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Castle Mountain Mine Project
Phase II Expansion Draft Environmental Impact Statement

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Prepared by:
U.S. Department of Interior
Bureau of Land Management

In Cooperation with:
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

EXECUTIVE SUMMARY

The Bureau of Land Management (BLM) Needles Field Office is preparing this Environmental Impact Statement (EIS) in response to a Plan of Operations Modification (Plan Modification) and right-of-way (ROW) applications submitted by Castle Mountain Venture (CMV or Applicant) for the Castle Mountain Mine Phase II Expansion Project (Project).

The Castle Mountain Mine is in the Hart Mining District of eastern San Bernardino County, California, approximately 60 miles south of Las Vegas and 5 miles west of the Nevada state line. The proposed Project includes expansion of an active open-pit gold mine in California, construction of a 0.7 mile administrative access road to avoid National Park Service (NPS) jurisdiction and remain on BLM-managed lands, and construction of an underground water pipeline and a 69-kilovolt (kV) overhead power line across public lands in California and Nevada. If approved, these activities would facilitate CMV's extraction and beneficiation of Phase II reserves, as reported by the Applicant, which are estimated to contain more than 4 million ounces of gold (Appendix J).

The Project would extend the mine life by approximately 30 years, with 20 years of mining and processing and 10 years of reclamation. Operations would effectively quadruple the annual mining rate from 22 million to 80 million tons. The increased rate would require approximately 2,250 acre-feet per year (AFY) of groundwater and up to 25 megawatts of power. To meet these demands, CMV proposes to construct a 31.5-mile-long underground water pipeline and 16.5-mile-long overhead power line across portions of San Bernardino County, California; Clark County, Nevada; and BLM-managed lands. Both ROWs would extend from the Project to Walking Box Ranch, located outside of Searchlight, Nevada, where the proposed power line would terminate. The proposed water pipeline would continue west and follow State Route 164 to its terminus near Nipton, California.

The proposed mine expansion includes:

- Construction and operation of a 31.5-mile underground water pipeline within a proposed BLM ROW.
- Construction and operation of a 16.5-mile long 69-kV overhead power line with a proposed BLM ROW.
- Increasing the total land disturbance by an additional 1,854-acres.
- Increasing mining by an additional 296 million tons.
- Increasing overburden stockpiling by an additional 196 million tons.
- Increasing crushing rate from 6 million to 19 million tons per year.
- Increasing maximum rate of mining by an additional 62 million tons per year.
- Increasing groundwater use from 625 to 2,250 AFY, an additional 1,625 AFY
- Expanding and deepening open pits to more than 400 feet below the water table.
- Providing up to 500 temporary and 400 permanent jobs.
- Creating an open-pit lake that would remain a permanent land feature.
- Extending the mine life to 2060.

The BLM's Purpose and Need are generally to:

- Respond to CMV's Mine Plan of Operations (MPO) and ROW applications for expanding mining facilities and installing associated utility infrastructure on BLM-managed lands.
- Ensure protection of public lands by preventing unnecessary or undue degradation consistent with the Federal Land Policy and Management act of 1975 (FLPMA) (43 United States Code [U.S.C.] Chapter 35), Mining Law of 1972 (30 U.S.C. § 22 et seq.), BLM Surface Management Regulations (43 Code of Federal Regulations [CFR] 3809), and ROWs under FLPMA ROW regulations (43 CFR 2800) to respond to the Standard Form 299 ROW application.

The BLM will decide whether to approve, approve with modifications, or deny CMV's MPO modification and Plan of Development applications, consistent with the analyses presented in this Draft EIS (see Chapter 3 – Affected Environment and Environmental Consequences).

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Abbreviations and Acronyms

3M	Monitor, Model, and Mitigate Program
µg/m^3	microgram(s) per cubic meter
AADT	annual average daily traffic
ABA	acid-base accounting
ACEC	Area of Critical Environmental Concern
ACEPM	applicant-committed environmental protection measure
AF	acre-feet
AFY	acre-feet per year
AJD	Approved Jurisdictional Determination
AKANM	Avi Kwa Ame National Monument
AML	Abandoned Mine Land
amsl	above mean sea level
AO	Authorized Officer
APE	area of potential effects
Applicant	Castle Mountain Venture
AQ-	Air Quality
AQR	Air Quality Regulations
AQRV	air quality related value
AQTSD	Air Quality Technical Support Document
BAAQMD	Bay Area Air Quality Management District
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BLM	Bureau of Land Management
BMP	best management practices
BO	Biological Opinion
Brown-Berry	Brown-Berry Biological Consulting
BWPC	Bureau of Water Pollution Control
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CaCO3	calcium carbonate
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CAP	criteria air pollutant
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board

CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CMA	conservation and management action
CMM	Castle Mountain Mine
CMNM	Castle Mountain National Monument
CMV	Castle Mountain Venture
CO	carbon monoxide
CUP	Conditional Use Permit
CWA	Clean Water Act
DAQ	Division of Air Quality
dBA	A-weighted decibel
DM	Department Manual
DOI	U.S. Department of the Interior
DRECP	Desert Renewable Energy Conservation Plan
DTSC	Department of Toxic Substances Control
ECORP	ECORP Consulting, Inc.
EI	Emissions Inventory
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ELMT	ELMT Consulting
ERMA	Extensive Recreation Management Areas
ESA	Endangered Species Act
EWF	East Well Field
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
GHG	greenhouse gas
GIS	geographic information system
GLA	Geo-Logic Associates
gpm	gallons per minute
HAP	hazardous air pollutant
HMBP	Hazardous Materials Business Plan
HPTP	Historic Properties Treatment Plan
HSG	hydrologic soil groups
IMPROVE	Interagency Monitoring of Protected Visual Environment

ITP	Incidental Take Permit
JSLA	Jumbo South Leslie Anne
km	kilometer(s)
KOP	key observation points
kV	kilovolt
LANDFIRE	Landscape Fire and Resource Management Planning Tools
L_{eq}	equivalent continuous sound level
LNG	liquified natural gas
LCRS	leak collection and recovery system
Lukos	Glenn Lukos Associates
LUP	land use plans
LVFO	Las Vegas Field Office
m	meter(s)
MCL	maximum contaminant level
MDAQMD	Mojave Desert Air Quality Management District
MERP	Modeled Emission Rates for Precursors
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MLRS	Mineral Land Records System
MNP	Mojave National Preserve
MOA	Memorandum of Agreement
MPO	Mine Plan of Operations
MTNM	Mojave Trails National Monument
MTR	Military Training Routes
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NBMP	Nesting Bird Management Plan
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NFO	Needles Field Office
NHPA	National Historic Preservation Act
NM	National Monument
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NP	National Park
NPDES	National Pollutant Discharge Elimination System

NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
O&M	operations and maintenance
PAG	potential acid-generating
PFYC	Potential Fossil Yield Classification
$PM_{2.5}$	particulate matter 2.5 microns in diameter or smaller
PM_{10}	particulate matter 10 microns in diameter or smaller
POD	Plan of Development
Porter-Cologne	Porter-Cologne Water Quality Control Act
Project	Castle Mountain Mine Phase II Expansion
RCRA	Resource Conservation and Recovery Act
RFTPA	reasonably foreseeable environmental trends and planned actions
RLM	Resource/Land Management
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SMU	soil map units
SO_2	sulfur dioxide
SR	State Route
SRMA	Special Recreation Management Area
State Water Board	State Water Resources Control Board
STLC	soluble threshold limit concentration
SWCA	SWCA Environmental Consultants
TAC	toxic air contaminant
TCP	traditional cultural places
tpy	tons per year
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Service
UUD	unnecessary or undue degradation
VAA	visual, auditory, and atmospheric
VOC	volatile organic compound
VRI	visual resource inventory
VRM	visual resource management
VRTR	Visual Resources Technical Report
VZMS	vadose zone monitoring system
WDR	waste discharge requirement
WEG	wind erodibility groups
WestLand	WestLand Engineering & Environmental Services, Inc.
WET	waste extraction testing
WOS	waters of the State
WOTUS	waters of the United States
WQPS	Water Quality Protection Standards
WTJTW	Wee Thump Joshua Tree Wilderness

CHAPTER 1: INTRODUCTION

1.1 Proposed Project

Castle Mountain Venture (CMV) (Applicant), a subsidiary of Equinox Gold Corp., proposes the expansion of the existing Castle Mountain Mine (CMM) in the historic Hart Mining District in eastern San Bernardino County, California.

CMV submitted a proposal to modify the CMM Plan of Operations for the expansion to the Bureau of Land Management (BLM) Needles Field Office (NFO) on March 14, 2022, with revisions on March 8, 2023, and October 7, 2025. The BLM determined the 2025 Plan Update (Appendix J) was complete on October 10, 2025. During this period, CMV also submitted right-of-way (ROW) applications to the NFO and Southern Nevada District Las Vegas Field Office (LVFO) to install an underground water pipeline and rebuild a 69-kV overhead power line to support the proposed mine expansion. The Castle Mountain Mine Phase II Expansion (Project) collectively refers to the Mine Plan of Operations (MPO) (Appendix J) and the associated ROW applications as detailed in the Plan of Development (POD) (Appendix K). The Project consists of two primary components: the MPO, which describes the expansion of an active open-pit gold mine and heap leach operation—including construction of a 0.7-mile administrative access road segment—and the POD, which describes development of new linear infrastructure—including an underground water pipeline and a 69-kV overhead power line. These components would collectively require additional land disturbance and multiple authorizations from federal and county agencies.

The proposed MPO expansion disturbance would result in approximately 1,434 acres of disturbance. The proposed underground water pipeline and 69-kV overhead power line would disturb approximately 380 acres within the Project Area (4,285 acres) and an additional 5 acres in the currently authorized Mine Plan Boundary. Including the 1,474 acres of existing disturbance, the total project proposed disturbance area following MPO and ROW approval would be approximately 1,854 acres. Overall project disturbance—including both existing and proposed—would result in a total of 3,288 acres of disturbed land within the approve MPO Boundary Area.

For the MPO, CMV would obtain Surface Mining and Reclamation Act (SMARA) permits (Appendix G) from San Bernardino County. Additionally, natural resource development (mining) for the CMM project is authorized through Conditional Use Permit (CUP) 90M-013 (San Bernardino County 1997) and current operations remain subject to including compliance with the reclamation and financial assurance requirements under SMARA, administered by San Bernardino County.

CMV's access road to CMM was approved under the mine's original BLM MPO (CACA-031137) in 1990 (BLM 1990a).[1] When the California Desert Protection Act of 1994 established the Mojave National Preserve (MNP), it included the mine's proposed utilities and 1,000 feet of access road. CMV has proposed an alternative 0.7 mile administrative access road segment that avoids the MNP and would be located wholly within the proposed long-term ROW for the overhead power line.

For the requested ROWs and associated POD (Appendix K), the proposed underground water pipeline and 69-kV overhead power line would cross public lands in San Bernardino County, California, and Clark County, Nevada, and would require BLM ROW authorizations from the NFO and LVFO.

[1] The original BLM Mine Plan of Operations (CACA-031137) was approved in the 1990 *Record of Decision for the Castle Mountain Mine Project Environmental Impact Statement* (EIS No. 890053/State Clearinghouse No. 88062708). This document will be referred to as the 1990 Plan herein.

1.2 Project Location

The Project is in the Mojave Desert near the border of California and Nevada, approximately 100 miles east of Barstow, California, 60 miles south of Las Vegas, Nevada, and about 17 miles southwest of the town of Searchlight, Nevada. The Project is in both San Bernardino County, California, and Clark County, Nevada, with the mine occupying private land owned by CMV and unpatented mining claims on BLM-managed land (Mine Project Area) (Figure 1-1) and the ROWs crossing BLM-managed lands in California and Nevada (ROW Project Area). The entirety of the MPO Boundary area is surrounded by the Castle Mountain National Monument in California.

The ROWs would consist of a 31.5-mile-long underground water pipeline and 16.5-mile-long 69-kV overhead power line that would extend from the Project to Walking Box Ranch in Nevada, then the underground water pipeline would continue and follow State Route (SR) 164 to Nipton, California. The proposed underground water pipeline and 69-kV overhead power line would cross public lands in California and Nevada, including the Avi Kwa Ame National Monument and the Piute-Eldorado Area of Environmental Concern (ACEC), requiring BLM ROW authorizations from the BLM NFO and LVFO.

The Project lies within the San Bernardino Base Line and Meridian of the U.S. Geological Survey (USGS) Castle Peaks, Crescent Peak, Hart Peak, Nipton, California, 7.5-minute quadrangles and Mount Diablo Base Line and Meridian of the USGS McCullough Mountain, Highland Spring, Hopps Well, Nevada, 7.5-minute quadrangles in San Bernardino, California, and Clark County, Nevada (USGS 2026). The Public Land Survey System legal description of the Project is provided in Table H-1 in Appendix H.

1.3 Historic and Current National Environmental Policy Act/California Environmental Quality Act

In preparing this joint Environmental Impact Statement (EIS) and Environmental Impact Report (EIR), the BLM has used NEPA tiering and incorporation by reference to enhance efficiency, promote transparency, and focus the analysis on new or unresolved issues (DOI NEPA Handbook, Section 3.2 and Appendix 1 [DOI 2026]). Tiering allows this document to rely on and build upon previous environmental reviews while concentrating on project-specific impacts that have not been previously analyzed or that require updated evaluation.

A list of the previous NEPA analyses and related decision documents relevant to this Project is provided in Table B-1.1.3-1 in Appendix B. These previously completed analyses provide important background information, regulatory context, and prior environmental evaluations associated with earlier phases of the project and related actions. Tiering to these documents allows this EIS/EIR to incorporate relevant analyses from the 1990 EIS/EIR (BLM 1990b), 1991 EA (BLM 1991), 1997 EIS/EIR (BLM 1997), 1998 EIS/Record of Decision (ROD) (BLM 1998a), and 2020 EA (BLM 2020a), while focusing the current analysis on the proposed Phase II Expansion and associated ROW applications. These documents include evaluations of potential impacts associated with expanded mine pits and waste rock storage areas, crushing facilities and overland conveyors, overburden areas, heap leach pads and comminution plant facilities, mine access routes, and the former 69-kV transmission line.

Additionally, this EIS/EIR incorporates by reference relevant baseline studies and technical reports listed in Table B-1.1.3-2 in Appendix B. Incorporation by reference reduces duplication and document length by allowing relevant information from previously prepared studies or analyses to be summarized and cited rather than repeated in full (DOI NEPA Handbook § 3.5 [DOI 2026]).

A joint EIS under the National Environmental Policy Act (NEPA) and Environmental Impact Report under the California Environmental Quality Act (CEQA) is being prepared to fulfill the BLM's obligations under NEPA and San Bernardino County's obligations under CEQA and the Surface Mining

and Reclamation Act (SMARA). Preparing a coordinated environmental review document allows for simultaneous public review, promotes consistency between federal and county analyses, and allows each agency to fulfill its respective statutory responsibilities. The EIR is included as Appendix A in this document.

1.4 History of the Castle Mountain Mine

In 1990, the BLM and San Bernardino County approved the original MPO (the 1990 Plan) to build and operate the CMM in far east San Bernardino County, California (BLM 1990a). The original MPO included a 10-year mining schedule followed by 10 years of reclamation and monitoring, with a termination date of December 31, 2010. The original MPO described a project that would provide access to the mine via the CMM Access Road, develop and operate three open pits, and construct associated facilities, including heap leach pads, ore-crushing facilities, a gold recovery plant,, and buildings for maintenance and administrative activities. The plan called for mining approximately 90 million tons of material, including 30 million tons of ore and 60 million tons of overburden. The original MPO identified an approved Mine Project Area of 2,735 acres, with an estimated surface disturbance of 890 acres.

Construction began on the open-pit heap leach mining operation in 1990. Mining and gold production began in 1991, producing 1.25 million ounces of gold and 400,000 ounces of silver. In 1991, installation of a 69-kV transmission under an agreement with the Neveda Power Company (now NV Energy), commenced for mining operations under the 1990 plan (BLM 1990a) and authorized by the 1990 EIS/EIR (BLM 1990b). The historic 69-kV transmission line extended from the Castle Mountain Mine to the Walking Box Ranch substation, which is similar to the current proposed transmission line for the 2025 plan update (Appendix J). During interim reclamation in 2011, the transmission line was removed.

In 1998, CMV submitted an MPO amendment application for the Project. The total Mine Project Area increased from 2,620 to 3,905 acres, and land disturbance increased by 486 acres to 1,496 acres after adjusting for a reclamation credit and applying an error factor converting to modern geographic information system (GIS) mapping techniques. The mining schedule was extended 10 years to December 31, 2020. In July 2002, reclamation plan revisions were approved by the lead agencies, although these revisions were not documented in a formal approved mine plan amendment. Mine operations ceased in 2004, and reclamation work was initiated. After the patented lands were transferred to CMV in 2007, the California Division of Mine Reclamation and San Bernardino County deemed the reclamation goals had been met in 2012 (CMV 2020).

The CMM began a phased restart of active mining operations in 2013, initially consisting of mineral exploration drilling in areas already authorized. Increases in the price of gold, renewed interest in the remaining resources, and the possibility of identifying additional resources led to the initiation of three phases of exploration drilling from late 2013 through 2019 under the 1998 Plan (BLM 1998a). The exploration drilling programs were designed to reconfirm the existence of previously identified mineral resources and to search for extensions of known gold mineralization.

Reconstruction of authorized mine facilities began in 2019 and was mostly complete by mid-2020. It included re-permitting with some state agencies whose permits (Appendix G) had expired due to the prolonged shutdown. Full-pit mining began in the Jumbo South Leslie Anne (JSLA) Pit in mid-2020, and ore leaching began during the fourth quarter of that same year after receiving the Regional Water Quality Control Board (RWQCB) new waste discharge requirement (WDR) permit for the newly rebuilt leach pad facility. Reconstructed mine facilities included mine offices, mobile maintenance yard, refueling station, lime silo, heap leach pad, gold processing plant and event pond, on-site power generation station, and a revegetation nursery and greenhouse.

In 2020, a plan was put forward as an update of the 1998 Plan, including modifications required to update the CMM as reclamation activities were not completed and therefore remained idle between 2013 and 2020 (CMV 2020). The 2020 Plan Update was a minor plan modification because it did not propose any facilities that had not been previously authorized; however, it did account for a change in land use, as the patented lands had been transferred to CMV in 2007. It also recorded reclamation plan revisions that had been approved by the lead agencies in July 2002.

As described in the MPO, ore crushing and agglomeration began in early 2022 due to excessive clay loading on the leach pad, which negatively affected leach solution percolation through the stacked leach pad ore. Pit mining and ore-crushing operations were suspended in mid-2024, with mining scheduled to resume in 2027. Leaching on the leach pad and gold refining at the process plant continued throughout 2025 and are expected to continue in 2026. These operational changes were driven by ore processing and percolation performance and not by environmental compliance exceedance or subsurface performance issues.

1.5 Purpose and Need

The BLM has received an application from CMV for approval of a MPO for the Castle Mountain Mine Phase II Expansion and associated ROWs for an underground water pipeline and electrical transmission line on BLM-administered lands in San Bernardino County California, and Clark County, Nevada. The BLM's purpose for this action is to respond to CMV's proposal as described in the 2025 *Castle Mountain Mine – Mine Plan of Operation and Reclamation Plan Amendment* (2025 Plan Update) (CACA031137) (Appendix J) and 2025 *Ivanpah Underground Water and 69 kV Overhead Power Line Rights of Way Project: Plan of Development* (POD) (Appendix K) in accordance with its statutory and regulatory obligations and to analyze the environmental effects associated with the Proposed Action and alternatives to the Proposed Action.

The need for the action is established by the BLM's responsibility under the Federal Land Policy and Management Act of 1976 (FLPMA) (43 United States Code [U.S.C] Chapter 35), Mining Law of 1872 (30 U.S.C. § 22 et seq.), and BLM Surface Management Regulations (43 Code of Federal Regulations [CFR] 3809) and BLM ROW regulations (43 CFR 2800). Under these statutes and regulations, the BLM is required to ensure that the proposals do not cause unnecessary or undue degradation (UUD) of public lands and whether the proposed ROWs represent a reasonable use of BLM-administered lands consistent with multiple use and sustained yield principles under FLPMA.

1.6 Applicant Objectives

The Applicant's objective is to expand the Project's mining operation by developing an additional 1,854 acres on BLM-managed land and securing ROW authorizations to support the power and water needs of the mine's expansion. The expansion would allow CMM to have greater operational efficiency and production. The expansion areas encompass the construction, operation, closure, and reclamation of the mine and ancillary facilities. The expansion would allow for full extraction of CMV's existing claim for gold and silver mineral resources.

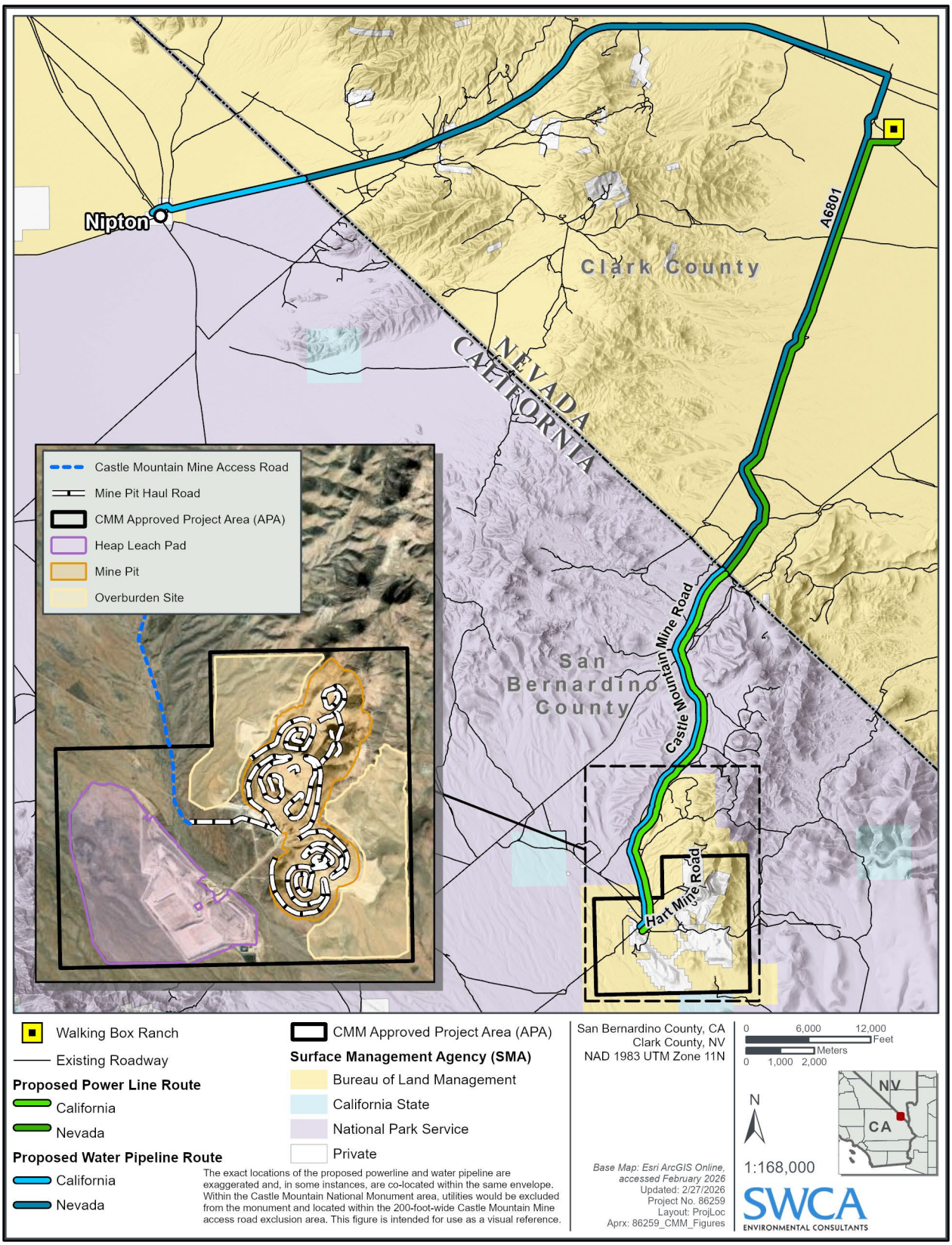


Figure 1-1. Project Location Map

1.7 Decisions to be Made

The BLM Authorized Officer (AO) would consider the following: (1) approve the plan modification as submitted; (2) approve the plan modification subject to changes or conditions that are necessary to meet the performance standards of 43 CFR 3809.420 and to prevent unnecessary or undue degradation; or (3) disapprove the plan modification because the proposed operations would result in unnecessary or undue degradation of public lands.

Additionally, under 43 CFR 3715, the BLM AO will make a written determination of concurrence or nonconcurrence with the occupancy proposed in the MPO.

The BLM AO would also decide under 43 CFR 2800 whether to approve the ROW applications for the Project as described within the POD, approve the ROW applications subject to changes or conditions necessary or disapprove or withhold approval of the ROW applications. The BLM's decision is made considering the results of this EIS prepared under NEPA and other applicable federal requirements (Appendix F). The BLM may include any terms, conditions, and stipulations it determines to be in the public interest and may include modifying the proposed use or changing the location of the proposed facilities (43 CFR 2805.10(a)(1)). In the decision process, the BLM must consider how the BLM's resource management goals, objectives, opportunities, and/or conflicts relate to this nonfederal use of public lands.

1.8 Land Use Plan Conformance

All actions authorized by the BLM must be consistent with the approved land use plans (LUPs) or resource management plans (RMPs) for the lands under their jurisdiction. The Project crosses several applicable LUP/RMP planning areas, including the *California Desert Conservation Area Plan* (CDCA Plan) (BLM 2022a), and *Record of Decision for the Approved Las Vegas Resource Management Plan and Final Environmental Impact Statement* (1998 Las Vegas RMP) (BLM 1998b). Additional management plans or guidance for specially designated areas include the Piute-Eldorado Area of Critical Environmental Concern (ACEC) Management Plan (BLM 2022b) and the BLM Memorandum for Interim Management of the Avi Kwa Ame National Monument (AKANM Memorandum) (BLM 2025a). These documents, described below, collectively provide guidance for public land and resource management within these designated areas:

- **California Desert Conservation Area Plan, DOI-BLM-CA-D010-1980-0001-RMP-EIS, Initial Record of Decision in 1980, Amended in 1999, Consolidated Version published in 2022.** The CDCA Plan established by the BLM in 1980, provides management guidance for over 12 million acres of public lands across multiple BLM field offices in the Southern California desert. The CDCA LUP not only ensures that the preservation of the historical significance of mining in the California desert region ensues but also plays a crucial role in maintaining the cultural and environmental integrity of the California desert region, including recognizing the importance of Tribal cultural significance and the relationships Tribes hold with these lands.

  In 2016, the DRECP amended portions of the CDCA Plan, and in 2022, the BLM published a consolidated version that incorporates all major amendments through 2020 (BLM 2022a). For NEPA projects within the DRECP planning area, LUP conformance requires that proposed actions align with the goals, objectives, and conservation and management actions (CMAs) identified in the plan (BLM 2016:69–205).For those areas of the CDCA Plan not amended by the DRECP, conformance with the original CDCA plan requirements remains necessary.

The CMM was identified in the DRECP, and later in the consolidated CDCA Plan, as an existing high-priority mineral operation exclusion area, exempting certain CMAs but not all (BLM 2022a:3-177; BLM 2016:137). Portions of the proposed underground water pipeline and 69-kV overhead power line within the DRECP boundary remain subject to the applicable CMAs outlined in the DRECP. The guidelines in the CDCA LIP emphasize the BLM's responsibility to permit authorized development on public lands (BLM 2022a:1–10). The consolidated CDCA Plan also provides that existing rights—such as those related to minerals—are documented legal rights or interests that authorize entities to use public lands for specific purposes.

Separate from the DRECP, the CDCA Plan identifies three primary goals for mineral resources, along with associated objectives and planned actions (BLM 2022a:3-170 to 3-175). Implementation measures for these mineral resources are derived from the DRECP (BLM 2022a:3-175 to 3-181). Given that the Project aligns with the goals and objectives established in the CDCA Plan for mineral resources, the Proposed Action is consistent with this RMP.

- **Record of Decision for the Approved Las Vegas Resource Management Plan and Final Environmental Impact Statement, DOI-BLM-NV-S000-1993-0001-RMP-EIS, Record of Decision in 1998**. The 1998 Las Vegas RMP provides guidance for the management of public lands within the LVFO, encompassing resource conservation, recreation, land use authorizations, and development (BLM 1998b). The RMP establishes goals, objectives, land use allocations, and management actions for a range of resources—including air quality, vegetation, visual resources, land use, ACECs, ROWs, and species management—to ensure sustainable use of public lands while protecting sensitive resources and accommodating authorized uses. These requirements are applicable to the portions of the Proposed Action within Nevada. The Proposed Action has been reviewed for conformance with the RMP, and the portions of the Project within Nevada are consistent with the applicable land use allocations, management prescriptions, and resource protection requirements outlined in the RMP.

- **Piute-Eldorado ACEC Management Plan, DOI-BLM-NV-S010-2022-0034-EA, Record of Decision Signed in 2022.** The Piute-Eldorado Valley ACEC Management Plan provides specific guidance for the protection and management of sensitive resources within the ACEC (BLM 2022b) as mandated by the 1998 Las Vegas RMP. The management plan establishes objectives, indicators, and actions to conserve critical habitat for the desert tortoise and other Sensitive species, protect unique ecological and cultural values, and regulate land uses to minimize adverse impacts. The portions of the Proposed Action that cross the Piute-Eldorado Valley ACEC have been reviewed for consistency with the Piute-Eldorado ACEC Management Plan. These segments of the Project are consistent with the applicable management prescriptions and resource protection requirements outlined in the plan.

- **BLM Interim Management of the Avi Kwa Ame National Monument, Internal Memorandum from the BLM Principal Deputy Director to the BLM Nevada State Director, Signed in 2025.** The AKANM Memorandum serves as interim guidance for the AKANM (BLM 2025a) and provides a framework for managing the monument until formal guidance can be established. This interim management guidance is based on Presidential Proclamation 10533, which designated the AKANM, and ensures that, until a new management plan is completed, the BLM manages the Monument in a manner consistent with that proclamation. The memorandum directs the BLM to prioritize the protection and restoration of the monument's significant cultural, ecological, and historic resources while preserving its undeveloped character and minimizing surface disturbances. It continues application of the 1998 Las Vegas RMP where consistent, restricts motorized vehicle use to existing routes, and requires that recreational and restoration activities support the monument's protective goals.

With respect to Project ROWs, Proclamation 10533 and AKANM memorandum (BLM 2025a:7) both state the following:

> Nothing in this proclamation shall be construed to preclude the renewal or assignment of, or interfere with the operation, maintenance, replacement, modification, upgrade, or access to, existing flood control, utility, pipeline, and telecommunications facilities; roads or highway corridors; seismic monitoring facilities; or other water infrastructure, including wildlife water developments or water district facilities, within or adjacent to an existing authorization boundary. Existing flood control, utility, pipeline, telecommunications, and seismic monitoring facilities, and other water infrastructure, including wildlife water developments or water district facilities, may be expanded, and new facilities of such kind may be constructed, to the extent consistent with the proper care and management of the objects identified above and subject to the Secretary's authorities and other applicable law.

Because only the utilities component of the Project crosses the AKANM, and both the Proclamation and AKANM memorandum do not preclude new ROWs for utilities, the Proposed Action is consistent with the interim guidance.

1.9 Major Authorizing Laws, Statutes, and Regulations

The BLM is guided by a robust legal and regulatory framework when considering proposed mining and ROW actions on public lands. Table 1.9-1 includes the applicable federal regulatory authorities and the relationship to the Proposed Action.

Table 1.9-1 Federal Regulatory Authorities and Guidance

Federal Authorities	Relationship to the Proposed Action
Mine Plan of Operation	
General Mining Law of 1872 (30 U.S.C.§§ 22–42)	The General Mining Law of 1872 authorizes the exploration and development of locatable minerals on federals lands, including those involved in the MPO.
Federal Land Policy and Management Act of 1976, as amended (Public Law 94-579; 43 U.S.C. § 1701 et seq.)	FLPMA directs BLM to manage public lands for multiple use and requires that implementation of the MPO would not result in UUD of public lands.
43 U.S.C. § 5 1781(f)	Section 601(f) of FLPMA directs BLM to prescribe the measures necessary to ensure plans of operations would not cause undue impairment to lands or waters within the CDCA.
43 CFR 3809, Surface Management	Governs surface management and protects against UUD of public lands. BLM is processing the MPO in accordance with 43 CFR 3809.
43 CFR 3715, Use and Occupancy Under the Mining Law	The MPO includes revisions and additions to the existing occupancy which requires BLM concurrence.
Plan of Development	
Federal Land Policy and Management Act of 196, as amended (Public Law 94-579; 43 U.S.C. § 1761-1771)	FLPMA authorizes federal agencies to grant, manage, and condition ROWs on public lands and requires a POD to describe construction, operation, maintenance, and reclamation activities
43 CFR 2800	43 CFR 2800 implements FLPMA by establishing the regulatory framework for authorizing, administering, and enforcing ROWs on public lands, including requirements for a detailed POD.

In addition to these foundational statutes, NEPA requires the BLM to thoroughly evaluate the environmental impacts of its decisions, ensuring that all potential effects are considered before actions are taken. For certain large-scale infrastructure projects, the Fixing America's Surface Transportation Act enables a more streamlined and coordinated environmental review and permitting process.

This EIS is being prepared in accordance with Department of the Interior (DOI) NEPA Implementing Regulations (43 CFR 46) and 516 Department Manual (DM) 1 (DOI 2026), as well as all relevant DOI policies and manuals. Ultimately, before any alternative identified in this EIS can be implemented, it is assumed that the Applicant will secure all necessary federal, state, county, and local permits and approvals. All mining operations and ROW uses on BLM-managed lands must adhere to these laws and regulations and must operate under an approved plan of operations.

Whereas this EIS has been prepared by the BLM to satisfy the requirements of NEPA, the Project is also subject to environmental review under CEQA. San Bernardino County, acting as the lead agency under CEQA, has prepared an EIR to evaluate the proposed Project's potential environmental effects, identify necessary mitigation and/or avoidance measures, and evaluate alternatives to the Project that avoid or reduce identified impacts (Appendix A). The BLM and San Bernardino County have coordinated their respective environmental reviews to ensure consistency in data collection and adherence to local, state, and federal laws, regulations, and policies.

1.10 Local County Plans

The Proposed Action conforms with the Clark County Master Plan and the San Bernardino Countywide Plan (Clark County 2021; San Bernardino County 2020). The Clark County Master Plan was most recently adopted in 2021, with policies and objectives aimed at directing future decisions regarding the development and use of public and private land in Clark County. The plan outlines Clark County's vision and policies for public lands and how Clark County should be involved in decisions made on public lands within the county boundaries. Provisions in the plan include keeping the county open to prospecting and mining to maintain mining and private industry as basic economic activities (Clark County 2021). The plan also supports transmission activities to ensure the expansion and interconnectivity of transmission capabilities.

In October 2020, San Bernardino County adopted a Countywide Plan, which is a collection of planning tools intended to guide future decisions, investments, and improvements throughout the county (San Bernardino County 2020). Within the Countywide Plan, the CMM is designated in the Resource Conservation and Resource/Land Management (RLM) zoning designations. The RLM zoning designation is to "manage, preserve, and protect natural resources such as agricultural/grazing lands, watersheds, minerals, and wildlife habitat areas, as well as open space areas not otherwise protected or preserved." Typical uses within the RLM zone include "mineral extraction, timbering, or similar activities as permitted by federal or state regulations" (San Bernardino County 2020). The Resource Conservation land use zoning designation provides sites for open space and recreational activities, single-family homes on very large parcels, and similar and compatible uses (San Bernardino County Development Code Chapter 82.03). Natural resource development (mining) is permitted with the approval of a mining CUP 90M-013 (San Bernardino County 1997). The San Bernardino County Surface Mining and Reclamation Plan Development Code Chapter 88.03 combines the CUP and a required reclamation plan.

CHAPTER 2: ALTERNATIVES

This chapter presents the No Action Alternative and Action Alternatives considered and dismissed in the preparation of this EIS as relevant to the Phase II Expansion which includes the MPO (Appendix J) and associated ROWs (see Appendix K for the POD). The range of alternatives was developed to address the Purpose and Need as outlined in Section 1.5 and the Applicant Objectives as outlined in Section 1.6. A total of five Action Alternatives are being considered and are presented in detail in the following sections. Action Alternatives considered but not analyzed in detail are listed in Table B-1.2-1 in Appendix B and described briefly in Appendix L.

2.1 Alternative A: No Action

Under the No Action Alternative, the BLM would not issue any ROW authorizations or authorize the MPO; however, CMV would continue mining only within the areas and to the extent currently authorized under existing permits and approvals (Appendix G) associated with the 1998 EIS/ROD (Figure 2-1) (BLM 1998a). Additionally, under the No Action Alternative, the proposed Project would be denied, and as a result, the objectives and goals of the Applicant, including expansion of operations, increased resource development, and associated economic benefits, would not be achieved.

Mining operations would proceed under the currently authorized BLM MPO CACA-031137 (BLM 2020b; San Bernardino County 1997). Mining would be limited to federal land or private land with vested mineral rights, up to 1,298 acres and 80 million tons per year (tpy), using open-pit mining and heap leach processing methods (Appendix J). Current operations remain subject to federal and state regulation, including compliance with BLM's financial guarantee requirements under 43 CFR 3809.5 and the reclamation and financial assurance requirements under the California SMARA of 1975, administered by San Bernardino County.

If the Applicant wishes to revise the currently authorized MPO to include activities beyond those already permitted or outside the existing boundaries, submission of a revised MPO to both BLM and San Bernardino County for review and approval would be required.

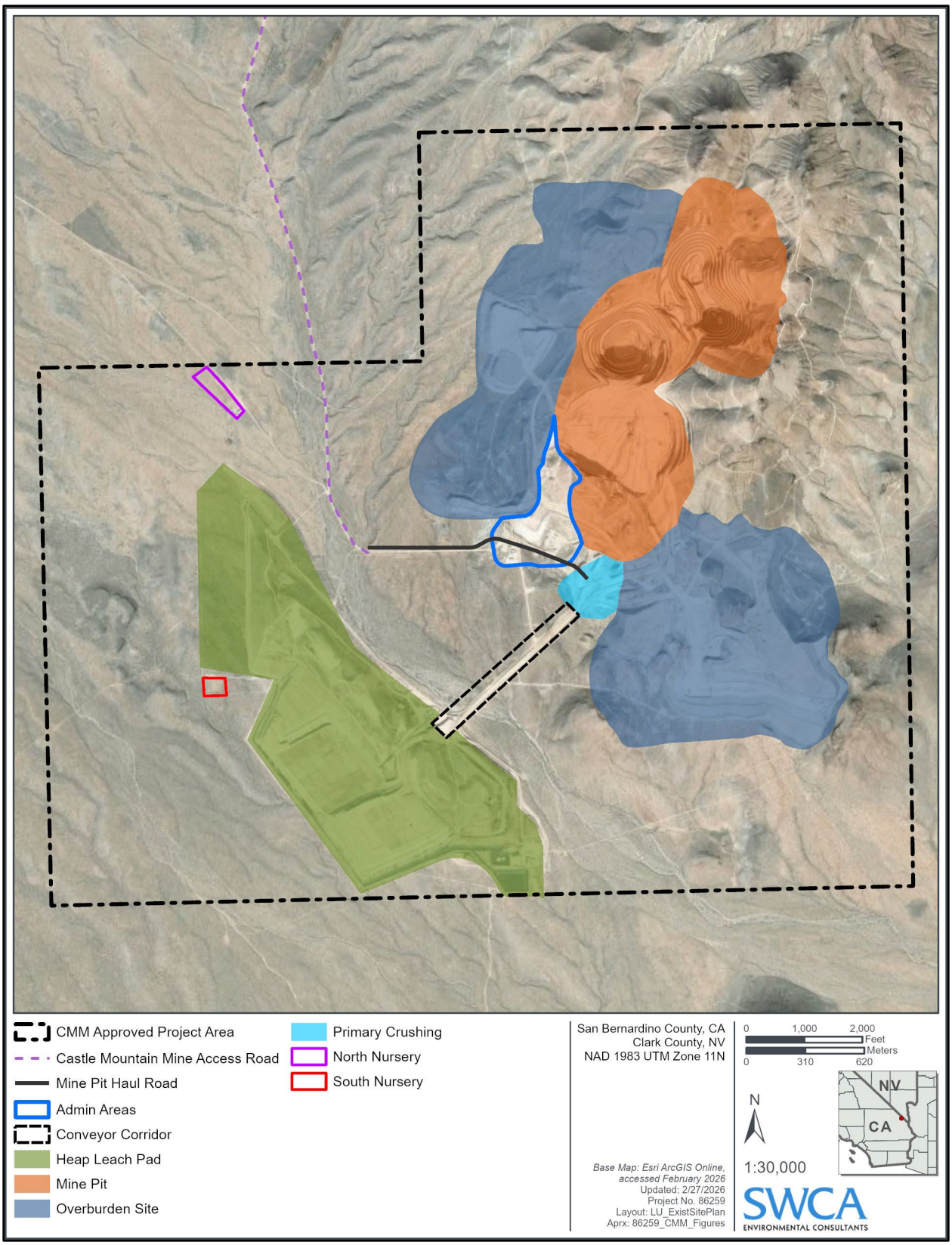


Figure 2-1. No Action Alternative Map

2.2 Alternative B: Proposed Action

The Proposed Action, or Project, consists of two primary components: (1) the expansion of operations at the CMM covered under the MPO (Appendix J) and (2) the newly requested ROWs for water and power utilities to support the expansion covered under the POD (Appendix K). Section 2.2.1 covers the portion of the Proposed Action relevant to the MPO and Section 2.2.2 covers the ROWs detailed in the POD (Appendix K). Approval of the Proposed Action would result in a total of 1,854 acres of new short-term and long-term disturbance, encompassing both the MPO and ROW components. If the Project is approved, the overall Mine and ROW Project Areas—including both new and existing authorized areas—would total 4,285 acres, reflecting the combined area of the proposed expansion and previously approved MPOs.

2.2.1 Amended Mine Plan of Operations

The amended MPO includes expanded mining within pits identified in previous plans, expanded overburden sites, increased mining rates, and an extended mine life to process all available ore reserves (Appendix J). The proposed changes would increase surface disturbance and annual groundwater demand associated with expanded mining operations, along with expanded pit dewatering activities. Additionally, the Project would continue to generate power on-site but would transition from diesel generators to liquified natural gas (LNG) microturbines to meet the increased power supply requirements.

The following sections summarize key modifications to the existing mining plan, highlighting changes and new features introduced under the Project. Details on increased total quantity and annual rate of ore and overburden mined, mine components, including processing and crushing facilities, utilities, ancillary facilities, and hazardous waste management, are available in the 2025 Plan Update (Appendix K).

Table 2.2-1 and Figure 2-2 detail the existing and newly proposed disturbance for the MPO component of the Proposed Action.

Table 2.2-1. Existing and Proposed Disturbance Relevant to the Proposed Action for the MPO

Mine Phase	Acres
Approved Existing Disturbance of 1998 Plan*	1,474
No Disturbance/Part of Approved MPO	997
Short-Term Disturbance	5
Long-Term Disturbance	1,429
Total	**3,905**

Notes:

* The 1998 EIS/ROD approved 1,375 acres of disturbance and CMV received 85-acre reclamation credit totaling 1,460 acres (BLM 1997, 1998b). The 1,474-acre estimate is based on measurements derived from GIS data. Acreages calculated using GIS may differ from those reported in on-the-ground plans due to differences in mapping methods and data resolution.

The existing disturbance from the 1998 Plan consists of 1,375 acres authorized under the 1997 EIS/EIR and 1998 ROD (BLM 1997, 1998a), as well as additional acreage granted as reclamation credits, for a total authorized disturbance of 1,460 acres (Appendix J). Due to advances in mapping technology and updates to GIS data management since plan approval, the Project's current GIS analysis identifies 1,474 acres of existing disturbance. The difference reflects improved spatial accuracy rather than additional authorized disturbance. The 997 acres associated with the previously approved MPO are included for continuity with prior approvals and to document the extent of the mine plan boundary and the 1,429 acres of proposed long-term disturbance includes the expansion of the mine facilities outlined in the following sections.

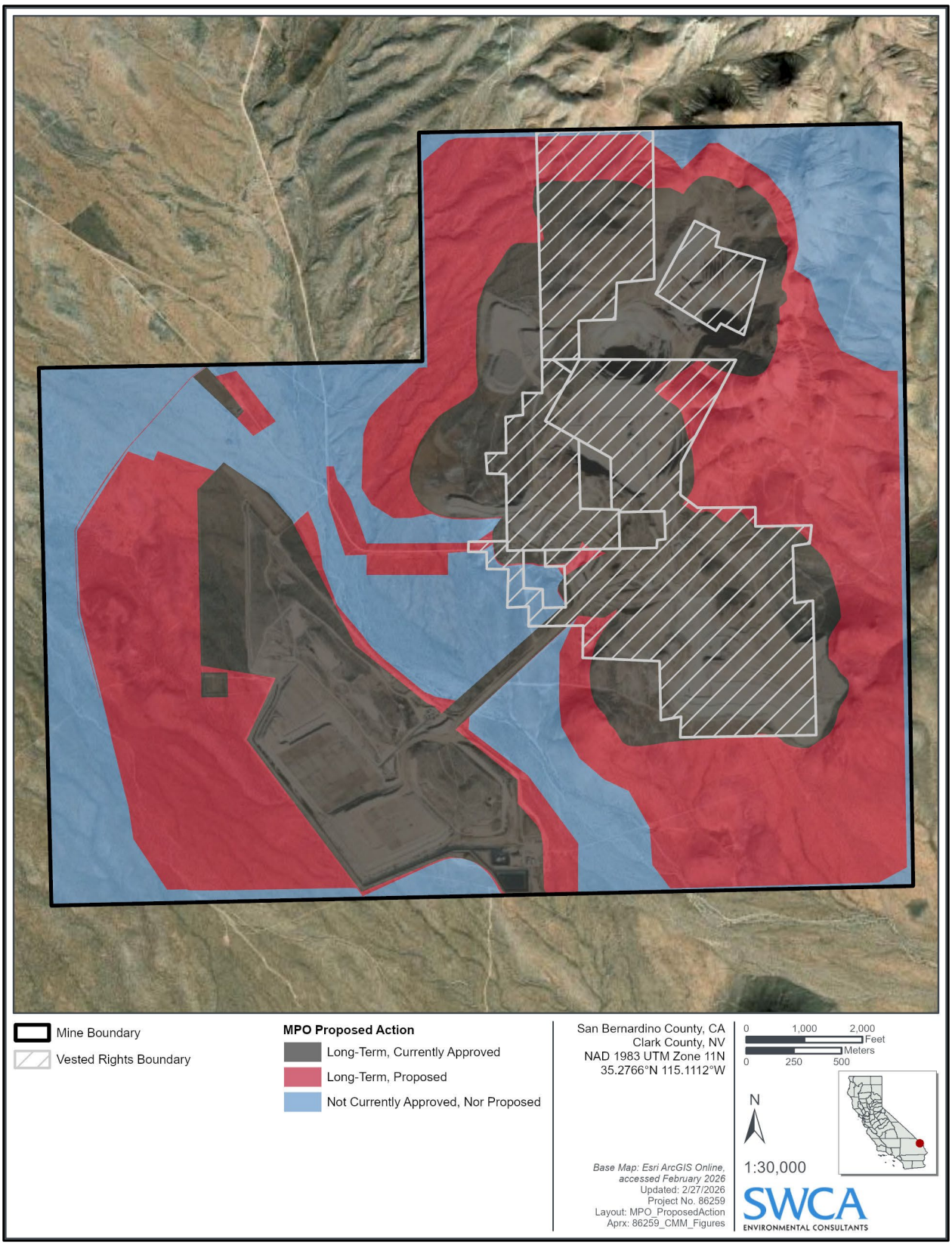


Figure 2-2. MPO Component of the Proposed Action

2.2.1.1 EXPANSION OF MINE PITS, OVERBURDEN SITES, AND HEAP LEACH PAD

The Proposed Action involves expanding mine pits adjacent to and surrounding ore deposits previously approved under the 1990 and 1998 RODs (BLM 1990a, 1998a). The proposal includes adjustments to the sequence and extent of mining at existing deposits, with an emphasis on pit backfilling to enhance operational efficiency, reduce environmental impacts, and facilitate effective reclamation (Figure 2-3). According to the MPO, key features of the proposed expanded operations include:

- Expanded Mine Pits and Waste Rock Storage Areas:
  - Lateral and vertical expansion of the JSLA, Jumbo, Oro Belle, and South Extension open pits adjacent to and surrounding ore deposits previously authorized under the 1990 Plan and 1998 Plan.
  - The existing mine pits occupy about 307 acres, and a maximum depth of almost 600 feet below ground surface (bgs) at the Oro Belle pit. This increases to 839 acres and a maximum depth of approximately 1,200 feet bgs or an approximate elevation of 3,000 feet above mean sea level (amsl) at the floor of the South Extension pit.
  - Excavations would extend to depths exceeding 400 feet below the groundwater table.
  - The total pit area would increase to approximately 839 acres, with a maximum depth of approximately 1,200 feet bgs.
  - Expanded mine pits and waste rock sites would be located near ore bodies to minimize haul distances, fuel use, and air emissions.
- Primary Crushing Facilities and Overland Conveyors:
  - Primary crushing would occur at a reestablished crushing plant located as authorized in the 1998 Plan.
  - The crushing plants would be positioned close to pits, and extensive use of overland conveyors would further reduce diesel-equipment travel and associated emissions.
- Overburden Storage Facilities:
  - The south and north overburden sites currently have an elevation gain of about 200 feet; this would be increased by approximately 100 feet for a total estimated pile height of 300 feet.
  - The 2025 plan would necessitate 1,049 acres for overburden placement, a 448-acre increase from the existing approved placement.
  - Overburden storage capacity would be expanded to accommodate approximately 352 million tons of waste rock. Total overburden production over the life of the proposed Project is estimated at approximately 738 million tons, of which approximately 400 million tons would be backfilled into northern pits and approximately 338 million tons would be placed in overburden storage facilities.
  - Overburden sites would be designed to mimic natural terrain, simplifying final reclamation.
- Heap Leach Pads and Comminution Plant:
  - The heap leach pad would expand west within the Project boundary; total land (currently approved and proposed) authorized for heap leach pad activity will total 841 acres, a 411-acre increase, but this includes portions of the old (reclaimed) leach pad including those areas approved for the comminution and agglomeration activities.
  - Increases the height of the heap leach pad from the currently authorized 150 to 300 feet. This material will be placed in lifts of 20 to 30 feet.

- The heap leach pad would be expanded to accommodate up to approximately 332 million tons of ore.
- Heap leach pads and the comminution plant would be sited on gentle slopes to maximize gravity flow, minimize grading, and reduce impacts on natural drainage and floodplains.

The expanded facilities in the proposed Project would increase land disturbance in the mine plan boundary by approximately 1,429 acres from the 2025 Plan Update, resulting in a new long-term disturbance total of approximately 2,903 acres within the mine plan boundary.

2.2.1.2 INCREASED MINING QUANTITY AND RATE

Under the Proposed Action, both the quantity and rate of ore and overburden mined at CMM would increase substantially. In total, approximately 332 million tons of ore and 738 million tons of overburden (waste rock) would be mined over the life of the Project, an increase of 324 million tons of ore and 603 million tons of overburden beyond currently approved quantities. Of the additional overburden, 400 million tons would be backfilled into mine pits, and 203 million tons would be placed at expanded North and South Overburden sites.

The Proposed Action would increase the annual mining rate to a maximum of 80 million tpy (19 million tpy of ore and 61 million tpy of overburden), an annual increase of 13 million tpy of ore and 45 million tpy of overburden above previously approved rates. The average annual mining rate would rise from 22 million to 58 million tpy, with peak rates reaching 80 million tpy—a peak increase of 58 million tons annually. Mining rates would fluctuate based on ore grade, gold recovery, and geotechnical conditions.

The proposed mining rate increase does not alter the approved methods of ore handling and processing, which would continue to include open-pit mining, blasting, ore crushing, overland conveyors, comminution and agglomeration, heap leaching, gold refining, and groundwater extraction.

2.2.1.3 INCREASED MINE LIFE

The currently approved authorization, mining, and reclamation activities at CMM are set to conclude by 2035. Approving the Proposed Action would extend mining and processing operations for 20 years, followed by 10 years of reclamation and monitoring, for a total extension of 30 years. This extension in mine life would be necessary to efficiently process the remaining metal ores on-site, given the potential increase in mining quantity and rate.

2.2.1.4 GROUNDWATER USE AND MINE PIT DEWATERING

The Proposed Action would modify and expand water supply systems at the CMM site to meet increased demands for heap leach processing, dust control, and essential mine operations. Currently, CMM relies on three groundwater wells in the West Well Field (WWF) and two pit-dewatering wells in the East Well Field (EWF). To support higher mining rates, the Proposed Action would include expanding the EWF in the Lanfair Basin with up to eight additional pit-dewatering wells, as well as developing the new Northwest Water System in the Ivanpah Valley Basin. The Northwest Water System is anticipated to provide 840 to 1,340 acre-feet per year (AFY) of water. Combined, water use from the Lanfair and Ivanpah Valley Basins would range from 830 to 1,340 AFY from each source, with a total permitted maximum of 2,250 AFY. This expansion would result in an increase of up to 1,625 AFY in groundwater use.

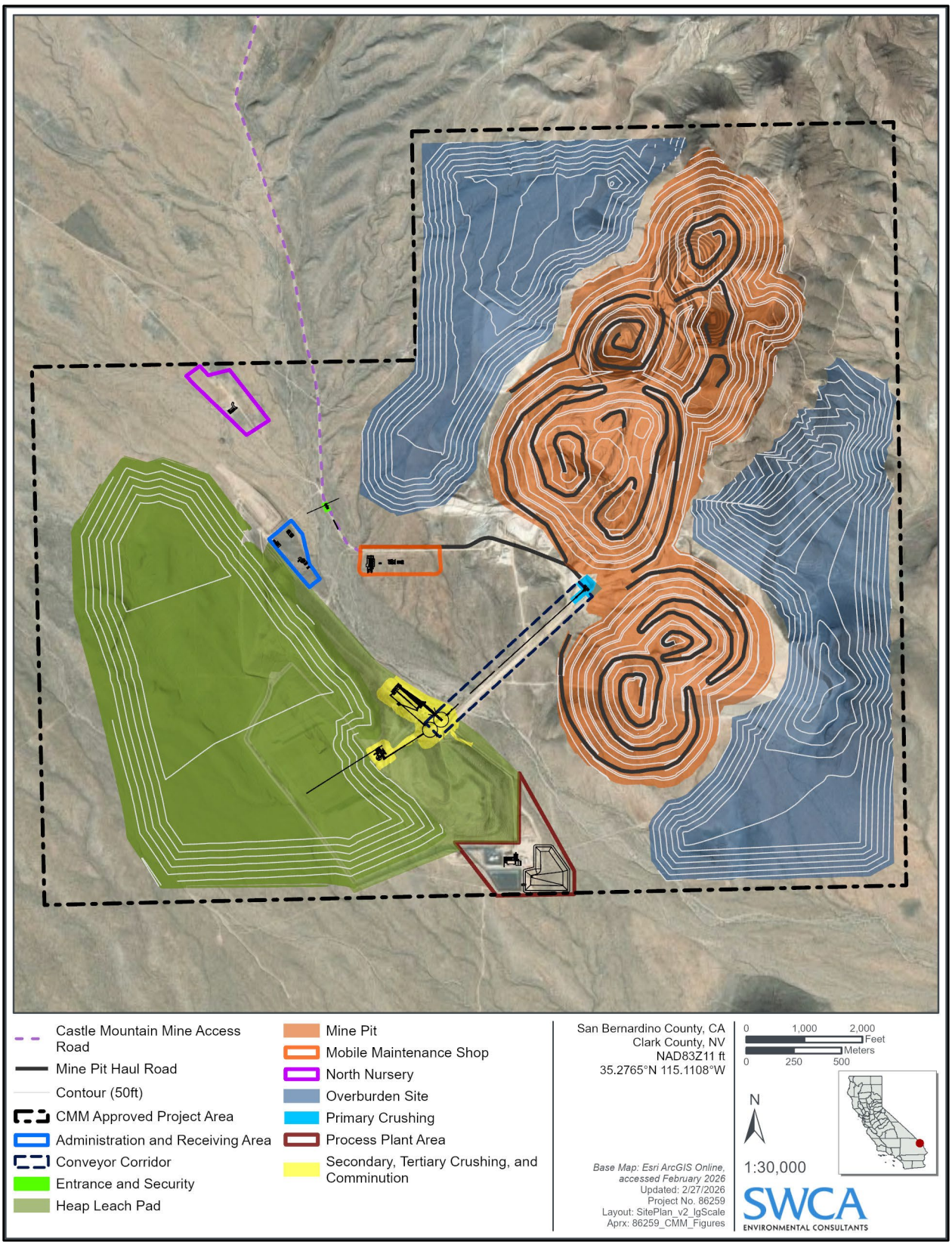


Figure 2-3. Expansion of the Mining Operation under the Proposed Action

2.2.1.5 TRANSITION TO LNG TURBINE ON-SITE POWER GENERATION

The Proposed Action would require an average of 20 megawatts (MW) of electrical power, with peak demand reaching 25 MW. Currently, the NV Energy utility grid can only supply about 10 MW due to capacity limitations, and the timing of future upgrades is uncertain. To address this uncertainty, CMM proposes transitioning from fuel-powered generators to more efficient LNG microturbines, with most existing generators retired or reserved for emergency backup. Thirteen compact microturbine units, each approximately 30 feet long, would generate about 10 MW of on-site power, supplied by LNG delivered via truck (about three trucks per day) and stored in aboveground tanks adjacent to the microturbines. These units would be sited within existing disturbed areas near the relocated mine administration offices and parts warehouse, requiring no new land disturbance.

2.2.1.6 FACILITY RELOCATION

Most existing facility locations would remain unchanged under the Proposed Action; however, select facilities would be relocated to accommodate expanded mine pits, overburden site, and the heap leach pad. Relocated facilities would be sited at least 1,500 feet from proposed pit boundaries to meet safety requirements for blasting. Key changes include moving the main security gate, truck scale, parking, and administration offices approximately 0.5 mile west along the primary access road within the plan boundary, maintaining public access via Hart Mine Road.

Additional updates include new growth media stockpile locations, expanded perimeter security and desert tortoise fencing, and realignment of New York Mountain Road along the western edge of the expanded heap leach pad to preserve public access. All facility relocations would occur within the mine plan boundary and are included in the total surface disturbance area.

2.2.1.7 CASTLE MOUNTAIN MINE ACCESS ROAD

The primary access route to the CMM is Walking Box Ranch Road (commonly referred to in this document as the CMM Access Road), which is currently authorized under the General Mining Law of 1872 and the approved MPO (BLM 1998a) and consists of established roadway segments analyzed through previous NEPA documents. Currently, approximately 800 feet of Walking Box Ranch Road crosses a corner of the Mojave National Preserve (MNP). To prevent any additional disturbance to National Park Service (NPS) lands, and to minimize jurisdictional conflict, the Proposed Action includes the construction of a 0.7 mile (3,760 feet) segment of an administrative access road that bypasses the preserve (Figure 2-4). The administrative access road would fall entirely within the proposed long-term ROW for the overhead 69-kv power line detailed in Section 2.2.2.2, *69-KV Overhead Power Line and* would maintain jurisdictional consistency to ensure that the access road remains entirely on BLM-managed lands.

The administrative access road segment would be used exclusively by CMV for ROW access and limited overflow access to the mine. Use of the road would be restricted to authorized personnel, as approved by the Authorized Officer through stipulations included in the overhead power line ROW grant. The stipulations would also require access control measures—such as gates, signage, barriers, or similar mechanisms—to prevent unauthorized public entry. The public's continued use of Walking Box Ranch Road would not be affected by this administrative access segment, and no changes to existing travel management are proposed as part of the Proposed Action.

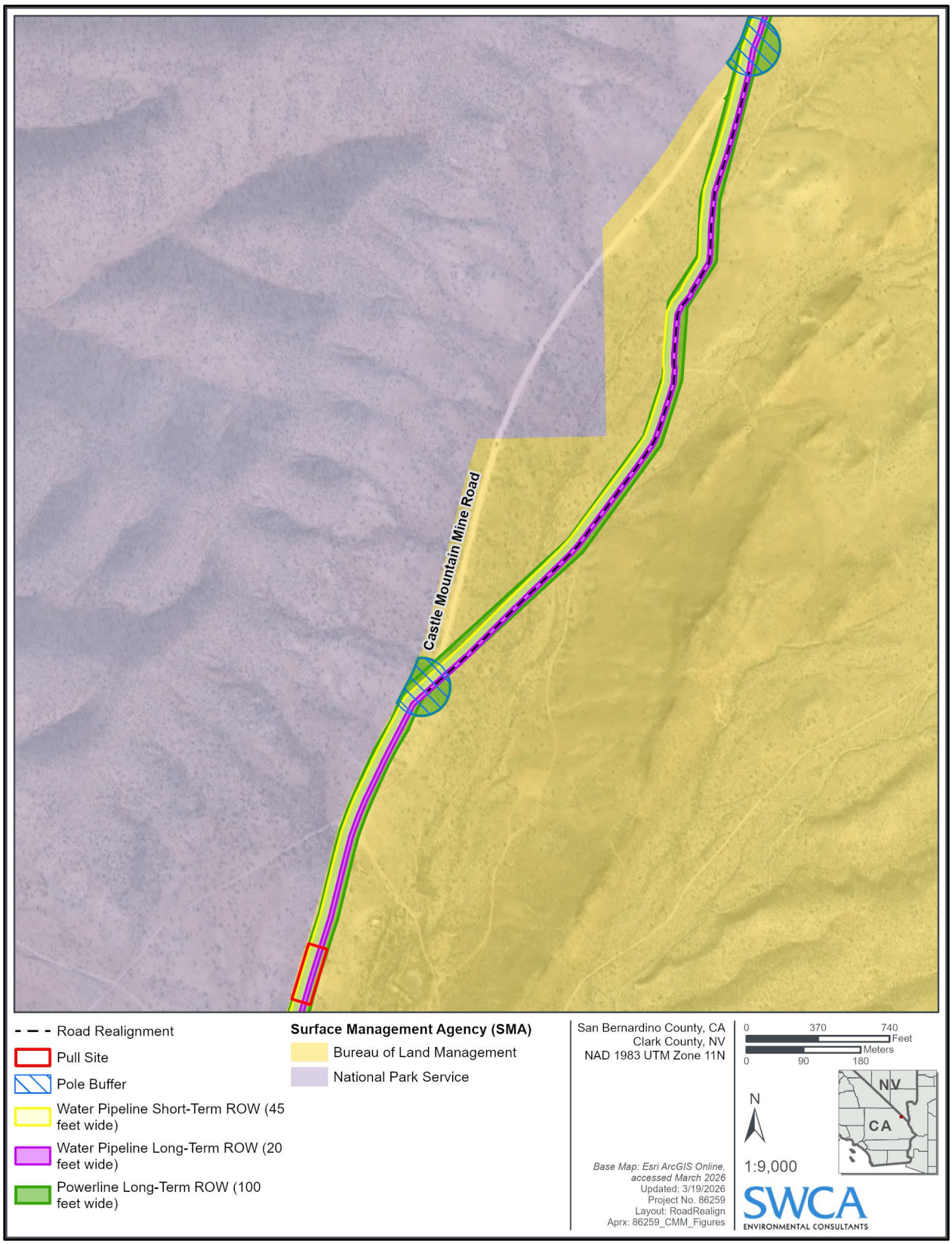


Figure 2-4. Proposed Administrative Access Road Segment

CMV would be responsible for routine maintenance along the approximately 18-mile long CMM Access Road to maintain safe and reliable access for operations and emergency response. Routine maintenance includes motor grading to repair potholes and washboarding, reestablishing roadway definition without widening beyond the existing disturbed footprint, application of new aggregate material using dump trucks, and compaction using water trucks and vibratory rollers. Dust control would be implemented using nontoxic suppressants. Road maintenance would generally occur on a quarterly basis depending on weather conditions, and dust suppressants would typically be applied annually. Use and maintenance activities for the CMM Access Road would continue throughout the life of the project as described in the POD (Appendix K).

2.2.1.8 RECLAMATION

Since initial approval in 1990, reclamation practices at CMM have evolved in response to changes in mine design, ore reserve estimates, and regulatory requirements. The amended reclamation plan in the 2025 Plan Update (Appendix J) builds on established methods from the 1990 and 1998 Plans (BLM 1990a, 1998a), introducing key updates to support expanded mining activities and increased land disturbance. The principal change is the larger volume of ore and overburden to be mined, resulting in expanded pit and stockpile boundaries and a greater area requiring reclamation. Enhanced pit backfilling is emphasized to increase reclaimed surface area and improve long-term landform stability, supported by updated engineering assessments and adaptive management strategies. The Proposed Action maintains the established backfilling approach at CMM but revises the mining sequence such that the south extension pit would be mined last and would not be significantly backfilled; only a minor portion would be backfilled, with the remainder left open after mining. Overall, the proposed reclamation plan expands the scope and flexibility of reclamation efforts to address the increased scale and evolving requirements of long-term site management.

2.2.2 Plan of Development

The Proposed Action also includes short and long-term ROW requests for an underground water pipeline and an overhead 69-kVpower line as detailed in the POD (Appendix K). Table 2.2-2 presents the requested ROW acreages and associated surface disturbance acreage for the POD component of the Proposed Action.

Table 2.2-2. Proposed ROW and Surface Disturbance Acreages Relevant to the Proposed Action

ROW Type	Short-Term ROW (acres)	Short-Term Disturbance (acres)	Long-Term ROW (acres)	Long-Term Disturbance (acres)
Underground Water Pipeline				
California	57	57	25	25
Nevada	119	119	53	53
69-kV Overhead Power Line				
California	42	42	90	4
Nevada	44	44	114	5
Total Acres	**262**	**262**	**282**	**87**

*The ROWs are approximately 380 acres. The 380-acre estimate is based on measurements derived from GIS data. Acreages calculated using GIS may differ from those reported in on-the-ground plans due to differences in mapping methods, data resolution, and potential overlapping of the ROWs.

Additional information on the construction, operations & maintenance (O&M), and reclamation of the underground water pipeline and 69-kV power line ROWs is provided in the POD (Appendix K). At this time, the construction schedule has not been determined. For analysis purposes, it is assumed that construction activities would not occur continuously (i.e., 24 hours per day, 7 days per week); instead, it is anticipated that work would be conducted in 12-hour shifts. Although the possibility of nighttime construction cannot be ruled out, if such a schedule were to be selected, appropriate measures would be implemented to minimize potential impacts associated with those operations.

2.2.2.1 UNDERGROUND WATER PIPELINE

CMV proposes to construct, operate, maintain, and eventually reclaim an underground water pipeline totaling approximately 31.5 miles (166,320 linear feet), which would cross both San Bernardino County, California (10 miles) and Clark County, Nevada (21.5 miles) (Figure 2-5). The underground water pipeline would convey groundwater from private wells in the Ivanpah Basin to the CMM, and traverse BLM-managed lands (31 miles) and private lands (0.5 mile).

Both a short-term and a long-term ROW spanning the full length of the proposed underground water pipeline on public lands are being requested to support construction and operational activities (see Table 2.2-2). The short- and long-term ROWs would include portions of the existing roadbed of Walking Box Ranch Road (CMM Access Road as discussed in Section 2.2.1.7) and SR 164. The short-term ROW, needed for short-term construction access and staging, would be 45 feet wide and cover disturbance of approximately 208 acres of BLM-managed land and 1 acre on private lands. The long-term ROW is needed for O&M and would be 20 feet wide and encompass approximately 77 acres. The short-term ROW would be requested for 3 years from the start of construction, and the long-term (30-year) ROW would be requested for O&M and final reclamation. During construction, the combined width of both ROWs would form a total ROW width of 65 feet. Upon successful completion of construction, the short-term ROW would be terminated, and CMV would maintain the long-term ROW for the duration of authorized use and reclamation.

Prior to construction, required surveys and applicable permits is assumed to be obtained by the Applicant, and the pipeline alignment and limits of disturbance would be staked and flagged. Access points along the pipeline route would be established to support construction activities. Temporary staging areas for equipment storage, materials handling, and workforce support would be established along the project ROWs between Nipton and the CMM. Up to five staging areas may be utilized along the route (see Section 2.2.2.3), although fewer areas may ultimately be required depending on contractor needs and logistics.

Construction would involve excavating a trench up to 6 feet deep × 30 inches wide, installing approximately 10-inch-diameter steel and high-density polyethylene pipes, and restoring topsoil and vegetation according to BLM requirements. Construction would generally begin with clearing and grubbing vegetation, rocks, and other surface obstacles where necessary. Growth media (topsoil) would be salvaged and stockpiled adjacent to the trench to preserve soil resources for reclamation. Bedding material would be placed and compacted along the base of the trench prior to installation of the pipeline. After installation, bedding and backfill materials would be placed around and above the pipe and compacted to approximate natural ground surface conditions, and salvaged topsoil would be redistributed over the backfilled trench

Approximately 40 construction workers, including crew members and supervisors, would be required during pipeline construction. Construction activities, including ROW clearing, trench excavation, pipe installation, and backfilling, are expected to take up to approximately 18 months, although the schedule may vary depending on weather conditions, terrain, and permitting requirements. Standard environmental protection measures would be implemented during construction, including the application of water for fugitive dust control where practicable, maintaining appropriate vehicle speeds on unpaved roads, and implementing erosion and sediment control measures developed in coordination with the BLM. Safety

procedures, signage, and traffic control measures would also be implemented where construction occurs near public roads. The typical equipment that may be used for construction and/or maintenance and repair activities are provided in the POD (See Appendix K, Table 6).

The long-term ROW for the water pipeline would be used to support routine operation and maintenance activities. Access along the pipeline alignment would be limited to authorized administrative use to allow personnel to inspect, monitor, and maintain the buried pipeline and associated infrastructure throughout the life of the Project. Inspections would generally occur at least once per month to identify potential leaks or equipment issues, and maintenance or repairs would be conducted as needed to ensure continued system integrity and functionality. Water may be applied for dust suppression during maintenance activities where practicable, and CMV would implement weed management within the ROW in coordination with the BLM and other applicable agencies.

Reclamation of the underground water pipeline would involve two phases: short-term reclamation, which would restore construction-disturbed areas—including staging zones on public lands—to their original condition immediately after construction, and long-term reclamation, which would occur once the facilities are no longer needed. Short-term reclamation would generally include recontouring disturbed areas, replacing salvaged growth media, transplanting salvaged vegetation where feasible, and reseeding disturbed areas using a locally appropriate, certified weed-free seed mix approved by the BLM. Plant salvage efforts would focus on native desert species such as Joshua tree, Mojave yucca, and barrel cactus where practicable. Short-term reclamation would generally begin within approximately 12 months following surface disturbance.

Closure for the underground water pipeline would include draining the line, excavating and sealing both ends, and reburying the pipeline, using the industry-standard closure-in-place method. Any surface equipment or vaults would also be removed, and the associated areas reclaimed. The maintenance areas and other remaining surface disturbances would be graded, prepared, and revegetated to restore conditions consistent with surrounding vegetation communities. Prior to the issuance of a notice to proceed (NTP), the Southern Nevada BLM District would require the completion of a restoration plan template. More information on the reclamation plan can be found in Chapter 6 of the POD (Appendix K).

2.2.2.2 69-KV OVERHEAD POWER LINE

The Proposed Action includes the construction, operation, maintenance, and eventual reclamation of approximately 16.5 miles (87,120 linear feet) of overhead power line on BLM-managed lands in Clark County, Nevada (9 miles), and San Bernardino County, California (7.5 miles). The proposed alignment would closely follow the route of the previously authorized, removed, and reclaimed 69-kV power line and would terminate within the CMM boundary near the proposed electrical substation (Figure 2-6). CMV is requesting a 100-foot-wide long-term ROW for the full length of the power line, totaling approximately 213 acres on BLM-managed lands (see Table 2.2.2). A separate short-term ROW is not proposed because the long-term ROW would encompass most of the existing 30-foot-wide Walking Box Ranch Road/CMM Access Road. The requested ROW term is 30 years to accommodate O&M and final reclamation.

The proposed 69-kV overhead power line would consist of approximately 272 wooden single-pole structures spaced about 300 feet apart and ranging from 52 to 70 feet in height. The structures would include a combination of single-pole staggered tangent structures and single-pole angle dead-end structures. Poles would be installed using augering or backhoe excavation in compliance with National Electrical Safety Code standards. Approximately 92 of the structures would be angle poles supported by guy wires attached to soil anchors to provide structural stability where the line changes direction. Each pole site would require an approximate 10-foot by 10-foot work area. Aluminum conductors and shield wires would be installed and maintained at a minimum height of 22 feet above ground. The poles would support three aluminum conductors and a shield wire connected to copper grounding wires buried within each pole excavation to electrically ground the structures.

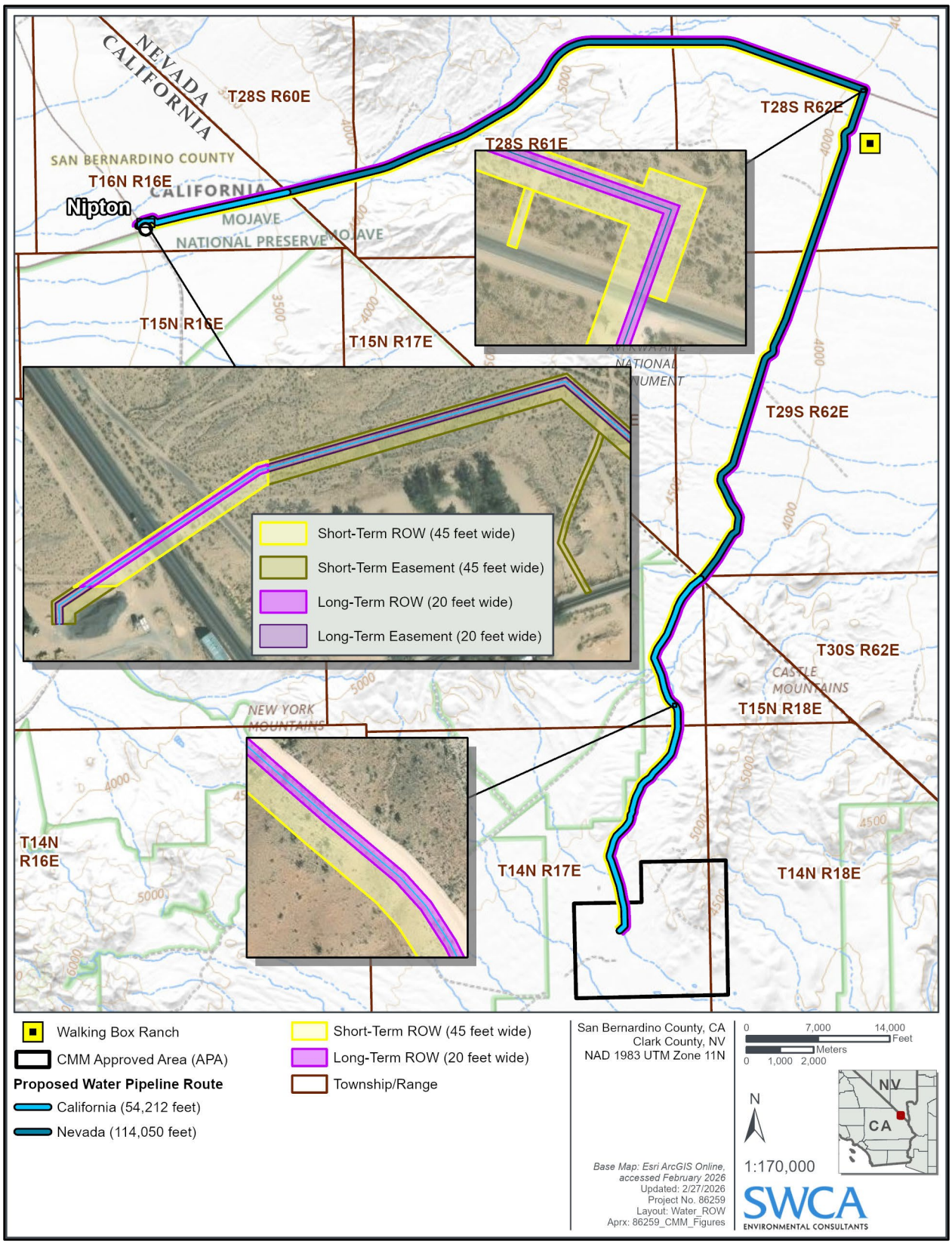


Figure 2-5. Underground Water Pipeline Location under the Proposed Action

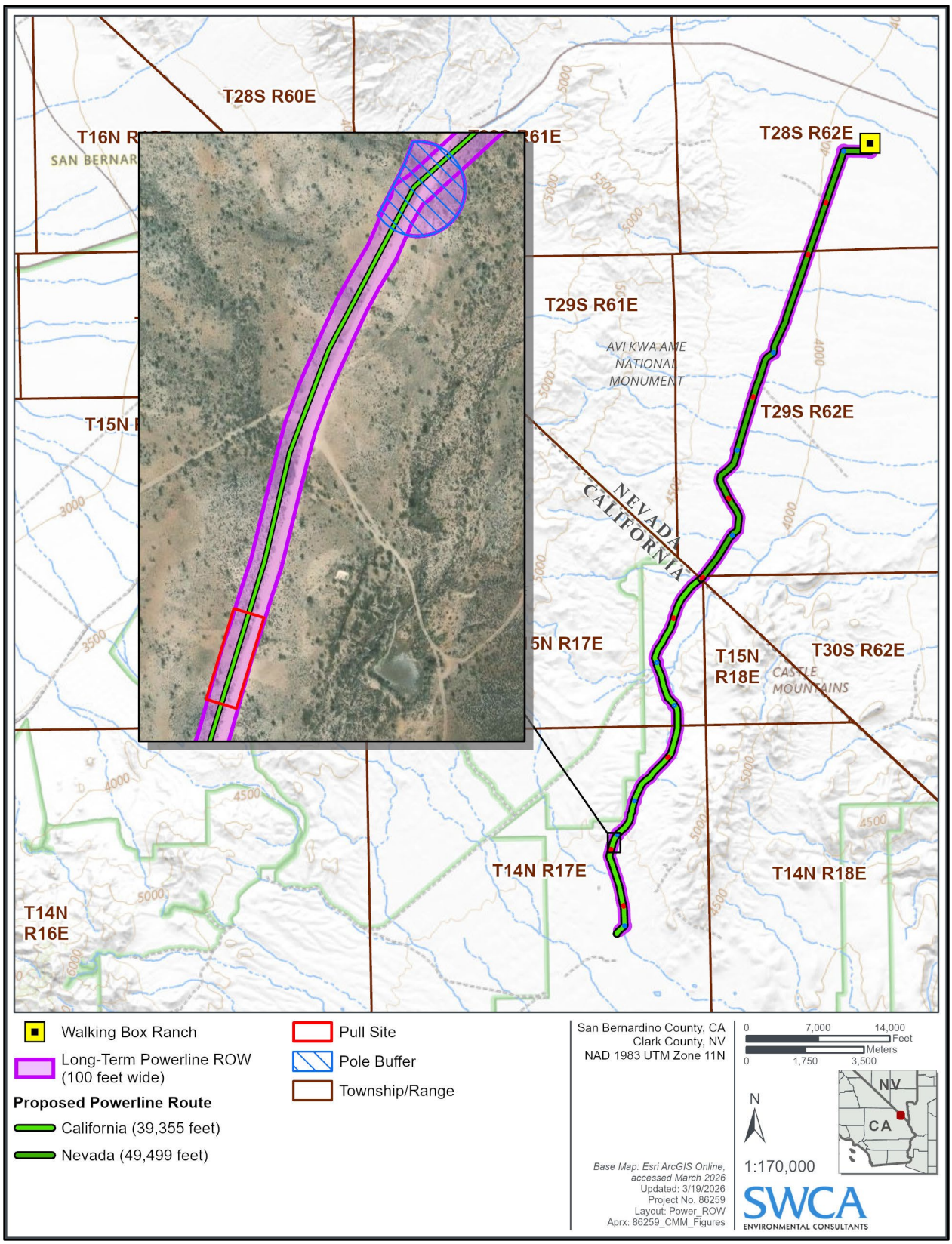


Figure 2-6. 69-kV Overhead Power Line Location under the Proposed Action

Construction would occur following completion of preconstruction surveying and permitting, completion of the BLM Southern Nevada District Office restoration plan template, and receipt of all required state and local approvals. Construction activities would include delivery of poles to staging areas, excavation of pole and guy anchor holes, pole installation adjacent to the Walking Box Ranch, and conductor stringing using puller-tensioner systems and ground crews operating beneath the ROW centerline. Pole holes would typically be excavated using truck-mounted augers to depths of approximately 7 to 10 feet, although backhoe excavation may be used where subsurface conditions prevent augering. Following pole installation, conductor and shield wires would be installed using standard puller-tensioner systems. A lead line would first be threaded through travelers mounted on each structure by ground crews traveling beneath the ROW centerline. The conductors and shield wires would then be pulled through the travelers, properly sagged and tensioned, and permanently secured to the structures. Construction would occur over an approximately 1-year period and involve a workforce of about 15 to 20 personnel using standard utility construction equipment. Additional support personnel such as inspectors, surveyors, and project managers may also be present during construction. Typical equipment may include pickup trucks, flatbed and boom trucks, aerial bucket trucks, cranes, bulldozers, excavators, truck-mounted diggers, pullers and tensioners, cable reel trailers, and water trucks. The full list of typical equipment that may be used for construction and/or maintenance and repair activities is provided in the POD (See Appendix K, Table 7).

O&M would require minimal routine activity, consisting primarily of infrequent inspections and occasional pole or conductor repairs. O&M activities may also include periodic inspection of hardware and grounding components, vegetation and weed management within the ROW in coordination with the BLM, and dust suppression during maintenance activities where practicable.

Reclamation of power-line disturbances would occur in two phases, as described in Chapter 6 of the POD (Appendix K). Short-term reclamation following construction would address construction-related disturbance through recontouring, growth media reapplication, plant salvage and transplanting where feasible, and seeding with a BLM-approved, certified weed-free native-seed mix, with invasive species management overseen by a qualified biologist. Long-term reclamation upon ROW termination would include removal and recycling of overhead conductors, cutting wooden poles at or near ground level, removal of cable supports and other ancillary surface equipment, surficial ripping as needed, and final revegetation. Reclamation success would be monitored annually using standardized transects or plots consistent with CMV's reclamation plan in the 2025 Plan Update (Appendix J), until BLM-approved success criteria are achieved.

2.2.2.3 STAGING AREAS

Temporary construction staging areas would be established to support construction of both the underground water pipeline and the overhead power line. These staging areas would be used for equipment and material storage, assembly of project components, and construction logistics during the construction period. Up to five staging areas may be used along the ROWs between the community of Nipton and CMM. The staging areas would be located within the water pipeline and power line right-of-way ROWs and would support construction activities for both utilities.

The staging locations identified in the POD (Appendix K) represent a conservative estimate intended to provide flexibility to construction contractors; therefore, some staging areas may ultimately not be used depending on contractor needs and construction logistics. Staging area locations were selected to minimize travel distances between work areas and material storage locations, reduce the need for new surface disturbance, and maximize the use of private land or previously disturbed areas where feasible. The proposed staging areas and their general characteristics are summarized in Table 2.2-3.

Table 2.2-3. Proposed Staging Areas for the Water Pipeline and Overhead Power Line

Staging Area	Location	Surface Management	Size (acres)
SA-1	Nipton, California	Private	17
SA-2	Within NDOT ROW for SR 164	Public	0.5
SA-3	Near Walking Box Ranch	Public	0.4
SA-4	Adjacent to Walking Box Ranch Road (NV)	Public	0.5
SA-5	Within CMM Mine Plan Boundary	Private	3.14

Staging areas would be used to store equipment, materials, and supplies associated with construction of both the water pipeline and the overhead power line. For the power line component, poles may be delivered to staging areas and assembled, if necessary, before being transported to individual pole locations along the alignment. Construction materials, fuels, lubricants, and other supplies associated with construction equipment may also be temporarily stored within the staging areas. Construction crews would utilize the staging areas for equipment maintenance and logistical support during the construction period. Construction areas and staging areas would be maintained in orderly condition throughout the construction period. Solid waste generated during construction would be collected in closed-top roll-off bins (typically 10- or 20-cubic-yard containers) placed at the project site and periodically removed for disposal at approved off-site facilities. Lubricants and other materials transported by support vehicles may also be temporarily stored in staging areas during construction activities.

The use of staging areas would be limited to the construction period. CMV would coordinate with the BLM to ensure that construction staging activities remain within approved disturbance footprints. Following completion of construction, staging areas located on public lands would be reclaimed in accordance with the project's reclamation plan.

2.3 Alternative C: Backfilling to Avoid Surface Expression of South Pit Lake

Alternative C evaluates partial backfilling of the South Extension Pit following completion of ore extraction, with the objective of reducing or eliminating the formation of a residual surface pit lake (Figure 2-7). Under the 2025 Plan Update, substantial backfilling is already proposed for the northern pits (JSLA, Jumbo, and Oro Belle). Because the South Extension Pit would be the final pit mined, concurrent backfilling during active mining is not technically feasible, as ore extraction and waste placement cannot occur safely or efficiently within the same pit at the same time (Appendix J). Backfilling of the South Extension Pit would therefore occur as a discrete activity after mining concludes.

Under this alternative, backfilling would commence at approximately Operation Year 18, when mining in the South Extension Pit is completed. The pit floor would be raised from an approximate pre-backfill elevation of 3,120 feet amsl to approximately 3,480 feet amsl. Achieving this elevation would require the placement of approximately 17 million tons of non-ore-waste rock. The backfill material would consist of waste rock previously generated during mining and temporarily stored or placed in the JSLA pit area, which is already designated for backfilling under the approved mine plan. No off-site material or new waste sources would be required.

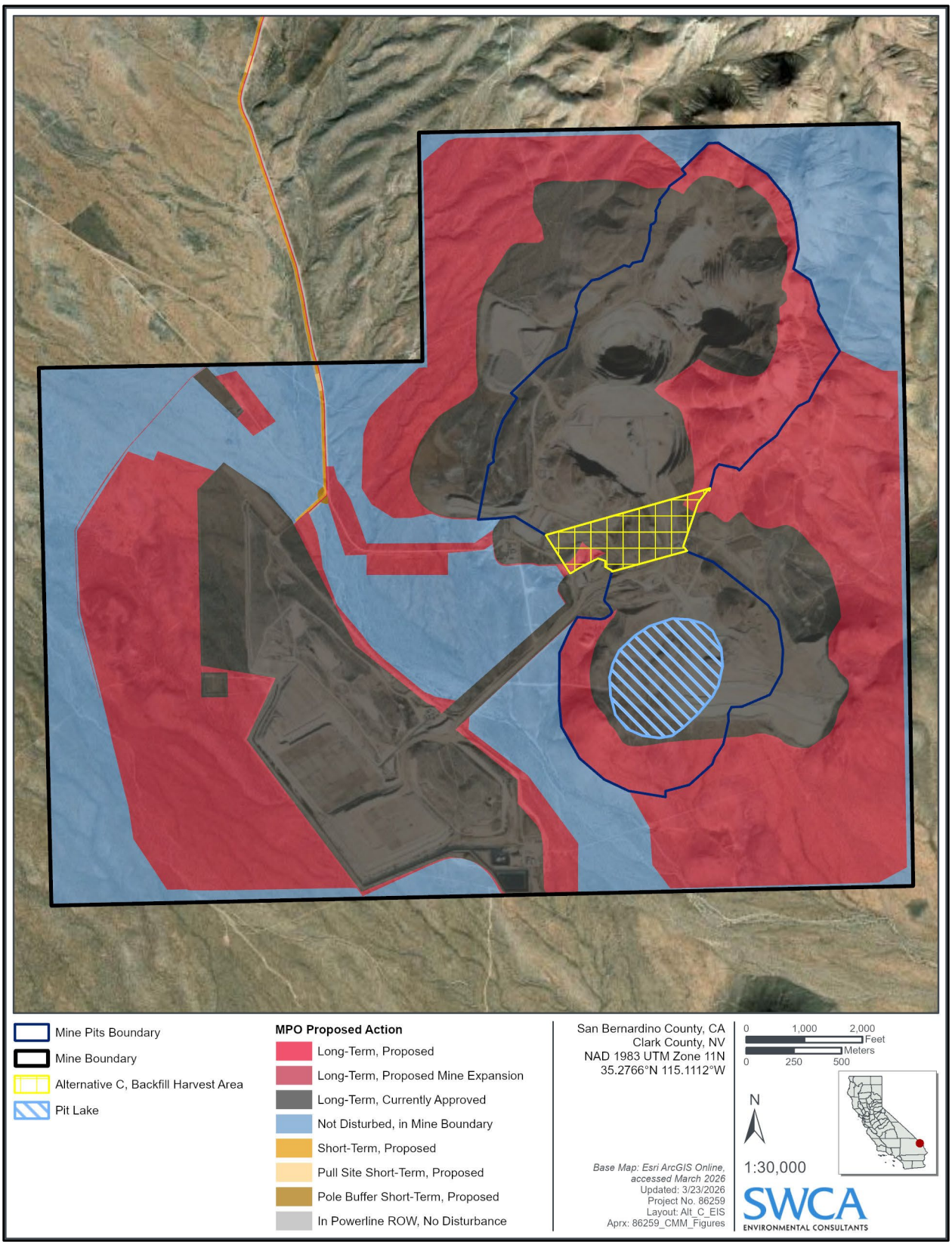


Figure 2-7. Alternative C Map

Backfilling would be accomplished using existing mine equipment, primarily 250-ton haul trucks, and would extend the overall mining schedule by approximately 2 years. The extended schedule reflects the time required to excavate, haul, and place the additional waste rock while maintaining safe operating conditions. From a technical feasibility standpoint, the alternative relies on standard, proven mining and reclamation practices that are already employed elsewhere at the site. No new technologies, equipment types, or design standards would be required, and no changes to pit geometry beyond the proposed backfill elevation would occur.

Hydrologic modeling indicates that partially backfilling the South Extension Pit to an elevation of approximately 3,480 feet amsl would prevent the formation of a measurably significant pit lake, substantially reducing long-term evaporative water loss compared to the no-backfill condition. Under baseline conditions, a non-backfilled pit is anticipated to form a pit lake that would gradually equilibrate with regional groundwater levels over approximately 100 years. Partial backfilling would reduce the available pit volume and limit ephemeral water feature exposure, resulting in estimated evaporative losses of approximately 0 to100 AFY, compared to approximately 672 AFY without backfilling (Appendix J).

Implementation of this alternative would result in increased haulage activity, fuel consumption, and associated air emissions due to the additional material movement and extended operating period. Energy use would increase proportionally with the additional 2 years of operations; however, no new power infrastructure or energy sources would be required.

From an economic feasibility perspective, partial backfilling of the South Extension Pit would increase total mining costs by approximately $20 million, primarily due to additional haulage, equipment operation, labor, and the extended schedule. Despite these increased costs, the alternative is considered economically feasible because it does not require new infrastructure, does not reduce ore recovery, and provides long-term water resource benefits by reducing evaporative losses associated with pit lake formation.

All other aspects of mine operations—including pit expansion limits, mining rates, groundwater pumping, underground water pipeline, 69-kV overhead power line, processing facilities, CMM Access Road, and reclamation approach—would remain consistent with the Proposed Action. The primary distinctions of Alternative C are the additional 2 years of operation, increased waste-rock movement, higher short-term emissions, and the long-term reduction in pit lake formation.

2.4 Alternative D: Small Solar Facility for Supplementation

Alternative D proposes the installation of a small on-site solar power facility to supplement intermittent energy needs for mine operations (Figure 2-8). The solar power facility would produce on average approximately 5 to 10 MW. The area north of the proposed Project heap leach pad, extending to the north nursery, was undisturbed until the 2023 York Fire (BLM 2023c; Inciweb 2023). As a result of the fire, most vegetation in this area was lost, potentially making it more suitable for a permanent solar array, with minimal additional impact to sensitive species. Use of this previously burned area would help address land-use constraints identified in earlier solar evaluations and is depicted on Figure 2-8 as the user restricted area.

Under this alternative, a small solar facility would supplement power needs, improving reliability and reducing operational utility demand. Solar generation would modestly reduce electrical demand from the utility grid and onsite LNG microturbines during daylight hours, resulting in decreased overall energy consumption from conventional sources. Solar generation would primarily support daytime operations but would not be sufficient for equipment start-ups or to meet overnight power requirements; LNG microturbines and the power line would remain the primary sources of power. Integration of solar generation would require only minor modifications to the onsite electrical grid, making the alternative technically feasible (CMV 2025b).

From an economic standpoint, this alternative would increase total project costs by approximately $42 million, primarily due to construction and integration of the solar facility; however, based on updated 2025 analyses, the alternative is considered economically feasible (CMV 2025b).

The proposed water use for Alternative D would be de minimis and therefore would not trigger additional analysis or permitting requirements.

Most other aspects of the mining operation—including pit expansion, mining rate, mine life, groundwater use, underground water pipeline, 69-kV overhead power line, facility locations, CMM Access Road, and reclamation—would remain unchanged from the Proposed Action, aside from minor adjustments associated with solar installation and additional land use within the Approved Mine Project Area.

2.5 Overview of Alternatives Considered

Table 2.5-1 and 2.5-2 can be useful in helping the reader understand differences between the alternatives; however, the reader is urged to read the detailed alternatives and analyses to understand specific differences. The four alternatives for the Project are comparatively presented in Table 2.5-1 and Table 2.5-2.

Table 2.5-1 Comparison of Alternative Acreages

MPO Boundary and ROW (Project Area)	Acreage Calculations			
	Proposed Action	No Action	Alternative C: Pit Backfilling**	Alternative D: Supplemental Solar Facility
Approved Existing Disturbance of 1998 MPO	1,474	1,474	1,474	1,474
No Disturbance	1,092	997	1,092	1,092
Short-Term Disturbance	209	0	209	209
Long-Term Disturbance	1,510	0	1,510	1,594
Total	**4,285**	**2,471**	**4,285**	**4,369**

Notes:

* Acreages calculated using GIS may differ from those reported in on-the-ground plans due to differences in mapping methods and data resolution.

**Alternative C will not change in acreage from the Proposed Action but will change in an additional 2 years added to the schedule timeline.

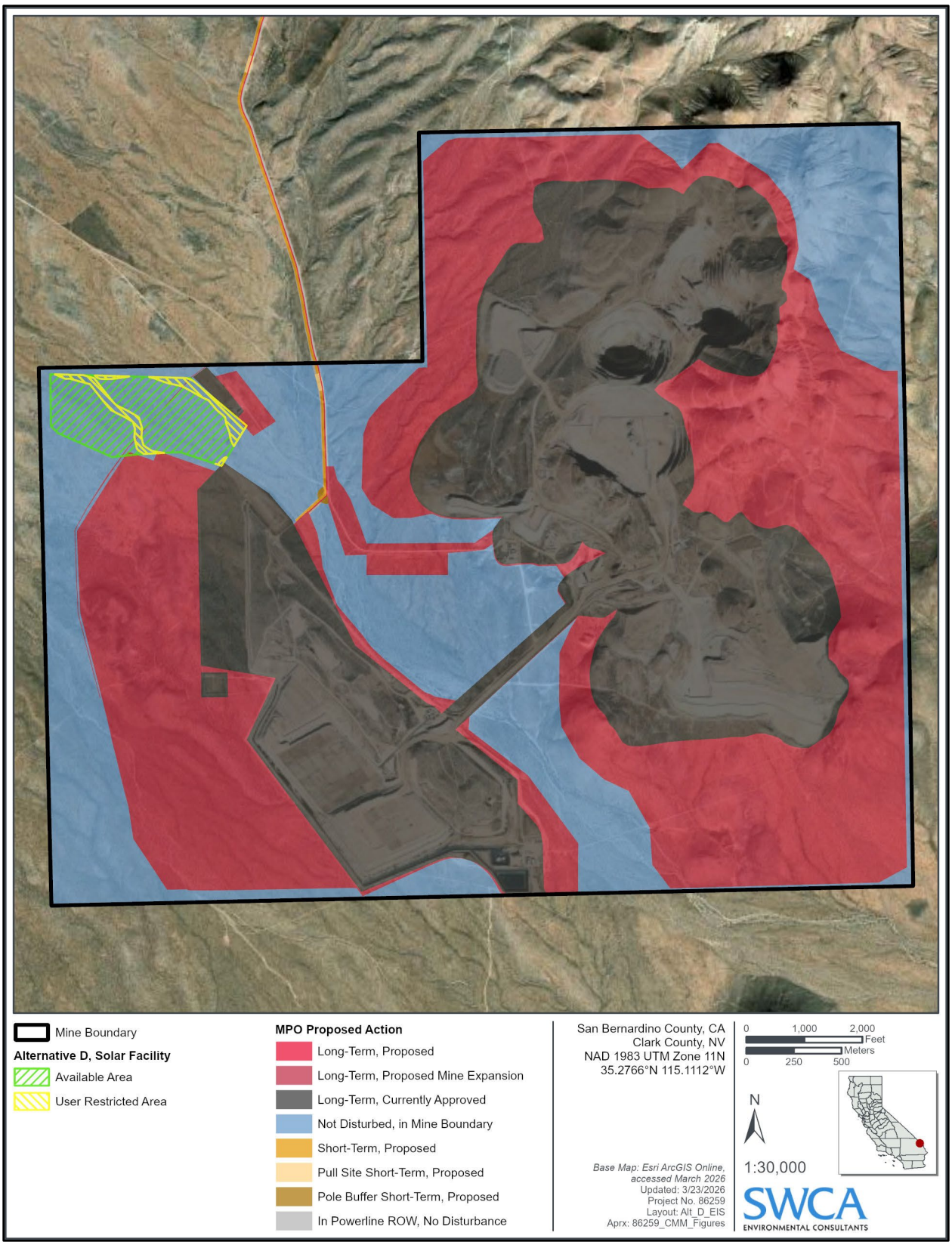


Figure 2-8. Alternative D Map

Table 2.5-2. Castle Mountain Mine Phase II Expansion Project Alternatives

Project Component	Alternative A: No Action	Alternative B: Proposed Action	Alternative C: South Pit Backfilling	Alternative D: Supplemental Solar
Expansion of Mine Pits, Overburden Sites, and Heap Leach Pad	No expansion of mine pits, overburden sites, or heap leach pad beyond areas currently authorized under the existing MPO (CACA031137) (Appendix J) and County CUP (90M-013) (San Bernardino County 1997). No authorization of ROWs associated with the water pipeline or power line.	Expansion of mine pits adjacent to previously approved ore deposits. Adjustments to mining sequence and extent, emphasizing pit backfilling for operational efficiency and reclamation. Expanded waste rock sites to minimize haul distances and emissions. Crushing plants near pits; increased use of overland conveyors to reduce diesel use. Increased land disturbance by approximately 1,44 acres, totaling approximately 2,903 acres for the Project.	No change from Proposed Action	Mine Pit and heap leach pad expansion to follow Proposed Action. A new solar facility 90 acres, north of the heap leach pad, would be constructed.
Increased Mining Quantity and Rate	Mining quantity and rate restricted to levels currently permitted under the 1998 EIS/ROD (BLM 1998a) and existing authorizations.	Substantial increase in ore and overburden mined—approximately 332 million tons of ore and approximately 738 million tons of overburden. Annual mining rate increased to a peak of 80 million tons/year (19 million tons ore and 61 million tons overburden).	No change from Proposed Action	No change from Proposed Action
Increased Mine Life	Mining and reclamation activities authorized to continue until the expiration of the San Bernardino County CUP (San Bernardino County 1997) in 2035. After 2035, mining may persist only on private land with vested mineral rights, subject to local regulations.	Mine operations extended for an estimated 20 years. Reclamation and monitoring extended for an additional estimated 10 years.	This action would extend the mining schedule by 2 years	No change from Proposed Action
Groundwater Use and Mine Pit Dewatering	Water use and pit dewatering limited to volumes and infrastructure currently permitted.	Up to seven additional pit-dewatering wells in the Lanfair Basin (East Well Field). New Northwest Water System in Ivanpah Valley Basin. Combined water use from both basins: 830–1,340 AFY each, up to 2,250 AFY total. Increase in groundwater use up to 1,625 AFY.	Reduced evaporation from water balance from pit lake	No change from Proposed Action
Underground Water Pipeline	The ROW for the construction, operation, or maintenance of the water pipeline would not be issued.	Construction, operation, and maintenance of a 31.5-mile underground water pipeline crossing the California-Nevada border. Short-term ROW (45 feet wide, 209 acres) for construction; long-term ROW (20 feet wide, 77 acres) for O&M.	No change from Proposed Action	No change from Proposed Action

Project Component	Alternative A: No Action	Alternative B: Proposed Action	Alternative C: South Pit Backfilling	Alternative D: Supplemental Solar
69-kV Overhead Power Line	The ROW for the construction, operation, or maintenance of the power line would not be issued	Construction, operation, and maintenance of a 16.5-mile overhead power line on BLM-managed lands in California and Nevada. 272 wooden single-pole structures, 52–70 feet tall, spaced approximately 300 feet apart. 100-foot-wide long-term ROW (212 acres) requested for 30 years.	No change from Proposed Action	No change from Proposed Action. Solar supplementation would provide additional reliability but would not replace the power line or LNG microturbines.
Transition to Liquified Natural Gas (LNG) Turbines	No LNG microturbines will be added	13 compact LNG microturbine units would be placed in existing disturbed areas near the relocated mine administration offices	No change from Proposed Action	No change from Proposed Action. Solar supplementation would provide additional reliability but would not replace the power line or LNG microturbines.
Relocation of Facilities	Facility locations remain unchanged within currently authorized boundaries.	Relocated facilities sited at least 1,500 feet from pit boundaries for safety. Security gate, truck scale, parking, and administrative offices moved approximately 0.5 mile west. Mine fleet maintenance facilities relocated; access roads within authorized MPO boundary widened. New growth media stockpiles, expanded security/tortoise fencing, and realigned New York Mountain Road.	No change from Proposed Action	Facility relocation under this alternative would be limited to the siting and installation of the solar array. No significant changes to other facilities are anticipated.
CMM Access Road	Continued use and routine maintenance of the authorized CMM Access Road previously authorized.	Continued use and routine maintenance of the CMM Access Road as previously authorized with the construction of a 0.7 mile segment of an administrative access road within the long-term overhead power line ROW.	No change from Proposed Action	The solar facility may require minor improvements or short-term access for construction and maintenance, but no new roads are expected and shifts in access would be confined to the current MPO Boundary.
Reclamation	Reclamation activities proceed according to the currently approved reclamation plan in the 2025 Plan Update (Appendix J).	Reclamation plan updated to address expanded mining activities and increased disturbance. Larger volume of ore/overburden requires expanded pit/stockpile boundaries for reclamation. Enhanced pit backfilling to increase reclaimed surface area and improve stability. Mining sequence revised; south extension pit mined last, only minor backfill, and remainder left open.	Reclamation activities would follow the same general plans as the Proposed Action, with adjustments to accommodate the partially backfilled south extension pit. The final landform would reflect the raised pit floor, and the elimination of a significant pit lake would reduce long-term water management and closure requirements.	Reclamation activities under this alternative would follow the same plans as the Proposed Action, with additional considerations for decommissioning the solar facility at closure.

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2.6 Applicant-Committed Environmental Protection Measures

The Applicant has committed to implementing specific measures relevant to the MPO and POD to prevent UUD during the life of the Project. These practices are grounded in the general requirements established by the FLPMA and the General Mining Act of 1872 (30 U.S.C. §§ 22–54) and are further informed by a range of agency guidance documents. Key references include the San Bernardino County CUP (San Bernardino County 1997), 1998 EIS/ROD (BLM 1998a), and 2020 Plan Update (BLM 2020b), as well as the WDRs issued by the RWQCB pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne) (California Water Code §§ 13260–13263). Additional guidance is provided by the *California Accidental Release Prevention (CalARP) Program Guidance* (California Office of Emergency Services 2020), and California Department of Fish and Wildlife (CDFW) Incidental Take Permit for desert tortoise. Furthermore, regulatory guidance provided in the U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BO) (USFWS 2020), along with recommendations from the Desert Tortoise Council (1996), has been incorporated to ensure that the practices are fully aligned with regulatory requirements and industry best practices.

The applicant-committed environmental protection measures (ACEPMs) outlined in Appendix E include both previously required measures and additional measures developed during Project pre planning and the NEPA process in coordination with the lead and cooperating agencies, and encompass both voluntary commitments and applicable regulatory requirements, reflecting the Applicant's acknowledgment of and commitment to implementing, tracking, documenting, and integrating all required measures into Project implementation. ACEPMs have been developed for the following resources to reduce potential impacts from the Proposed Action:

- Public Health and Safety
- Fire Prevention and Control
- Geologic Hazards
- Hazardous Material Management
- Waste Management
- Aesthetics/Visual
- Air Quality
- Cultural and Paleontological Resources
- Biological Resources
- Reclamation and Revegetation
- Ephemeral water features
- Groundwater

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The following resource chapters present a detailed analysis of the reasonably foreseeable effects of the Proposed Action and Action Alternatives, consistent with the 516 DM 1 (DOI 2026). Reasonably foreseeable effects are defined as changes to the human environment that are predictable and have a reasonably close causal relationship to the proposed action or its alternatives (516 DM 1 Section 6.1(k)). In preparing this EIS, the analysis evaluates whether such effects are likely to be significant, focusing on adverse environmental effects and considering beneficial effects only where they directly offset adverse impacts to the same resource (516 DM 1 Section 1.2(b)).

The evaluation of reasonably foreseeable effects is grounded in the context of the affected environment, including appropriate analysis areas, and reasonably foreseeable planned actions (516 DM 1 Section 1.2(b)(1)). Environmental consequences described in the resource chapters are informed by desktop research, field surveys, baseline resource reports, input received during the public scoping period, and ongoing coordination with agencies (Appendix D).

Issues identified during internal and external scoping that fell within the scope of the Proposed Action have been carried forward for detailed analysis. Table 3.1-1 summarizes the issues retained for further evaluation, which are addressed in this chapter. Additional information regarding the scoping process—including comments received and issues identified—can be found in the *Castle Mountain Mine Phase II Expansion Project Environmental Impact Statement and Environmental Impact Report – Draft Scoping Report* (BLM 2025b).

Table 3.1-3.1-1. Resources Analyzed in Detail

Resource Topic	Issues
Air Quality and Climate Resources	Direct disturbance due to increased traffic and on-site power generation.
Cultural Resources and Native American Religious Concerns	Direct disturbance to cultural sites and impacts to cultural setting due to visual and noise impacts.
Forestry and Woodlands	Direct disturbance to forestry and woodlands due to construction and reclamation activities.
Lands and Realty	Direct disturbance to current land use authorizations and potential changes to existing land use and realty actions due to the proposed ROW and expansion of the MPO.
Noise and Vibrations	Direct disturbance to sensitive receptors due to the increased operation- and construction-related noise.
Paleontology	Direct disturbance to geologic units with paleontological sensitivity that may result in damage to or destruction of fossil resources and the loss of associated scientific data
Public Health and Safety	Direct disturbance to the public due to an increase in transportation (see Section 3.14, *Transportation*).
Recreation and Special Designations	Direct disturbance to recreation resources and lands with special designations which may alter recreational experiences and the condition of protected landscapes, potentially affecting dispersed recreation opportunities, temporary access, and the unique values for which these areas were designated.
Socioeconomics	Direct impact to local communities and their economies.
Soils and Reclamation	Direct disturbance to soil communities due to construction and operational activities.

Resource Topic	Issues
Transportation	Direct disturbance to roadways/access routes due to the increase in construction- and operations-related traffic.
Vegetation (general, threatened and endangered species/special-status species, noxious and invasive species)	Direct disturbance to vegetation communities and special-status species due to construction and operational activities.
Visual Resources	Direct disturbance due to visual resource inventory of Class III, visual resource management of Class II and III, and construction and operational increases changing the visual landscape.
Waste (solid and hazardous)	Direct disturbance due to transportation and handling of hazardous wastes from construction and operation activities.
Water Resources and Geochemistry	Direct disturbance to water resources due to construction and operational activities.
Wildlife (general, threatened and endangered species/special-status species, noxious and invasive species, and migratory birds)	Direct disturbance to wildlife due to construction and operational activities.

Resource topics and issues that were considered but ultimately dismissed from detailed analysis in this EIS are presented in Table B-1.3.1-1 in Appendix B. For each topic or issue, a rationale is provided explaining why it was excluded from further evaluation. These dismissals may be based on factors such as a lack of potential for significant impact, redundancy with other analyses, or the determination that the issue falls outside the scope of the Proposed Action.

3.2 Definitions for Analysis

The following terms are defined for environmental analysis in this EIS:

- **Project Area:** In total, the Project Area encompasses up to 4,285 acres, including the expanded mine plan boundary (Mine Project Area), maximum extent of ROWs (ROW Project Area), and existing authorized disturbance within the mine plan boundary. (For a detailed breakdown of acreages, see Tables 2.2-1 and 2.2-2 in Section 2.2, *Alternative B: Proposed Action Alternative*.)
- **Analysis Area:** Specifically defined for each resource or issue in the methods sections.
- **Study Area:** Specifically referring to areas defined in technical surveys or reports.
- **Disturbance Area:** The disturbance area only includes newly proposed short-term and long-term disturbance for the mine plan boundary and the ROWs, totaling 1,854 acres.

3.3 Reasonably Foreseeable Trends and Planned Actions

In accordance with 516 DM 1 (DOI 2026), the assessment of environmental impacts must consider not only the immediate effects of a proposed action but also the broader context in which it occurs. This includes an evaluation of the affected environment, defined as the environmental conditions that would prevail in the absence of the proposed action or its alternatives. This definition encompasses any reasonably foreseeable environmental trends and planned actions (RFTPAs) within the area that may influence—or be influenced by—the implementation of the proposed action. Reasonably foreseeable trends refer to ongoing or expected changes in environmental, social, economic, or cultural conditions that can be anticipated based on current data and patterns. Planned actions include projects, developments, or regulatory initiatives that are formally proposed or reasonably expected to occur in the same geographic area and timeframe as the action under review. RFTPAs identified for the Project are summarized below and listed in Table B-1.3.3-2 in Appendix B.

A review of agency planning documents and publicly available project information identified approximately 28 RFTPAs within 20 miles of the Project. These projects represent a range of land uses and infrastructure activities, including energy transmission and utility upgrades, transportation improvements, mining exploration, recreation events authorized through Special Recreation Permits, water infrastructure development, communication facilities, conservation land acquisitions, and public safety projects. Several projects involve substantial linear infrastructure, including the 218-mile Brightline West High-Speed Rail Project, the approximately 175-mile Eldorado–Pisgah–Lugo transmission reliability project, the 160-plus-mile McCullough–Victorville transmission line upgrades, and the 155-mile GridLiance West transmission upgrades. Additional linear projects include roadway rehabilitation along approximately 21 miles of U.S. Highway 95 and installation of more than 100 miles of broadband fiber infrastructure. Many other actions involve localized disturbances generally affecting fewer than 5 acres, such as mineral exploration drilling, communication facility upgrades, abandoned mine land closures, and small infrastructure modifications. Larger area projects include the approximately 575-acre Ivanpah Substation right-of-way, the proposed 6,000-acre Southern Nevada Supplemental Airport, and the approximately 4,520-acre Jean Lake Solar project.

Of the identified projects, only a small number overlap with the Project area. These include the Eldorado–Pisgah–Lugo Project, which proposes reliability upgrades along approximately 175 miles of existing transmission infrastructure, and three existing Southern California Edison (SCE) transmission lines (Eldorado–Lugo–Mohave 500-kilovolt, Cima–Eldorado–Pisgah 223-kilovolt, and Boulder–Chino) that cross portions of the region and would continue routine operation and maintenance within established ROWs. All other identified projects occur outside the Project footprint or are confined to existing routes or facilities and therefore would not spatially overlap with the Proposed Action or alternatives

The Proposed Action and action alternatives would not adversely interact with the identified RFPAs. Limited spatial overlap (less than 2 miles along SR 64) occurs where the proposed water pipeline right-of-way coincides with existing overhead transmission infrastructure. Activities in these areas would be limited to routine operation and maintenance within established rights-of-way. Therefore, the Proposed Action and alternatives would not interfere with the implementation or operation of the RFPAs.

3.4 Other NEPA Considerations

In addition to the reasonably foreseeable effects associated with the range of alternatives discussed in Chapter 3 below, NEPA (Section 102(2)(C)) and the DOI NEPA Implementing Procedures 516 DM 1 Handbook (Section 2.3) (DOI 2026) require an EIS to address the broader relationship between the Project's timeline and the environment, as well as short-term or long-term loss of resources.

3.4.1 Relationship Between Local Short-Term Uses and Long-Term Productivity

NEPA requires a statement on "the relationship between local and short-term uses of man's environment and the maintenance and enhancement of long-term productivity (NEPA (Section 102(2)(C)(iv)))." The potential short-term and long-term uses associated with the alternatives are described below.

- **Short-Term Uses:** For the Project, short-term refers to the period associated with construction and reclamation of short-term disturbances, generally occurring over approximately 3 years. Short-term activities would include construction of mine facilities and associated infrastructure, including the underground water pipeline, 69-kV overhead power line, and associated utility lines within the proposed ROWs. These activities would result in short-term disturbance and removal of desert scrub habitat, soil disruption, increased use of construction materials such as timber and gravel, and short-term increases in groundwater withdrawal to support construction

activities. Reclamation of short-term disturbances would be initiated as areas are no longer needed, with the objective of stabilizing soils and reestablishing native vegetation. Short-term use of the ROWs would also include initial operation and routine maintenance activities necessary to support construction and early operational phases of the Project.

- **Long-Term Productivity:** Long-term refers to the estimated 30-year mine operations, long-term O&M of the proposed ROWs, and final reclamation, as well as the condition of the environment following mine closure and completion of the estimated 10-year reclamation period. During this time, extraction of gold and silver ore would occur to meet market demand, and the ROWs would continue to support power and water conveyance necessary for ongoing mine operations. Long-term productivity considerations also include the lasting effects of open pits, permanent waste rock facilities, and maintained ROW, which may result in a long-term alteration of site productivity relative to pre-disturbance geologic and ecological conditions. While reclamation efforts are designed to restore landforms and support native plant and wildlife habitat, recovery of the local aquifer may occur slowly over multiple decades, potentially affecting long-term groundwater availability and the viability of distant seeps or springs if drawdown extends to those areas. Following completion of mining and ROW decommissioning, long-term land productivity would depend on reclamation success and natural recovery processes.

3.4.2 Irreversible and Irretrievable Commitment of Resources

NEPA requires a statement addressing "any irreversible and irretrievable commitments of Federal resources which would be involved in the proposed agency action should it be implemented" (NEPA Section 102(2)(C)(v)). Implementation of the Proposed Action and associated alternatives could result in irreversible and irretrievable commitments of Federal resources that are inherent to mining activities and the approval of associated ROWs for utilities. These commitments are summarized below, with detailed effects discussed in the applicable resource sections of this document.

- **Irreversible Commitments:** An irreversible commitment occurs when a resource is consumed, used, or altered in a manner that cannot be undone or restored to its original condition. Mining activities result in irreversible commitments through the extraction and processing of mineral resources, which permanently removes those resources from their natural setting. Physical modification of landforms associated with mine development, such as excavation, waste placement, and surface grading, also represents irreversible change, even where reclamation is implemented. Approval of ROWs, including those for water conveyance and power transmission, may result in irreversible commitments where surface disturbance permanently alters soils, vegetation, landform characteristics, or the values and features for which the lands may be specially designated. Although such ROWs may be relatively limited in width, construction and long-term infrastructure placement can permanently modify affected areas.
- **Irretrievable Commitments:** Irretrievable commitments involve the short or long-term loss of resource availability or use for the duration of the action. Mining operations can result in irretrievable commitments of land, habitat, and other environmental resources due to surface disturbance and operational restrictions that limit alternative uses for the life of the mine. Water used for mining-related purposes, such as dust control and mineral processing, is irretrievably committed during operations through consumption, evaporation, or retention within process facilities. Similarly, lands authorized for ROWs are irretrievably committed for the period of authorization, during which other land uses may be constrained and ecological functions altered. Energy resources, materials, and labor required to construct, operate, and maintain mining facilities and associated ROWs are also irretrievably committed to the Proposed Action and are unavailable for other uses during that time.

3.5 Air Quality

This section describes the existing air quality conditions, applicable regulations, and air quality analysis that was performed to determine the short-term and long-term, direct and indirect, and cumulative air quality impacts associated with the Project. Information in this section is derived from the *Castle Mountain Mine 2022 Plan Amendment Technical Support Document for Air Quality, Climate, and Energy Analyses* (AQTSD) and the *Castle Mountain Mine Right of Way Emissions Inventory* (EI) (Ramboll Americas Engineering Solutions, Inc [Ramboll] 2025a, 2025b).

An EI was prepared for Proposed Action, including the subset of emissions associated with currently approved operations (Ramboll 2025a). The scope of emissions evaluated includes direct and indirect emission sources such as on-site stationary sources, on-site mobile sources, on-site fugitive dust sources, on-site blasting sources, off-site mobile exhaust, and off-site fugitive dust. Emissions during a maximum operational year as well as during construction were quantified. The calculated particulate matter 10 microns in diameter or smaller (PM_{10}) emissions during the Project were compared to Clean Air Act (CAA) General Conformity *de minimis* thresholds, which is a regulatory process independent of NEPA/CEQA review. In addition, air dispersion modeling was also completed for three different operational modeling scenarios and the modeled PM_{10} and particulate matter 2.5 microns in diameter or smaller ($PM_{2.5}$) concentrations were compared to the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) to assess potential project impacts under standard air quality evaluation procedures. Following the Federal Land Managers' Air Quality Related Values Work Group guidance for Class I areas, an assessment of Project impacts on the air quality related values (AQRVs) of regional haze and acid deposition at the closest Federal Class I areas, Grand Canyon National Park (NP) and Joshua Tree NP was made using the Emission/Distance (Q/D) screening approach.

In addition, to support the Project, CMM would complete ROW construction and reinstall the former 69-kV overhead power line from Walking Box Ranch to the mine site, as well as install an underground water pipeline from Nipton, California, to Walking Box Ranch and along the CMM Access Road to the mine site. A ROW construction EI was prepared, and total construction emissions were disclosed (Ramboll 2025b). Potential air emissions during routine operations following the underground water pipeline and 69-kV overhead power line installations would be limited to as-needed maintenance activities, and operational emissions for this portion of the Project would be *de minimis*; thus, they were not quantified.

For both the 2025 Plan Update and EI, various emission factors from the California Air Resources Board (CARB), U.S. Environmental Protection Agency (USEPA), Bay Area Air Quality Management District (BAAQMD), Mojave Desert Air Quality Management District (MDAQMD), and BLM were used. The air quality analysis area is San Bernardino County, California, and Clark County, Nevada.

3.5.1 Affected Environment

Criteria air pollutants (CAPs) are monitored throughout various parts of the United States. Monitors measure concentrations of pollutant in the atmosphere, and the results are often presented in parts per million or micrograms per cubic meter ($\mu g/m^3$). Pursuant to 40 CFR 58.14 (c)(1), the USEPA and states periodically analyze and review monitor locations, discontinue monitoring at locations where pollutant concentrations have been well below the standards, and add monitors in areas where pollutant concentrations may be approaching air quality standards. Instantaneous, on-demand, monitored outdoor air quality data collected from state, local, and Tribal monitoring agencies can be obtained from USEPA's Air Data web page and interactive tool (USEPA 2025a). The MDAQMD currently maintains 13 air monitoring sites within the district, and there are approximately 17 air monitoring sites within Clark

County. Using these monitors, San Bernardino County has been designated as a moderate nonattainment area for federal and state PM_{10} standards and moderate nonattainment for state ozone standards. Although other areas within San Bernardino County, such as the Western Mojave Desert area, are designated as nonattainment areas for federal ozone and state $PM_{2.5}$ standards, the Project would be outside these areas (USEPA 2008). Portions of Clark County outside the Project Area have been designated as serious nonattainment for the 2015 8-hour ozone standard and a maintenance area for carbon monoxide (CO) and PM_{10} (USEPA 2025b). For all other pollutants having an air quality standard, the USEPA has designated Clark County, Nevada, and San Bernardino County, California as attainment/unclassifiable.
For regulatory and planning purposes, USEPA treats unclassifiable areas as attainment areas (unclassifiable/attainment areas) and considers the Project Area, except the PM_{10} nonattainment areas, to meet all NAAQS for all CAPs (USEPA 2025b).

The General Conformity Rule was established under Section 176(c)(4) of the federal CAA and ensures that federal actions do not inhibit a state's attainment plans for areas designated as nonattainment or maintenance. The General Conformity Rule, which is designed to protect ambient air quality within nonattainment and maintenance areas against further degradation, only applies to the PM_{10} in San Bernardino County; thus, the Project would be subject to the 100-tpy *de minimis* threshold for PM_{10} as outlined in 40 CFR§93.153(b)(1) (USEPA 2025c). Although the BLM has preliminarily determined that the Project would conform to the CAA SIP as required under the General Conformity Rule, this determination is not yet final. In the interim, the Project's compliance is consistent with the preliminary recommendation of conformity provided by the Mojave Desert Air Quality Management District (De Salvio 2025).

The CMM currently conducts PM_{10} monitoring at four monitoring stations: Southwest, East Ridge, North, and Southeast. All four stations collect continuous data for PM_{10} and meteorological parameters. The North Station is used as the basis of the PM_{10} background, based on the availability of co-located and high-quality meteorological data; however, to establish a representative background value, the PM_{10} data was processed to remove the effects of high winds and possible contribution of dust from existing onsite activities. The maximum (1st high) background concentrations for PM_{10}, by month, and the annual average presented in Section 5.1 of the AQTSD are used as background concentrations and the Project impacts will be added to these concentrations (Ramboll 2025a).

In 1999, the USEPA announced the Regional Haze Rule, an effort to improve air quality and visibility in 156 NPs that were then designated as Class I areas (USEPA 1999). Regional haze reduces long-range visibility over a wide region. Section 169A of the CAA sets forth a national goal for visibility. States are required to demonstrate reasonable progress toward the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution" (42 U.S.C. 7491(a)). These areas have additional protections for air quality and visibility by monitoring and limiting AQRVs. Any areas not designated as Class I areas are considered Class II areas. The closest Class I areas to the Project Area are Grand Canyon and Joshua Tree NPs, both managed by the NPS, 128 km and 131 km from the Project Area, respectively (USEPA 2025a).

Currently, all federal land managers use Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring data to determine conditions for visibility in federal land manager areas (IMPROVE 2025). The closest IMPROVE monitors are in Grand Canyon and Joshua Tree NPs. Visibility is good at Grand Canyon NP, based on the 5-year average (2019–2023) measured visibility (haze index). For 2014–2023, the 10-year trend in visibility at Grand Canyon NP remained relatively unchanged (no statistically significant trend) on the 20% clearest days and 20% haziest days, resulting in an overall unchanged visibility trend (IMPROVE Monitor ID: GRCA2, AZ). The CAA visibility goal requires visibility improvement on the 20% haziest days, with no degradation on the 20% clearest days. Visibility is fair at Joshua Tree NP, based on the 5-year average (2019–2023) measured visibility (haze index). For 2014–2024, the 10-year trend in visibility at Joshua Tree NP remained relatively unchanged

(no statistically significant trend) on the 20% clearest days and 20% haziest days, resulting in an overall unchanged visibility trend (IMPROVE Monitor ID: JOSH1, CA) (NPS 2025).

3.5.1.1 REGULATORY FRAMEWORK

The federal CAA, as amended, is the primary federal law governing air quality in the United States. At the state level, air quality in California is regulated under the California CAA and managed by the CARB, whereas air quality in Nevada is regulated through Nevada air quality statutes and regulations managed by the Nevada Division of Environmental Protection (NDEP) and by the Clark County Department of Environment and Sustainability, Division of Air Quality (DAQ) within Clark County. These laws and implementing regulations establish standards for the concentration of pollutants in ambient air. At the federal level, the NAAQS apply in both California and Nevada.

NAAQS and state ambient air quality standards have been established for six CAPs that have been linked to potential health concerns: CO, nitrogen dioxide (NO_2), ozone, PM_{10}, $PM_{2.5}$, lead, and sulfur dioxide (SO_2). In addition, state standards exist for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both federal and state regulatory schemes also cover hazardous air pollutants (HAPs); some CAPs are also HAPs or may include certain HAPs in their general definition. It is important to note that ground-level ozone is typically not directly emitted into the atmosphere from an emissions source. Rather, emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOCs), when combined with high temperatures and ultraviolet radiation from sunlight, can form ground-level ozone. The two-tiered NAAQS standards may be primary or secondary. Primary standards set limits to protect public health, including the health of sensitive populations, such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, which includes protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Averaging periods vary by pollutant, based on the potential health and welfare impacts of each pollutant. States may set their own ambient air quality standards, but they must be at least as stringent as the national standards. The NAAQS, which have been adopted by the Clark County DAQ, along with the CAAQS—which are generally more restrictive than NAAQS—for CAPs are listed in Table B-1.3.4.1 in Appendix B (USEPA 2025d).

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel General Conformity requirement under the federal CAA also applies.

Congress amended the CAA in 1990 to address a large number of air pollutants that are known or suspected of causing cancer or other serious health effects, such as reproductive effects, birth defects, or adverse environmental effects. Congress initially identified 188 specific pollutants and chemical groups as HAPs and has modified the list over time. The CAA requires control measures for HAPs. The USEPA issues national emissions standards for HAPs to limit the release of designated HAPs from specific industrial sectors. These standards are technology-based, meaning that they represent the maximum achievable control technology that is economically feasible for an industrial sector. The CAA defines a major source of HAPs to be one that emits 10 tpy of any single HAP or 25 tpy of any combination of HAPs. NAAQS have not been set for HAPs; rather HAP emissions are controlled by source type– or industrial sector–specific regulations.

The regulatory authority for air quality in the San Bernardino County portion of Mojave Desert Air Basin is the MDAQMD, which has been delegated authority under the CAA in the project area and the MDAQMD regulations are included in the State Implementation Plan (SIP). MDAQMD regulates emissions of CAPs through rules addressing fugitive dust, including Rule 403 (Fugitive Dust Control), as well as permitting requirements for stationary and portable sources. The project is also subject to

Nonattainment New Source Review (NNSR) permitting administered by the MDAQMD. The Project would comply with applicable MDAQMD fugitive dust–control requirements and obtain any required permits (Appendix G). The MDAQMD *California Environmental Quality Act (CEQA) and Federal Conformity Guidelines* provide the environmental setting, impacts discussion guidance, and local MDAQMD significance thresholds (MDAQMD 2020).

Clark County has authority delegated by the Governor of the State of Nevada for the implementation of the federal CAA. The DAQ under the Clark County Department of Environment and Sustainability is responsible for administering the air pollution control program for Clark County under the provisions of the Clark County Air Quality Regulations and the USEPA-approved SIP for Clark County, Nevada (Clark County Air Quality Regulations Sections 00–94, as adopted in 40 CFR 52(DD)). Within Clark County, emissions are regulated by the DAQ. Construction activities impacting greater than 0.25 acre in Clark County require a dust-control operating permit from DAQ. Projects larger than 10 acres also require completion of a Dust Mitigation Plan Supplement for DAQ (Clark County 2024).

3.5.2 Environmental Consequences

3.5.2.1 ANALYSIS METHODOLOGY

The air quality analysis area is San Bernardino County, California, and Clark County, Nevada. The following sections discuss the methodologies used in the air quality analysis, and details on the air quality analysis are provided in the AQTSD and EI (Ramboll 2025a, 2025b).

3.5.2.1.1 Operations EI

Section 2.1.3 of the AQTSD explains the operations EI methodology, which used the most recent engineering and mining design for the Project to extract potential activity data, evaluated on both a maximum annual and maximum daily basis. CAP, HAP, and greenhouse gas (GHG) emissions were quantified for a peak year of mine operation (Ramboll 2025a). Emission factors and methodology were then selected for each activity using applicable local, state, and federal guidance as appropriate from resources including the CARB, USEPA, BAAQMD, California Air Pollution Control Officers Association (CAPCOA), NDEP Bureau of Air Pollution Control, MDAQMD, and BLM.

Emission factors for on-road mobile units conservatively use the year 2027, although mining operations may commence after this year and would continue into future years, when corresponding emission factors would continue to decrease due to improved technology and vehicle regulation (Ramboll 2025a). Emission estimates for maximum daily and annual operations under the Proposed Action, including emissions from approved activity, were calculated. In addition, the emission estimates for maximum daily and annual operations under approved operations as authorized in the 1998 Plan and 2020 Plan Update were calculated. The difference between emissions estimated under the Proposed Action, including emissions from approved activity, and those approved under the 1998 Plan was calculated, and emission estimates for annual operation activity were also calculated. Annual emissions of PM_{10} from construction and operations were totaled and compared with the General Conformity *de minimis* threshold of 100-tpy for PM_{10} and compliance is demonstrated through modeling as discussed in the General Conformity concurrence (De Salvio 2025).

3.5.2.1.2 Construction EI

Section 2.2.1 of the AQTSD explains the construction EI methodology, which uses anticipated construction activity—including worker and vendor travel to and from the site, off-road equipment use, and fugitive dust disturbance details—and assumed the direct and indirect emissions during construction would include CAPs, HAPs, and GHG emissions (Ramboll 2025a). Emission factors and methodologies

were selected for each activity using applicable local, state, and federal guidance as appropriate from resources including the CARB, USEPA, BAAQMD, CAPCOA, MDAQMD, and BLM. Emission factors for on-road mobile units conservatively use the years 2026 and 2027, even though construction may commence after this year, when corresponding emission factors would continue to decrease due to improved technology and vehicle regulation. Due to uncertainty in contractor selection during construction, the EI conservatively assumes Tier 3 emission standards for all off-road equipment; however, due to state and federal regulations, fleet turnover, and continuing improvement in emissions control technology, it is expected that many—if not all—off-road units would meet higher emission standards (Tier 4 Interim or Tier 4 Final); thus, the EI off-road equipment emissions are conservative. Roads used during construction would be controlled with watering, surface graveling, treatment with chemical stabilizers, and speed control, and watering would be used for fugitive dust control from disturbed areas. Maximum daily and annual construction activity emissions were estimated. Annual emissions of PM_{10} from construction and operations were totaled and compared with the General Conformity de minimis threshold of 100-tpy for PM_{10} and compliance is demonstrated through modeling as discussed in the General Conformity concurrence (De Salvio 2025).

3.5.2.1.3 Modeling

Section 3.1 and Attachment A of the AQTSD explain the methodology used for the modeling (Ramboll 2025a). The AQTSD provides the model versions and guidance available at the time of the analyses, which included AERMOD version 24142 and its associated processors, Appendix W to 40 CFR 51 – Guideline on Air Quality Models, and other applicable USEPA guidance, described in Attachment A. The pollutants SO_2, NO_2, CO, PM_{10}, and $PM_{2.5}$ were modeled and compared to the NAAQS.

3.5.2.1.4 AQRV Analysis

Section 4 of the AQTSD provides the methodology and results of the AQRV analysis (Ramboll 2025a). Following Federal Land Managers' Air Quality Related Values Work Group guidance for Class I areas, an assessment of Project impacts on the AQRVs of regional haze and acid deposition at the closest Federal Class I areas, (Grand Canyon NP and Joshua Tree NP)" was made using the Q/D screening approach. For Q/D, Q is the on-site annualized, maximum daily Project emissions of visibility-impairing pollutants—i.e., PM_{10}, SO_2, and NO_x for this Project in tpy—divided by the distance between the Project and the Class I area, D in km. If the Q/D values are less than 10, the Project emissions would not have an adverse impact on AQRVs at these NPs. It is noted that the value of Q includes fugitive PM_{10} emissions, which are unlikely to travel to the Class I areas due to gravitational settling, wet and dry deposition, and the low-level nature of the emissions. Therefore, this Q/D calculation should be considered a conservative estimate of the Q/D value.

3.5.2.1.5 ROW Construction EI

Section 2 of the EI explains the methodology used for the ROW construction EI (Ramboll 2025b), which assumed direct and indirect emissions during construction would include CAPs, HAPs, and GHG emissions from off-road equipment operation, worker, vendor, and hauling trips to the construction site (e.g., commuting, material deliveries and soil movement), as applicable, and fugitive dust from disturbed areas. Construction of the 69-kV overhead power line and underground water pipeline are estimated to last less than 1 year. Construction was conservatively estimated to start as early as 2026. Emission factors for on-road mobile units conservatively use the year 2026, even though construction may commence after this year when corresponding emission factors would continue to decrease due to improved technology and vehicle regulation; thus, emissions are conservative. The EI uses anticipated construction activity, including worker and vendor travel to and from the site, off-road equipment use, and fugitive dust disturbance details. Emission factors and methodologies were selected for each activity using applicable local, state, and federal guidance as appropriate from resources including the CARB, USEPA, BAAQMD,

CAPCOA, MDAQMD, and BLM. Due to uncertainty in contractor selection during construction, the EI conservatively assumed Tier 3 emission standards for all off-road equipment. When Tier 3 standards do not apply to a given size, Tier 2 standards were conservatively used. Due to state and federal regulations, fleet turnover, and continuing improvement in emissions control technology, it is expected that many—if not all—off-road units would meet higher emission standards, i.e., Tier 4 Interim or Tier 4 Final; thus, emissions estimates are conservative. The mine access road, along which construction vehicles would need to travel, would be controlled with watering, surface graveling, and treatment with chemical stabilizers. Additional construction surfaces and disturbed areas would be controlled with watering and speed control, where applicable.

3.5.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

The air quality analysis considers the Proposed Action in combination with 28 RFTPAs identified in Table B-1.3.3-1 in Appendix B. RFTPAs within the air quality analysis area include projects related to electric transmission, intermittent energy sources, government facilities, mining, water development, transportation, and land development. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. Nearby active projects include the Eldorado-Pisgah-Lugo and related SCE projects, Interstate 15 (I-15) Wildlife Crossings Project, Searchlight U.S. 95 Roadway Rehabilitation Project, and Mojave Groundwater Bank Project. These projects would primarily involve construction activities that generate short-term emissions from equipment operation and increased vehicle traffic. Long-term effects on air quality are expected to be minimal, as most projects would transition to lower-emitting operations or routine maintenance following construction, resulting in limited ongoing emissions.

3.5.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under the No Action Alternative, air quality would be affected in locations where current operations would still occur, as approved in the 1998 EIS/ROD (BLM 1998a).

3.5.2.4 IMPACTS OF PROPOSED ACTION

3.5.2.4.1 Operations

Emission estimates for maximum daily and annual operations under the Proposed Action, including emissions from approved activity, are summarized in Table 1 of the AQTSD, and emission estimates for maximum daily and annual operations as authorized in the 1998 Plan and 2020 Plan Update are shown in Table 2 of the AQTSD (Ramboll 2025a). The change in emissions as a result of the Proposed Action is summarized in Table 3 of the AQTSD. The difference between emissions estimated under the Proposed Action, including emissions from approved activity, and those approved under the 1998 Plan is shown in Table 4 of the AQTSD. Detailed emission tables supporting the Proposed Action along with approved activity are included as Tables O-1 through O-31 of the AQTSD (Ramboll 2025a). Detailed emission tables supporting approved operations are included as Tables OA-1 through OA-31. These tables show that PM_{10} emissions from the Proposed Action (including the 1998 Plan) are 267 tpy.

3.5.2.4.2 Construction

Emission estimates for maximum daily and annual construction activity are summarized in Tables C-1 and C-2 of the AQTSD, and Tables C-3 through C-15 provide detailed activity data, emission factors, and emissions methodologies (Ramboll 2025a). These tables show that PM_{10} emissions from the construction are 56 tpy during Operational Year 1 and 28 tpy during Operational Year 2.

Emission estimates for total annual construction activity during ROW construction are summarized in Tables C-1 through C-3 of the EI (Ramboll 2025b). Detailed emission tables that document activity data, emission factors, and emissions methodologies are included as Tables C-4 through C-18. The total tpy from any single pollutant from the 69-kV overhead power line and underground water pipeline construction is under 18 tpy.

3.5.2.4.3 Conformity Concurrence

Annual emissions of PM_{10} from construction and operations were totaled and compared with the General Conformity *de minimis* threshold of 100-tpy for PM_{10}. The PM_{10} emissions from the Proposed Action operations (including the 1998 Plan) are 267 tpy. The PM_{10} emissions during construction are 56 tpy during the maximum year (Operational Year 1), and ROW construction totals 18 tpy, totaling 74 tpy; therefore, the total emissions from operations and construction are 341 tpy, which is over the General Conformity *de minimis* threshold of 100-tpy for PM_{10}.

As the Project is in a region classified as nonattainment for multiple CAP standards, and the Proposed Action (including the 1998 Plan) results show that PM_{10} emissions over the 100-tpy de minimis threshold, BLM as a federal agency has the duty of making and publishing a General Conformity Determination for PM_{10} emissions prior to approving the proposed action in consultation with the agency responsible for the SIP. BLM has sought and received the following input on SIP Conformity from the MDAQMD as required in 40 CFR 93.158(b).

According to a letter dated October 8, 2025, Alan J. De Salvio, the MDAQMD Deputy Air Pollution Control Officer, MDAQMD conducted a review of the Project's air quality emission modeling and concluded that, although the Project is over the *de minimis* threshold, the Proposed Action would conform to the applicable SIP and would not cause or contribute to any new violation of any air quality standard in any area, or increase the frequency or severity of any existing violation of any standard in any area (De Salvio 2025). Based on the air modeling data reviewed, and the preliminary recommendation from MDAQMD, the BLM concludes that general conformity has been demonstrated and is in the process of issuing a formal General Conformity Determination.

3.5.2.4.4 Modeling

Section 3.5 of the AQTSD provides a summary of the Project's NAAQS impact assessment results (Ramboll 2025a). The modeling results for comparison to the NAAQS are summarized in Tables 3.5-1, 3.5-2, and 3.5-3 for each of the three scenarios: Maximum Emissions Scenario, North Operations Scenario, and South Operations Scenario, respectively (Ramboll 2025a: Tables 3-1, 3-2, and 3-3). All modeled scenarios are in compliance with the applicable NAAQS. The impacts between the three modeled scenarios differ slightly based on the different spatial location of the emission sources between the scenarios (e.g., location of blasting, haul roads, overburden piles, etc.). For each scenario, the highest impacts compared to the standard is 1-hour NO_2. As detailed in Section 3.1.1 of the AQTSD, these results represent maximum hourly blasting emissions always occurring with worst-case meteorology and should be considered conservative (Ramboll 2025a). All other results are less than 75% of the applicable NAAQS.

Table 3.5-1. Maximum Emissions Scenario NAAQS Results

Pollutant	Average Timing	Rank	Impact (µg/m^3)	Background (µg/m^3)	Total Concentration (µg/m^3)	NAAQS (µg/m^3)	Percent of Standard (%)
SO_2	1-hr	99th percentile	0.4	11	11.4	196	6
NO_2	1-hr	98th percentile	101.6	64.9	166.5	188	89
	Annual	Maximum	5.9	6.8	12.7	100	13
CO	1-hr	H2H	3,164	2,406	5,570	40,000	14
	8-hr	H2H	487	1,948	2,435	10,000	24
PM_{10}	24-hr	H2H	28.7	(included)	28.7	150	19
$PM_{2.5}$	24-hr	98th percentile	1.5[a]	16.6	18.1	35	52
	Annual	Maximum	0.46[a]	4.8	5.3	9	58

Note:
H2H = High 2nd High.

Table 3.5-2. Maximum Emissions Scenario – Assumed North Operations NAAQS Results

Pollutant	Average Timing	Rank	Impact (µg/m^3)	Background (µg/m^3)	Total Concentration (µg/m^3)	NAAQS (µg/m^3)	Percent of Standard (%)
SO_2	1-hr	99th percentile	0.4	11	11.4	196	6%
NO_2	1-hr	98th percentile	101.6	64.9	174.5	188	93%
	Annual	Maximum	5.9	6.8	14.8	100	15%
CO	1-hr	H2H	3,164	2,406	5,482	40,000	14%
	8-hr	H2H	487	1,948	2,439	10,000	24%
PM_{10}	24-hr	H2H	28.7	(included)	34.4	150	23%
$PM_{2.5}$	24-hr	98th percentile	1.5[a]	16.6	19.2	35	55%
	Annual	Maximum	0.46[a]	4.8	5.6	9	62%

Note:
H2H = High 2nd High.

Table 3.5-3. Maximum Emissions Scenario – Assumed South Operations NAAQS Results

Pollutant	Average Timing	Rank	Impact (µg/m^3)	Background (µg/m^3)	Total Concentration (µg/m^3)	NAAQS (µg/m^3)	Percent of Standard (%)
SO_2	1-hr	99th percentile	0.4	11	11.5	196	6
NO_2	1-hr	98th percentile	101.6	64.9	168.7	188	90
	Annual	Maximum	5.9	6.8	14.3	100	14
CO	1-hr	H2H	3,164	2,406	5,574	40,000	14
	8-hr	H2H	487	1,948	2,441	10,000	24
PM_{10}	24-hr	H2H	28.7	(included)	29.8	150	20
$PM_{2.5}$	24-hr	98th percentile	1.5[a]	16.6	18.2	35	52
	Annual	Maximum	0.46[a]	4.8	5.4	9	60

Note:
H2H = High 2nd High.

An ozone and secondary $PM_{2.5}$ impact assessment was also conducted (Ramboll 2025a:Section 3.7). The secondary formation of $PM_{2.5}$ from Project emissions of SO_2 and NO_x emissions were estimated using the USEPA Modeled Emission Rates for Precursors (MERPs) guidance (USEPA 2019). The secondary $PM_{2.5}$ is added to the primary $PM_{2.5}$ impacts generated from AERMOD. The total $PM_{2.5}$, primary plus secondary, are compared to the applicable $PM_{2.5}$ air quality standards. Secondary ozone formation from on-site Project emissions of NO_x and VOC emissions were estimated using the same approach using the MERPs guidance.

Using the USEPA MERPs Qlik tool, the nearest hypothetical source from CMM is in Las Vegas, Nevada, which is about 129 km (80 miles) away from CMM. The total Project emissions and data extracted from the USEPA MERPs database for the 10-meter (m) stack for this source are provided in Table 3. 3.5-4 (Ramboll 2025a:Table 3-7), which shows that the Project estimated impacts are below the ozone Significant Impact Level value of 1.0 parts per billion. The secondary 24-hour and annual $PM_{2.5}$ impacts are added to the primary $PM_{2.5}$ AERMOD impacts, as summarized in Sections 3.5 and 3.6 of the EI (Ramboll 2025a). It is noted that the USEPA-estimated secondary impacts from the MERPs database represent the maximum impacts anywhere within 50 km (31 miles) of the hypothetical source. This maximum impact is added to design value impacts of primary $PM_{2.5}$ from AERMOD, which occur at the site boundary. The addition of the secondary and primary $PM_{2.5}$ impacts, even though they are not spatially paired, provides a conservative estimate of the total $PM_{2.5}$ impacts from the Project.

Table 3.5-4. EPA MERP Modeling Results for a Hypothetical Source in Las Vegas, Nevada

County	Metric	Precursor	MERP Emissions (tpy)	On-Site Project Emissions (tpy)	MERP Impact	Estimated Project Impact by Precursor	Combined Estimated Project Impact
Clark	8-hr ozone	NO_x (ppb)	1,000	569	0.636	0.363	0.373
Clark	8-hr ozone	VOC (ppb)	500	35	0.160	0.011	–
Clark	Annual $PM_{2.5}$	NO_x ($\mu g/m^3$)	1,000	569	0.009	0.005	0.005
Clark	Annual $PM_{2.5}$	SO_2 ($\mu g/m^3$)	1,000	1.3	0.012	0.000	–
Clark	Daily $PM_{2.5}$	NO_x ($\mu g/m^3$)	1,000	569	0.085	0.048	0.048
Clark	Daily $PM_{2.5}$	SO_2 ($\mu g/m^3$)	1,000	1.3	0.086	0.000	–

3.5.2.4.5 AQRV Analysis

The Project impacts on the AQRVs of regional haze and acid deposition at Class I areas beyond 50 km (31 miles) was made using the Q/D screening approach. The closest Class I areas to the Project are Grand Canyon and Joshua Tree NPs. The Q/D calculations using the maximum daily Project emissions for the emitted visibility-impairing pollutants (PM_{10}, SO_2, and NO_x) at each of these Class I areas are provided in Table 4-1 of the AQTSD (Ramboll 2025a). The Q/D values for both Class I areas are less than 10 (Grand Canyon NP Q/D 8.0 and Joshua Tree NP Q/D 7.8); therefore, Project emissions would not have an adverse impact on AQRVs at these NPs.

3.5.2.4.6 ACEPMs

Implementation of ACEPMs would reduce impacts to air quality and climate resources by requiring permits for stationary equipment (AQ-1), implementing dust and emission control measures such as road watering, speed limits, and covered stockpiles (AQ-3 through AQ-10), and conducting regular maintenance and monitoring of air quality (AQ-11 and AQ-16) (Appendix E). Use of low-sulfur fuels and emission controls for generators and equipment (AQ-12 and AQ-30 – AQ-35) further minimize emissions.

3.5.2.5 IMPACTS OF ALTERNATIVE C – D

Alternative C

Alternative C would evaluate partially backfilling this pit to reduce the size of the forecasted mine pit lake. The material used for backfill would be sourced from the JSLA pit. Under this scenario, backfill would occur after mining ends. Alternative C operations would take place after mining ends at the facility. Supplemental operations would be limited to haul truck operation, material handling, off-road equipment (loader, dozer, and water truck), and employee vehicle and fuel delivery truck trips. Emissions associated with this alternative are anticipated to occur over a two-year period. Any additional emissions resulting from ancillary support operations such as administrative buildings and trailers are assumed to be minimal and were not quantified. No changes to construction emissions would be anticipated from new or modified activity in Alternative C, thus construction emission estimates were not necessary.

Table 1 of the AQ Alternatives Analysis and Table 3.5-5 below presents the one-time change in potential CAP and GHG emissions. For Alternative C, the one-time change in potential emissions represents all additional activity to backfill the SE Pit.

Table 3.5-5. One-Time Emissions Increase for Alternative C

Emissions Inventory	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NO_x (tpy)	SO_x (tpy)	CO (tpy)	VOC (tpy)
Alternative C One-Time Project Emissions Increase	54	6.8	79	0.16	85	4.9

Emissions of HAPs associated with the Alternatives will scale with CAP emissions since the Alternatives would not change any HAP only sources. Therefore, any comparative trends drawn for annual or cumulative impacts would similarly apply to HAP emissions. As shown in Table 3.5-6, CAP emission for Alternative C are under 80 tons per year.

Alternative D

Alternative D would incorporate a small (5 to 10 megawatt) on-site solar power facility to supplement intermittent energy needs for the mine, which would result in additional infrastructure and may cause additional fugitive dust from the disturbance.

Table 1 of the AQ Alternatives Analysis and Table 3.5-6 below presents the one-time change in potential CAP and GHG emissions. For Alternative E, the one-time change in potential emissions represents all construction-related activity for the small on-site solar facility.

Table 3.5-6. One-Time Emissions Increase for Alternative D

Emissions Inventory	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NO_x (tpy)	SO_x (tpy)	CO (tpy)	VOC (tpy)
Alternative D One-Time Project Emissions Increase	13	3.3	4.4	0.019	6.1	0.32

Emissions of HAPs associated with the Alternatives will scale with CAP emissions since the Alternatives would not change any HAP/TAC only sources. Therefore, any comparative trends drawn for annual or cumulative impacts would similarly apply to HAP emissions. As shown in Table 3.5-6, CAP emission for Alternative D are under 14 tons per year.

3.6 Biological Resources

This section evaluates impacts to biological resources that may result from implementation of the Proposed Action, including general and special-status wildlife species, general vegetation, noxious weeds and invasive species, special-status plant species, cactus and yucca species, and forestry and woodlands. Each subsection presents an overview of the biological resources analysis area, summarizes the applicable biological resources, identifies how impacts to these resources were evaluated, describes the potential impacts to these resources that may result from implementation of the Proposed Action or alternatives, and lists ACEPMs that would be incorporated to avoid or minimize impacts to these resources.

3.6.1 General Wildlife

This section addresses general wildlife species found within the Project Area and analyzes potential impacts to these species resulting from the implementation of Proposed Action. For the purposes of this analysis, general wildlife is defined as species of fauna with no special-status regulatory listing at the federal level. The general wildlife species discussed in this section include mammals, avian species (including migratory birds), reptiles, amphibians, and invertebrates. No fish species have been identified within the Project Area. The indicator used to evaluate potential impacts includes the presence or absence of the species observed during previous biological surveys. Wildlife species documented during previous biological surveys are included in Table B-1.3.6-1 in Appendix B, and a list of biological survey reports conducted for the Proposed Action is provided in Table B-1.1.3-2 in Appendix B. The analysis area for general wildlife species consists of the proposed disturbance footprint plus a 50-foot buffer (Figure C.3.6-1 in Appendix C). This buffer is included to account for potential effects (e.g., increased human presence, noise, vibration, fugitive dust, and traffic, as well as habitat fragmentation and displacement from preferred habitat) that may extend beyond the immediate disturbance footprint. Special-status wildlife species are discussed in Section 3.6.6, *Special-Status Species – Wildlife* and threatened or endangered wildlife species are discussed in 3.6.7, *Threatened or Endangered Species – Wildlife*

3.6.1.1 AFFECTED ENVIRONMENT

Based on the results of several biological studies, the biological resources analysis area supports suitable habitat for the following general wildlife species.

3.6.1.1.1 Mammal Species

During baseline surveys, 20 mammal species were documented in the biological resources analysis area (Glenn Lukos Associates [Lukos] 2024; ECORP Consulting, Inc. [ECORP] 2021a), of which seven are considered general wildlife species. One species documented within the analysis area is categorized as a furbearer by the states of California and Nevada—kit fox (*Vulpes macrotis*). Small-game species documented within the analysis area include white-tailed jackrabbit (*Lepus californicus*) and desert cottontail (*Sylvilagus audubonii*). American badger (*Taxidea taxus*) was also observed during baseline surveys.

Mountain lions (*Puma concolor*) have been observed infrequently, with two known observations over the past 30 years, and signs of presence recorded within the biological resources analysis area (Brown-Berry Biological Consulting [Brown-Berry] 2019). One known siting occurred during the 1990s mining operations while a more recent observation was from a 2025 game camera deployed at the Oro Belle wildlife drinker (personal communication, Aren Hall 2026). CMV installed six game cameras at three regional wildlife drinkers, two are located within the Project Area and one is located within the Castle Mountain range a few miles north of the Project Area (personal communication, Aren Hall 2026;

WestLand Engineering & Environmental Services, Inc. [WestLand] 2022). The 2025 sighting was the first captured by the game cameras since they were deployed in 2022.

Mule deer (*Odocoileus hemionus*) is a big-game species present within the biological resources analysis area, as well as Nelson's bighorn sheep (*Ovis canadensis nelsoni)*, which is discussed in greater detail in Section 3.6.6.2.4, *Impacts of Proposed Action* (Mammal Species). The South McCullough Mountains mule deer movement corridor is present in the northern portion of the biological resources analysis area within the ROWs.

3.6.1.1.2 Avian Species Including Migratory Birds

During baseline surveys, 52 avian species were documented within the biological resources analysis area, of which 44 are considered general wildlife species. Of the avian species documented within the analysis area, 51 are protected under the Migratory Bird Treaty Act (16 U.S.C. 703–712). Golden eagles (*Aquila chrysaetos*) are discussed in Section 3.6.6.2.4, *Impacts of Proposed Action* (Avian Species, including Migratory Birds). Additionally, nine raptor species have been documented within the analysis area, of which five are considered general wildlife species. These species include barn owl (*Tyto alba*), American kestrel (*Falco sparverius*), great-horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*).

Two species of game birds have been documented within the biological resources analysis area—Gambel's quail (*Callipepla gambelii*) and mourning dove (*Zenaida macroura*) (Lukos 2024). Waterfowl and shorebirds are not found within the analysis area, as large wetlands and water bodies are not present.

3.6.1.1.3 Reptile Species

During baseline and protocol surveys, 10 reptile species were documented within the biological resources analysis area, seven of which are considered general wildlife species (Bio Logical, LLC 2020; ECORP 2021a; Lukos 2024). General reptile species documented included common side-blotched lizard (*Uta stansburiana*), desert spiny lizard (*Sceloporus magister*), gopher snake (*Pituophis catenifer*), Great Basin whiptail (*Aspidoscelis tigris tigris*), long-nosed leopard lizard (*Gambelia wislizenii*), Mojave patch-nosed snake (*Salvadora hexalepis mojavensis*), and zebra-tailed lizard (*Callisaurus draconoides*).

3.6.1.1.4 Amphibian Species

The biological resources analysis area lies within the range of the red-spotted toad (*Anaxyrus punctatus*); however, no suitable habitat (i.e., rocky desert streams, oases, pools in rocky arroyos, and river floodplains) is present in the analysis area, and this species was not observed during the baseline surveys (Lukos 2024).

3.6.1.1.5 Invertebrate Species

No invertebrate-focused surveys were conducted in the analysis area, and no invertebrate species were formally documented during the baseline surveys (Lukos 2024); however, species from several common invertebrate families have been recorded in iNaturalist within the biological resources analysis area, including moths and butterflies (Nymphalidae, Erebidae, Saturniidae, Crambidae, Noctuidae, Geometridae, Sphingidae, Prodoxidae), mantises (Mantidae), walkingsticks (Phasmatidae), antlions (Myrmeleontidae), beetles (Tenebrionidae, Meloidae, Cleridae, Cantharidae, Curculionidae), flies (Syrphidae), true bugs (Pentatomidae, Coreidae, Cicadellidae, Thyreocoridae), ants (Formicidae), wasps (Tiphiidae), spiders and tarantulas (Theraphosidae, Sparassidae, Gnaphosidae, Salticidae, Theridiidae, Araneidae, Philodromidae, Homalonychidae), and scorpions (Vaejovidae) (iNaturalist 2026).

3.6.1.2 ENVIRONMENTAL CONSEQUENCES

3.6.1.2.1 Analysis Method

Impacts on general wildlife species were evaluated by assessing species' presence in the biological resources analysis area. Additionally, impacts were quantitatively calculated by comparing the extent of ground disturbance to the number of acres of suitable habitat, and impacts were considered qualitatively by examining the effects of the Project within a 50-foot buffer surrounding the disturbance footprint. This analysis is based on the following assumptions, which are informed by on-site conditions:

- Previous survey results are an accurate representation of the general wildlife species that could occur within the disturbance footprint.
- Due to the mobility of wildlife species, Project-related impacts can be quantified by measuring suitable habitat for these species.
- Landscape Fire and Resource Management Planning Tools (LANDFIRE) land cover data are an accurate spatial representation of the suitable habitat within the disturbance footprint (LANDFIRE 2024).
- Impacts such as noise, vibration, and fugitive dust, decrease in intensity with distance from the source and that the established buffer is sufficient to capture the extent of these disturbances.
- For linear components (ROW), long-term impacts are primarily limited to the footprint of the poles/towers and appurtenant facilities. Although short-term construction activities and maintenance may result in broader short-term disturbance to wildlife and habitat, implementation of design features (ACEPM/BMPs) would minimize these effects and maintain habitat and habitat connectivity.

3.6.1.2.2 RFTPAs Common to All Alternatives

Twenty-eight RFTPAs have been identified near the Project Area. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. The closest RFTPAs Eldorado-Pisgah-Lugo and other related SCE Projects, I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project (see Table B-1.3.3-1 in Appendix B). These projects would involve short-term construction activities and long-term O&M activities that would result in habitat loss and fragmentation, as well as increased human presence, noise, and vehicle traffic. Some of these projects span hundreds of miles, creating both local and regional impacts (e.g., Mojave Groundwater Bank Project), whereas others would reduce impacts to regional and local wildlife movement (e.g., the I-15 Wildlife Crossings Project).

3.6.1.2.3 Impacts of No Action Alternative

Under the No Action Alternative, modifications to the Project would not be authorized, and expansion of the mine and associated infrastructure as proposed under the Proposed Action would not occur. The current authorized mining activities would be permitted to continue under the existing authorizations. Under the No Action Alternative, 1,474 acres of disturbance would continue to occur and affect general wildlife species as previously analyzed. Effects would not change from the existing conditions described and analyzed under the 1998 EIS/ROD (BLM 1998a).

3.6.1.2.4 Impacts of Proposed Action

Mammal Species

The Proposed Action would impact approximately 1,758 acres of suitable habitat for mammal species, including mountain lion. Approximately 1,484 acres of this habitat would be long-term disturbance that would be unavailable for mammal use until the successful completion of reclamation, and approximately 274 acres would be short-term disturbance that would become available for mammal use after vegetation has resprouted. Disturbance from the Proposed Action would impact individual mammals but would not directly remove populations. The Proposed Action would affect mammal species through habitat loss, habitat fragmentation, and displacement from preferred habitat, which may decrease survival rates of affected individuals. Smaller species would not be able to relocate as easily as larger species that could relocate to adjacent habitat; however, effects to larger species may still occur if adjacent habitat is lacking or adjacent habitat is already at capacity. Habitat fragmentation and displacement may also increase competition among larger mammal species (e.g., mountain lions) by reducing primary prey species (e.g., desert bighorn sheep, mule deer). Additionally, mammal species may be injured, crushed, or killed by equipment and vehicular traffic during all phases of the Proposed Action, including construction, O&M, and reclamation, as well as by falling into open trenches and holes associated with construction of the utilities. Further, roadkill/carrion resulting from vehicle and equipment use may attract scavenging and lead to injury or mortality for scavengers due to vehicle or equipment collisions.

Increased human presence, noise and vibration (including blasting and drilling), lighting, and traffic due to the mine expansion and associated infrastructure may cause mammal species to experience increased stress and to avoid areas adjacent to the Proposed Action. Noise, traffic, lighting, and human presence from previously authorized actions and existing roadways have been occurring within the biological resources analysis area; however, human presence, lighting, and traffic would increase due to construction and additional operational needs, and noise and vibration would increase from blasting and drilling conducted as part of the Proposed Action. Effects from noise are discussed further in Section 3.10, *Noise and Vibration*.

Expansion of the heap leach facility, which includes the heap leach pad, comminution circuit, process plant, and ponds, may continue to be an attractant to mammal species when ponded water is present. However, fencing and netting would continue to be implemented for solution storage areas and active heap leach pads to keep out and deter wildlife, in accordance with WILD-3 and WILD-6. In addition, drip irrigation methods, including buried irrigation tubes, would continue to be used to minimize the potential for ponding water, in accordance with WILD-7 and WILD-8. A 69-kV overhead power line would be constructed as part of the Project but would be reclaimed following the end of mining. The addition of the 69-kV overhead power line and a perimeter fence under the Proposed Action may provide additional perching opportunities for predatory avian species that predate on small mammals. The additional opportunities for predation could lower survivorship of these smaller species within the biological resources analysis area.

The 69-kV overhead power line and underground water pipeline ROWs would intersect the South McCullough Mountains mule deer movement corridor, with long-term impacts to approximately 17 acres and short-term impacts to approximately 40 acres. During construction of these utilities, regional movement within this corridor would be restricted, but access would resume during the operation of these utilities (Appendix K). Effects to mule deer movement and populations within the area of analysis may result in a reduction of primary prey species for mountain lions; however small mammals (i.e., mice, ground squirrels, and rabbits) also make up a large part of the mountain lion diet. Additionally, noise from mining activities, as well as fencing surrounding the site, may cause individuals to avoid the area.

An open-pit lake, which that would remain as a permanent land feature, would be created as part of the Proposed Action. The pit lake may provide a water source for local or migrating mammal species, as well as provide opportunities for foraging once vegetation is established around the perimeter; however, additional foraging habitat would be anticipated to be lower quality, and beneficial effects from the pit lake would be negligible.

Impacts to mammal species would be reduced through implementation of ACEPMs, including reducing the spread of noxious weeds (WEED-1), protecting wildlife from hazardous materials and operations (WILD-1-4, WILD-6-10, WILD-58), implementing a worker training program (WILD-11), prohibiting domesticated animals (WILD-12), shielding lighting (WILD-46 and WILD-54), and allowing wildlife access to abandoned mine features or closing them to deter access (WILD-47 and WILD-56) (Appendix E).

Avian Species, including Migratory Birds

The Proposed Action would impact approximately 1,758 acres of suitable nesting and foraging habitat for avian species, including migratory birds. Approximately 1,484 acres of this habitat would be long-term disturbance that would be unavailable for avian use until the successful completion of reclamation, and approximately 274 acres would be short-term disturbance that would become available for avian use after vegetation has resprouted. In addition to removal of habitat, mortality or injury to individuals, eggs, and nestlings could occur during surface- and vegetation-disturbing activities. To protect nesting bird species, nesting bird surveys, protective nest buffers, and nesting bird deterrent methods (as needed) would be implemented in accordance with the BLM Southern Nevada Nesting Bird Management Plan (NBMP) (BLM 2019*)* and the BLM Instruction Memorandum 2008-050 (*Migratory Bird Treaty Act – Interim Management Guidance*) (BLM 2007). To supplement the NBMP, ACEPMs would be implemented including conducting vegetation removal outside of nesting bird season (March 1–August 31) to the extent feasible and preceding vegetation removal - a nesting bird survey if within the nesting bird season (WILD-52) (Appendix E). With the implementation of these ACEPMs and the Southern Nevada NBMP, effects from the loss of nesting and foraging habitat under the Proposed Action would be minimized.

Within the biological resources analysis area, the addition of the 69-kV overhead power line under the Proposed Action may pose an electrocution hazard for migratory bird and raptor species attempting to perch on structures, as well as increase collisions for migrating species. While electrocution hazard is rare for most smaller bird species, CMV has committed to design and construct the 69-kV overhead power line with provisions for raptor safety (WILD-49).

Increased human presence, noise and vibration (including blasting and drilling), lighting, and traffic due to the Proposed Action may cause avian species to avoid foraging and nesting in areas within and adjacent to the Proposed Action. Noise, traffic, lighting, and human presence from previously authorized actions and existing roadways have been occurring within the analysis area; however, human presence, lighting, and traffic would increase from existing conditions due to construction and additional operational needs, and noise and vibration would increase from blasting and drilling conducted as part of the Proposed Action. Effects from noise are discussed further in Section 3.10, *Noise and Vibration*. Further, roadkill/carrion resulting from vehicle and equipment use may attract scavenging and lead to injury or mortality for scavengers due to vehicle or equipment collisions.

Expansion of the heap leach facility, which includes the heap leach pad, comminution circuit, process plant, and ponds, may continue to be an attractant to avian species and may be utilized as a stopover site by migrating avian species. The fencing surrounding the heap leach pads (WILD-6) may increase raptor perching and increased predation; however, netting would continue to be implemented for solution storage areas to keep out and deter avian species, in accordance with WILD-3 and WILD-50. In addition,

drip irrigation methods, including buried irrigation tubes, would continue to be used to minimize the potential for ponding water, in accordance with WILD-7 and WILD-8.

The pit lake may be used as a stopover site for local or migratory avian species. Additionally, the pit lake may provide opportunities for nesting once vegetation is established around the perimeter; however, additional foraging and nesting habitat would be anticipated to be of lower quality, and beneficial effects from the pit lake would be negligible.

Impacts to avian species would also be reduced with implementation of other ACEPMs, including reducing the spread of noxious weeds (WEED-1), protecting wildlife from hazardous materials and operations (WILD-1-4, WILD-6- 10, WILD-50, WILD-58), implementing a worker training program (WILD-11), prohibiting domesticated animals (WILD-12), shielding lighting (WILD-46 and WILD-54), allowing wildlife access to abandoned mine features or closing them to deter access (WILD-47 and WILD-56), and using bird-compatible design standards (WILD-53) (Appendix E).

Reptile Species

The Proposed Action would impact approximately 1,758 acres of suitable habitat for reptile species. Approximately 1,484 acres of this habitat would be long-term disturbance that would be unavailable for reptile use until the successful completion of reclamation, and approximately 274 acres would be short-term disturbance that would become available for reptile use after vegetation has resprouted. Disturbance from the Proposed Action would impact individual reptiles but would not directly remove any populations. The Proposed Action would affect reptile species primarily through habitat loss, habitat fragmentation, and displacement from preferred habitat, which may decrease survival rates of affected individuals. Additionally, reptile species could be injured, crushed, and/or killed by equipment during all phases of the Proposed Action, including construction, O&M, and reclamation. Vehicular collisions with reptile species could also occur, due to increased vehicular traffic during construction and operation.

Within the biological resources analysis area, the addition of the 69-kV overhead power line under the Proposed Action may provide additional perching opportunities for predatory avian species that predate on small reptiles. The additional opportunities for predation could lower survivorship of these species within the analysis area.

The pit lake may be used by local reptile species and may provide additional foraging habitat, as prey may be attracted to the water source; however, the beneficial effects to reptile species would be negligible.

Impacts to reptile species would be reduced with implementation of ACEPMs, including reducing the spread of noxious weeds (WEED-1), protecting wildlife from hazardous materials and operations (WILD-1- 4, WILD-6-10, WILD-58), implementing a worker training program (WILD-11), prohibiting domesticated animals (WILD-12), and allowing wildlife access to abandoned mine features or closing them to deter access (WILD-46 and WILD-54) (Appendix E).

Amphibian Species

No suitable habitat for amphibian species is present within the disturbance limits. Additionally, the disturbance limits do not have connectivity to suitable habitat; therefore, no effects to amphibian species would result from the Proposed Action.

Invertebrate Species

Common invertebrate species anticipated to occur in the analysis area could be directly injured, crushed, or killed during all phases of the Proposed Action, including construction, O&M, and reclamation. Vegetation management and use of herbicides for weed-control purposes during O&M may reduce

foraging habitat; however, abundant foraging habitat is present surrounding the Project Area. These impacts would harm individuals but would not affect entire populations.

The pit lake may be used by local or migrating invertebrate species and may provide additional foraging habitat; however, beneficial effects to invertebrate species would be negligible.

Impacts to invertebrate species would be reduced with implementation of ACEPMs, including reducing the spread of noxious weeds (WEED-1) and prohibiting domesticated animals (WILD-12).

3.6.1.2.5 Impacts of Alternative C – D

Alternative C includes partial backfilling of the south extension pit following ore extraction, which would increase the mining schedule by 2 years and would result in continued traffic, noise, and human activity that could displace individuals and result in potential collisions with individuals. Additionally, Alterative C would avoid the development of an open-pit lake, but effects would be negligible, as wildlife species would continue to use existing water sources.

Alternative D would incorporate a small on-site solar power facility to supplement mine operations, which would result in additional infrastructure, but the disturbance would occur in an area previously disturbed by fire that contains low-quality habitat.

These differences would not have a measurable effect on general wildlife species beyond that described for the Proposed Action.

3.6.2 General Vegetation

This section analyzes potential impacts to general vegetation communities resulting from the implementation of the Project. The analysis is based on review of existing resources, technical data, and applicable laws, regulations, and guidelines. LANDFIRE land cover data (LANDFIRE 2024) and Project-specific botanical survey reports were used to inform the general vegetation occurring within the analysis area and as a basis to quantify impacts on general vegetation from the Project's development. Table B-1.1.3-2 in Appendix B provides a list of general vegetation technical reports used in the evaluation of impacts to general vegetation for the Project.

General vegetation refers to the natural vegetation communities within the biological resources analysis area. The analysis area for general vegetation includes the Project Area and an additional 50-foot buffer, totaling approximately 4,749 acres. The general vegetation analysis area encompasses both long-term and short-term disturbance zones. Long-term disturbance areas persist for the life of the Project, whereas short-term disturbance areas remain affected until reclamation is successful. Impacts occur where ground disturbance or construction takes place. The 50-foot buffer is included to account for potential impacts from dust deposition and edge-related vegetation stress and are anticipated outside the immediate disturbance footprint and vary by resource type.

3.6.2.1 AFFECTED ENVIRONMENT

The biological resources analysis area primarily comprises Mojave Mid-Elevation Mixed Desert Scrub vegetation community (84%), which is characterized by white bursage (or burro weed) (*Ambrosia dumosa*), blackbrush (*Coleogyne ramosissima*), California buckwheat (*Eriogonum fasciculatum*), Nevada ephedra (*Ephedra nevadensis*), spiny hopsage (*Grayia spinosa*), spiny menodora (*Menodora spinescens*), Gander's buckhorn cholla (*Opuntia acanthocarpa*), Joshua tree (*Yucca brevifolia*), and Mojave yucca (*Yucca schidigera*) (U.S. Department of Agriculture [USDA] 2020).

Earlier permitting efforts identified creosote rings and the presence of desert grassland understory (ECORP 2021b; WestLand 2022). Creosote rings are clones of a long deceased central parent and can be significantly old and rings that are greater than 10 feet in diameter are protected in San Bernardino County (Appendix A). Botanical surveys completed in 2021 by ELMT Consulting (ELMT) identified two plant communities present in the mine site but may have been oversimplified—Joshua tree woodland and creosote bush scrub—and a land cover type classified as disturbed (ELMT 2021). Vegetation communities observed within the analysis area from past baseline studies generally coincide with the LANDFIRE dataset. Table B-1.3.6-5 in Appendix B provides the LANDFIRE land cover types within the biological resources analysis area. Figure C.3.6-5 in Appendix C maps the vegetation communities, and Figure C.3.6-2 in Appendix C maps the LANDFIRE land cover classes.

3.6.2.2 ENVIRONMENTAL CONSEQUENCES

3.6.2.2.1 Analysis Method

Impacts to general vegetation were evaluated by quantifying the acres of unique native vegetation communities that may be impacted or lost within the biological resources analysis area. Indicators include the presence or absence of native vegetation communities and the extent of long-term and short-term disturbance. Impacts including loss or alteration to the physical structure of the local vegetation community and habitat connectivity, soil compaction, alteration and partial loss of seedbanks, dust accumulation, altered surface hydrology, introduction and competition of nonnative plant species were qualitatively considered within the analysis area. Baseline data were considered qualitatively as a confirmation of the LANDFIRE Existing Vegetation Type dataset (LANDFIRE 2024).

- This evaluation assumes that the LANDFIRE vegetation community data is accurate to on-site conditions.
- It is assumed that a 50-foot buffer surrounding the Project Area encompasses all areas that may be impacted.

3.6.2.2.2 RFTPAs Common to All Alternatives

Twenty-eight RFTPAs have been identified near the Proposed Action. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. The closest RFTPAs include the Eldorado-Pisgah-Lugo and related SCE projects, I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project (see Table B-1.3.3-1 in Appendix B). These projects would involve short-term construction activities and long-term O&M activities that would result in impacts to general vegetation communities. Some of these projects span hundreds of miles creating both local and regional impacts (e.g., Mojave Groundwater Bank Project).

3.6.2.2.3 Impacts of No Action Alternative

Under the No Action Alternative, vegetation communities would be affected in locations where current operations would still occur, as approved in the 1998 EIS/ROD, particularly in areas of travel (BLM 1998a). Areas of high traffic have potential of introducing invasive plant species, resulting in the change to or replacement of natural vegetation communities. Vegetation communities would not be affected in areas that expand past the current approved surface disturbance, including within the ROWs, which would not be approved and built.

3.6.2.2.4 Impacts of Proposed Action

Under the Proposed Action, native vegetation communities would be impacted within the biological resources analysis area through ground disturbance and vegetation removal during construction activities. Most Project-related impacts would occur within the Mojave Mid-Elevation Mixed Desert Scrub vegetation community, which accounts for approximately 84% of the analysis area.

Within the Project Area, long-term disturbance would total 1,510acres and impact 1,469 acres of Mojave Mid-Elevation Mixed Desert Scrub, accounting for approximately 97% of the total proposed long-term disturbance area. Short-term disturbance (including areas of no disturbance within the ROWs) within the Project Area would total 304 acres and would impact 255 acres of Mojave Mid-Elevation Mixed Desert Scrub, approximately 84% of the proposed short-term disturbance area. Some species within this vegetation community such as creosote bush may resprout after clear-cutting, however, high mortality of perennial shrubs is anticipated from this method (Gibson et al 2004). Construction impacts would alter vegetation communities throughout the Project Area, especially where soil disturbance takes place. Impacts to vegetation communities, especially those with soil disturbance, would take decades to recover to their pre-disturbance levels.

The 50-foot buffer surrounding the Project Area mostly contains Mojave Mid-Elevation Mixed Desert Scrub vegetation. These native vegetation communities may be impacted through the following: altered surface hydrology through change in surface topography related to ground disturbance; dust accumulation, possibly reducing photosynthetic rate, and soil compaction reducing plant's ability to germinate and/or inhibiting root growth, introduction and competition of nonnative plant species through Project construction and activities, which could compete against native plant species, may alter the seedbank, or alter the physical structure of the local vegetation community.

Other vegetation communities present that may be impacted by the Proposed Action within the analysis area are listed in Table B-1.3.6-5 in Appendix B.

Implementation of ACEPMs would reduce impacts related to loss of vegetation communities by minimizing impacts related to fugitive dust and erosion and sediment (AQ-47 and REC-27); maintaining native seedbank through topsoil salvage (PLANTS-1, REC-4); reintroducing native plant species through reseeding and revegetation (plant salvage) (REC-5, REC-6, REC-7, REC-8, REC-9, REC-11, REC-13); and reducing introduction and spread of nonnative plant materials by pressure washing vehicles before and after site visits, conducting vehicle/equipment checks (WEED-1), using certified weed-free products (REC-39), and conducting annual monitoring (REC-40) (Appendix E).

3.6.2.2.5 Impacts of Alternatives C – D

The Alternative Actions would produce similar disturbance to the Proposed Action through vegetation loss and disturbance, with most of the disturbances occurring in the Mojave Mid-Elevation Mixed Desert Scrub vegetation community.

Alternative C is designed to partially backfill the south extension pit after completion of ore extraction, with the objective of preventing the formation of a surface pit lake. Impacts to general vegetation would include approximately 1,851 acres—approximately 1,547 acres of long-term disturbance and 304 acres of short-term disturbance (including areas of no disturbance within the ROWs).

Alternative D is designed to build a small on-site solar power facility as an intermittent energy source for mine operations. Impacts to general vegetation would include approximately 1,904 acres—approximately 1,684 acres of long-term disturbance and 196 acres of short-term disturbance.

Similar to the Proposed Action, Implementation of ACEPMs would reduce impacts related to loss of vegetation communities by minimizing impacts related to fugitive dust and erosion and sediment (AQ-47 and REC-27); maintaining native seedbank through topsoil salvage (PLANTS-1, REC-4); reintroducing native plant species through reseeding and revegetation (plant salvage) (REC-5, REC-6, REC-7, REC-8, REC-9, REC-11, REC-13); and reducing introduction and spread of nonnative plant materials by pressure washing vehicles before and after site visits, conducting vehicle/equipment checks (WEED-1), using certified weed-free products (REC-39), and conducting annual monitoring (REC-40) (Appendix E).

3.6.3 Noxious Weeds and Invasive Species

This section analyzes potential impacts to noxious and invasive species within native vegetation communities resulting from the implementation of the Project. The analysis is based on review of existing resources, technical data, and applicable laws, regulations, and guidelines. Table B-1.1.3-2 in Appendix B provides a list of noxious weed and invasive species technical reports that were prepared for the Project.

Invasive species are broadly defined as nonnative plants that spread rapidly throughout an environment, often displacing native communities. Noxious weeds are a regulated subset of nonnative species, officially listed by each state's agricultural department and subject to specific legal control requirements. Ground disturbance provides a vector for the introduction and spread of invasive and noxious weeds, whether from construction equipment or from natural recruitment of preexisting weed populations within the area.

The analysis area for noxious and invasive weed species includes the Project Area and an additional 50-foot buffer. The noxious and invasive weed analysis area encompasses both long-term and short-term disturbance zones. Long-term disturbance areas persist for the life of the Project, whereas short-term disturbance areas remain affected until reclamation is successful. Impacts occur where ground disturbance or construction takes place. The buffer is included to account for potential impacts from dust deposition and edge-related vegetation stress, which may extend beyond the immediate disturbance footprint and vary by resource type.

Available GIS data for weeds and botanical survey data were used to inform the presence of current populations of invasive and noxious species throughout the analysis area (SWCA Environmental Consultants [SWCA] 2023, 2025a). Using the analysis area, acres of disturbance were quantified to determine the potential spread and/or introduction of invasive and noxious species throughout the analysis area.

3.6.3.1 AFFECTED ENVIRONMENT

Botanical surveys from 2018 and 2020–2021 had limited information on invasive and noxious weed species (ECORP 2021a, 2021c; ELMT 2019). These surveys were focused on rare plants and their habitat in various portions of the analysis area. These surveys reported incidental observations of several nonnative plant species including red brome (*Bromus rubens*), cheatgrass (*Bromus tectorum*), common Mediterranean grass (*Schismus* sp.), red-stem stork's-bill (*Erodium cicutarium*), and one noxious weed species, Russian thistle (*Salsola tragus*).

Botanical surveys completed by SWCA in 2023 and 2025 detected two noxious weed species—Sahara mustard (*Brassica tournefortii*) and puncturevine (*Tribulus terrestris*)—within the ROW area (SWCA 2023, 2025a). Invasives recorded present during 2025 surveys within the ROW area include: tall tumblemustard (*Sisymbrium altissimum*), red-stem stork's-bill, red brome, and common Mediterranean grass.

A query of California Invasive Plant Council (Cal-IPC) CalWeedMapper data reported red brome, cheatgrass, hairy whitetop (*Lepidium appelianum*), tall whitetop (*Lepidium latifolium*), annual rabbitsfoot grass (*Polypogon monspeliensis*), and Mediterranean grass are present in and near the California portions of the analysis area in high abundance (Cal-IPC 2026). Sahara mustard was reported to have a medium abundance, with spread increasing rapidly. Tansy mustard (*Descurainia sophia*), red-stem stork's-bill, Russian knapweed (*Rhaponticum repens*), Russian thistle, London rocket (*Sisymbrium irio*), silverleaf nightshade (*Solanum elaeagnifolium*), Athel tamarisk (*Tamarix aphylla*), and saltcedar (*Tamarix ramosissima*) were reported as being present with low or unknown abundance in and around the California portions of the Project Area.

3.6.3.2 ENVIRONMENTAL CONSEQUENCES

3.6.3.2.1 Analysis Method

Impacts to invasive and noxious species present within native vegetation communities were evaluated by quantifying the acres of native vegetation communities and overlaid with proposed ground disturbance to determine the number of acres of disturbance throughout the analysis area. Existing botanical survey data and available GIS data were used to estimate the relative abundance of invasive and noxious weeds present in the analysis area.

- It is assumed that common invasives (e.g., *Bromus rubens*, *Schismus* sp.) and noxious weeds (e.g. Brassica tournefortii, Tribulus terrestris) recorded as present during botanical resources surveys are at risk of spreading.

3.6.3.2.2 RFTPAs Common to All Alternatives

Twenty-eight RFTPAs have been identified near the Proposed Action. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. The closest RFTPAs include the Eldorado-Pisgah-Lugo and related SCE projects, I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project (see Table B-1.3.3-1 in Appendix B).These projects would involve short-term construction activities and long-term O&M activities that would result in impacts to noxious and invasive weed species. Some of these projects span hundreds of miles creating both local and regional impacts (e.g., Mojave Groundwater Bank Project). Ground disturbance and construction have the potential to spread and increase infestation.

3.6.3.2.3 Impacts of No Action Alternative

Under the No Action Alternative, the amount of invasive and noxious species present within the analysis area would be affected in locations where current operations would still occur with what is approved in the 1998 EIS/ROD, particularly in areas of travel because of the potential of bringing in invasives, changing/replacing natural vegetation communities (BLM 1998a). Vegetation community structure with respect to invasive and noxious weeds would not be expected to be affected in areas that expand past the current approved surface disturbance, including in the ROW utilities, which would not be approved and built.

3.6.3.2.4 Impacts of Proposed Action

Under the Proposed Action, the densities of invasives and noxious species present within vegetation communities in both short-term and long-term disturbance areas have potential to increase due to soil disturbance. Construction activities such as ground disturbance, vegetation removal, and equipment travel cause soil disturbance, which can increase the likelihood of noxious and invasive species spread.

The spread of noxious and invasive species could also affect the surrounding landscape by modifying native plant assemblages, reducing biodiversity, outcompeting native species, and potentially increase fire hazards. Noxious species that are currently known to be present are Sahara mustard and puncturevine. Several invasive species have been observed in the Project Area or reported in Cal-IPC CalWeedMapper data (see Section 3.6.3.1, *Affected Environment*) (Cal-IPC 2026).

ACEPMs that may reduce some of the impacts are listed in the POD (Appendix K) and include WEED-1, REC-12, REC-39, REC-40 (Appendix E). Implementation of these design features would reduce direct impacts of nonnative infestations by washing outside vehicles prior to bringing then on-site and monitoring and abating noxious weeds within construction areas (WEED-1) monitoring potential invasions of exotic species using methods included in the reclamation plan (REC-12 and REC-1), monitoring potential invasions of exotic species using methods included in the reclamation plan (REC-12), using a certified weed-free seed mixture in the short-term water pipeline ROW area where it will be reseeded (REC-39), and using annual monitoring methods to identify weed presence (REC-40). The suggested methods of nonnative control are manual clearing or the use of approved herbicides, depending on the species and the extent of the infestation. The selection of methods to be used would be site-specific and made by a qualified biologist in concert with the BLM. Implementation of these applicant-committed design features would reduce indirect impacts by monitoring the occurrence of invasive species onsite after revegetation by visual inspection annually during the annual monitoring (REC-40). Reports of inspections and weed control implementation shall be part of the revegetation monitoring as reported to the BLM. Reintroduction of native plant species through reseeding and revegetation (plant salvage) would increase competition, limiting available cover for nonnative plants.

3.6.3.2.5 Impacts of Alternatives C – D

The Alternative Actions would produce similar disturbance to the Proposed Action through vegetation loss and disturbance, with most of the disturbances occurring in the Mojave Mid-Elevation Mixed Desert Scrub vegetation community.

Alternative C is designed to partially backfill the South Extension pit after completion of ore extraction, with the objective of preventing the formation of a surface pit lake. Impacts to general vegetation would include approximately 1,851 acres—approximately 1,547 acres of long-term disturbance and 304 acres of short-term disturbance (including areas of no disturbance within the ROWs).

Alternative D is designed to build a small on-site solar power facility as an intermittent energy source for mine operations. Impacts to general vegetation would include approximately 1,904 acres—approximately 1,684 acres of long-term disturbance and 196 acres of short-term disturbance.

Similar to the Proposed Action, implementation of ACEPMs would reduce impacts from invasive and noxious weed species and are described above in Section 3.6.3.2.4.

3.6.4 Special-Status Species – Plants

This section analyzes potential impacts to special-status plant species resulting from the implementation of the Project. Special-status plant species include those that are designated as threatened, endangered, or candidates for listing under the federal Endangered Species Act (ESA); species listed as Sensitive by the BLM; and species listed as rare, threatened, or endangered by the State of Nevada, State of California, and California Native Plant Society (BLM 2008). Special-status species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The analysis is based on review of technical data, and applicable laws, regulations, and guidelines. Table B-1.1.3-2 in Appendix B lists the special-status plant species technical reports that were prepared for the Project.

The analysis area for special-status plant species includes the Project Area and an additional 50-foot buffer, which includes the proposed expansion of the mine pits, overburden sites, and heap leach pad, and installation of the associated underground water pipeline and 69-kV overhead power line. The analysis area encompasses both long-term and short-term disturbance zones. Long-term disturbance areas persist for the life of the Project, whereas short-term disturbance areas remain affected until reclamation is successful. Impacts occur where ground disturbance or construction takes place and may affect adjacent areas through short-term changes such as dust or altered hydrology. The buffer is included to account for potential impacts such as dust deposition, localized soil disturbance, and edge-related vegetation stress, which may extend beyond the immediate disturbance footprint and vary by resource type.

Using information from Project-specific botanical survey reports, impacts to special-status plant species are quantified by evaluating the occurrences of special-status plants and acres of habitats that would be lost due to Project development or indirectly impacted by Project activities.

3.6.4.1 AFFECTED ENVIRONMENT

The biological resources analysis area contains special-status plant species. Several botanical studies have been conducted within the CMM and ROW that have identified populations and individuals of special-status species.

A habitat assessment for special-status species area revealed 29 species with potential to occur in the Project area (Figures C.3.6-4 through C.3.6-22 in Appendix C) (SWCA 2026a). Of the 29 species, only 11 have been observed and/or presumed present in baseline surveys described below.

In 2020 and 2021, special-status plant surveys were completed by ECORP within the mine plan boundary (ECORP 2021a, 2021b). Results report 97 individuals of rosy two-toned beardtongue (*Penstemon bicolor ssp. roseus*) were recorded with confirmed identification within the northeastern portion of the mine plan boundary during 2021 surveys. Mojave milkweed (*Asclepias nyctaginifolia*), black grama (*Bouteloua eriopoda*), viviparous foxtail cactus (*Coryphantha vivipara* var. *rosea*), Clark Mountain buckwheat (*Eriogonum heermannii* var. *floccosum*), matted cholla (*Grusonia parishii*), and desert milkwort (*Polygala acanthoclada*) were presumed present. Botanical surveys for the eastern Joshua tree (*Yucca brevifolia* var. *jaergeriana*), completed by ELMT in 2021, report a total of 445 eastern Joshua trees in the south overburden footprint (ELMT 2021).

Biological surveys completed by SWCA in 2023 within the ROW totaled 501 acres and resulted in the observation of 557 individuals of matted cholla, a California BLM Sensitive plant species. Six penstemon individuals were observed in the survey area but were unidentifiable to the species level without the presence of floral characteristics (SWCA 2023). Additional surveys were completed by SWCA in 2025 on segments of the ROW (SWCA 2025a) and detected 938 matted cholla and one scarlet four o'clock (*Mirabilis coccinea*). Biological surveys completed by Lukos (2024) observed curved-spine pricklypear (or curved-spine beavertail) (*Opuntia* x *curvispina*), eastern Joshua tree, matted cholla, and purple-nerve cymopterus (*Cymopterus multinervatus*) within a 403-acre study area associated with the underground water pipeline and 69-kV overhead power line ROWs. Additionally, a query of the Nevada Division of Natural Heritage database resulted in three species having potential habitat within the analysis area: Clokey pincushion (*Coryphantha vivipara*), Aven Nelson phacelia (*Phacelia anelsonii*), and New York Mountains cat's-eye (*Cryptantha tumulosa*) (Nevada Division of Natural Heritage 2025).

No federally listed plant species have been documented within the analysis area.

3.6.4.2 ENVIRONMENTAL CONSEQUENCES

3.6.4.2.1 Analysis Method

Impacts to special-status plant species were evaluated by assessing species presence and abundance (if available) and the extent of ground disturbance in the Project footprint. Results of several special-status plant surveys were compared by overlaying occurrences on to the area of the Project footprint to determine the number of plants that would be lost and the number of acres of potential habitat impacted due to Project construction.

- It is assumed that existing survey results accurately represent special-status plant species within the Project Area where surveyed; however, species observed and other special-status plant species with the potential to occur could also exist in the unsurveyed areas in and around the Project Area.
- It is assumed that annual species are best assessed by habitat and seedbank acreage lost, as individual plants are ephemeral and population size fluctuate annually.

3.6.4.2.2 RFTPAs Common to All Alternatives

Twenty-eight RFTPAs have been identified near the Proposed Action. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. The closest RFTPAs include the Eldorado-Pisgah-Lugo and related SCE projects, I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project (see Table B-1.3.3-1 in Appendix B). These projects would involve short-term construction activities and long-term O&M activities that would result in impacts to noxious and invasive weed species. Some of these projects span hundreds of miles creating both local and regional impacts (e.g., Mojave Groundwater Bank Project). Ground disturbance and construction may impact special-status plant species through the loss individuals, loss of preferred habitat, and the potential introduction of nonnative plant species such as invasive and noxious weeds that compete with special-status plant species.

3.6.4.2.3 Impacts of No Action Alternative

Under the No Action Alternative, special-status plant species and their associated habitat would be affected in locations where current operations would still occur, as approved in the 1998 EIS/ROD (BLM 1998a). Special-status plant species would not be affected in areas that expand past the current approved surface disturbance, including in the ROW utilities, which would not be approved and built.

3.6.4.2.4 Impacts of Proposed Action

The Proposed Action would directly impact special-status plant species within the biological resources analysis area through construction activities such as ground disturbance and vegetation removal.

Special-status plant species may also be impacted through altered surface hydrology through change in surface topography related to ground disturbance changing the availability of water; dust accumulation, possibly reducing photosynthetic rate of plants; and soil compaction reducing special-status plants from germinating and/or inhibiting root growth. Additionally, the introduction and competition of nonnative plant species through Project construction and activities, which could reduce potential habitat for special-status plant species and decrease population over time; loss or alteration of the seedbank causing changes to the overall vegetation community or the population of a specific species; and loss or alternation to the physical structure of the local vegetation community that is considered special-status plant habitat may reduce the ability for special-status plants to produce viable offspring.

According to the most recent botanical surveys, special-status plants that are present in the Project with the potential to be lost or impacted are two-toned beardtongue, matted cholla, scarlet four o'clock, curved-spine pricklypear, eastern Joshua tree, and purple-nerve cymopterus. Special-status plants that are presumed present and therefore could also be lost or impacted are: Mojave milkweed, black grama, viviparous foxtail cactus, Clark Mountain buckwheat, and desert milkwort.

Approximately 97 two-toned beardtongue individuals, 938 matted cholla, and one scarlet four o'clock were recorded in the Project Area and could be impacted (ECORP 2021b; SWCA 2025a). Curved-spine pricklypear, eastern Joshua tree, and purple-nerve cymopterus could be impacted in unknown amounts, as number of individuals were not recorded but were observed in and around the Project Area (Lukos 2024).

Impacts from long-term and short-term disturbances are likely to occur but would be reduced through ACEPMs if impacts could not be avoided. ACEPMs that may reduce some of the impacts to special-status plant species are listed in the 2025 Plan Update and POD (Appendices J and K). Implementation of these ACEPMs would reduce impacts related to fugitive dust and erosion and sediment (DF-1 and DF-2); maintain native seedbank through topsoil salvage (RECL-3); reintroduce native plant species through reseeding and revegetation (plant salvage) (RECL-4, RECL-5, RECL-6, and RECL-7); and reduce introduction and spread of nonnative plant materials by pressure washing vehicles before and after Project site visits, conducting vehicle/equipment checks (WEED-1), removing invasives during reclamation (RECL-8), and using certified weed-free products (RECL-7) annual monitoring (RECL-9) (Appendix E).

3.6.4.2.5 Impacts of Alternatives C – D

Alternative C is designed to partially backfill the south extension pit after completion of ore extraction, with the objective of preventing the formation of a surface pit lake. The change in the design does not overlap with known occurrences of special-status plant species.

Alternative D is designed to build a small on-site solar power facility as an intermittent energy source for mine operations, which would not overlap with known occurrences of special-status plant species.

Similar to the Proposed Action, implementation of ACEPMs may reduce some of the impacts to special-status plant species. Implementation of these ACEPMs would reduce impacts related to fugitive dust and erosion and sediment (DF-1 and DF-2); maintain native seedbank through topsoil salvage (RECL-3); reintroduce native plant species through reseeding and revegetation (plant salvage) (RECL-4, RECL-5 RECL-6, and RECL-7); and reduce introduction and spread of nonnative plant materials by pressure washing vehicles before and after Project site visits, conducting vehicle/equipment checks (WEED-1), removing invasives during reclamation (RECL-8), and using certified weed-free products (RECL-7) annual monitoring (RECL-9) (Appendix E).

3.6.5 Cactus and Yucca Species

This section analyzes potential impacts to cactus and yucca species that are not special-status plant species, as described above. Nevada Revised Statutes (NRS) 527.060–120 protect all cacti and yucca in the state due to threats from poaching, off-road vehicle use, and development. The analysis is based on review of existing resources, technical data, and applicable laws, regulations, and guidelines. Table B-1.1.3-2 in Appendix B provides a list of technical reports that were prepared for the Project.

The analysis area for cactus and yucca species includes the Project Area and an additional 50-foot buffer totaling approximately 4,749 acres. The cactus and yucca analysis area encompasses both long-term and short-term disturbance zones. Long-term disturbance areas persist for the life of the Project, whereas short-term disturbance areas remain affected until reclamation is successful. Impacts occur where ground disturbance or construction takes place and may affect adjacent areas through short-term changes such as increased presence of construction equipment and vehicles. The buffer is included to account for potential

impacts from dust deposition, localized soil disturbance, and edge-related vegetation stress, which may extend beyond the immediate disturbance footprint and vary by resource type.

3.6.5.1 AFFECTED ENVIRONMENT

Cacti and yucca are prevalent throughout the Mojave Desert. These well-known perennial species are emblematic of the desert landscape. They are at risk due to poaching and other anthropogenic threats, including off-road vehicle use and human development. Biological surveys completed by multiple environmental consulting companies between 2021 and 2025 (See Table B-1.1.3-2 in Appendix B) detected a variety of cactus and yucca species within the analysis area including: buckhorn cholla (*Cylindropuntia acanthocarpa*), silver cholla (*Cylindropuntia echinocarpa*), branched pencil cholla (*Cylindropuntia ramosissima*), cottontop cactus (*Echinocactus polycephalus*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), California barrel cactus (*Ferocactus cylindraceus*), common fishhook cactus (*Mammillaria tetrancistra*), beavertail cactus (*Opuntia basilaris* var. *basilaris*), dollarjoint pricklypear (*Opuntia chlorotica*), cactus apple (*Opuntia phaeacantha*), plains pricklypear (*Opuntia polyacantha*), curved-spine beavertail, banana yucca (*Yucca baccata*), eastern Joshua tree, and Mojave yucca within the ROW area. Joshua tree surveys conducted with the overburden area report 445 eastern Joshua tree individuals (ELMT 2021). Joshua tree surveys conducted via remote sensing data within the ROW identified and estimated 2,602 eastern Joshua tree individuals (CMV 2025c).

3.6.5.2 ENVIRONMENTAL CONSEQUENCES

3.6.5.2.1 Analysis Method

Impacts to cactus and yucca species present were evaluated by quantitative and qualitative means, depending on the data available. Mapped or described cactus and yucca populations were assessed with proposed ground disturbance to determine the number of individuals or, at minimum, which species may be impacted throughout the analysis area.

- It is assumed that—prior to ground-disturbing activities—cactus and yucca within proposed disturbance areas would be surveyed for, avoided if possible, and salvaged in accordance with the reclamation plan if present within disturbance areas.

3.6.5.2.2 RFTPAs Common to All Alternatives

Twenty-eight RFTPAs have been identified near the Proposed Action. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. The closest RFTPAs include the Eldorado-Pisgah-Lugo and related SCE projects, I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project (see Table B-1.3.3-1 in Appendix B). These projects would involve short-term construction activities and long-term O&M activities that would result in impacts to noxious and invasive weed species. Some of these projects span hundreds of miles creating both local and regional impacts (e.g., Mojave Groundwater Bank Project). Ground disturbance and construction may impact cactus and yucca species through the loss of individuals and loss of preferred habitat.

3.6.5.2.3 Impacts of No Action Alternative

Under the No Action Alternative, cactus and yucca species present within the analysis area would be affected in locations where current operations would still occur, as approved in the 1998 EIS/ROD (BLM 1998a). Cactus and yucca would not be expected to be affected in areas that fall outside of the current approved surface disturbance, including in the ROW utilities, which would not be approved and built.

3.6.5.2.4 Impacts of Proposed Action

Under the Proposed Action, impacts from construction activities would involve the disturbance of 1,854 acres including 1,510 acres of long-term disturbance and 304 acres of short-term disturbance (including areas of no disturbance within the ROWs). Surface disturbance associated with construction would be the primary impact to cacti and yucca anticipated to result from the Proposed Action. Impacts to cacti and yucca are expected to be similar to special-status plant impacts (Section 3.6.4, *Special Status Species – Plants*). Cactus and yucca species would be salvaged according to the reclamation plan and placed in a nursery, then transplanted into reclamation areas in a phased approach concurrent with the completion of construction activities.

3.6.5.2.5 Impacts of Alternatives C – D

The Action Alternatives would produce similar disturbance to The Proposed Action through vegetation loss and disturbance.

Alternative C is designed to partially backfill the south extension pit after completion of ore extraction, with the objective of preventing the formation of a surface pit lake. Impacts to cactus and yucca species would include approximately 1,851 acres—approximately 1,547 acres of long-term disturbance and 304 acres of short-term disturbance (including areas of no disturbance within the ROWs).

Alternative D is designed to build a small on-site solar power facility as an intermittent energy source for mine operations. Impacts to cactus and yucca species would include approximately 1,904 acres—approximately 1,684 acres of long-term disturbance and 196 acres of short-term disturbance.

3.6.6 Special-Status Species – Wildlife

This section addresses special-status wildlife species found within the Project Area and analyzes potential impacts to these species resulting from the implementation of Proposed Action. For the purposes of this analysis, special-status wildlife is defined as federal candidate species under the ESA, Sensitive species designated by the BLM, avian species listed under the Birds of Conservation Concern (BCC) (USFWS 2021a), and avian species protected under the Bald and Golden Eagle Protection Act (BGEPA) (BLM 2008). Table B-1.3.6-3 in Appendix B lists each special-status wildlife species, their status, and their potential to occur within the Project Area. Wildlife species documented during previous biological surveys are included in Table B-1.3.6-1 in Appendix B, and a list of biological surveys conducted for the Proposed Action are included in Table B-1.1.3-2 in Appendix B. The special-status wildlife species that are discussed in this section include mammals, avian species (including migratory birds), reptiles, and invertebrates. No special-status amphibian or fish species have been identified within the Project Area. The analysis area consists of the proposed disturbance footprint plus a buffer (Figure C.3.6-3 in Appendix C). This buffer differs based on the species (as detailed in the Section 3.6.6.2.1, *Analysis Method*) and is included to account for potential effects that may extend beyond the immediate disturbance footprint.

3.6.6.1 AFFECTED ENVIRONMENT

Based on the results of several biological studies, the analysis area supports suitable habitat for the following special-status wildlife species.

3.6.6.1.1 Mammal Species

Eleven special-status mammal species were observed during baseline or focused surveys (ECORP 2021a; Brown-Berry 2019; Lukos 2024; WestLand 2022). Nelson’s bighorn sheep is a BLM Sensitive species, common throughout the Castle Mountains, and has been documented within the Project Area during the

initial permitting efforts for mine development (BLM 1997). Sheep have been seen within the analysis area and prefer steep, less vegetated rocky terrain as a means to avoid and escape predators (WestLand 2022). This species is commonly found on mountain slopes and inactive quarry benches with rugged terrain throughout the east half of the mine area (ECORP 2021a; WestLand 2022).

Several BLM Sensitive bat species have been detected during these surveys and may occupy habitat in or near the analysis area. Nine bat species have been detected or observed since the initial surveys began in 1994, eight of which were detected in the 2018 and 2019 surveys (Brown-Berry 2018, 2019). These species include Yuma myotis (*Myotis yumanensis*), fringed myotis (*Myotis thysanodes*), California myotis (*Myotis californicus*), small-footed myotis (*Myotis ciliolabrum*), canyon bat (*Parastrellus hesperus*), big brown bat (*Eptesicus fuscus*), Townsend's big-eared bat (*Corynorhinus townsendii*), pallid bat (*Antrozous pallidus*), and Mexican free-tailed bat (*Tadarida brasiliensis*) (Brown-Berry 2018, 2019; Nevada Department of Wildlife 2025). Potential bat roost habitat and foraging locations were surveyed throughout portions of the analysis area, including during survey efforts for initial permitting in 1994 (Brown-Berry 2018). In 2018 and 2019, field surveys were conducted at abandoned mine land (AML) features within the mine expansion footprint and included internal roost surveys and acoustic surveys. Six BLM Sensitive bat species have potential to occur within the analysis area—big free-tailed bat (*Nyctinomops macrotis*), California leaf-nosed bat (*Macrotus californicus*), hoary bat (*Lasiurus cinereus*), long-legged myotis (*Myotis volans*), spotted bat (*Euderma maculatum*), and western mastiff bat (*Eumops perotis californicus*).

One BLM Sensitive small mammal species—Botta's pocket gopher (*Thomomys bottae*)—has been detected during these surveys and may occupy habitat in or near the analysis area. One additional BLM Sensitive small mammal species, desert pocket mouse (*Chaetodipus penicillatus*), has potential to occur but has not been documented in the disturbance footprint.

3.6.6.1.2 Avian Species

Eleven special-status avian species were observed during baseline or focused surveys.

Golden eagle is protected under the BGEPA and is a BLM Sensitive species. Golden eagles have been considered for analysis since permitting efforts began in 1989; it was acknowledged that golden eagles may occur in the Project Area vicinity but adverse impacts to the species were not expected (BLM 1989, 1997). Surveys conducted in 2018 identified several historic nests within the analysis area (the closest of which was within 2 miles of the Project boundary) but found that no active eagle nests were present within 10 miles of the Project Area (BioResource Consultants, Inc [BRC] 2018). Ongoing monitoring to gather baseline data of eagle presence and use of the analysis area is currently being conducted (BRC 2021, 2022, 2023). Surveys are planned to continue and expand monitoring into the proposed utilities ROW in 2026 (BRC 2025). Baseline data gathered from the utilities ROW indicates that golden eagle nesting habitat is absent within the immediate vicinity of the disturbance footprint; however, the disturbance footprint and surrounding areas contain potential foraging habitat (Lukos 2024).

Several BLM Sensitive and BCC were detected during these surveys and may occupy habitat in or near the analysis area. Three species listed as both BLM Sensitive and BCC include pinyon jay (*Gymnorhinus cyanocephalus*), gilded flicker (*Colaptes chrysoides*), and Bendire's thrasher (*Toxostoma bendirei*). Two species listed as BCC include Costa's hummingbird (*Calypte costae*) and Scott's oriole (*Icterus parisorum*). The six BLM Sensitive species are common nighthawk (*Chordeiles minor*), golden eagle, loggerhead shrike (*Lanius ludovicianus*), phainopepla (*Phainopepla nitens*), Swainson's hawk (*Buteo swainsoni*), and verdin (*Auriparus flaviceps*).

Western burrowing owl (*Athene cunicularia hypugaea*) is a BLM Sensitive species and BCC with potential to occur within the analysis area. Protocol-level surveys performed in the utilities ROW

identified several suitable burrows but did not observe any individuals or breeding pairs (Lukos 2024). Focused surveys have not been conducted within the mine analysis area, but many general wildlife surveys have not detected its presence, nonetheless suitable habitat is present.

Additional BLM Sensitive species that have potential to occur but have not been documented within the analysis area include ferruginous hawk (*Buteo regalis*), Le Conte's thrasher (*Toxostoma lecontei*), and sagebrush sparrow (*Artemisiospiza nevadensis*) (Lukos 2024).

3.6.6.1.3 Reptile Species

Two BLM Sensitive species—desert horned lizard (*Phrynosoma platyrhinos*) and desert iguana (*Dipsosaurus dorsalis*)—were observed during baseline surveys.

3.6.6.1.4 Invertebrate Species

Monarch butterfly (*Danaus plexippus*) is a proposed threatened species under the federal ESA and a BLM Sensitive species. Although this species has not been documented within the analysis area, the presence of Mojave milkweed within the Project boundary suggests that suitable summer breeding and foraging habitat may be present (ECORP 2021b). No overwintering populations have been documented within the analysis area.

3.6.6.2 ENVIRONMENTAL CONSEQUENCES

3.6.6.2.1 Analysis Method

Impacts on special-status wildlife species were evaluated by assessing species' presence in the Project Area and applying impact indicators. These indicators allow for a combination of quantitative measurements (e.g., acres of habitat impacted) and qualitative assessments (e.g., the effects of noise on breeding behavior). The analysis area includes the disturbance footprint plus specific spatial buffers that vary by species to account for their unique movement patterns and habitat requirements. These buffers are designed to capture edge effects such as noise, vibration, light, and fugitive dust that may affect wildlife behavior beyond the physical disturbance footprint. Where specific protocols are not defined for a species, buffers were derived from ecologically similar species to provide a standard of protection consistent with BMPs. The specific analysis areas and indicators used to measure impacts are summarized in Table B-1.3.6-4 in Appendix B.

The impacts analysis considers the life of the Project, including construction, O&M, and final reclamation during sensitive periods for species.

This analysis is based on the following assumptions, which are informed by on-site conditions:

- Previous survey results are an accurate representation of the special-status wildlife species that could occur within the disturbance footprint.
- A lack of detection during surveys indicates a low likelihood of occupancy but does not definitively prove species absence. Therefore, preconstruction surveys are assumed to be a necessary follow-up to validate these findings.
- Due to the mobility of wildlife species, Project-related impacts can be quantified by measuring suitable habitat for these species.
- LANDFIRE land cover data are an accurate spatial representation of the suitable habitat within the disturbance footprint.

- Impacts such as noise, vibration, and fugitive dust, decrease in intensity with distance from the source and the established buffers are sufficient to capture the extent of these disturbances.
- For linear components (ROW), long-term impacts are primarily limited to the footprint of the poles/towers and appurtenant facilities. Although short-term construction activities and maintenance may result in broader short-term disturbance to wildlife and habitat, implementation of design features (ACEPM/BMPs) would minimize these effects and maintain habitat and habitat connectivity.
- Suitable habitat for the western burrowing owl only occurs within the ROWs and not the Project Area.
- Habitat conditions within the analysis buffers (e.g., 500-m buffer for bighorn sheep) are characterized by the same LANDFIRE and aerial imagery data used to determine the primary disturbance footprint, supplemented by observations during on-site surveys.
- All ACEPMs and design features would be fully implemented and effective in minimizing impacts to the levels described.

3.6.6.2.2 RFTPAs Common to All Alternatives

Twenty-eight RFTPAs have been identified near the Proposed Action. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. The closest RFTPAs include the Eldorado-Pisgah-Lugo and related SCE projects, I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project (see Table B-1.3.3-1 in Appendix B). These projects would involve short-term construction activities and long-term O&M activities that would result in habitat loss and fragmentation, as well as increased human presence, noise, and vehicle traffic. Some of these projects span hundreds of miles creating both local and regional impacts (e.g., Mojave Groundwater Bank Project), whereas others would reduce impacts to regional and local wildlife movement (e.g., the I-15 Wildlife Crossings Project).

3.6.6.2.3 Impacts of No Action Alternative

Under the No Action Alternative, modifications to the Project would not be authorized, and expansion of the mine and associated infrastructure as proposed under the Proposed Action would not occur. The current authorized mining activities would be permitted to continue under the existing authorizations. Under the No Action Alternative, existing authorized disturbance would continue to occur and affect special-status wildlife species as previously analyzed. Effects would not change from the existing conditions described and analyzed under the 1998 EIS/ROD (BLM 1998a).

3.6.6.2.4 Impacts of Proposed Action

Mammal Species

NELSON'S BIGHORN SHEEP

The Proposed Action would impact approximately 1,758 acres of suitable habitat for sheep. Approximately 1,484 acres of this habitat would be long-term disturbance that would be unavailable for sheep use until the successful completion of reclamation, and approximately 274 acres would be short-term disturbance that would become available for use after construction. The Proposed Action would affect sheep through habitat loss, habitat fragmentation, and displacement from preferred habitat, which may decrease survival rates of affected individuals. Sheep would likely relocate to the surrounding suitable habitat to the north and west of the mine, as well as the areas surrounding the 69-kV overhead

power line and underground water pipeline; however, effects may still occur, as relocation may not be successful for all individuals if adjacent habitat is already at capacity or results in less access to suitable foraging and breeding habitat. Additionally, the underground water pipeline would intersect the McCullough-New York Mountains bighorn sheep movement corridor, resulting in long-term impacts to approximately 23 acres and short-term impacts to approximately 52 acres of this movement corridor. During construction of the underground water pipeline, regional movement within this corridor would be restricted, but access would resume during operation.

Although sheep have been observed in areas of high- and low-level human and vehicular activity (ECORP 2021a), increased human presence, lighting, noise and vibration (including blasting and drilling), and traffic due to the Project and associated infrastructure may cause bighorn sheep increased stress and to adjust their use of the Project Area to other locations that may not support the key resources needed or preferred by the sheep, particularly during the lambing season (February 1–May 31). Noise, traffic, lighting, and human presence from previously authorized actions are ongoing within the analysis area; however, human presence, lighting, and traffic would increase from existing conditions due to construction and additional operational needs, and noise and vibration would increase from blasting and drilling conducted as part of the Proposed Action. Vehicular collisions could also occur due to increased vehicular traffic during construction and operation. Periods of loud and/or abrupt noise can have negative effects on sheep, including causing ewes to briefly abandon lambs or for lambs to be knocked off or stumble off ledges and steep slopes, among other effects, resulting in injury and mortality. Effects from noise are discussed further in Section 3.10, *Noise and Vibration*.

Expansion of the heap leach facility, which includes the heap leach pad, comminution circuit, process plant, and ponds, may continue to be an attractant to sheep when ponded water is present. However, fencing and netting would continue to be implemented for solution storage areas and active heap leach pads to keep out and deter wildlife, in accordance with WILD-3 and WILD-6. In addition, drip irrigation methods, including buried irrigation tubes, would continue to be used to minimize the potential for ponding water, in accordance with WILD-7 and WILD-8.

Two wildlife guzzlers are currently present at the mine site and have documented sheep use (ECORP 2021a); however, the pit lake may provide an additional water source, as well as foraging habitat once vegetation grows around the perimeter of the lake. These beneficial effects to sheep would be negligible.

Impacts to sheep would be reduced through implementation of ACEPMs, including reducing the spread of noxious weeds (WEED-1), protecting wildlife from hazardous materials and operations (WILD-1-4, WILD 6-10, WILD-58), implementing a worker training program (WILD-11), prohibiting domesticated animals (WILD-12), shielding lighting (WILD-46 and WILD-54), maintaining wildlife drinkers (WILD-59), and sheep-compatible fencing (WILD-51) (Appendix E).

SPECIAL-STATUS BATS

Fifteen special-status bat species are documented to occur or potentially occur within the analysis area. Potential roost habitat was identified at 28 AMLs within the disturbance footprint (Brown-Berry Consulting 2018), and potential foraging habitat occurs throughout the disturbance footprint. Increased human presence, noise and vibration (including blasting and drilling), and traffic due to the mine expansion and associated infrastructure may deter breeding and use of potential hibernacula and foraging habitat, as well as cause increased stress. Noise, traffic, and human presence from previously authorized actions and existing roadways have been occurring within the analysis area; however, human presence and traffic would increase from existing conditions due to construction and additional operational needs, and noise and vibration would increase from blasting and drilling conducted as part of the Proposed Action. Additionally, the Proposed Action would impact approximately 1,740 acres of suitable bat

foraging habitat (i.e., desert shrub habitats) within the analysis area. Approximately 1,476 acres of this habitat would be long-term disturbance that would be unavailable for use until the successful completion of reclamation, and approximately 264 acres would be short-term disturbance that would become available for use after vegetation has resprouted. Effects to foraging habitat from vegetation removal and fugitive dust could influence prey availability; however, due to the extensive amount of available foraging habitat within the analysis area, food scarcity due to loss of habitat would not be anticipated.

Construction and operational lighting from the Proposed Action would attract insects and in turn foraging bats. Bats foraging in close proximity to the Proposed Action would have increased risk of collisions. Potential collisions with equipment or infrastructure would affect individuals but not populations.

Expansion of the heap leach facility, which includes the heap leach pad, comminution circuit, process plant, and ponds, may continue to be an attractant to bat species. However, netting would continue to be implemented for solution storage areas to keep out and deter bat species, in accordance with WILD-3 and WILD-50. In addition, drip irrigation methods, including buried irrigation tubes, would continue to be used to minimize the potential for ponding water, in accordance with WILD-7 and WILD-8. The pit lake may be used by bats and provide additional foraging habitat as prey may be attracted to the water source. These beneficial effects to bats would be negligible.

Impacts to special-status bat species would be reduced through implementation of ACEPMs, including reducing the spread of noxious weeds (WEED-1), protecting wildlife from hazardous materials and operations (WILD-1-4, WILD 6-10, WILD-58), implementing a worker training program (WILD-11), prohibiting domesticated animals (WILD-12), shielding lighting (WILD-46 and WILD-54), allowing wildlife access to abandoned mine features or closing them to deter access (WILD-47 and WILD-56), conducting surveys of abandoned mine features and avoiding bat habitat features (WILD-48 and WILD-55), and using bat-compatible design standards (WILD-53) (Appendix E).

OTHER SPECIAL-STATUS MAMMALS

Effects to the remaining special-status mammal species (Botta's pocket gopher and desert pocket mouse) would be the same as those described for general mammal species. Impacts to special-status mammals would be reduced through implementation of ACEPMs described for general wildlife species (Appendix E).

Avian Species

GOLDEN EAGLE

Based on surveys and telemetry studies, no active golden eagle nests were identified within 10 miles of the disturbance footprint and historic nests were identified 2 or more miles from the disturbance footprint (BRC 2018, 2023). The USFWS recommends a 1-mile no-disturbance buffer and a 2-mile blasting buffer surrounding golden eagle nesting sites (USFWS 2021b); therefore, no effects to nesting habitat would be anticipated from the Proposed Action. The analysis area provides suitable foraging habitat, and repeated use of the Project Area vicinity has been documented during telemetry studies (BRC 2023). The Proposed Action would impact approximately 1,742 acres of suitable golden eagle foraging habitat (i.e., scrub and grassland habitats) within the analysis area. Approximately 1,477 acres of this habitat would be long-term disturbance that would be unavailable for use until the successful completion of reclamation, and approximately 264 acres would be short-term disturbance that would become available for use after vegetation has resprouted. Effects to habitats that support white-tailed jackrabbit, desert cottontail, and other small mammal prey populations could influence prey availability, including during the breeding season when foraging increases to provide adequate food for their young. Due to the extensive amount of available foraging habitat within the analysis area, food scarcity due to loss of habitat would not be anticipated to limit breeding within the local golden eagle population.

Installation of the 69-kV overhead power line may affect golden eagle habitat and migratory corridors and pose a risk to golden eagles from mortality through accidental collisions and electrocutions. Large bird species that inhabit open areas are at greater risk for electrocution due to their large wingspans (Avian Power Line Interaction Committee and USFWS 2005). As stated in Section 3.6.1, *General Wildlife*, WILD-49 would be implemented to minimize electrocution and electrocution potential. With implementation of this ACEPM, effects to golden eagles from electrocution under the Proposed Action would be minimized.

Increased human presence, lighting, noise and vibration (including blasting and drilling), and traffic due to the mine expansion may cause golden eagles to avoid foraging in areas within and adjacent to the Proposed Action. Noise, traffic, lighting, and human presence from previously authorized actions and existing roadways have been occurring within the analysis area; however, human presence, lighting, and traffic would increase from existing conditions due to construction and additional operational needs, and noise and vibration would increase from blasting and drilling conducted as part of the Proposed Action. Vehicle and equipment use during all phases of the Proposed Action could result in roadkill/carrion that may attract golden eagle scavenging and lead to injury or mortality for the golden eagle due to vehicle or equipment collisions. Carrion along roads within the area of analysis may attract scavenging golden eagles, which in turn could be injured or killed by vehicle collision.

Expansion of the heap leach facility, which includes the heap leach pad, comminution circuit, process plant, and ponds, may continue to be an attractant to golden eagle and the fencing surrounding the heap leach pads (WILD-6) may increase perching; however, netting would continue to be implemented for solution storage areas to keep out and deter golden eagle, in accordance with WILD-3 and WILD-50. In addition, drip irrigation methods, including buried irrigation tubes, would continue to be used to minimize the potential for ponding water, in accordance with WILD-7 and WILD-8.

The pit lake may be used by golden eagles and provide additional foraging habitat as prey may be attracted to the water source; however, beneficial effects to golden eagles would be negligible.

Impacts to golden eagles would be reduced through implementation of ACEPMs described for general avian species (Appendix E).

BURROWING OWL

No active burrows have been observed for burrowing owl within the analysis area, but suitable habitat and potential burrows were documented along the proposed overhead power line and underground water pipeline ROWs (Lukos 2024). The Proposed Action would impact approximately 1,753 acres of suitable burrowing owl habitat (i.e., grassland, open space, and desert scrub habitats) within the analysis area. Approximately 1,479 acres of this habitat would be long-term disturbance that would be unavailable for use until the successful completion of reclamation, and approximately 274 acres would be short-term disturbance that would become available for use after vegetation has resprouted. The Proposed Action would affect burrowing owl through habitat loss, habitat fragmentation, and displacement from preferred habitat, which may decrease survival rates of affected individuals. Increased human presence, lighting, noise and vibration (including blasting and drilling), and traffic due to the mine expansion may also cause burrowing owl to avoid nesting and foraging in areas within and adjacent to the Proposed Action. Burrowing owls would likely relocate to the surrounding habitat; however, effects may still occur as relocation may not be successful for all individuals if there is a lack of adjacent habitat or adjacent habitat is already at capacity. Additionally, loss of habitat may reduce prey species (i.e., small mammals) and increase opportunities for predation. During ground-disturbing activities, burrowing owls or their burrows may be crushed by vehicles or equipment during all phases of the Proposed Action or may fall in open trenches and holes associated with construction of the utilities, resulting in injury or mortality to individuals and eggs. Vehicular collisions could also occur due to increased vehicular traffic during construction and operation.

Impacts to burrowing owls would be reduced through implementation of ACEPMs described for general avian species (Appendix E).

OTHER SPECIAL-STATUS AVIAN SPECIES

Effects to the remaining special-status avian species (Bendire's thrasher, common nighthawk, Costa's hummingbird, gilded flicker, loggerhead shrike, phainopepla, pinyon jay, Scott's oriole, Swainson's hawk, verdin, ferruginous hawk, Le Conte's thrasher, and sagebrush sparrow) would be the same as those described for general wildlife avian species, including migratory birds.

Impacts to special-status avian species would be reduced through implementation of ACEPMs described for general avian species (Appendix E).

Reptile Species

Effects to special-status reptile species (i.e., desert horned lizard and desert iguana) for the Proposed Action would be the same as those described for general reptile species.

Impacts to special-status reptile species would be reduced through implementation of ACEPMs described for general species (Appendix E).

Invertebrate Species

No impacts to overwintering habitat for monarch butterfly is anticipated. Potential breeding and foraging habitat may occur within areas that contain Mojave milkweed, which was present during previous biological surveys, as well as other potential nectar sources (ECORP 2021b). The Proposed Action would impact approximately 1,742 acres of potential monarch butterfly habitat (i.e., scrub and grassland habitats where Mojave milkweed may occur) within the analysis area. Approximately 1,477 acres of this habitat would be long-term disturbance that would be unavailable for use until the successful completion of reclamation, and approximately 265 acres would be short-term disturbance that would become available for use after vegetation has resprouted. Additional impacts resulting from the Proposed Action would be the same as those described for general wildlife invertebrate species.

Impacts to monarch butterfly species would be reduced through implementation of ACEPMs described for general wildlife invertebrate species.

3.6.6.2.5 Impacts of Alternatives C – D

Alternative C includes partial backfilling of the south extension pit following ore extraction, which would extend mine operations by approximately 2 years, resulting in continued traffic, noise, and human activity that could displace individuals and result in potential collisions with individuals. Alterative D would avoid the development of an open-pit lake, but effects would be negligible, as wildlife species would continue to use existing water sources.

Alternative D would incorporate a small on-site solar power facility to supplement mine operations, which would result in additional infrastructure; however, the disturbance would occur in an area previously disturbed by fire that contains low quality habitat for special-status species.

These differences would not have a measurable effect on special-status species beyond that described for the Proposed Action.

3.6.7 Threatened or Endangered Species – Wildlife

This section addresses threatened or endangered wildlife species found within the Project Area and analyzes potential impacts to these species resulting from the implementation of Proposed Action. For the purposes of this analysis, threatened and endangered wildlife are defined as federally listed species under the ESA. The only federally threatened or endangered wildlife species with the potential to occur within the Project Area is desert tortoise (*Gopherus agassizii*). The analysis area consists of the proposed disturbance footprint plus a 500-foot buffer to account for potential effects that may extend beyond the immediate disturbance footprint (see Figure C.3.6-3).

3.6.7.1 AFFECTED ENVIRONMENT

Desert tortoise (*Gopherus agassizii*) is a federally threatened species and BLM Sensitive species (BLM 1997). Critical habitat for desert tortoise intersects the northern portion of the analysis area, along the ROW for the proposed utilities. Transect surveys were conducted prior to ground disturbance in 1989 and after ground disturbance in 1995, 2017, 2019, and 2020 (WestLand 2022). In the most recent surveys, four live tortoises were observed, and sign (i.e., scat, burrows, remains) was observed throughout the analysis area. Additionally, an incidental observation of a tortoise using an AML as shelter was recorded during the 2018 bat survey (Brown-Berry 2018). Given identified four tortoises and a realized survey area of 1,854acres, the calculated tortoise population is 7.5, with a predicted tortoise density of 1.0 tortoise per square kilometer (Bio Logical, LLC 2020; USFWS 2009).

3.6.7.2 ENVIRONMENTAL CONSEQUENCES

3.6.7.2.1 Analysis Method

The analysis method is the same as discussed for special-status wildlife species, see Section 3.6.6.2.1, *Analysis Method*.

3.6.7.2.2 RFTPAs Common to All Alternatives

The potential impacts of RFTPAs are the same as discussed as special-status wildlife species, see Section 3.6.6.2.2, *RFTPAs Common to All Alternatives*.

3.6.7.2.3 Impacts of No Action Alternative

The potential impacts of the No Action Alternative are the same as discussed as special-status wildlife species, see Section 3.6.6.2.3, *Impacts of No Action Alternative.*

3.6.7.2.4 Impacts of Proposed Action

The Proposed Action would impact approximately 1,753 acres of suitable desert tortoise habitat (i.e., Mojavean desert scrub, grasslands, and associated habitats) and 118 acres of USFWS-designated critical habitat within the analysis area. Approximately 1,479 acres of suitable habitat and 22 acres of critical habitat would be long-term disturbance that would be unavailable for use until the successful completion of reclamation, and approximately 274 acres of suitable habitat and 96 acres of critical habitat would be short-term disturbance that would become available for use after vegetation has resprouted. The Proposed Action would affect desert tortoise through habitat loss, habitat fragmentation, and displacement from preferred habitat, which may decrease survival rates of affected individuals. Additionally, during ground-disturbing activities, desert tortoise or their burrows may be crushed by vehicles or equipment during all phases of the Proposed Action or fall in open trenches and holes associated with construction of

the utilities, resulting in injury or mortality to tortoise individuals and eggs. Vehicular collisions could also occur due to increased vehicular traffic during construction and operation.

Multiple components associated with the Proposed Action would increase the risk of predation for desert tortoise. The addition of the 69-kV overhead power line, a perimeter fence, and other Project structures may provide additional perching and nesting opportunities for common ravens that predate on juvenile tortoises. Dust control abatement during construction and operation could result in pooled water and creation of the pit lake could be used as a water source, both of which could attract tortoises and their predators. Additionally, food refuse from construction and maintenance workers could also attract predators. These additional opportunities for predation could lower survivorship of the species within the analysis area.

Increased human presence, lighting, noise and vibration (including blasting and drilling), and traffic due to the mine expansion and associated infrastructure may cause desert tortoise increased stress and to avoid areas adjacent to the Proposed Action. Noise, traffic, lighting, and human presence from previously authorized actions and existing roadways have been occurring within the analysis area; however, human presence, lighting, and traffic would increase from existing conditions due to construction and additional operational needs, and noise and vibration would increase from blasting and drilling conducted as part of the Proposed Action. Effects from noise are discussed further in Section 3.10, *Noise and Vibration*.

Due to the presence of desert tortoise within the disturbance footprint, a Biological Assessment is being prepared to evaluate the potential effects of the proposed action on this species. The BLM will initiate formal consultation (50 CFR 402.14) with the Service, and based on recommendations by the Service, the BLM may implement mitigation with the goal of offsetting effects of the proposed action on the desert tortoise.

Impacts to desert tortoise would also be reduced through implementation of ACEPMs described for general reptile species, as well as WILD-13 to WILD-45, which includes measures that cover the terms and conditions of the existing USFWS BO and CDFW ITP among other protection measures. Additionally, consistent with the DRECP and the Consolidated CDCA Plan (BLM 2016, 2022a), mitigation may be required for portions of the ROWs within the Ivanpah ACEC due to its overlap with designated critical habitat for the desert tortoise. If required under the applicable land use plans, such mitigation would be incorporated as terms and conditions of the ROW grants.

3.6.7.2.5 Impacts of Alternatives C – D

The potential impacts of Alternatives C through D are the same as discussed as special-status wildlife species (see Section 3.6.6.2.5, *Impacts of Alternatives C –D*.)

3.6.8 Forestry and Woodlands

This section evaluates the potential effects of the Proposed Action on forestry and woodland resources. For purposes of this analysis, forestry and woodland resources are defined as areas containing tree-form vegetation that provides woodland structure, habitat, or ecosystem functions, including dryland woodlands characteristic of arid environments. Indicators used to evaluate potential effects include the presence or absence of woodland vegetation within the analysis area, the extent of tree-form woody vegetation affected by surface disturbance, and the potential for woodland recovery following reclamation.

The analysis area consists of the Project Area, encompassing approximately 4,285 acres, including previously approved mine areas and proposed short-term and long-term disturbance areas. A 50-foot buffer surrounding the proposed disturbance footprint is included to account for indirect effects such as

fugitive dust deposition, localized soil disturbance, and edge-related vegetation stress. This analysis area is applied consistently throughout the evaluation.

3.6.8.1 AFFECTED ENVIRONMENT

Vegetation within the analysis area is dominated by Mojave Desert scrub communities, including blackbrush scrub, general desert scrub, washes, and rocky uplands, as mapped by LANDFIRE and documented in Section 5.3.2 of the 2025 Plan Update and the 2025 special-status plant surveys (Appendix J) (LANDFIRE 2024; SWCA 2025a). Although these communities are shrub-dominated, tree-form species are a component of these vegetation communities and occur within portions of the broader Project Area.

LANDFIRE classifies the Project Area as Mojave Mid-Elevation Mixed Desert Scrub, a vegetation system in which tree-form species occur primarily as widely spaced individuals and do not form extensive or contiguous woodland structure (LANDFIRE 2024; USDA 2020). Consistent with this classification, 2025 field surveys documented three tree-form species across most of the analysis area: eastern Joshua tree (*Yucca jaegeriana*), Utah juniper (*Juniperus osteosperma)*, and cat-claw acacia (*Senegalia greggii*). No observations indicated tree-form canopy dominance (SWCA 2025a). These characteristics meet the BLM woodland definition for arid landscapes, supporting the inclusion of Mojave Mid-Elevation Mixed Desert Scrub with eastern Joshua tree presence in the forestry and woodland effects analysis.

Within the mine disturbance footprint, tree-form species occur primarily as scattered individuals or small patches. Existing vegetation analyses prepared for the 2025 Plan Update similarly identify desert scrub communities with an eastern Joshua tree, Utah juniper, and cat-claw acacia component, indicating that woodland vegetation is present within the Project Area (CMV 2025c; SWCA 2025a).

The Project Area spans elevations of approximately 4,200 to 5,200 feet above mean sea level. Utah juniper has been documented only as isolated individuals or small patches on north-facing slopes between approximately 4,528 and 4,593 feet above mean sea level (see Section 2.3 of Appendix O in 2025 Mine Plan, provided in Appendix J) (ELMT 2021). Although this elevation range occurs within the Project Area, surveys indicate that Utah juniper is not a dominant canopy component but contributes to the area, meeting BLM's woodland definition for arid environments.

Eastern Joshua tree woodlands occur with varying density across most of the Project Area, including the South Overburden Area and along the 69-kV overhead power line and underground water pipeline ROWs, including the alignment near Nipton Road. Field surveys indicate that eastern Joshua trees within the South Overburden Area include individuals seeded or transplanted during past reclamation activities, whereas surveys along the ROW alignments documented naturally occurring Joshua tree characterized by higher densities and more continuous distribution of this woodland type (SWCA 2026a).

Salvage and transplant of woody plants in arid environments have historically resulted in low survival rates and limited reestablishment of woodland structure (Appendix J, Sections 5.3.2 and 5.4). Nevertheless, reclamation actions within portions of the analysis area have demonstrated measurable short-term success. Monitoring conducted within the South Overburden Area documented eastern Joshua tree recovery over the 20-year period since revegetation was initiated. Approximately 62% of individuals observed were between 1 and 5 m tall, with the remaining 38% less than 1 m tall. Eastern Joshua tree density was relatively high, with 445 individuals observed across the monitored area, indicating that reclamation efforts have successfully established early successional eastern Joshua tree woodland characteristics in the short term. These results are notable given the arid site conditions and generally low Joshua tree recovery rates reported following disturbance (Abella 2010; DeFalco et al. 2010; ELMT 2021; Joukhajian et al. 2026)

3.6.8.2 ENVIRONMENTAL CONSEQUENCES

3.6.8.2.1 Analysis Method

Potential effects on forestry and woodland resources were evaluated by quantifying acres of woodland resources within the analysis area and assessing potential project-related disturbance to woodland extent and recovery potential. Indicators considered include the presence of Mojave Mid-Elevation Mixed Desert Scrub with an eastern Joshua tree component within the disturbance footprint, the extent of tree-form woody vegetation affected by surface disturbance, and the potential for woodland recovery following reclamation. The LANDFIRE Existing Vegetation Type dataset was used to establish baseline conditions (LANDFIRE 2024).

Analysis of surface disturbance impacts is limited to BLM-managed lands within the approved Project Area, including the mine site, water pipeline, and power line improvement areas. Acres of disturbance were used to quantify potential effects, while potential dust-related impacts were evaluated qualitatively within 50 feet of the disturbance boundary.

This analysis is based on the following assumptions:

- No forest resources occur within the analysis area.
- Woodland vegetation is a component of Mid-Elevation Mixed Desert Scrub under the BLM woodland definition. Eastern Joshua tree woodlands represent the largest extent of woodlands within the analysis area; this woodland type is included in all woodland analysis for this project.
- LANDFIRE data are representative of baseline conditions.
- Tree-form woody species establish slowly under local arid conditions.
- Surface disturbance within Joshua tree–bearing scrub communities would result in long-term woodland impacts.
- Reclamation is expected to promote early-successional recovery consistent with surrounding vegetation communities

3.6.8.2.2 RFTPAs Common to All Alternatives

RFTPA s identified by the BLM include 28 currently authorized or proposed projects within the broader Project vicinity that may occur independent of the Proposed Action. These actions represent ongoing or planned land management and development activities and are considered common to all alternatives. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. RFTPAs applicable to the Project Area are identified in Table B-1.3.3-1 in Appendix B. Although some identified actions have the potential to affect woodland resources, those impacts would not overlap the woodland analysis area evaluated for this Project. Ongoing public land uses that may overlap the analysis area are limited to motorized travel on designated routes and ongoing CMM operations. These areas are considered previously disturbed and do not support woodland structure; however, individual woodland species may occur adjacent to motorized routes and the mine site and could experience indirect effects such as dust accumulation.

Dust generated by vehicle and equipment use may accumulate on vegetation adjacent to disturbed areas and could affect individual tree health; however, these ongoing effects are localized and are not expected to alter woodland resource presence or extent at a measurable scale. Accordingly, implementation of the Proposed Action would not interact with or alter woodland resources in relation to identified RFTPAs.

3.6.8.2.3 Impacts of No Action Alternative

Under the No Action Alternative, mining activities would remain limited to areas previously authorized under the 1998 EIS/ROD and confined to the existing mine plan boundary. Surface disturbance would continue within approved disturbance areas and existing ROWs. Ongoing mine operations and traffic on open road prisms have the potential to generate dust that may be deposited on adjacent vegetation.

Effects such as dust deposition, minor soil disturbance, and the spread of nonnative plants would continue in areas already influenced by existing operations and would affect woodland resources (CMV 2005:Appendix O, Section 2.3; SWCA 2025a).

Accordingly, the No Action Alternative would result in no effects on forestry and woodland resources because no new disturbance or operational changes beyond existing and ongoing activities would occur.

3.6.8.2.4 Impacts of Proposed Action

The Proposed Action would affect woodland resources through surface disturbance and vegetation removal during construction activities within the analysis area, resulting in the removal of eastern Joshua tree, Utah juniper, and cat-claw acacia individuals. These impacts are anticipated across approximately 1,535 acres of BLM land where proposed pit expansion, overburden placement, ROWs, and associated infrastructure would result in high to complete mortality of woodland resource species, including eastern Joshua trees. Long-term effects are expected where short-term or long-term surface disturbance occurs because recovery of woodland resources in the analysis area is slow and may require several decades (Section 5.3.2 of Appendix J) (Abella 2010; DeFalco et al. 2010; Joukhajian et al. 2026; LANDFIRE 2024; SWCA 2025a).

Implementation of ACEPMs identified in the 2025 Plan Update would reduce impacts to woodland resources. These measures include salvage and reapplication of growth media to preserve native seedbanks and promote revegetation; slope stabilization and micro-catchment contouring to reduce erosion and improve plant establishment; reseeding and planting with native species and nursery stock during reclamation; dust control through water application during operations and reclamation; and long-term revegetation monitoring and maintenance (Appendix K, Sections 5.10.1, 5.12.2, 5.13.1, and 5.14.3) (ELMT 2021). Collectively, these measures would support early-successional establishment of woodland species and facilitate recovery where surface disturbance occurs, although the extent and rate of full recovery would vary depending on seedbank viability, soil characteristics, microclimate, and pre-disturbance species composition.

Within approximately 50 feet of proposed surface disturbance, individual woodland species adjacent to disturbed areas may experience indirect effects from dust accumulation, potentially effecting photosynthesis, seedling establishment, and root growth. These effects would be localized and variable, influenced by exposed soil extent, vehicle and equipment use, and wind conditions. While dust-related effects to individual plant health would be likely, the specific location and severity cannot be predicted with certainty and are not expected to alter woodland resource presence or extent. Within 50 feet of proposed surface disturbance, woodland resources are likely to accumulate dust, potentially affecting photosynthesis rates, seedling establishment, and root growth inhibition. This effect is expected to be variable and localized, largely driven by the extent of exposed soil, vehicle and equipment use, persistent wind, and atmospheric turbulence. Though this effect to woodland resource health and recovery is likely in the Project Area, identifying the location and severity would be speculative due to wind, use level, and woodland species variability across the analysis area.

3.6.8.2.5 Impacts of Alternatives C – D

Under the Full Pit Backfilling to Avoid a Pit Lake (Alternative C), and Supplemental Power via a Small Solar Array (Alternative D), project activities would either be consistent with the Proposed Action or would modify specific project components in ways that reduce, relocate, or redistribute surface disturbance within the analysis area.

Alternative C would incorporate full pit backfilling, which may increase short-term disturbance during backfilling activities but would reduce long-term disturbance and promote reclamation within the pit footprint. Alternative D would introduce a small solar array to supplement power supply, resulting in minor additional surface disturbance associated with panel installation but reducing reliance on other power infrastructure.

Although these alternatives differ in approach, facility placement, reclamation strategy, or power supply configuration, the types of impacts to woodland resources would be similar to those described for the Proposed Action. Direct impacts would occur where surface disturbance results in the removal of eastern Joshua tree, Utah juniper, or cat-claw acacia individuals, and indirect impacts could occur adjacent to disturbed areas due to dust deposition; however, the location, extent, and duration of these effects would vary by alternative depending on how surface disturbance is redistributed.

Implementation of ACEPMs identified in the 2025 Plan Update would apply to all alternatives and would reduce impacts to woodland resources through soil salvage (PLANTS-1), erosion control (REC 27), revegetation (REC-1), dust control (AQ-47), and long-term monitoring (REC-16) (Appendix E). As with the Proposed Action, recovery of woodland resources under Alternatives C and D would be slow and variable, with full recovery potentially requiring several decades. Overall, Alternatives C and D would result in impacts to woodland resources that are similar in in intensity to those of the Proposed Action.

3.7 Cultural Resources

Cultural resources are defined by BLM as “a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence” (BLM 2004). Historic properties are specific types of cultural resources, defined at 36 CFR 800.16(l)(1), as any precontact “or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior.” Traditional cultural places (TCPs) are defined as building, structure, object, site, or district that may be listed in or eligible for the National Register of Historic Places (NRHP) for its significance to a living community because of its association with cultural beliefs, customs, or practices that are rooted in the community’s history and that are important in maintaining the community’s cultural identity (*Federal Register* 89:4988–4989).

The first cultural resource studies in the Project Area were conducted in the 1980s and 1990s. Starting in 2018, several new studies were performed to update and evaluate the status of cultural resources in and around the Project Area, including *Class III Cultural Resources Inventory of 1,091 Acres for the Castle Mountain Venture Project, San Bernadino County, California* (Powell and Windslow 2018*), Class III Cultural Resources Inventory of Approximately 1,550 Acres, Castle Mountain Mine, San Bernadino County, California* (Winslow 2021), *Class III Results for the California Portion of the Castle Mountain Mine Phase II Expansion Project, San Bernardino County, California (*Winslow and Vicari 2025), *Class III Results for the Nevada Portion of the Castle Mountain Mine Phase II Expansion Project, Clark County, Nevada* (SWCA 2025b). Additionally, site testing was conducted at two sites, in a report entitled *Results of Testing Plan for Cultural Resource Sites, Castle Mountain Mine, San Bernardino County, California* (Winslow 2024). Table B-1.1.3-2 in Appendix B provides a list of these Class III inventories and site testing conducted for the Project.

For purposes of the NEPA analysis, the area of potential effects (APE), a term defined under Section 106 of the National Historic Preservation Act (NHPA), refers to the geographic area within which the Proposed Action may directly or indirectly cause changes to the character or use of historic properties. For this Project, the APE includes both a physical APE and a visual, auditory, and atmospheric (VAA) APE. The physical APE encompasses all areas subject to ground disturbance or other direct surface alteration associated with the undertaking. The cultural resource inventory reports completed to date cover the entirety of the physical APE. The VAA APE consists of a one-mile buffer surrounding the physical APE and represents the area within which indirect effects—such as visual, auditory, or atmospheric changes—could alter the setting, feeling, or association of historic properties. The VAA analysis is ongoing and has not yet been completed for the Project. BLM has not yet finalized the effects analysis based on the completed inventories; the results of the effects analysis and the Finding of Effect to historic properties under NHPA Section 106 will be completed through consultation and incorporated into the Final EIS. Together, the physical and VAA APE constitute the analysis area used to evaluate potential effects to historic properties for both the NEPA review and the NHPA Section 106 consultation process.

3.7.1 Affected Environment

In total, 353 cultural resource sites have been identified in the physical APE. These include a portion of one NRHP-listed historic property (Walking Box Ranch/26CK4626/NRHP No. 08001392), five potential historic properties were recommended eligible for listing on the NRHP (26CK3081/26CK7466, S2128/26CK10806, P-36-003060/CA-SBR-3060/H, P-36-005872/CA-SBR-5872, and P-36-032513/CA-SBR-32513), 308 cultural resources were recommended not eligible for listing on the NRHP, one cultural resource that was previously determined a non-contributing segment of a historic property, the San Pedro-Los Angeles and Salt Lake Railroad (P-36-001910/CA-SBR-1910H), and eight unevaluated cultural resources (P-36-003066/CA-SBR-3066H, P-36-006835/CA-SBR-6835H, P-36-024864/CA-SBR-24864H, JM-S-08, P-36-005705/CA-SBR-5705, P-36-005706/CA-SBR-5706, P-36-005707/CA-SBR-5707, and P-36-005708/CA-SBR-5708) would require additional testing before a NRHP determination can be made if they are adversely affected by the Project. BLM has not yet consulted with the SHPOs on the eligibility recommendations made in the inventory reports. The inventories also identified 202 isolated occurrences within the physical APE, which are not eligible for the NRHP. The cultural resources are summarized in Table B-1.3.7-1 in Appendix B.

Of the 353 cultural resources within the physical APE, 339 are potentially not eligible for listing on the NRHP and would not be considered further under Section 106 of the NHPA. These sites and isolated occurrences will require no additional management should the project be approved. The only historic property currently listed on the NRHP is Walking Box Ranch (26CK4626/NRHP No. 08001392), which was formally included on the NRHP in 2008 and is significant under Criterion A for its association with the history of cattle ranching in Clark County and the larger Mojave region and Criterion C for its Spanish Colonial Revival and railroad tie architecture. Five historic properties have been recommended eligible for listing on the NRHP, but some have not yet received SHPO concurrence on their eligibility recommendation. Site 26CK3081/26CK7466 is the historic-era stagecoach route, Road from Searchlight to Nipton; this historic property is eligible under Criterion A as it served as the primary transportation route important to the settlement of both Searchlight and Nipton. Site S2128/26CK10806 consists of historic-era Southern California Edison power lines, including the Eldorado 500-kV Transmission line system and associated 220-kV circuits. This historic property is recommended eligible under Criterion A for its association with Southern California Edison's 500-kV extra high-voltage system that contributed to the power grid in the southwestern United States. Site P-36-003060/CA-SBR-03060/H is the multicomponent site that contains the Hart Townsite (the majority of which was previously determined not eligible and most of the townsite has been disturbed by previously permitted mine activity) but includes a historic-era cemetery; the cemetery was recommended eligible under Criterion D for its research value and potential to contain human remains. Historic property P-36-005872/CA-SBR-5782 is

an Indigenous lithic procurement location recommended eligible under Criterion D for its potential to yield significant data concerning Native American use of the region. P-36-032513/CA-SBR-32513 is an Indigenous lithic scatter potentially eligible under Criterion D for its potential to yield significant data related to early Holocene occupation in the area. Eight resources remain unevaluated for listing in the NRHP, pending additional research. Resource P-36-003066/CA-SBR-3066H is the historic-era Nipton Townsite, Resource P-36-006835/CA-SBR-6835 is the historic-era Von Schmidt Line (although the resource exists on historic maps of the area, there are no physical manifestations of the resource in the physical APE), Resource P-36-024864/CA-SBR-024864H consists of two levees associated with the Nipton Townsite, Resource JM-S-08 consists of historic-era structural remains and associated artifacts, and Resources P-36-005705/CA-SBR-5705, P-36-005706/CA-SBR-5706, P-36-005707/CA-SBR-5707, and P-36-005708/CA-SBR-5708 are Indigenous lithic procurement locations.

3.7.2 Environmental Consequences

3.7.2.1 ANALYSIS METHOD

The Proposed Action has the potential to impact historic properties and other cultural resources during construction, operation, and reclamation phases of the Project. Ground-disturbing activities may cause physical destruction of historic properties and other cultural resources. Long-term changes to the landscape may impact the setting, feeling, and other important aspects of historic properties' integrity to the extent that they can no longer convey their significance.

The spatial analysis area is the APE established for the Proposed Action. The physical APE consists of the entire proposed ROW for the underground water pipeline (45 feet for short-term ROW plus 20 feet for long-term ROW) with a 50-foot buffer, the entire proposed ROW for the 69-kV overhead power line (100 feet) with a 100-foot buffer to account for any pulling/tensioning sites, staging areas with a 50-foot buffer, and proposed ground disturbance included in the mine plan. The VAA APE consists of a one-mile buffer surrounding the physical APE.

Analysis of physical impacts to potential historic properties and other cultural resources within the physical APE would indicate the physical impacts of the Project on cultural resources. Impact causing elements would be ground-disturbing activities including vegetation removal, excavation, grading, blasting, and vehicular traffic could physically impact historic properties. Analysis of nonphysical impacts to historic properties within the VAA APE would indicate the visual, auditory, and/or atmospheric impacts of the Project on cultural resources. Impact causing elements would be construction activities may cause visual or atmospheric disturbances with proposed changes to the open-pit mine and associated facilities potentially resulting in long-term changes to the landscape.

The temporal analysis scale of impacts is the duration of construction and the life of the mine and the length of the ROW grant. Physical destruction of a historic property is assumed to have a long-term impact. Long-term alteration of the landscape in areas where cultural resources are located is also assumed to have a long-term impact. The number of cultural resources and number of historic properties that would be adversely affected by the Proposed Action is the impact indicator.

3.7.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

BLM has identified 28 RFTPAs within the cultural resources analysis area (see Table B-1.3.3-1 in Appendix B). These projects include seven recreation projects, five transmission projects, three communication projects, three mining projects, three transportation projects, three utility projects, two solar projects, and one project each related to access, conservation, infrastructure, public safety, and water development. Large projects that involve new ground disturbance generally have the greatest potential to affect cultural resources. Among the identified RFTPAs, seven projects would involve substantial ground

disturbance: one utility project (155 miles), two transmission projects (one approximately 160 miles and the other covering approximately 575 acres), one transportation project (218 miles), one solar project (4,520 acres), one infrastructure project (6,000 acres), and one water development project (more than 300 miles). Collectively, these projects would result in approximately 833 miles and 11,095 acres of ground disturbance within the RFTPAs considered for the Project. The Proposed Action would add approximately 48 miles and 1,854 acres of disturbance. When combined with the disturbance from the identified RFTPAs, the total increases approximately 881 miles and 12,904 acres of disturbance that could potentially affect cultural resources. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure.

3.7.2.3 IMPACTS OF NO ACTION ALTERNATIVE

If selected, the No Action Alternative would have no impact to cultural resources. No new ground disturbance would be allowed and there would be no changes to the landscape. This alternative would result in no effect to historic properties or other cultural resources.

3.7.2.4 IMPACTS OF PROPOSED ACTION

As currently designed, BLM's preliminary determinations is that the Proposed Action would impact (adversely affect) three potential - (S2128/26CK10806, P, and P-36-36-005872/CA-SBR-5872, and P-36-003060/CA-SBR-3060/H) and six unevaluated resources (P-36-005705/CA-SBR-5705, P-36-005706/CA-SBR-5706, P-36-005707/CA-SBR-5707, and P-36-005708/CA-SBR-5708, P-36-024864/CA-SBR-24864H, and JM-S-08). The NRHP-listed historic property (26CK4626/ NRHP No. 08001392), along with the remaining potentially NRHP-eligible resource (P-36-32513/CA-SBR-32513) and two unevaluated resources (P-36-003066/CA-SBR-3066H and P-36-006835/CA-SBR-6835) would be avoided through project design, and an archaeological monitor would be on-site when working within 30 m (100 feet) of an eligible or unevaluated site boundary to assist construction crews in identifying and avoiding the resources. After making a formal Section 106 determination of effect for the project, BLM would develop a Memorandum of Agreement (MOA) and associated Historic Properties Treatment Plan (HPTP), in consultation with the Section 106 consulting parties, to resolve any adverse effects identified to historic properties.

Implementation of ACEPMs would reduce impacts to cultural resources by requiring work stoppage, and consultation with Native American representatives as needed evaluation if cultural resources are discovered (ARCH-1 and ARCH-2), closing and rerouting roads within the approved MPO boundary to areas of high cultural sensitivity (AECH-3instituting employee awareness programs (ARCH-5), and constructing protective fencing around sensitive sites (ARCH-4) (Appendix E).

3.7.2.5 IMPACTS OF ALTERNATIVES C – D

Impacts of Alternative D would be the same as the Proposed Action to historic properties. These alternatives would result in physical impacts to three potential historic properties (S2128/26CK10806, P-36-005872/CA-SBR-5872, and P-36-003060/CA-SBR-3060/H) and six unevaluated sites (P-36-005705/CA-SBR-5705, P-36-005706/CA-SBR-5706, P-36-005707/CA-SBR-5707, and P-36-005708/CA-SBR-5708, P-36-024864/CA-SBR-24864H, and JM-S-08). The NRHP-listed historic property (26CK4626/ NRHP No. 08001392), along with the remaining potential historic property (P-36-32513/CA-SBR-32513) and two unevaluated resources (P-36-003066/CA-SBR-3066H and P-36-006835/CA-SBR-6835) would be avoided through project design, and an archaeological monitor would be on-site when working within 30 m (100 feet) of a historic property or unevaluated site boundary to assist construction crews in identifying and avoiding the resources. After making a formal Section 106 determination of effect for the project, BLM would develop a Memorandum of Agreement (MOA) and

associated Historic Properties Treatment Plan (HPTP), in consultation with the Section 106 consulting parties, to resolve any adverse effects identified to historic properties.

Alternative C would minimize impacts to potential historic properties and unevaluated cultural resources in the APE. Selection of Alternative C would result in physical impacts to two potential historic properties (S2128/26CK10806 and P-36-005872/CA-SBR-5872), as well as two unevaluated resources (P-36-024864/CA-SBR-24864H and JM-S-08). The NRHP-listed historic property(26CK4626/NRHP No. 08001392), along with the three remaining potential historic properties (26CK3081/26CK7466, P-36-003060/CA-SBR-3060/H, and P-36-32513/CA-SBR-32513) and six unevaluated resources (P-36-005705/CA-SBR-5705, P-36-005706/CA-SBR-5706, P-36-005707/CA-SBR-5707, P-36-005708/CA-SBR-5708, P-36-003066/CA-SBR-3066H, and P-36-006835/CA-SBR-6835) would be avoided through project design, and an archaeological monitor would be on-site when working within 30 m (100 feet) of an eligible or unevaluated site boundary to assist construction crews in identifying and avoiding the resources. BLM would develop an MOA and HPTP, in consultation with the Section 106 consulting parties, to resolve any adverse effects identified to historic properties.

3.8 Native American Concerns

Native American groups with Tribal territories that fall within the Project Area (see Figure 1-1) include the Nuwuvi (Southern Paiute), Nüw (Chemehuevi), and Aha Makhav (Mojave). An initial letter requesting consultation under NHPA Section 106 and the Native American Graves and Protection and Repatriation Act was sent via certified U.S. mail to the following 22 Native American Tribes on April 18, 2025:

- Big Pine Paiute Tribe of the Owens Valley
- Chemehuevi Indian Tribe
- Cocopah Indian Tribe
- Colorado River Indian Tribes
- Fort Independence Indian Community
- Fort Mojave Indian Tribe
- Fort Yuma Quechan Tribe
- Havasupai Tribe
- Hopi Tribe
- Hualapai Indian Tribe
- Jamul Indian Village
- Kaibab Band of Paiute Indians
- Las Vegas Paiute Tribe
- Las Vegas Tribe of Paiute Indians
- Lone Pine Paiute-Shoshone Tribe
- Moapa Band of Paiute Indians
- Pahrump Paiute Tribe
- Timbi-Sha Shoshone Tribe
- Twenty-Nine Palms Band of Mission Indians
- Utu Utu Gwaitu Paiute Tribe
- Yavapai-Apache Indian Nation
- Yavapai-Prescott Indian Tribe

An additional eight Native American Tribes were sent letters requesting consultation under Section 106 and Native American Graves and Protection and Repatriation Act via certified U.S. mail on May 3, 2025:

- Barona Band of Diegueno Mission Indians
- Campo Band of Diegueno Mission Indians
- Fort Independence Indian Community
- Moapa Band of Paiutes
- Paiute Indian Tribe of Utah
- Pueblo of Zuni
- San Juan Southern Paiute Tribe
- San Pasqual Band of Diegueno Mission Indians

The Chemehuevi Indian Tribe, Hualapai Indian Tribe, Twenty-Nine Palms Band of Mission Indians, and Fort Mojave Indian Tribe responded to the initial letter and requested consultation for the Project. BLM invited Tribal representatives to site visits on November 4, 2025, and January 14, 2026. Representatives from the Chemehuevi Indian Tribe, Twenty-Nine Palms Band of Mission Indians, Fort Mojave Indian Tribe, and Las Vegas Paiute Tribe attended the visit on January 14. 2026, to learn more about the Project and discuss potential impacts to resources important to their Tribe in the Project Area. Additional site visits would be conducted by request.

Government-to-government consultation for the Project as well as consultation under Section 106 is ongoing.

3.8.1 Affected Environment

The Project is proposed within the ancestral homelands of the Nuwuvi (Southern Paiute), Nüw (Chemehuevi), and Aha Makhav (Mojave) peoples. The Project lies within an area identified as Nuwuvi Holy Lands/Salt Song Trails which includes parts of California, Nevada, Utah, and Arizona (Wright 2022). The Nuwuvi Holy Lands/Salt Song Trails has not been identified or evaluated for the NRHP by BLM. Spirit Mountain TCP, which was listed on the NRHP in 1999 (No. 99001083), is 21 miles from the project area within the Avi Kwa Ame National Monument in Nevada. No formally designated TCPs have been disclosed to BLM within the Project Area; however, ongoing consultation with federally recognized Tribes in the region and on the Project have indicated that there are several issues of concern, including precontact archaeological sites, water use, wildlife, visual resources, and impacts to vegetation.

3.8.2 Environmental Consequences

3.8.2.1 ANALYSIS METHOD

Government-to-government consultation for the Project as well as consultation under Section 106 of the NHPA is ongoing and has not yet been completed for the Project. Project impacts to Tribal communities can only be determined through consultation with Tribal governments; this consultation is ongoing.

3.8.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

BLM has identified 28 RFTPAs within the analysis area for the Proposed Action (see Table B-1.3.3-1 in Appendix B). These projects include seven recreation projects, five transmission projects, three communication projects, three mining projects, three transportation projects, three utility projects, two solar projects, and one project each related to access, conservation, infrastructure, public safety, and water development. Large projects that involve new ground disturbance are most likely to affect Native American religious concerns. Seven large ground-disturbing projects have been identified in the analysis area: one utility project (155 miles), two transmission projects (one approximately 160 miles and the other covering approximately 575 acres), one transportation project (218 miles), one solar project (4,520 acres), one infrastructure project (6,000 acres), and one water development project (more than 300 miles). Collectively, these projects would result in approximately 833 miles and 11,095 acres of ground disturbance within the RFPAs considered for the Project. The Proposed Action would introduce an additional 48 miles and 1,854 acres of disturbance within the analysis area. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure.

3.8.2.3 IMPACTS OF NO ACTION ALTERNATIVE

If selected, the No Action Alternative would have no additional impacts to resources of concern to Native American Tribes.

3.8.2.4 IMPACTS OF PROPOSED ACTION

The Proposed Action would result in physical impacts to lands within the Nuwuvi Holy Lands/Salt Song Trails area, five precontact archaeological resources potentially eligible or unevaluated for the NRHP, with one potentially eligible precontact archaeological resource planned for avoidance. The Proposed Action would result in no impacts to the Spirit Mountain TCP as it is over 20 miles from the Project Area. Impacts to other resources significant to Tribal governments would be determined in consultation with those governments.

3.8.2.5 IMPACTS OF ALTERNATIVES C – D

Alternative C includes partial backfilling of the south extension pit following ore extraction, which would result in physical impacts to lands within the Nuwuvi Holy Lands/Salt Song Trails, one precontact archaeological resource potentially eligible for the NRHP, with five potentially eligible or unevaluated precontact archaeological resources planned for avoidance through project design. The Proposed Action would result in no impacts to the Spirit Mountain TCP as it is over 20 miles from the Project Area. Impacts to other resources significant to Tribal governments would be determined in consultation with those governments.

Alternative D would incorporate a small on-site solar power facility to supplement mine operations, which would result in physical impacts to lands within the Nuwuvi Holy Lands/Salt Song Trails area, five precontact archaeological resources potentially eligible or unevaluated for the NRHP, with one potentially eligible precontact archaeological resource planned for avoidance. Impacts to other resources significant to Tribal governments would be determined in consultation with those governments. The Proposed Action would result in no impacts to the Spirit Mountain TCP as it is over 20 miles from the Project Area. Impacts of Alternative E would be the same as the Proposed Action.

3.9 Land Use and Realty

This section addresses current land uses within the Project Area as designated by federal, state, county, and local management plans. The analysis evaluates how the Project may affect existing and reasonably foreseeable future land use authorizations within the Project Area. The analysis area includes all BLM-managed and private lands potentially affected by the Project with the assessment focused on the overall footprint, including short and long-term disturbance, where all proposed activities would occur. This area encompasses all locations where surface disturbance, infrastructure development, and land use changes would result directly from the Proposed Action and its alternatives.

3.9.1 Affected Environment

The land use and realty analysis area encompasses 4,285 acres, with approximately 71% (3,036 acres) managed by the BLM and 29% (1,239 acres) privately owned; nearly 95% (4,038 acres) of the area is in California. Existing land use authorizations within the area include roads, railroads, power lines, pipelines, mineral material sites, and active mining claims which includes one plan of operation, as summarized in Table B-1.3.9-1 in Appendix B.

Currently CMV has previous authorizations (BLM 1998a) that allows for the current ongoing operations. In 2025, CMV submitted to the BLM a new MPO (Appendix J) that would expand current mining operations related to the Proposed Action. All 1,106 active mining claims are held by CMV or Viceroy Gold Corporation. Viceroy formed CMV in 1991, and both names have been used interchangeably as mineowners since that time.

The analysis area also overlaps two Military Training Routes (MTRs)—IR 213 and IR 217—which are airspace corridors established by the Federal Aviation Administration to support low-altitude, high-speed training operations by military aircraft. Military aircraft using these routes must fly at or below 1,500 feet above ground level and cannot exceed 7,000 feet amsl.

3.9.2 Environmental Consequences

3.9.2.1 ANALYSIS METHOD

Land use and realty analysis was conducted using a review of the BLM's Mineral and Land Records System (MLRS) and GIS mapping and to determine land status, existing authorizations, and areas that overlap with MTRs (BLM 2026). Disturbance area calculations for the MPO and requested ROWs were calculated using multiple GIS datasets, including surface management agencies, land use authorizations, and MTRs. The analysis assumes that the BLM, by policy, promotes the compatible use of ROWs in common where practical, protects existing rights, does not permit exclusive ROWs, and that public access and overlapping uses—such as military airspace and railroad crossings—would remain open and unaffected by the Project.

3.9.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

Twenty-eight RFTPAs have been identified in the region, involving infrastructure, mining, transportation, and recreation. Many of these projects may intersect with existing land use authorizations, such as ROWs leases, and permits. Short-term impacts could include temporary access limitations, construction-related disturbances, or the need for coordination among overlapping authorizations. Long-term impacts may result from new or expanded infrastructure, changes in land management practices, or altered access routes, potentially requiring amendments to existing authorizations or issuance of new permits. In some cases, projects such as utility upgrades or land acquisitions could consolidate or modify authorized uses. Continued agency coordination would help minimize conflicts and support compatible land uses across the region. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure.

3.9.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under the No Action Alternative, no additional ROWs would be granted for the water or power lines, and the currently authorized MPO would remain in effect. No new surface disturbance would occur outside the existing mine plan boundary, and there would be no new impacts to existing ROWs, land uses, military airspace, railroad crossings, or areas near mineral material sites. Patented mining claims would continue to be mined as currently authorized.

3.9.2.4 IMPACTS OF PROPOSED ACTION

The Proposed Action aligns with BLM plans and policies, which designate the analysis area for mineral development and new ROWs. Of the 4,280-acre analysis area, 1,000 acres within the mine plan boundary would remain undisturbed, and 1,475 acres are already approved for long-term disturbance under the 1998 Plan (BLM 1998a). The expansion proposes 1,510 acres of new long-term disturbance and 304 acres of short-term disturbance, primarily on BLM-managed lands (92% and 94%, respectively), with the remainder on private land.

The proposed utilities component would not have any long-term conflicts with the active land use authorizations identified in Table B-1.3.9-1 in Appendix B. Access to roads, railroads, pipelines, power lines, and mineral material sites would be maintained for each existing authorization and permit holders, and the Project would not interfere with these uses or public access; however, the proposed utilities

associated with the Project would result in new surface disturbance on public lands. Short-term impacts to public lands during construction total 279.42 acres, whereas long-term impacts during O&M would result in the loss of 75 acres.

Two land use authorizations within the land use and realty analysis area warrant additional mention due to the need for further coordination during construction, O&M, and decommissioning of the proposed utilities. The Nevada Department of Transportation (NDOT) holds an existing ROW (NVNV105896749) along SR 164, which is 400 feet wide. Within the analysis area, this NDOT ROW extends approximately 11.65 miles and encompasses a total of 562 acres. Additionally, near the town of Nipton, a ROW was authorized for the Union Pacific Railroad (UPRR) under the General Railroad Right-of-Way Act of 1875 (Act of March 3, 1875; 18 Stat. 482; codified at 43 U.S.C. §§ 934–939). The UPRR ROWs, broadly granted in the early 1900s, are generally 200 feet wide but they may be wider in certain areas. While the exact width of the UPRR railroad ROW in this area is unknown, the proposed water pipeline would cross under and perpendicular to the UPRR railroad and associated infrastructure for the width of the UPRR ROW. Construction, O&M, and decommissioning activities would occur within both the NDOT and UPRR ROWs over the life of the Project. The ROWs have been aligned for compatible uses, and the proposed short-term and long-term ROWs for the underground water pipeline would not alter the use or access to the NDOT or UPRR ROWs. Proper coordination with the appropriate agencies would be conducted prior to any surface-disturbing activities.

Previous EIS/EIR documents for the CMM concluded that mining operations would not create land use conflicts within the mine plan boundary (BLM 1990b, 1997). This finding remains valid for the Project. Although the expansion increases both the mine plan boundary and the extent of short-term and long-term disturbance, these changes do not affect existing mining claims within the plan boundary. The Project would not impact any active mineral claims, as the Applicant is also the claimant. Within the analysis area, the only active plan of operation is the 1998 Plan (including all previous MPOs), and the only pending plan of operation in MLRS is associated with CMV's current MPO for this Project.

The Project has the potential to impact MTRs within the analysis area. The addition of new aboveground structures—such as power poles, towers, and mining equipment—could introduce vertical obstructions in the MTR airspace, increasing the risk of collision for low-flying military aircraft during training operations. Construction activities may also generate dust, glare, or lighting, which could reduce visibility for pilots, especially during low-level or nighttime missions. To accommodate construction, O&M, or decommissioning and reclamation activities, short-term or long-term changes in airspace use may be required, potentially resulting in restrictions or rerouting of military training flights. These activities would require increased coordination and communication between CMV and the Federal Aviation Administration to ensure all parties are informed of scheduling and operational changes.

Implementation of ACEPMs would reduce impacts to lands and realty by maintaining orderly site management (WM-1), complying with all land use permits and approvals (ADM-2), and providing regular reporting on mine development and reclamation (ADM-1) (Appendix E).

3.9.2.5 IMPACTS OF ALTERNATIVES C – D

A review of Alternatives C and D, in comparison with the Proposed Action, indicates that none of the alternatives would result in new or additional impacts to land use or realty. Although each alternative involves variations in reclamation strategies, or power supply configurations, these differences do not translate into changes in existing land uses or realty authorizations. Alternative C and D would remain within the established mine plan boundaries and would not require new land use authorizations.

None of the Alternative Actions would change land use or realty, and any variations would be contained within the existing Project Area.

3.10 Noise and Vibration

This section describes the existing noise and vibration conditions, applicable regulations, and the noise and vibration analysis performed to evaluate the impacts associated with the Project. Information in this section is derived from the Project sound study titled *Castle Mountain Mine Baseline/Phase II Noise Analysis* (CMM Baseline/Phase II Noise Analysis) (Sespe Consulting, Inc. [Sespe] 2024) and applicable federal, state, and local regulations.

The CMM is an open-pit gold mine in the Mojave Desert of eastern San Bernardino County, California. Noise and vibration sources associated with the Project include construction activities, operation of stationary and mobile equipment, and increased truck traffic along haul routes. In addition, noise-generating activities would occur during construction of the ROW components, including reinstallation of the former 69-kV power line and installation of a water pipeline.

3.10.1 Affected Environment

Noise is typically measured in decibels using the A-weighted scale (dBA), which adjusts sound levels to reflect the sensitivity of the human ear. Environmental noise conditions are generally described using measures of average noise levels over time, including the equivalent continuous sound level (L_{eq}). Ambient noise levels may vary substantially based on natural factors such as wind and topography, as well as the presence or absence of industrial or transportation-related activities.

The CMM is primarily within rural rangeland in eastern San Bernardino County, California with additional ROW in Clark County, Nevada. The noise study area encompasses a 2-mile radius from all potential noise-generating sources associated with mine construction and operation. The study area is largely undeveloped and sparsely populated, and existing human activity is generally limited to mine operations and intermittent recreational use.

The CMM Baseline/Phase II Noise Analysis reported background noise levels near the center of the CMM of approximately 38.0 dBA when mining operations were not occurring and approximately 55.7 dBA when the mine was operating (Sespe 2024). Wind is frequently a major contributor to ambient noise levels in the area, along with mine operations when active.

Noise-sensitive receptors in the study area are limited to recreational resources and wildlife. Recreational resources include Castle Mountain National Monument (CMNM), which is approximately 1.5 miles north of the study area (see Section 3.11, *Recreation and Special Designations*). No residential development occurs within the immediate vicinity of the mine. The nearest residence is approximately 5 miles south of the CMM.

3.10.1.1 REGULATORY FRAMEWORK

San Bernardino County regulates construction activity through time-of-day restrictions and exemptions for construction noise. For unincorporated areas, noise sources associated with construction, maintenance, and repair operations conducted by public agencies and/or utility companies or their contractors are exempt such that these activities take place between 7 a.m. and 7 p.m. (San Bernardino County Code of Ordinances, Chapter 7 – Noise Abatement and Control).

In unincorporated Clark County, Nevada, daytime construction noise is exempt from baseline noise limits. Enforcement is generally complaint-driven for nighttime hours between 10:00 p.m. and 6:00 a.m., and no specific daytime noise cap applies during normal daytime hours (Clark County, Nevada, Title 30 Unified Development Code 30.04.07.D Operational Standards – D; Clark County 2025a). At the state level, Nevada State law (Assembly Bill 189 [2023]; Assembly Bill 478 [2025]) allows construction to

begin as early as 5:00 a.m. from April 1 through September 30 if activities occur at least 300 feet from residences; otherwise, local start-time restrictions typically apply.

In addition to applicable regulatory requirements, environmental noise analyses commonly use accepted technical thresholds to evaluate changes in ambient noise conditions. A 5-dBA increase in noise levels is generally considered readily noticeable and is often used as a threshold for evaluating potential adverse impacts, particularly in noise-sensitive environments (Bolt Beranek and Newman, Inc. 1973). For occupational exposure, an 85-dBA L_{eq} over an 8-hour period is commonly referenced in regional studies as a conservative benchmark for short-term construction activities; however, occupational thresholds are not intended to represent community noise standards and are included for general context.

Vibration is typically evaluated in terms of groundborne vibration levels and potential effects on structures, wildlife, and human perception. Construction-related vibration sources may include heavy equipment operation and blasting.

3.10.2 Environmental Consequences

3.10.2.1 ANALYSIS METHOD

Operational noise impacts were evaluated using the results of the CMM Baseline/Phase II Noise Analysis (Sespe 2024). Source sound levels for key mine activities, including excavation, haul truck movement, heap leach pad development, and ore processing, were measured in the field and normalized to a reference distance of 50 feet. For facilities not operating during monitoring (e.g., crushing and comminution plants), source levels were developed using manufacturer specifications and data from comparable mine operations.

Noise propagation modeling was conducted using SoundPLAN Essential 5.0 to evaluate noise levels under Project conditions. Model inputs included measured source sound levels, updated operational layouts, and terrain modifications anticipated during Project implementation. Modeling was performed in accordance with ISO 9613-2 standards for outdoor sound propagation from industrial sources.

Construction noise impacts were evaluated using criteria from the Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual (Federal Transit Administration 2018) and construction noise source level assumptions and methodologies consistent with the Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (FHWA 2011).

3.10.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

Noise impacts associated with the Proposed Action and alternatives are expected to occur independently of the RFTPAs identified in Appendix B (see Table B-1.3.3-1). As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. In total, 28 RFTPAs have been identified within or adjacent to the Proposed Action area and include activities related to electric transmission, intermittent energy development, government facilities, mining, water development, transportation, and land development. These projects may generate short-term construction-related noise and, in some cases, long-term operational noise associated with maintenance activities and increased vehicle traffic. Although some projects extend across large geographic areas and could contribute incrementally to regional noise levels, noise effects would generally be localized, intermittent, and specific to individual projects. Given the spatial and temporal separation of these activities, combined noise exposure within the Project Area would likely be limited.

3.10.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under the No Action Alternative, noise conditions would remain consistent with existing operations approved under the 1998 EIS/ROD (BLM 1998a). Baseline monitoring indicates that average operational noise levels near the central mine area are approximately 55.7 dBA during active mining conditions (Sespe 2024). Higher sound levels occur intermittently in proximity to active equipment and specific operational activities.

Given the remote location and the limited presence of nearby sensitive receptors, noise impacts would remain within the analysis area. Noise conditions beyond the immediate Project Area would continue to be low relative to typical regulatory thresholds. Wildlife and recreational receptors would continue to experience existing ambient and operational noise conditions.

3.10.2.4 IMPACTS OF PROPOSED ACTION

Construction activities associated with the Project would primarily include earthmoving, excavation, pit expansion, and facility installation within the existing mine boundary. Construction equipment would include haul trucks, dozers, loaders, graders, excavators, and cranes. Reference noise levels for heavy construction equipment may approach approximately 85 dBA at 50 feet (FHWA 2011).

Due to the remote setting, limited receptors, and the distance to the nearest residence (approximately 5 miles south of the CMM), construction-related noise impacts are expected to be short-term and confined to active work areas. ACEPMs including maintaining properly functioning mufflers, implementing routine equipment maintenance, and limiting construction to applicable allowable hours, would further reduce the potential for noise impacts (Appendix E).

The Project would require construction of a 31.5-mile underground water pipeline and a 16.5-mile 69-kV overhead power line. Construction would primarily occur along existing roadways, including SR 164 and the existing CMM Access Road, which would minimize new disturbance and generally confine construction activities to areas already influenced by transportation-related noise.

Short-term construction noise would be generated by trenchers, excavators, haul trucks, and support equipment. Typical construction equipment noise levels range from approximately 76 to 82 dBA at 50 feet (FHWA 2011). No sensitive receptors are within distances where construction noise would approach regulatory thresholds. Impacts would be short term, intermittent, and limited to active construction areas.

Noise modeling results indicate that operational noise levels under Project conditions would remain generally comparable to Phase I operations. Baseline monitoring during active current operational conditions recorded average daytime noise levels near the central mine area of approximately 55.7 dBA (Sespe 2024). Modeled noise levels at the nearest residence, approximately 5 miles from the Project site, are predicted to remain well below San Bernardino County exterior noise criteria of 65 dBA L_{eq} (daytime) and 55 dBA L_{eq} (nighttime); therefore, Project operations are expected to comply with applicable county standards.

An increase of 5 dBA above existing ambient conditions is commonly considered readily noticeable and is often used as an indicator of potential adverse impact. Modeled Project operational noise levels are not expected to exceed existing operational noise levels by more than 5 dBA at sensitive receptors. Accordingly, Project operations would not be expected to result in a substantial increase in ambient noise conditions.

Noise-sensitive receptors in the study area are limited and include wildlife and recreational resources such as CMNM. During existing operational monitoring, wildlife observations (including bighorn sheep near active excavation areas) indicated no apparent behavioral response attributable to ongoing mining noise (Sespe 2024). Because Project operational noise is expected to remain similar to existing operational conditions, no substantial change in noise exposure is anticipated for wildlife or recreational receptors.

Project-related traffic would include medium- and heavy-duty trucks associated with construction and mine operations (see Section 3.14, *Transportation*). Traffic noise increases logarithmically with traffic volume. A doubling of traffic volume generally results in an approximate 3-dBA increase, which is considered barely perceptible.

Traffic associated with mine operations is already established in the area and contributes to existing noise levels along local transportation corridors. No sensitive receptors are within proximity to these corridors where traffic noise increases would result in substantial impacts. Even if traffic volumes increased substantially during Project implementation, the associated increase in traffic noise would be expected to be minor and not result in a significant impact.

Vibration impacts would be generated primarily by blasting and heavy equipment operation during construction and mining activities. Due to the remote location of the mine, distance to the nearest residence, limited sensitive receptors, and the confinement of blasting to the mine pit areas, vibration impacts would remain within the analysis area and are not expected to result in off-site nuisance conditions or damage to structures.

Implementation of ACEPMs would reduce impacts related to noise and vibrations by restricting blasting during high winds (AQ-9), maintaining equipment in good working order (AQ-13 and AQ-16), and implementing training programs for personnel to minimize unnecessary noise (ADM-5) (Appendix E).

3.10.2.5 IMPACTS OF ALTERNATIVES C – D

Alternative C includes partial backfilling of the south extension pit following ore extraction, which would extend mine operations by approximately 2 years and require additional haulage. Noise and vibration levels may be slightly higher in the vicinity of the pit during backfilling due to increased haul truck activity and extended equipment operation; however, impacts would remain local to active mining areas, and off-site noise and vibration impacts would remain similar to the Proposed Action due to distance to sensitive receptors.

Alternative D would incorporate a small on-site solar power facility to supplement mine operations. Construction would generate minor short-term noise and vibration from equipment operation during grading and installation; however, these impacts would be short-term and confined to the analysis area. Operational noise from solar facility components (e.g., inverters and transformers) would be low and would not result in substantial changes to ambient noise conditions. Overall, noise and vibration impacts under Alternative D would remain similar to the Proposed Action.

3.11 Recreation and Special Designations

Recreational resources for this analysis include public land and infrastructure accessible to the public for recreation activities. Lands with special designations refer to public lands established to protect significant natural, cultural, or scientific resources. These typically allow outdoor recreation. The analysis area for recreation and land with special designations (hereafter recreation and special designations analysis area) includes all land within 15 miles of the mine site and 3 miles from the underground water pipeline and 69-kV overhead power line ROWs (Figure C.3.11-1 through Figure C.3.11-4). The 15-mile buffer around the mine site aligns with the visual resources analysis area (see Section 3.15, *Visual*

Resources) and is appropriate for evaluating potential changes in visual resources and light pollution from mine activities. The 3-mile buffer along the underground water pipeline and 69-kV overhead power line ROWs reflects the anticipated maximum extent of potential impacts from dust and noise related to the water pipeline and power line.

3.11.1 Affected Environment

The affected environment for recreation and special designations includes public lands, recreational infrastructure, and areas managed under special land use designations intended to protect unique cultural, scenic, ecological, or recreational values. Because most recreation within the recreation analysis area occurs on lands with special designations, these areas are described first; which is followed by a discussion of recreational access, infrastructure, and opportunities. Lastly, information is provided on the potential number of recreation user-days within the analysis area.

3.11.1.1 SPECIAL DESIGNATIONS

Special designations on public lands, such as NMs, Extensive Recreation Management Areas (ERMAs), and ACECs, are established to protect significant natural, cultural, or scientific resources. NMs and preserves are designated either by presidential proclamation or by an act of Congress, with management focused on preserving the specific values for which they were established. In contrast, ERMAs and ACECs are designated through the BLM land use planning process, based on the presence of unique resources conditions or uses that require special management attention. In total, 14 specially designated areas—four ACECs, three NMs, three ERMAs, two wilderness areas, one Special Recreation Management Area (SRMA), and one national preserve—intersect the recreation and special designations analysis area. Note that these are not 14 fully distinct geographic areas, as several special designation areas partially overlap. The special designation areas intersected by the recreation and special designations analysis area are listed below.

3.11.1.1.1 Areas of Critical Environmental Concern

The Castle Mountain ACEC was formally designated in the DRECP, though it had been nominated and referenced in earlier planning efforts (BLM 2016). The ACEC encompasses approximately 3,270 acres and was designated for its unique historic and cultural landscape, as well as its ecological diversity (see Figure C.3.11-2). The area contains high-quality desert habitat, including representative Joshua tree woodland, pinyon–juniper communities at higher elevations, and a distinctive desert grassland plant assemblage. The ACEC also provides important habitat connectivity for wildlife, particularly desert bighorn sheep, serving as a linkage between surrounding mountain ranges and supporting the Castle Mountain population. In addition, the area supports regionally significant plant species and provides habitat for several special-status wildlife species, including prairie falcon, gray vireo, and Bendire's thrasher. Cultural resources in the area reflect Native American use, historic mining activities, and early settlement patterns in the eastern Mojave Desert, further contributing to its designation as an ACEC (BLM 2016:Appendix B:620–621).

The Ivanpah ACEC was originally established in 2002 and later incorporated into the DRECP (BLM 2002, 2016). Covering 78,190 acres, the ACEC overlaps part of the recreation and special designation analysis area as it crosses the state border from Nevada into California near Nipton (see Figure C.3.11-2). The ACEC was designated primarily to protect the biologically rich ecosystem of the Ivanpah Valley, which supports a high density of desert tortoise and includes designated desert tortoise critical habitat. The area also provides important habitat connectivity between the Mojave National Preserve and lands managed by the BLM LVFO. In addition to desert tortoise habitat, the ACEC supports populations of several special-status plant species, including San Bernardino milk-vetch, polished blazing star, and Rusby's desert-mallow, as well as wildlife such as desert bighorn sheep, American badger, and

Bendire's thrasher. The area also contains extensive cultural resources, including evidence of Native American occupation along the shoreline of Ivanpah Dry Lake spanning more than 4,000 years. These biological, cultural, and scientific values contribute to the designation of the Ivanpah ACEC and its management emphasis on protecting habitat quality, sensitive species, and landscape connectivity while allowing compatible public uses (BLM 2016:Appendix B:267–268).

The Piute-Eldorado ACEC was designated in the 1998 Las Vegas RMP to protect and conserve populations and habitat of the Mojave desert tortoise and to safeguard important cultural and Tribal resources within the region (BLM 1998b, 2022b). Encompassing approximately 323,690 acres, the ACEC overlaps portions of the proposed ROWs in Clark County, Nevada (see Figure C.3.11-2). The ACEC represents one of the largest areas of high-density desert tortoise habitat in Nevada and contains extensive designated critical habitat for the species. Maintaining habitat quality and connectivity across the Piute and Eldorado valleys is important for supporting viable tortoise populations and facilitating gene flow across the Mojave Desert recovery units. In addition to desert tortoise habitat, the ACEC supports other special-status wildlife and plant species and contains areas of high scenic quality associated with surrounding mountain ranges. The landscape also forms part of a broader interconnected cultural landscape that holds cultural and religious significance for several Tribal Nations, including the Southern Paiute and Mojave peoples, with connections to important cultural features such as Avi Kwa Ame (Spirit Mountain) and the Salt Song Trail. In 2022, the BLM developed the Piute Eldorado Valley ACEC Management Plan to recommend management actions and conservation strategies that implement the objectives of the 1998 Las Vegas RMP, including protecting desert tortoise habitat, maintaining habitat connectivity, addressing ecological stressors, and guiding compatible land uses within the ACEC (BLM 2022b).

The Piute-Fenner ACEC was originally established in 2002 and later incorporated into the DRECP (BLM 2016). Encompassing approximately 155,710 acres of BLM-managed lands (see Figure C.3.11-2), the ACEC was designated to protect and conserve critical habitat for the federally threatened desert tortoise, as well as significant ecological and cultural resources. The area contains high-quality Mojave Desert habitat, including creosote bush scrub and unique plant assemblages such as smoke tree and ocotillo communities, and serves as an important habitat linkage between desert tortoise populations in Mojave National Preserve and adjacent BLM-managed lands in Nevada. Cultural resources within the ACEC include historic travel routes such as the Mojave Road and Old Government Road, as well as archaeological sites including petroglyphs associated with long-term Native American use of the region, some of which are listed on the National Register of Historic Places (BLM 2016:Appendix B).

3.11.1.1.2 Extensive Recreation Management Areas

The Castle Mountain ERMA overlaps the CMM and its surrounding area, encompassing approximately 7,900 acres (see Figure C.3.11-4). Established through the DRECP, this ERMA is managed to provide outstanding scenic views and opportunities for dispersed recreational use (BLM 2016: Appendix C 196–197).

A portion of the Southern Nevada ERMA located along the Nevada-California border and would be crossed by the proposed ROWs (see Figure C.3.11-4). Established in the Las Vegas RMP, the ERMA contains a total of approximately 2.5 million acres. It is managed for dispersed and diverse recreation opportunities.

The Ivanpah Valley ERMA was established through the DRECP and is managed for outstanding views and dispersed recreational use (BLM 2016:Appendix C:86–89). The ERMA, totaling 25,982 acres, overlaps the proposed ROWs where it enters California on SR 164 near Nipton (see Figure C.3.11-4).

3.11.1.1.3 National Monuments

The AKANM was established by presidential proclamation in 2023 and encompasses approximately 506,814 acres in southern Nevada (see Figure C.3.11-1) (BLM 2025a). The monument was designated to protect a landscape of exceptional cultural, spiritual, historic, and scientific significance, including sacred sites central to the creation stories and living traditions of multiple Tribal Nations. The designation also preserves a large, relatively intact desert ecosystem containing important archaeological resources, distinctive geologic features, naturally quiet soundscapes, dark night skies, centuries-old Joshua trees, and habitat for sensitive and threatened species, including the Mojave desert tortoise, Gila monster, and desert bighorn sheep. Consistent with the proclamation and applicable management direction, the AKANM also provides for continued public access and recreation, including hunting, camping, hiking, designated off-highway vehicle use, photography, and other compatible recreational activities.

The CMNM was designated in 2016 by presidential proclamation and consists of approximately 21,000 acres near the California-Nevada border (see Figure C.3.11-1). The Castle Mountains area provides a critical linkage for plants, animals, and water between two mountain ranges within the MNP—the New York Mountains to the northwest and the Piute Mountains to the southeast. The area is also known for its long history of precontact and historic human use. Additionally, it has been prioritized for scientific research on desert bighorn sheep and multiple rare plant populations.

The Mojave Trails National Monument (MTNM), similar to the CMNM, was established in 2016 by presidential proclamation The MTNM spans 1.6 million acres across the Mojave Desert of Southern California (see Figure C.3.11-1). The monument protects a vast expanse of desert landscape, serving as a crucial wildlife corridor that connects the MNP with other conservation lands. Mojave Trails is known for its diverse habitats, scenic vistas, and significant cultural resources, including historic Route 66 and numerous Native American trails and archaeological sites. The area supports a variety of plant and animal species and is valued for recreation, scientific research, and the preservation of its unique natural and cultural heritage.

3.11.1.1.4 National Preserves

The MNP was established by Congress through the California Desert Protection Act in 1994 and spans approximately 1.6 million acres (see Figure C.3.11-1). The preserve is renowned for its rich biodiversity and diverse desert landscapes, which include Joshua tree forests, sand dunes, volcanic formations, mountains, and historic sites.

3.11.1.1.5 Special Recreation Management Areas

The National Trails SRMA, established by the DRECP, is a BLM-managed area in Southern California of approximately 484,000 acres designated to protect and enhance the scenic and historic recreational opportunities along the Mojave Adventure Trails System (BLM 2016). Encompassing the longest unspoiled section of U.S. Route 66, historic railroad lines, and segments of the Mojave Road (aka Mojave Trail) and Old Spanish National Historic Trail (OST), the SRMA highlights over 400 years of travel and migration history. The OST, designated by Congress in 2002, is a 2,700-mile trail network that played a role in the exploration and settlement of the interior Mountain West, including southern Nevada and southern California. Between 1829 and 1848, traders, explorers, settlers, and others traveled the difficult pack trail linking Spanish colonies in New Mexico with coastal settlements in southern California. The OST and its ROW are located more than 5 miles from the proposed water pipeline and power line rights-of-way and more than 9 miles from the CMM. Today, the SRMA features a network of backcountry touring routes for motorized and nonmotorized recreation, providing access to remote desert landscapes, historic sites and trails, and gateways to the MNP and Joshua Tree NP.

3.11.1.1.6 Wilderness

The Wee Thump Joshua Tree Wilderness (WTJTW), designated by the Clark County Conservation of Public Land and Natural Resources Act of 2002 (Public Law 107-282), encompasses 6,050 acres west of Searchlight, Nevada (see Figure C.3.11-3). Located within the AKANM, the WTJTW is known for its ancient Joshua trees—some over 900 years old and more than 30 feet tall. The wilderness area also provides important habitat for wildlife such as the desert tortoise, bighorn sheep, and a variety of birds, including the gilded flicker, which is found in Nevada only at this location. Within the wilderness boundary, motorized vehicles and mechanized equipment are prohibited to preserve wilderness character.

The Mojave Wilderness lies within the MNP and encompasses approximately 695,200 acres (see Figure C.3.11-3). Designated in 1994 as part of the California Desert Protection Act, the Mojave Wilderness safeguards some of the most pristine and ecologically significant areas in the MNP. Managed by the NPS, this vast wilderness protects a diverse desert landscape that includes Joshua tree forests, sand dunes, volcanic cinder cones, rugged mountains, and expansive valleys. The Mojave Wilderness provides critical habitat for the threatened desert tortoise, bighorn sheep, and a variety of other desert wildlife. To preserve its character, the use of motor vehicles, mechanical transport, and motorized equipment is prohibited within the Mojave Wilderness; however, open roads within the MNP provide access to most of the wilderness boundaries.

3.11.1.2 RECREATION

The recreation and special designations analysis area consists of remote, largely undeveloped public lands, including portions of specially designated areas and other surrounding public lands. Access is generally limited to high-clearance or four-wheel drive vehicles, and infrastructure and developed facilities are minimal. Recreational use is primarily dispersed and low-intensity, consistent with the area's remoteness and limited amenities. Regional visitation data, adjusted for local conditions, indicates that annual recreational-use density within the analysis area is relatively low. The following sections provide additional details on access, infrastructure, recreational opportunities, and visitation.

3.11.1.2.1 Access and Infrastructure

The entire CMNM intersects the recreation and special designations analysis area (see Figure C.3.11-1). The CMNM is generally remote and access requires a high-clearance four-wheel drive vehicle (NPS 2026a); however, the CMM Access Road (Walking Box Ranch Road), is a gravel road accessible by most motor vehicles. The CMNM contains no facilities or maintained trails.

The MNP, which surrounds the CMNM, can be accessed in several locations from I-15 and I-40 and contains infrastructure including a visitor center and several campgrounds (see Figure C.3.11-1). The visitor center and two other attractions are accessible via paved or gravel roads that do not require a four-wheel drive vehicle (NPS 2026b); however, the developed areas and attractions that can be accessed by general motor vehicles are outside of the recreation analysis area. Access to the portions of the MNP that are within the recreational analysis area are remote and require four-wheel drive vehicles. Based on visitor maps, two attractions overlap the recreation analysis area (NPS 2026c):

- The Rock Spring Loop Trail trailhead and an adjacent picnic area are within the recreation analysis area, approximately 10.7 miles west-southwest of the expanded mine site.
- The Fort Piute Ruins and Piute Canyon Loop Trail trailhead are within the recreation analysis area, approximately 9.3 miles south-southeast of the expanded mine site.

The Mojave Road (aka Mojave Trail) is an approximately 150-mile route that traverses the desert between the Colorado River and the Mojave River. Most of the road is within the MNP (see Figure

C.3.11-1). The road enters the park Piute Spring to the East and Soda Dry Lake to the west. The historical route traces trade routes used by Native Americans. The route was also used by American settlers traveling west.

Portions of the Mojave Wilderness overlap the recreation and special designation analysis area (see Figure C.3.11-3). Motorized vehicle use is not allowed within the wilderness, and there are no facilities present.

The recreation and special designations analysis area overlaps portions of the AKANM (see Figure C.3.11-1). Access to the monument is generally limited to unpaved roads, many of which require high-clearance or four-wheel drive vehicles. There are currently no developed campgrounds or maintained recreation facilities outside of trailheads and parking areas (off SR 164) within the monument boundaries. Although not specifically related to recreation, Walking Box Ranch, a site listed on the NRHP, is a developed facility within AKANM that is frequently used as a temporary visitor center, hosts monthly public events and activities, and is available for school tours and community outreach programs.

Several California State Land parcels are interspersed within the MNP and overlap the recreation and special designation analysis area (see Figure C.3.11-1). Recreational access to these lands has not been verified. If recreational access is permitted, these areas would generally require four-wheel drive vehicles.

Most of the WTJTW overlaps the recreation and special designation analysis area see (Figure C.3.11-3). No motorized vehicles are permitted inside the wilderness and there are no developed facilities. There is one designated trail—the Joshua Tree Trail.

The recreation and special designations analysis area overlaps multiple ERMAs and one SRMA (see Figure C.3.11-4).

Based on available visitor maps and GIS data, the portions of the MTNM, ACECs, ERMAs, and SRMA intersected by the recreation and special designation analysis area do not have developed access or infrastructure. Like most other areas included in this analysis, these areas are generally accessible only by unpaved roads.

3.11.1.2.2 Opportunities and Activities

Recreational opportunities are generally similar within the lands that intersect the recreation analysis area. There is little or no infrastructure and recreation is dispersed. Based on agency documents and scoping comments, activities that are allowed and likely occur within the recreation analysis area may include horseback riding, off-road driving,[2] hiking, camping, wildlife viewing/photography, rock hounding,[3] mining tourism, and dark sky viewing.

3.11.1.2.3 Visitation Estimates

Visitation estimates are made by extrapolating available data on recreational visits collected by the NPS for MNP and BLM provided data from to the remainder of the recreation analysis area (NPS 2026d). The most recent 10-year average (2015–2024) annual visitation is 737,291. Based on a simple linear regression, there is no statistically significant trend in visitation over these 10 years ($p = 0.574$).[4] As noted above, the MNP contains 1.6 million acres. These numbers imply that the annual number of visits per acre is 0.46.[5]

[2] Prohibited in designated wilderness areas.

[3] Prohibited in designated wilderness areas.

[4] Visits were modeled as a function of constant and year, using STATA 18.

[5] 737,291 ÷ 1,600,000 = 0.461.

Before extrapolating this number of visits per acre to the acres within the recreation analysis area, several adjustments are made so that the number is more representative of conditions within the recreation analysis area. Specifically, visitors' responses to the 2003 MNP Visitor Use Survey (NPS 2023) are used to include only visits to the less developed regions of MNP, which is more representative of the recreation analysis area. Consider the following responses from the visitor use survey:

- 48% used MNP as a cut-through from Southern California and Las Vegas and did not stop;
- 43% of visitors used unpaved roads; and
- 15% of visitors used developed campgrounds.

The 0.46 visit per acre above is adjusted by these numbers to exclude people who only drove through, include only those people who used unpaved roads, and exclude people who stayed in developed campgrounds. The resulting estimate is 0.09 visit per acre.[6]

This estimate of visits per acres is applied to three distinct geographic zones for the analysis, based on the expected intensity of impacts: (1) the area within 3 miles of the center of the mine; (2) the combined area of the Castle Mountain ACEC, Castle Mountain ERMA, and CMNM, which surround the CMM, excluding Zone 1; and (3) the remainder of the recreation analysis area. The area of Zone 1 is approximately 18,000 acres. The area of Zone 2 is approximately 14,000 acres. The area of Zone 3 is approximately 420,000 acres. The combined number of annual visits is approximately 41,000. The calculation of annual visits to each zone is shown in Table B-1.3.11-1 in Appendix B.

The BLM collects traffic counter data at two locations within AKANM: (1) along Walking Box Ranch Road and (2) along a dirt road on the eastern border of WTJTW. The 10-year annual average number of one-way vehicles is approximately 15,000 for Walking Box Ranch Road and approximately 5,000 for Wee Thump East Road.[7] Assuming all vehicles are associated with recreationists, the number of annual visitors would total approximately 50,000.[8] AKANM encompasses approximately 500,000 acres, but the portions of the AKANM represented by the two traffic counters total approximately 288,000 acres.[9] This results in an annual visitation rate of approximately 0.17 visitors per acre based on the BLM traffic counter data.[10] This result is higher than the estimate of 0.09 visitors per acre derived above, suggesting that the estimate of 41,000 visits per year derived above may be understated. At the same time, the 0.17 acres may not be representative of (and overstates visits to) the entire recreation and special designations analysis area because it only applies to areas with some roadway access, may include visits outside of AKANM (e.g., the Castle Mountain ERMA), and likely includes some vehicles not associated with recreational activities (e.g., traffic to CMM). Overall, there is not sufficient information available to refine the estimate of 41,000 visitors per year to the recreation and special designations analysis area derived above. That number is adopted for this analysis with the recognition that it may be somewhat understated.

3.11.2 Environmental Consequences

3.11.2.1 ANALYSIS METHOD

Data sources for analyzing potential impacts to recreation and special designation areas include BLM GIS datasets and management plans or interim guidance. Spatial analysis techniques were used to overlay the

[6] $0.46 \times (1 - 0.48) \times 0.43 \times (1 - 0.15) = 0.09$

[7] The BLM typically assumes 2.5 persons per vehicle.

[8] $(15{,}000 + 5{,}000) \times 2.5 \div 2 = 25{,}000$.

[9] Some of the 288,000 acres are outside of the recreation and special designations analysis area.

[10] $50{,}000 \div 288{,}000 = 0.17$.

boundaries of each special designation with the Project analysis area, allowing for the identification and assessment of potential spatial resource and management conflicts. This approach also provides important context by quantifying the potential impacts in terms of affected acreage relative to the total acreage of each special designation.

Potential impacts on recreation and special designations are first discussed qualitatively. In addition, the potential changes in visits within the recreation and special designations analysis area are estimated.

Assumptions for analysis include:

- Existing recreation uses and patterns are characterized using the most recent available data, surveys, and applicable land management plans.
- In the absence of specific recreation visitation data, it is assumed that all public lands capable of supporting dispersed recreation are used at similar levels for such activities.
- Noise, dust, and traffic associated with the Project are anticipated to be greatest during construction phases; these impacts may continue, albeit at reduced levels, during operations, maintenance, and through Project decommissioning and reclamation.
- Public access to existing recreation areas and special designation lands would be maintained in accordance with the approved MPO and POD for the life of the Project.
- All management prescriptions and protective measures for special would be implemented as required by applicable laws, regulations, and LUPs.

3.11.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

A total of 28 RFTPAs have been identified in the region, including infrastructure, mining, transportation, and recreation projects (see Table B-1.3.3-1 in Appendix B). As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. Several of these RFTPAs occur on or near lands with special designations or areas managed for recreation. Short-term impacts could include temporary access restrictions, noise, dust, and increased traffic during construction or permitted events. For example, organized recreation events may temporarily affect access or visitor experience on designated routes and dry lakebeds, while transportation and infrastructure projects may generate localized construction disturbances. Long-term impacts may result from new infrastructure or changes in land use that could affect scenic quality, habitat connectivity, or the character of recreation settings. Projects such as the Southern Nevada Supplemental Airport and regional transmission or utility upgrades could introduce permanent infrastructure within the broader landscape, while some projects—such as the I-15 Wildlife Crossings, abandoned mine land closures, and the McCullough Springs land acquisition—are intended to enhance public safety, habitat connectivity, and conservation outcomes.

3.11.2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, no additional ROWs would be granted for the underground water pipeline or 69-kV overhead power line, and the currently authorized MPO would remain in effect. No new surface disturbance would occur outside the existing mine plan boundary, and there would be no new impacts to surrounding recreational activities, or the use, access, and management of adjacent special designations.

3.11.2.4 IMPACTS OF PROPOSED ACTION

3.11.2.4.1 Special Designations

Within the recreation and special designation analysis area, seven of the 14 special designations overlap portions of the Project, including the AKANM, three ACECs, and three ERMAs. Because these designation units encompass large portions of the Project area environmental consequences are discussed collectively rather than separately for individual MPO and ROW components. Table B-1.3.11-2 in Appendix B summarizes disturbance categories for each special designation unit affected by the Project.

Project-related disturbances within these designated areas would occur primarily during construction and operation of the proposed water pipeline and overhead power line. In many locations, these facilities would be co-located with existing transportation corridors, including Walking Box Ranch Road/CMM Access Road and SR 164, or within the existing 400-foot NDOT ROW (See Section 3.9). This siting approach would limit new disturbance in previously undisturbed areas; however, construction would still result in short-term and long-term environmental consequences within affected designation units.

Short-term disturbances during construction would include vegetation removal, soil disturbance from trenching and equipment access, increased human activity, noise, and localized dust generation. These activities could temporarily affect biological soil crusts, desert pavement, native vegetation communities, and wildlife habitat associated with desert washes and upland desert ecosystems. Construction could also temporarily disrupt recreational use and access within portions of designated recreation areas.

Long-term disturbances would occur where infrastructure or persistent surface disturbance remains following construction, including permanent infrastructure associated with the overhead power line, maintained right-of-way areas for the buried pipeline, and ongoing inspection and maintenance activities. Long-term impacts could include incremental habitat fragmentation, localized alteration of soils and vegetation communities, and the potential introduction or spread of invasive species. In designated areas such as the AKANM and ACECs, project-related disturbance could also affect resources and values identified in designation documents, including Joshua tree woodland, desert tortoise habitat, biological soil crusts, and broader landscape characteristics such as scenic quality and undeveloped character.

For special designations identified in Table B-1.3.11-2 that occur within the recreation and special designation analysis area but are not crossed by the Project, impacts to the designations themselves are not analyzed further. These include the CMNM, MTNM, National Trails SRMA and OST, Piute Fenner ACEC, MNP, WTJTW, and the Mojave Wilderness. The Proposed Action does not overlap these designations and would not affect their management, resources, or the purposes for which they were designated.

National Monuments

Of the three national monuments evaluated in the analysis area, the Project would intersect only the AKANM. Project-related activities within the monument would occur in portions of the proposed underground water pipeline and the 69-kV overhead power line ROWs located in Nevada.

The proposed overhead power line would primarily parallel Walking Box Ranch Road/CMM Access Road within the monument. Long-term disturbance associated with the power line is estimated at approximately 5 acres and would consist of permanent infrastructure such as poles and associated pulling and tensioning sites. Although the permanent disturbance footprint would be small, installation of aboveground transmission structures would introduce vertical infrastructure into portions of the monument landscape and could result in localized changes to visual character (see Section 3.15, Visual Resources). Because the alignment follows an existing roadway corridor, new infrastructure would be concentrated in areas that already contain human-made features.

Construction of the underground water pipeline within the monument would result in approximately 118 acres of short-term disturbance associated with staging, trenching, and equipment access. Following installation and backfilling, long-term disturbance would be approximately 52 acres because the pipeline would be buried and surface restoration would occur. Long-term effects would primarily be associated with periodic inspection and maintenance activities. The pipeline ROW would generally parallel SR 164 within the NDOT 400-foot ROW, approximately 100 to 130 feet from the roadway (see Section 3.9).

Construction of the proposed water pipeline and power line within the AKANM could affect several monument objects identified in the Presidential Proclamation and may result in adverse impacts. Ground disturbance could affect biological soil crusts, desert pavement, and native plant communities. ROWs would also intersect areas potentially containing Joshua trees—an object of protection in the proclamation and an important component of wildlife habitat—where removal or relocation could result in the loss of mature individuals. Vegetation removal along portions of the buried pipeline, including trees in desert washes along Nipton Road, could also affect habitat used by phainopepla. In addition, construction activities and new infrastructure could introduce visual and noise effects that alter the monument's landscape setting and soundscape and affect views across the desert landscape. Because the proclamation recognizes the landscape itself—and the connections between mountains, valleys, and culturally important landmarks—as an object of protection, these disturbances would affect not only individual resources but also the broader ecological, visual, and cultural integrity of the monument.

Areas of Critical Environmental Concern

Of the four ACECs overlapping the analysis area, three would be intersected by the Project's proposed ROWs. Similar to the AKANM, disturbances within these ACECs would occur either adjacent to or in close proximity to Walking Box Ranch Road/CMM Access Road or SR 164, and primarily within the existing NDOT ROW.

The Proposed Action would result in approximately 2 acres of short-term disturbance and 1 acre of long-term disturbance within the Castle Mountains ACEC. Short-term disturbance would occur during construction of the water pipeline and power line, whereas long-term disturbance would occur where surface conditions remain altered following construction in the long-term ROWs. The Castle Mountains ACEC was designated to protect nationally significant biological and ecological values, including Joshua tree woodland, unique desert grassland plant assemblages, habitat connectivity between the Piute and New York mountains, and habitat used by desert bighorn sheep and other special-status wildlife species. Ground disturbance could temporarily or permanently reduce vegetation cover, disturb biological soil crusts, and incrementally reduce habitat quality within the disturbance footprint. However, because the disturbance would be limited relative to the overall size of the ACEC and temporary disturbance areas would be reclaimed following construction, impacts to ACEC values would be limited. Additionally, consistent with the DRECP and the Consolidated CDCA Plan (BLM 2016, 2022a), mitigation may be required for portions of the ROWs within the Castle Mountain ACEC. If required under the applicable land use plans, such mitigation would be incorporated as terms and conditions of the ROW grants.

The Proposed Action would result in approximately 16 acres of short-term disturbance and 7 acres of long-term disturbance within the Ivanpah ACEC. These acreages include only the water pipeline and overhead power line, as the MPO boundary does not overlap this ACEC. The ACEC was designated to protect nationally significant biological, ecological, cultural, and scientific values, including a high-density population of the federally threatened Mojave desert tortoise and habitat connectivity between MNP and lands managed by the LVFO (BLM 2016). Ground disturbance could remove vegetation, disturb soils, and incrementally reduce habitat quality within the disturbance footprint, potentially affecting desert tortoise habitat, sensitive plant populations, and other wildlife species. The portions of the ROWs overlapping the Ivanpah ACEC may be subject to disturbance caps and associated mitigation established under the DRECP and the Consolidated CDCA Plan (BLM 2016, 2022a). If

required under the applicable land use plans, such mitigation would be incorporated as terms and conditions of the ROW grants.

For the Piute-Eldorado ACEC, the Proposed Action would result in approximately 177 acres of short-term disturbance and 51 acres of long-term disturbance. These acreages include only the water pipeline and overhead power line, as the MPO boundary does not overlap this ACEC. The Piute–Eldorado Valley ACEC was designated to protect and conserve populations and habitat of the federally threatened Mojave desert tortoise and to support implementation of the Desert Tortoise Recovery Plan (BLM 1998b, 2022b). The ACEC also supports ecological resources that contribute to desert tortoise habitat quality, including native vegetation communities, soils, and broader ecosystem processes within the Mojave Desert. Ground disturbance associated with the Proposed Action could temporarily or permanently remove vegetation, disturb soils, and incrementally reduce habitat quality within the disturbance footprint. These effects could locally reduce the availability or quality of habitat for desert tortoise and other native wildlife species and may temporarily disrupt ecological conditions that support tortoise habitat. The Piute–Eldorado Valley ACEC management framework allows for certain land use activities provided they are consistent with resource protection objectives identified in the Las Vegas RMP and the ACEC Management Plan. Although the Proposed Action would result in short- and long-term disturbance within the ACEC, no disturbance caps or prescribed mitigation ratios are established for the Piute–Eldorado Valley ACEC under the Las Vegas RMP or the ACEC Management Plan (BLM 1998b, 2022b). If the LVFO determines that mitigation is required to minimize adverse impacts to the ACEC, it would include such mitigation as terms and conditions of the ROW grants.

Extensive Recreation Management Areas

For the Castle Mountain ERMA, approximately 2,500 acres are contained within the 1998 mine boundary or the proposed mine boundary expansion, and have no proposed disturbances. Approximately 1,400 acres would have long-term disturbance and an additional 10 acres would have short-term disturbance. These disturbances would largely occur near other disturbed areas. The additional disturbance would not alter the general management of this area or adversely affect the special values for which these areas were designated.

The portions of Ivanpah Valley ERMA that would have long-term disturbance (7 acres) and short-term disturbance (an additional 33 acres) are along SR 164 and Nipton, California. Potential impacts would be reduced by the co-location with SR 164 and other disturbed areas.

The ROWs in Nevada are fully within the Southern Nevada ERMA for a total of 175 acres of short-term disturbance and 85.5 acres of long-term disturbance. These areas are mostly parallel to Walking Box Ranch Road/CMM Access Road or within the existing 400-foot NDOT ROW along SR 164. Potential impacts would be minimized through co-location with SR 164 and other previously disturbed areas. The incremental disturbance would not alter overall management of the area or result in adverse effects to the special values or resources for which these areas were designated.

3.11.2.4.2 Recreation

Potential impacts to recreation within the recreation and special designation analysis area could occur mainly due to changes in visual resources, traffic, noise, and dust. No changes in access to public lands are anticipated. Impacts are anticipated to differ in intensity and duration for the mine operations, the underground water pipeline, and the 69-kV overhead power line.

Implementation of ACEPMs would reduce impacts to recreation and special designations by restricting access to hazardous mine areas (PHX-3 and ADM-6) and maintaining orderly site conditions (WM-1) (Appendix E).

Mine Operations

In addition to expanding mining operations, the mine life would be extended from 2035 in Alternative A to 2058, including both mining and reclamation activities. All else equal, these changes could result in: (1) an increase in recreational impacts over current conditions and (2) an extension of recreational impacts for an additional two decades. Impacts due to changes in mine operations would therefore be long-term.

According to the noise analysis, noise during construction and operation of the mine and along roadways is not expected to be noticeably different than under current conditions (see Section 3.10). There would be an increase in traffic and associated dust near the mine expansion and along the CMM Access Road. The visual resources analysis is provided in the Project's Visual Resources Technical Report (VRTR) (see Section 3.15, *Visual Resources*) (SWCA 2026b). Based on that analysis, this recreation assessment assumes that there would be adverse visual impacts during both day and night throughout the entire recreation analysis area.[11]

Underground Water Pipeline

A short-term ROW would be required during the approximately 2 years of construction. Construction activities could result in temporary changes in visual resources, traffic, and dust, primarily within the ROW adjacent to Walking Box Ranch Road/CMM Access Road. Following construction, a long-term ROW for the water pipeline would be maintained to support routine operation and maintenance activities. Because the water pipeline would be buried, no direct impacts to recreation are expected following construction. However, impacts could occur if the ROW is used by OHVs, which could create hazardous conditions for riders at wash crossings and other locations along the ROW.

Access along the pipeline alignment would be limited to authorized administrative use for inspection, monitoring, and maintenance of the buried pipeline and associated infrastructure. The long-term ROW would be used exclusively by CMV for utility access, and use of the ROW would be restricted to authorized personnel as approved by the Authorized Officer through stipulations included in the ROW grant. These stipulations would require access control measures—such as gates, signage, barriers, or similar mechanisms—to discourage unauthorized public entry. Implementation of these measures would reduce the likelihood of unauthorized OHV use and minimize the potential for associated safety hazards and recreation-related impacts along the ROW.

69-kV Overhead Power Line

The power line would consist of wooden single-pole structures, which would represent a long-term change in visual resources compared to current conditions (See Section 3.15, Visual Resources). Increased traffic, noise, and dust during construction of the power line would generally be limited to areas near existing roads (Walking Ranch Box Road and SR 164). The ROW along SR 164 may be used by off-road vehicles, potentially creating incremental noise impacts to Wilderness users.

Change in Visits

Construction and industrial activity has been found to adversely affect recreation on public lands (Rasch et al. 2018; Teigland 1999). This analysis follows an approach used to estimate changes in recreational visits on adjacent public lands associated with proposed construction of a pumped storage hydroelectric

[11] This assumption is conservative, in that it tends to overstate the potential impacts of the Project on recreation. Based on the VRTR, the Project would be visible from some, but not all, of the recreation and special designations analysis area.

facility in Wyoming (Byrd and Wakefield 2023).[12] The study is applicable to the Project because it involves similar types of anthropogenic disturbances (i.e., blasting, changes in visual resources, traffic, noise, lighting, and dust). Drawing on past research, Byrd and Wakefield (2023) categorized potential impacts as shown in Table B-1.3.11-3 in Appendix B.

For the CMM analysis, three zones within the recreation assessment area are considered: (1) the area within 3 miles of the mine property center; (2) the remainder of the area within the combined Castle Mountain ACEC-ERMA-NM complex; and (3) the remainder of the recreation analysis area. Each of these zones is assigned a category of impacts based on the expected intensity of disturbances during the two main phases of the Project: (1) construction; and (2) operation and reclamation. Note that these estimates have considerable uncertainty; the purpose of this analysis is to provide a general sense of how recreation trips might change as a result of the Project, not to predict exact changes. Note also that this approach essentially compares the proposed Project to a scenario without the mine operating (i.e., not the No Action Alternative); this is because the visitation data from the MNP largely reflect a condition without anthropogenic stressors such as a mine in place. There are not sufficient existing visitation data to compare the Project to the No Action Alternative. Therefore, the results provided in Table B-1.3.11-4 in Appendix B should be considered likely overestimates of potential changes, all else equal.

The total changes in annual recreation visits are estimated to be approximately 2,900 during construction years and approximately 750 during O&M and construction years (see Table B-1.3.11-4). The area-weighted average percent reductions across the entire recreation analysis area are 7.0% during construction and 1.8% during O&M and reclamation. These relatively low percentages reflect the fact that most impacts would be concentrated within a few miles of construction activities, leaving large swaths of land either not affected or affected only by relatively small changes in visual resources such as the power line.

It should be noted that the results do not account for potential substitution, whereby recreationists can go to other nearby locations outside of the recreation analysis area to enjoy similar recreational experiences. Given the large amount of public land with similar characteristics in the area, it is likely that recreationists can find other nearby locations to engage in their preferred activities.

3.11.2.5 IMPACTS OF ALTERNATIVES C – D

A review of Alternatives C and D in comparison with the Proposed Action indicates that none of the alternatives would result in new or additional impacts to recreation or special designations. Although each alternative presents variations in reclamation strategies, or power supply configurations, all would remain within the Project Area as analyzed under the Proposed Action. In summary, none of the alternatives would alter recreational access and use, or the use and management of special designations, when compared to the Proposed Action. The discussion on potential changes in recreation visits for the Proposed Action applies to the Alternatives C and D.

3.12 Socioeconomics

The socioeconomics assessment evaluates the interaction between the Project and the social/economic characteristics of communities that could be affected. The socioeconomics analysis area for this assessment includes San Bernardino County, California, and Clark County, Nevada. This analysis area was selected because primary taxing authority would occur in San Bernardino County where the Project sits and the nearest populations centers that would supply workers and worker housing are in Clark County. Socioeconomic indicators are used to characterize current socioeconomic conditions in the

[12] Public lands in Byrd and Wakefield (2023) included federal lands (BLM and Bureau of Reclamation) and state lands, including a nearby state park.

analysis area and evaluate potential impacts. Indicators include population and demographics, housing, economic conditions, property values, community services, and tax revenues.

3.12.1 Affected Environment

This section describes the existing conditions and trends within the affected environment for the identified socioeconomic indicators. Information is presented for the two counties that make up the analysis area, Clark County, Nevada, and San Bernardino County, California. Additionally, information is sometimes provided for the states of California and Nevada for reference or for towns in the vicinity of the Project Area where additional detail is useful.

3.12.1.1 POPULATION AND DEMOGRAPHICS

Changes in population can have adverse and/or beneficial impacts because more people not only may increase demand for public services but also may increase the tax base and bring in new revenues to pay for those services. Population growth can be an indicator of the overall health of an economy and community. If conditions are not desirable people would move away or would not choose to move into the area, creating a stagnant or declining population. Similarly, an aging population may mean more people reach retirement age and leave the workforce.

Both counties in the analysis area include large metropolitan population centers with the cities of San Bernardino in San Bernardino County and Las Vegas in Clark County; however, the counties also encompass large stretches of relatively unpopulated areas including the mine site, which is approximately 20 miles from the nearest population center. The total population in San Bernardino County was estimated to be 2,187,816 in 2023, a 9.1% increase since 2010. The total population of Clark County was estimated to be 2,293,764 in 2023, a 21.0% increase since 2010. Both counties show faster population growth than their respective states. Clark County grew at a faster rate than San Bernardino County. Over the same time frame, the median age increased by 3.2 years in both counties. Table B-1.3.12-1 in Appendix B provide the population in the analysis area between 2010 and 2023.

3.12.1.2 HOUSING AND LODGING

As workers come into the area for construction or operation jobs, they may increase the demand for local housing and lodging, which can cause an increase in home or rent prices that can be beneficial for property owners who sell or rent their property but increase costs for existing residents. Additionally, workers staying in temporary lodging, such as hotels, motels, or RV parks, could displace tourists or other visitors who may have spent additional money at local attractions. The large population centers in the analysis area provide a significant amount of housing; however, population centers in San Bernardino County are generally not within commuting distance of the Project site. Clark County home values and rents are similar to statewide levels for Nevada. The housing inventory in Cal-Nev-Ari, Laughlin, and Searchlight is much lower than in Henderson and Las Vegas; however, median rental prices and home values are significantly lower. Clark County home values and rents are similar the statewide levels for Nevada. Table B-1.3.12-2 in Appendix B provides a summary of the housing in the analysis area, and Table B-1.3.12-3 in Appendix B lists housing statistics for towns that are likely commuting locations to the Project Area based on a 1.5 hour drive time and the Applicant's past experience with construction and operations workers at the site. As shown in Table B-1.3.12-3, the two towns nearest the Project Area, Cal-Nev-Ari and Searchlight, have no housing available for rent which will push the likely commute times for workers over 1 hour.

Temporary accommodations within commuting distance of the Project include hotels or RV parks. Travel Nevada (2025) publishes detailed quarterly hotel information for Clark County and the cities of Las Vegas and Laughlin (Table B-1.3.12-4 in Appendix B). RV parks in Cal-Nev-Ari, Searchlight, and

Cottonwood Cove have roughly 140 sites (RV Life Campgrounds 2026), and there are over 750 additional sites in Laughlin (Visit Laughlin 2026).

Although the city of Las Vegas has a relatively high occupancy rate, there is also a large inventory of rooms. Additionally, a significant number of rooms are in Laughlin, where occupancy rates are lower. The unincorporated town of Primm is also within commuting distance of the Project Area and has the nearest large hotels to the Project Area, with a total of 624 rooms (Primm Valley Resorts 2026).

3.12.1.3 ECONOMIC CONDITIONS

The makeup of existing industries in a local economy can be a determining factor in how much of a project's impacts are captured by local businesses and workers. There are more likely to be supporting supplier businesses and qualified workers to support the project where an industry is already established. Where no such industry exists, support services and workers are more likely to be acquired from outside the area.

The largest share of jobs in San Bernardino County are in transportation and warehousing (14.9%) with the next largest contributor being government (12.2%). Table B-1.3.12-6 in Appendix B summarizes jobs by industry in the analysis area. Driven by the large tourism industry in Las Vegas, the largest share of jobs in Clark County are in the accommodation and food services industry (17.3%) followed by retail trade (9.3%). Table B-1.3.12-7 in Appendix B summarizes employment and income statistics in the analysis area. Generally, incomes are lower in counties in the analysis area than in their respective states, and the rate of poverty is higher. Table B-1.3.12-8 in Appendix B lists the average annual wages by industry in the analysis area. The highest wages in San Bernardino County are in the mining industry, averaging $110,081 per year versus the total average annual wage of $62,314 in the county. In Clark County the highest wages come in the information industry at $123,015 per year versus the total average annual wage of $64,854 in the county. In both counties, wages in the construction industry outpace the overall average wage of the county. Table B-1.3.12-8 in Appendix B lists the average annual wages by industry in the analysis area.

3.12.1.3.1 Property Values

Property values may be positively impacted by projects through increased demand created by an influx of workers, which may increase values, but they also can be negatively impacted if a project creates adverse conditions such as noise or pollution or impairs viewsheds or limits access to local amenities. The small towns in the vicinity of the Project site in Clark County (Cal-Nev-Ari, Searchlight, and Laughlin) have relatively low rental prices and home values when compared to the county as a whole. Prices are lower due in part to the limited economic opportunities and amenities in the towns. Median home values in the analysis area and in towns near the Project Area are shown in Tables B-1.3.12-2 and B-1.3.12-3, respectively, in Appendix B.

3.12.1.3.2 Tourism and Recreation

Tourism and recreation can be affected by projects if project activities create disturbances or other disamenities to tourist and recreation activities or if workers staying in temporary lodging displace visitors that would otherwise be spending money at local attractions. As shown in Table B-1.3.12-6 in Appendix B, the accommodation and food services industry employs the highest percentage of people in Clark County. Visitors to casinos and resorts in and around Las Vegas support a significant tourism economy. Table B-1.3.12-6 shows that the tourism industry also supplies a significant amount of temporary lodging options in the analysis area. As detailed in Section 3.11, *Recreation and Special Designations*, the analysis area is also home to significant outdoor recreation resources, including seven specially designated areas. The specially designated areas include two NMs, two ERMAs, three ACECs,

and one national preserve. Visitors to these sites and other areas participate in a number of recreation activities that can directly or indirectly contribute to the tourism economy. Visitors spend money on lodging, food, fuel, and other local services that brings money from all over the world to support and stimulate the local economy.

3.12.1.4 COMMUNITY SERVICES

3.12.1.4.1 Emergency Services

Ambulance and fire services at the CMM are provided by San Bernardino County Fire and Rescue with alternative emergency services available from Clark County Fire and Rescue, Station 75 in Searchlight, Nevada (Appendix J). The primary hospital serving the mine is Dignity Health – St. Rose Dominican Hospital in Henderson, Nevada, with an alternate hospital designated as Western Arizona Regional Medical Center in Bullhead City, Arizona, both of which are approximately 1.5 hours driving time from the Project Area. Helicopter medical evacuation service is provided by Mercy Air Dispatch, with an approximate 27-minute response time.

3.12.1.4.2 Schools

Surrounding school districts in the analysis area include the Clark County School District in Nevada and the Baker Valley Unified School District in California (National Center for Education Statistics 2026). The Clark County School District comprises 387 schools, with a combined enrollment of 309,787 students. The Baker Valley Unified School District comprises three schools, with a total enrollment of 124 students.

3.12.1.4.3 Utilities

Current water use at the CMM is supplied by two groundwater well systems, the WWF and EWF, with the current approved use of 625 AFY. Electrical power at the site is provided by on-site internal combustion power generators. Formerly, the site was connected to the Nevada Energy grid via a 69-kV overhead power line, but the line was dismantled in 2011. Telecommunications services are provided by an on-site private microwave facility and an uplink to equipment in Searchlight, Nevada.

3.12.1.5 TAX REVENUES

For the 2026 fiscal year, San Bernardino County has estimated revenues of approximately $10.56 billion (San Bernardino County 2025). Tax revenues are projected at $1.66 billion and consist of approximately $1.28 billion in property taxes and $351 million in sales, occupancy, and other taxes. Other significant revenue sources include $3.1 billion from state, federal, and other government aid, $1.69 billion from fees and services, and $1.52 billion from other restricted general funds, special revenue funds, and capital project funds.

Clark County projects revenues of $9.0 billion in fiscal year 2026, with an estimated $1.27 billion from property taxes and $95 million from other taxes (Clark County 2025b). Other major sources include $3.7 billion from intergovernmental sources and $2.93 billion from charges for services.

3.12.2 Environmental Consequences

3.12.2.1 ANALYSIS METHOD

This section of the socioeconomic assessment reviews potential impacts associated with the construction and operation of the No Action Alternative, Proposed Action, and action alternatives on the existing socioeconomic conditions in the analysis area of San Bernardino County, California, and Clark County, Nevada.

Impacts on the demand for housing and public services are evaluated by calculating the percentage change in population within the analysis area resulting from the in-migration of nonlocal workers and then considering how that would affect demand. Nonlocal workers are defined as those workers who, absent the Project, would reside outside the analysis area. It is assumed that demand for housing and public services increases approximately proportionally to the change in population. It is further assumed that up to one housing or lodging unit is required for each nonlocal worker.

Impacts on employment, income, and economic output throughout the analysis area are estimated using the economic impact analysis report *Castle Mountain Mine Phase 2 Project Analysis of Economic, Fiscal, and Social Effects* (the economic report) (Applied Analysis 2025), which is included in the 2025 Plan Update (Appendix J). The economic report uses an Impact Analysis for Planning model to estimate the changes in these socioeconomic indicators resulting from the direct Project-related expenditures on labor and materials, as well as the indirect and induced impacts as money circulates throughout the local economy. For construction and capital outlays the economic report assumes an effective local purchase percentage of approximately 44%, with $392 million of local expenditures, $118 million in direct salaries and wages, and 1,514 direct person-years of employment. During operations the economic report assumes an average of $162 million per year in direct economic output, $46 million per year in direct salaries and wages, and 273 jobs.

3.12.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

Twenty-eight RFTPAs occur near the Project and include activities related to electric transmission, renewable energy, government facilities, mining, water development, transportation, and land development. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. Notable nearby projects include the Eldorado-Pisgah-Lugo Projects, I-15 Wildlife Crossings, the Searchlight U.S. 95 Roadway Rehabilitation, and the Mojave Groundwater Bank. In the short term, these projects are expected to generate employment opportunities, increase local spending, and raise demand for goods and services during construction, while potentially causing temporary disruptions such as noise, traffic delays, and limited access for some residents and businesses. Construction activities could also increase short-term demand for housing; however, the availability of both short- and long-term accommodations within commuting distance of the Las Vegas metropolitan area would likely minimize effects on home values and rental prices. Over the long term, these projects are expected to support regional socioeconomic conditions by improving infrastructure, increasing economic activity, and supporting public services.

3.12.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under the No Action Alternative, no additional ROWs would be granted for the underground water pipeline or 69-kV overhead power line, and the currently authorized MPO would remain in effect. No new surface disturbance would occur outside the existing mine plan boundary, and there would be no new impacts to socioeconomic resources.

3.12.2.4 IMPACTS OF PROPOSED ACTION

3.12.2.4.1 Population and Demographics

An average of approximately 500 workers would be required during the 2 years of construction of the Proposed Action with a maximum workforce of roughly 650 workers during the peak of construction. It is likely that many of the workers may come from the analysis area, with both San Bernardino County and Clark County supporting significant construction industries (see Table B.1.3.12-6 in Appendix B); however, significant numbers of workers would be required to come from outside the area or temporarily relocate within the analysis area to be closer to the CMM. It is assumed that workers relocating to the area would reside in Clark County, as population centers in San Bernardino County are not within commuting distance to the CMM. Due to the temporary nature of the construction jobs, it is likely that most workers would not bring their families with them. In a maximum impact scenario where all 650 peak workforce workers came from outside the analysis area and brought their families with them—assuming an average household size of 2.5—would yield a peak population increase of 1,625 people, which is less than 0.1% of the Clark County population of 2,293,764.

During peak operation of the mine up to 373 new workers would be required, and an average of 273 workers would be required over the life of the mine. Many of these workers could also be hired from within the analysis area. For these permanent jobs, it is likely that workers relocating to the area would bring families. In a maximum impact scenario where all 273 workers were from outside Clark County, the population increase would be 933 people, which would be negligible. CMV estimates that approximately 25% current mine workers live in Searchlight, Laughlin, or Cal-Nev-Ari. If a similar percentage of the new workers chose to live in those towns it would equate to roughly 93 families or 233 people. An influx of population in the smaller towns of Searchlight or Cal-Nev-Ari near the mine site could place strain on local services or infrastructure, however, as shown in Table B.1.3.12-4 and discussed in Section 3.12.2.4.2, *Housing and Lodging*, there are no housing units showing available for rent or for sale in either town, so the ability of the workers to locate there is limited.

3.12.2.4.2 Housing and Lodging

Based on previous experience, CMV estimates that construction workers would use hotels and RV parks, with hotel stays primarily in Primm, Laughlin, and Henderson and RV stays primarily in Searchlight and Cal-Nev-Ari. During construction, the proponent plans to offer vans and buses from the Henderson, Bullhead City/Laughlin, and Las Vegas, NV areas (Urban Crossroads 2025). As shown in Table B.1.3.12-5 in Appendix B, Laughlin's peak occupancy rate was 55.9% in third quarter 2023, which means on average 44.1% of its 8,864 total rooms (or 3,909 rooms) are available and are more than enough to house the peak construction workforce of 650 workers. Peak travel times, such as weekends and holidays, are masked in the average occupancy statistic, so at times, increased demand would reduce the number of available rooms for workers, however, large numbers of rooms are available in a range of locations. Additionally, CMV is exploring options to expand housing and lodging options in towns near the mine site including investigating the potential to rezone land near the town of Searchlight for use as an RV camp and supporting other potential long-term housing development initiatives with private land owners in surrounding towns such as Nipton.

CMV estimates that permanent mine workers hired for operations would live mostly in Henderson and Las Vegas, with 25% opting for housing in Searchlight, Laughlin, or Cal-Nev-Ari. Desire to be closer to the CMM may raise the demand for housing in the smaller communities.

3.12.2.4.3 Economic Conditions

The economic report estimates $392 million in direct economic output, $104 million in indirect economic output, and $97 million in induced economic output, for a total of $593 million in output that would be generated in the analysis area from construction and capital outlays over the life of the Project (Applied Analysis 2025). That estimate includes a total of $186 million in salaries and wages paid ($118 million direct, $39 million indirect, and $30 million induced) and 2,677 person-years of employment (1,514 direct, 598 indirect, and 566 induced). The estimated average construction wage of $77,781 is higher than the average wages in San Bernardino County ($62,314) and Clark County ($64,854). Induced impacts from worker spending are likely to be concentrated in Clark County where the workers would be staying and living during construction.

Operation of the Project is estimated to generate an average of $276 million in total economic output in the analysis area per year, including $162 million in direct output, $52 million in indirect output, and $63 million in induced output. A total of 782 average annual employment years (273 direct, 133 indirect, and 376 induced) in the analysis area would earn workers $80 million in wages and salaries ($46 million direct, $14 million indirect, and $19 million induced). Induced impacts from worker spending are likely to be concentrated in Clark County where the workers would be living.

Property Values

The influx of workers during construction may increase the demand for the limited housing in the closest towns to the CMM; which could have the effect of increasing rent prices; however, the 2 years of construction would limit impact on existing residents.

The increased demand would carry through operations, although from a smaller number of workers. The limited housing inventory and amenities such as grocery stores and schools in the towns would also limit the demand; however, there would likely be some marginal upward effect due to the increased employment.

There would not likely be any adverse impact to property values based on disamenities associated with the mine operation itself as the nearest residence is approximately 5 miles away and the number of residences within 10 miles is limited due to the large amount of federal land surrounding the site.

Tourism and Recreation

There is not likely to be any impact on tourism or recreation during construction or operation of the Project. The abundance of hotel rooms in the area would mean tourists are not likely to be displaced by construction workers, and the abundance of recreation options would allow people to substitute for a different area if access were limited or restricted.

3.12.2.4.4 Community Services

Emergency Services

During construction, increased activity at the CMM could increase the possibility of the need for emergency services. The CMM Emergency Response Plan establishes an emergency response team of CMV employees that would serve as primary responders (Appendix J). CMM also has its own site ambulance, water truck, and other heavy equipment for initial response. The influx of workers would represent a minor change in the population of the analysis area and therefore would not impose significant impacts on emergency services within communities. Due to the focus on the tourism industry in Clark County, communities in the analysis area are equipped to handle visitors.

Schools

During construction, nonlocal workers are not likely to bring their families to the analysis area. Workers that did bring families are likely to choose to stay in the larger population centers such as Henderson. If each worker brought a school-aged child, the 650 additional students would represent less than 0.5% of the Clark County School District enrollment of 309,787. Similarly, during operations workers are more likely to live in the larger population centers of Las Vegas and Henderson, and the potential increase in students would not have a significant impact on the school district. Harry Reid Elementary School in Searchlight is the nearest school to CMM and the only school within 30 miles. With less than 20 students, there is available capacity at the school and student teacher ratios are high, however, any increase in the student population would represent a high relative change and may require logistical changes for the school.

Utilities

During construction, increased use of utilities is not expected.

During operation of the Project, the proposed 1,625 AFY increase in water use would be supplied by the two existing well sites, as well as through the construction of the underground water pipeline, which is proposed to supply between 840 and 1,340 AFY. A pump test of the Ivanpah well estimated about 5 feet of aquifer drawdown near the production well after 22 years of simulated use of approximately 1,425 AFY (Appendix J).

Proposed grid power demand during operation would be between 15 to 25 MW. On-site generators would transition from diesel to an LNG microturbine thermal generating system, which would supply 10 MW. Additional grid supply would come through the proposed 69-kV overhead power line (Appendix J).

3.12.2.4.5 Tax Revenues

During construction, the economic report estimates $160.2 million in sales and use tax revenues generated between the State of California and San Bernardino County and the State of Nevada and Clark County (Applied Analysis 2025). This estimate is based on an assumption that 44.2% of Project purchases would be made within San Bernardino County or Clark County. The majority of direct sales and use tax paid on materials and equipment with a delivery location at CMM would be paid to the State of California and San Bernardino County where the Project sits. Statewide sales and use tax rate in California is 7.25%, and San Bernardino County imposes an additional 0.5% sales and use tax for transportation improvements. Roughly half of the sales and use tax revenue goes into the State general fund, and the remainder supports local components and transportation. Taxes generated from indirect and induced spending would occur in both counties with the majority of induced impacts occurring in Clark County where the workers would be staying. The statewide sales tax rate in Nevada is 6.85% with an additional 1.525% local component for Clark County.

During operations, an estimated $6.2 million would be generated through the diesel fuel tax. Property taxes on land improvements, construction structures, inventory, and equipment are estimated to generate an average of $7.4 million per year and $171 million over 20 years. An average of $7.1 million per year would be paid to the State of California for franchise taxes. Over the life of the Project, California Department of Conservation will collect $17 million ($5/ounce of gold) to fund mine reclamation oversight and regulatory compliance.

3.12.2.5 IMPACTS OF ALTERNATIVES C – D

Under the Alternatives C and D, Full Pit Backfilling to Avoid a Pit Lake (Alternative C) and Supplemental Power via a Small Solar Array (Alternative D), activities would either be consistent with the Proposed Action or would modify Project components in ways that redistribute or slightly increase surface disturbance or schedule. These changes would not materially alter the socioeconomic impacts when compared with the Proposed Action.

3.13 Soils and Reclamation

This section identifies the existing soils that occur in the Project Area and evaluates the direct and indirect impacts of the construction, operation, and decommissioning phases on soil resources, including short-term and long-term impacts. Soils, which comprise both mineral and organic material, provide the necessary structure, moisture, gases (including oxygen), and nutrients needed to support diverse microbial communities and propagation/growth of plants. Soils provide functions such as infiltration and percolation of rain and stormwater, retention and slow release of water to creeks and streams, groundwater recharge, and stormwater filtration of sediments and nutrients. In desert environments, soil formation and the characteristics that control biological community establishment (below- and aboveground) and co-development take place over hundreds to thousands of years. Ground disturbance would potentially remove soil cover, directly and indirectly impacting the quality, health, function, integrity, and stability of a soil, thereby degrading its productivity and capacity to sustain plant growth and resist erosion. Indicators used to evaluate the potential short-term or long-term soil impacts include the acres of soil as a proxy for overall soil impact, acres of sensitive soil impacted (including those identified by the fragile soil index or sensitivity to wind or water erosion ratings), suitability of remaining and salvaged soil for reclamation, and percent of surface soils that function for infiltration and stormwater filtration impacted by disturbance.

The soils analysis area encompasses approximately 1,922 acres of ground disturbance associated with the Proposed Action and all Action Alternatives. This area includes the newly requested long-term ROWs for the underground water pipeline and the 69-kV overhead power line to support the expansion, as well as short-term ROWs for underground water pipeline construction but excludes the existing approved mine footprint. The temporal parameters for this soils analysis involve the time frames for (1) construction and operation—Operational Years 1 through 20—and (2) closure and reclamation—Operational Years 21 to 30. This analysis extends to the end of reclamation and monitoring, which is anticipated to be completed by Operational Year 30; however, because arid soils and vegetation communities in the analysis area can take extended period to recover and reestablish, it is assumed passive restoration would continue well beyond the active reclamation period.

3.13.1 Affected Environment

The soils analysis area is within the Mojave Basin and Range Major Land Resource Area, characterized by landscapes that are a result of massive thrust faults at the boundaries of the Pacific and North American Plates, as well as normal faulting (Natural Resources Conservation Service [NRCS] 2025a). There are 13 soil map units (SMUs) within the soils analysis area (Table B-1.3.13-1 in Appendix B; see Figure C.3.13-1) (NRCS and Esri 2026). Dominant soil orders consist of Aridisols and Entisols. Aridisols are characterized by low organic matter and xeric moisture regime and may contain subsurface horizons with calcium carbonate ($CaCO_3$), gypsum, or soluble salts that may limit use for plant growth. Entisols are characterized by recent origin, lack of significant horizon development and soil-forming processes beyond an A horizon, and low- to moderate-organic matter. Entisols may be unaltered from their parent material, which can include unconsolidated sediment or rock; are commonly found in a variety of environments; and are one of the most widespread soil types globally. The soils in the analysis area are

generally well drained to excessively drained, fine-loamy to sandy-skeletal, and shallow to very deep. Soils are predominantly formed from alluvium derived on alluvial fans or fan pediments, residuum, and colluvium on limestone and dolomite hills and mountains. The soils dominantly have a thermic and hyperthermic temperature and typic aridic moisture regimes and are all listed as non-hydric soils (NRCS 2025b; NRCS and Esri 2026).

The impacts to soil resources within the soil analysis area from all Alternatives Actions would occur primarily (68%–73% of area, depending on Alternative) on Hartpeak-Highland association, Helendale-Caruthers-Castaneda complex, Highland-Nipton complex, and Minehart gravelly fine-sandy loam (see Table B-1.3.13-1). Hartpeak-Highland association has extremely and very cobbly loam surface textures, ranges from nonsaline to very slightly saline, and is well drained, and Hartpeak soils have a depth of greater than 80 inches, whereas Highland have lithic bedrock at depths from 30 to 39 inches (NRCS 2025b). Helendale-Caruthers-Castaneda complex has fine-sandy loam and sandy loam surface textures, ranges from nonsaline to very slightly saline and is well drained, and Helendale soils have a depth of greater than 80 inches, whereas Caruthers and Castaneda both have a petrocalcic horizon at depths between 20 and inches. Highland-Nipton complex has cobbly fine-sandy loam and very gravelly fine-sandy loam surface textures, ranges from nonsaline to very slightly saline, and is well drained, and Hartpeak soils have lithic bedrock at depths from 28 to 39 inches, and Nipton soils have lithic bedrock at depths from 4 to 14 inches. Minehart gravelly fine-sandy loam ranges from nonsaline to very slightly saline, is well drained, and has a depth of greater than 80 inches. The remaining 37% of the soils analysis area are minor components, each making up less than 10% individually, and soil features are not individually presented here (minor soil components <10% cover are lumped within the desktop suitability analysis below).

3.13.2 Environmental Consequences

3.13.2.1 ANALYSIS METHOD

A desktop evaluation was completed to identify the existing soils mapped within the soils analysis area using publicly available NRCS Web Soil Survey (NRCS 2025b) and 2024 Gridded Soil Survey Geographic (gSSURGO) Database accessed via the Esri USA Soils Map Units feature layer (NRCS and Esri 2026). Potential impacts to soil resources could include the following:

- Direct effects (using acreage as a proxy) on sensitive soil resources and soils from short-term and long-terms impacts of construction, operations, and reclamation, which can alter the soil's physiochemical properties.
- Direct effects on soils that function for infiltration and stormwater filtration by construction, operations, and decommissioning.
- Direct effects on available suitable soil material (topsoil and subsoil) for reclamation.

The effects assessment quantifies direct and indirect effects using acres of impact and qualitative indicators (i.e., topsoil suitability). The purpose of the soils analysis is to evaluate how proposed Project activities and Alternative Actions may affect nonrenewable soil resources. Therefore, any soil loss within the Project Area is considered a long-term impact unless specific measures are taken, including (1) salvaging and reapplying soils during construction and reclamation, (2) implementing successful revegetation to stabilize soils and minimize ongoing erosion within short-term impact areas, and (3) restoring soil productivity to levels comparable to those before mining.

3.13.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

Twenty-eight RFTPAs have been identified near the Proposed Action. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. The closest RFTPAs include the Eldorado-Pisgah-Lugo Projects, I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project (see Table B-1.3.3-1 in Appendix B). These projects would involve short-term construction activities and long-term O&M activities that would result in direct impacts on the soil. Ground disturbance, construction, operations, and reclamation have the potential to impact sensitive soil resources including increasing erosion, altering the soil's physicochemical properties, and decreasing the area of soils that function for infiltration and stormwater filtration.

3.13.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under Alternative A (No Action), no additional ROWs would be granted for the underground water pipeline or the 69-kV overhead power line, and the currently authorized MPO would remain in effect. Mining would continue within the existing mine plan boundary but no new surface disturbance would occur outside it. No additional impacts to soil resources are quantified for this alternative as all potential impacts are analyzed under existing environmental documentation.

3.13.2.4 IMPACTS OF PROPOSED ACTION

Under Alternative B (Proposed Action), CMV is requesting BLM's approval for the Project, including the expansion of the mine operations at the CMM and newly requested issuance of short- and long-term ROWs for an underground water pipeline and 69-kV overhead power line to support the expansion, as well as short-term ROW use for underground water pipeline construction. Construction and operations activities could result in adverse impacts to soil resources within the soils analysis area by modifying their biological, chemical, or physical properties. The Project would disturb soils through surface construction and operations, which could include vegetation removal, soil compaction and disturbance, soil removal and stockpiling, drainage alteration, and soil sealing/crusting. Soil-surface sealing occurs when dispersed soil particles pack into soil pore space and inhibit infiltration. The presence of a surface seal can increase erosion and runoff and decrease soil amounts. Soil such as those in the soils analysis area with low organic matter and weak soil structure are more susceptible to sealing/crusting due to soil disturbance.

The Proposed Action would have approximately 1,854 acres of surface disturbance resulting in direct impacts to soils and includes approximately 1,510 acres of long-term disturbance and approximately 304 acres of short-term disturbance. Sensitive soil features, including biological soil crusts and desert pavements, are vulnerable to disturbance impacts. Based upon the desktop analysis, 82.0% (1,483.93 acres) of the soils in the Proposed Action are rated as fragile and 15.8% (286.53 acres) as highly fragile according to the NRCS fragile soil index (Table B-1.3.13-2 in Appendix B). The fragile soil index identifies soils with high vulnerability to degradation (e.g., highly erodibility) and have a low capacity to recover after degradation. Soils in the soils analysis area are rated fragile and highly fragile, predominantly due to dry conditions, extremely low organic matter, and weak or poor soil structure (NRCS 2025b), which are common characteristics within the Aridisol and Entisol soil orders. Information regarding extent and distribution of soil crusts and desert pavement within the soils analysis area is not available through publicly available data and is typically evaluated through on-the-ground site-specific surveys. The extent of desert pavement (LUPA-SW-9) and biological soil crust (LUPA-SW-10) should be evaluated and mapped within the soils analysis area using best available data and standards, as determined by BLM and based on BLM and USGS methodologies (Belnap et al. 2001; BLM 2016). If disturbance from construction and operation activities is likely to exceed 10% of the overall mapped desert pavement, the BLM would determine whether the activity may proceed or whether a redesign is needed to avoid direct impacts to sensitive soils. LUPA-SW-9 stipulates the 10% threshold for California lands within the

BLM LUPA Decision Area and is an appropriate threshold to be used for analysis of potential impacts for the Nevada portion of the Project. Both desert pavement and biologically intact soil crusts should be avoided to the extent possible (LUPA-SW-9, LUPA-SW-10) (BLM 2016).

The potential for soil erosion by wind is rated as low across the soils analysis area, with over 95% of acres in wind erodibility groups (WEGs) 5 to 8 (see Table B-1.3.13-2). Soils are grouped by WEG based on the Wind Erodibility Index for each WEG. The Wind Erodibility Index is a numerical value, which indicates the susceptibility of soil to wind erosion or the tons per acre per year that can be expected to be lost to wind erosion (NRCS 2025b). Soils within WEGs 5 to 8 have a slight limitation for wind erosion. Standard BMPs such as seeding soil stockpiles and/or covering with a vegetal tackifier (plant-based or organic-derived) or vertical mulch, and revegetation of disturbed areas and soils stockpiled for longer than 6 months, as well as keeping roads and disturbance areas hydrated, would limit this potential impact further.

Soil K factor was used to group soils within the analysis area into slight (0.05–0.20), moderate (0.25–0.40), and severe (>0.40) water erosion classes (NRCS 2025b). The potential for water erosion within the soils analysis area ranges from slight to severe (see Table B-1.3.13-2). In the Proposed Action 39.4% (712.49 acres) is rated slight—based on a low K factor, 21.0% (379.64 acres) rated moderate, 37.5% (677.65 acres) rated severe, and 2.1% (38.7 acres) not rated. K factor is one of six factors used in the Revised Universal Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year.[13] Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Factors that influence the erosion potential of soil (and the K factor) include aggregate stability, cohesion, soil texture, structure, organic matter content, permeability, gradation (distribution of soil particles), vegetative cover, length and percent of slope, and rainfall/wind intensity.

Runoff potential ranges from low to high across the soils analysis area. Hydrologic soil groups (HSGs) assigned by SMUs were used to assess the potential for surface runoff across the soils analysis area. The HSG classifies soils according to their runoff-producing characteristics, which include type of soil (e.g., texture), infiltration rate, permeability after prolonged wetting, depth to the slowest permeable layer, and site-specific factors relating to management practices such as compaction, crusting, organic matter, and vegetative cover. Soils within HSG A are considered to have a low-runoff potential, HSG B soils have a moderate-runoff potential, HSG C have a moderately high-runoff potential, and HSG D soils are considered to have a high-runoff potential (NRCS 2025b). Soils with low-runoff potential (HSG A) (24.86% of the Proposed Action [449.80 acres]) facilitate infiltration and provide stormwater filtration due to a high-infiltration rate even when thoroughly wet and consist of deep, well-drained soils with a high water-transmission rate (NRCS 2025b; NRCS and Esri 2026). Soils with low-runoff potential do not have specific stipulations for work within these areas or specific protection measures; however, minimization of impacts to these soils should be considered during final site plan development.

Surface runoff potential within the Proposed Action Area is high (HSG C and D combined), with 69.94% of the area (1,264.83 acres) considered to have moderately high to high runoff potential (see Table B-1.3.13-2). Three SMUs—Hartpeak-Highland association, 15 to 50 percent slopes; Highland-

[13] The Revised Universal Soil Loss Equation is:
$A = R \times K \times LS \times C \times P$
Where:
A = average annual soil loss
R = rainfall–runoff erosivity factor (how erosive the rainfall is)
K = soil erodibility factor (how easily the soil is detached)
LS = slope length and steepness factors (topography)
C = cover-management factor (vegetation, residue, crop canopy)
P = support-practice factor (contouring, terracing, erosion-control practices)

Nipton complex, 15 to 50 percent slopes; and Lithic Haplargids–Lithic Torriorthents association, 2 to 15 percent slopes (37.47% [677.65 acres] of the Proposed Action Area)—are rated as high (HSG D). On an as-needed activity-specific basis, the site plan would be prepared specific to each of these three SMUs (in accordance with LUPA-SW-8 (BLM 2016) because each SMU occurs on greater than 5% and has an HSG rating of D. LUPA-SW-8 establishes a threshold of greater than 5% for HSG D within the BLM LUPA Decision Area in California to maintain cohesiveness in planning and implementation; this threshold is also appropriate for Nevada portion of the Project Area. Additionally, because 37.5% of the Proposed Action is rated as having severe potential water erosion and 69.95% is rated as HSG C or D, the use of construction area BMPs and compliance with California Construction Stormwater General Permit requirements would minimize erosion and stormwater runoff and would help reduce sediment transport to drainages during construction.

Susceptibility to compaction is rated as medium within 83.18% (acres) of the Proposed Action, and the remainder is ranked as low or not rated (see Table B-1.3.13-2). Soil compaction occurs when soil particles are compressed, which modifies soil structure and can result in a reduction in the porosity, infiltration, moisture-holding capacity, and rooting depth. Soil compaction also increases runoff and the potential for water erosion, and compacted soils and subsoils are particularly difficult to revegetate without active remedial activities to reverse compaction and promote seed germination and moisture retention. Most soils have some susceptibility to soil compaction due to the presence of air-filled pore space in soils. A medium susceptibility indicates, by definition, a significant potential for compaction; however, after initial compaction (i.e., the first equipment pass), only minimal increases in soil density occur. Soils with a medium rating can be either moisture-insensitive or moisture-sensitive, meaning their susceptibility to compaction may increase as soil moisture increases (NRCS 2025b). Soil compaction would be addressed through implementation of an Access Management Plan, which would limit vehicle and equipment traffic to designated routes to reduce the extent of compacted soils. Compacted soils would be addressed through decompaction treatments (e.g., deep ripping) during restoration, prior to topsoil reapplication.

Calcareous soils are defined by significant $CaCO_3$ content, which can be present as residue, nodules, or soil crust and typically contain greater than 15% $CaCO_3$. Calcareous soils are common in the arid and semiarid western United States. Soils with high $CaCO_3$ content are considered alkaline and have high soil pH, often ranging from 7.5 to 9.5, and have reduced nutrient availability and soil productivity that limits seedling germination and types and presence of vegetation. Representative $CaCO_3$ percent by weight of the soil fraction (<2 millimeters) in the rooting zones of the SMUs within the soils analysis area ranges from 0 to 23%, with the four dominant SMUs all having $CaCO_3$ content greater than 15% (NRCS 2025b). Lecyr very gravelly sandy loam, 4 to 30 percent slopes is the only SMU considered to be calcareous, with 23% $CaCO_3$ in the soils analysis area. Lecyr very gravelly sandy loam covers approximately 4% (74.61 acres) of the Proposed Action (see Table B-1.3.13.1). During soil salvage and revegetation, attention should be given to areas where Lecyr very gravelly sandy loam is mapped, and these soils should have special treatment measures (such as stockpiling separately for reuse for soil crust salvage or mixing with other soils at a site-specific rate) so that total CaCO3 does not limit revegetation.

Based on the soil characteristics, the most limiting factors for reclamation and revegetation would be the dry conditions, low soil organic matter, and poor soil structure associated with the fragile and highly fragile soil ratings (see Table B-1.3.13-2). If not handled appropriately, all soils have the potential for compaction, both in surface soil being salvaged as well as subsurface soil during heavy-equipment operations. In areas of short-term impact, topsoil should be salvaged or protected from compaction through implementation of a Soil Salvage Plan or Restoration Plan. An Access Plan, detailing access routes and prohibiting equipment passes under moist soil conditions, can minimize soil compaction issues. Additionally, a Restoration Plan can outline criteria for evaluating soil compaction and detail active decompaction practices prior to reapplication of topsoil for revegetation. In areas of long-term impact, topsoil may also be salvaged for reuse/redistribution in areas planned for restoration. A Soil

Salvage Plan can assist in quantifying depth of available/suitable soils and amount of soil necessary for salvage to support adequate restoration/revegetation and determining whether soil salvage in long-term-impact areas is necessary. Implementation of applicant-committed design features would support reclamation and reduce long-term soil impacts by stockpiling and redistributing available soils following construction (REC-4), conducting concurrent reclamation to stabilize soils through revegetation (REC-11), and implementing ground-preparation procedures that include ripping and harrowing for soil decompaction to increase infiltration and decrease erosion (REC-15) (Appendix E).

3.13.2.5 IMPACTS OF ALTERNATIVES C – D

The Action Alternatives are very similar to the Proposed Action with respect to soil disturbance acreage and soil impacts. All Action Alternatives would affect the same 13 SMUs, with comparable levels of soil disturbance (in acres) and similar impact types (see Table B-1.3.13-1). As a result, soil characteristics and overall soil-related effects would be essentially the same across the Proposed Action and all Action Alternatives (see Table B-1.3.13-2).

Alternative C evaluates partially backfilling the south extension pit after completion of ore extraction, with the objective of preventing the formation of a surface-pit lake. The potential direct impacts on soils associated with Alternative C are the same as the Proposed Action.

Alternative D includes a small on-site solar power facility that would serve as an intermittent energy source for mine operations. Under Alternative D, potential direct impacts on soils would result from approximately 1,897.23 acres of surface disturbance, which represents an increase of 88.75 acres of surface disturbance within the soils analysis area compared to the Proposed Action and Alternative C. The surface disturbance comprises approximately 1,594 acres of long-term and 304 acres of short-term impacts. Alternative D would disturb an additional 83.36 acres with slight water-erosion potential, moderately high runoff potential (HSG C), and medium susceptibility to compaction, as well as an additional 5.37 acres with severe water-erosion potential, high runoff potential (HSG D), and low susceptibility to compaction (see Table B-1.3.13-2). All additional disturbances areas under Alternative D are rated as fragile with slight wind-erosion potential. Alternative D would result in an increase in impacts to soil resources.

3.14 Transportation

This section of the EIS analyzes the anticipated impacts on regional and local transportation networks for each Action Alternative. The analysis begins with an overview of the existing roadway infrastructure, including a summary of the primary roads within the transportation analysis area. Baseline traffic volumes, crash data, and road conditions are described to establish existing conditions. This section also evaluates how project-related traffic could affect these transportation systems, as well as public access.

3.14.1 Affected Environment

The transportation analysis area consists of 4,285 acres of public land managed by the BLM, including access roads. Primary access to CMM is via Hart Mine Road and Walking Box Ranch Road (also referred to as the CMM Access Road), where use and maintenance have been approved through previous MPOs and NEPA decisions. The MPO portion of the project area is already disturbed due to ongoing mining operations by CMV, which have occurred since 1998. The proposed ROWs are located along or near portions of Walking Box Ranch Road and SR 164 (Nipton Road). Analysis regarding the Old Spanish Historic Trail (NHT) confirmed that the NHT crosses Nipton Rd near the town of Searchlight, Nevada. For further information regarding the NHT please see sections 3.7: Cultural Resources and3.11 Recreation and Special Designations.

The transportation network surrounding the project area consists of U.S. and state highways, local county roads, and private roads (Table B 1.3.14-1 in Appendix B; Figure C.3.14-1 in Appendix C). CMV plans to use existing roads on BLM-managed lands to access project facilities and infrastructure. These access roads would be used during construction, operations, and maintenance. Traffic would consist primarily of pickup trucks but would also include trucks, tractor-trailers, and construction equipment. The transportation system in the vicinity of the transportation analysis area consists of a network of roads maintained by Clark and San Bernardino Counties, NDOT, California Department of Transportation (Caltrans) and the BLM or are existing roads on public land that provide public access but are not actively maintained by Clark or San Bernardino Counties. As required by the FLPMA, public land under BLM jurisdiction is managed "on the basis of multiple use and sustained yield unless otherwise specified by law" (43 U.S.C. § 1701(a)(7)), and access to public land is generally considered open, unless the 1998 Las Vegas RMP (see Section 1.8, *Land Use Plan Conformance*) has designated otherwise (BLM 1998b).

The transportation technical report prepared for the Project is described in Table B-1.1.3-2 in Appendix B.

The Project Area is accessed from Searchlight, Nevada, by traveling approximately 7 miles northwest on SR 164, turning southwest on Walking Box Ranch Road, continuing for approximately 17 miles then turning east on the Hart Mine Road to access the Project Area.

Project traffic would adhere to the posted speed limit within the Project Area to minimize the risk of collisions (Table B-1.3.14-3 in Appendix B). During saturated soil conditions, vehicular activity would be confined to roads designed and constructed for all-weather access (e.g., paved, graveled, and "mag-water" surfaced roads).

3.14.2 Environmental Consequences

3.14.2.1 ANALYSIS METHOD

A desktop analysis was completed using data from NDOT as well as from Caltrans to review existing traffic data, collision data, and current conditions of the roads within the analysis area. The results of the desktop analysis presented herein include the following:

- A qualitative discussion regarding the impacts of Project-related traffic impacts on surrounding population and roads using data from NDOT and Caltrans (Caltrans 2025a, 2025b; NDOT 2025a, 2025b).
- A qualitative discussion of existing conditions the traffic impact assessment using data on current traffic volumes, road capacities, traffic flow patterns, and accident statistics (Urban Crossroads 2025)
- A quantitative analysis of for existing road conditions, traffic volumes, and ACEPM along with short-term and long-term analysis of these impacts.
- An RFTPA analysis evaluated the combined impacts of the Proposed Action along with the effects of other past, present, and reasonably foreseeable projects within the study area.
- It is assumed that traffic will be at its peak during Project construction and lowest during Project operation.
- Consideration was also given to changing Project-related traffic volumes throughout the various Project phases.

3.14.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

A review of RFTPAs in the surrounding region indicates that no identified projects are expected to substantially overlap with or be influenced by Project-related traffic. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. Transportation improvements and other planned developments in the area are anticipated to occur independently of the Project and are not expected to coincide spatially or temporally with Project construction or operations in a manner that would meaningfully affect traffic conditions. Vehicle trips generated by the Project would be limited and are not expected to measurably contribute to traffic congestion, roadway degradation, or other transportation impacts affecting nearby developments or regional transportation networks.

3.14.2.3 IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, the Project would continue in accordance with the operations approved under the previous authorizations (BLM 1990a, 1998a, 2020b). Project traffic would continue to occur on CMM Access Road/Walking Box Ranch Road, as previously authorized. This arrangement permits the use of existing roads from Walking Box Ranch Road across BLM-managed lands to access both private and State parcels.

The Project Area is accessed by traveling from Searchlight for approximately 7 miles northwest on SR 164 and turning southwest on Walking Box Ranch Road for approximately 17 miles, then turning east on the Hart Mine Road that accesses the Project Area.

Estimated Project-related increases in traffic volumes would be heaviest on Walking Box Ranch Road/Castle Mountain Mine Road and SR 164, increasing average annual daily traffic (AADT) during the construction period from the current 100 AADT to 180 AADT (Urban Crossroads 2025). Estimated crash levels would be assumed to rise in correspondence with increased traffic levels.

3.14.2.4 IMPACTS OF THE PROPOSED ACTION

Traffic generated by the Project would include commute trips by CMV employees and contract workers and material and equipment deliveries, as well as off-site product transportation. The Project would add an estimated 80 AADT to SR 164 and Walking Box Ranch Road during the construction phase of the Project. It is expected that the peak vehicle AADT would occur during the construction period with O&M phases having substantially fewer AADT of traffic equivalent to 165 Project-related traffic commuting to and from the Project site (Urban Crossroads 2025). The original traffic analysis assumed each worker would commute to the Project Area in a single-passenger vehicle; however, with further analysis, it was determined that employees would prefer commuter vans; therefore, the Urban Crossroads Traffic Report numbers were slightly higher (Urban Crossroads 2025).

Project traffic would adhere to the posted speed limit within the Project Area to minimize the risk of collisions as well as adhere to the same rules during saturated-soil conditions (see Table B-1.3.14-3).

Current AADT for the CMM with existing operations is 100 AADT. Any increase in the risk of traffic accidents would be proportional to the overall increase in traffic and is considered negligible. The large increase in traffic associated with the construction period would be short term, lasting only a few months, with peak traffic occurring during the construction phase (180 AADT) and decreasing substantially during the 25-year O&M phase (165 AADT). Table B-1.3.14-1 provides current and historical AADT in the transportation analysis area.

Implementation of ACEPMs would reduce impacts caused by Project-related traffic traveling to and from the CMM (Appendix E). Road maintenance and designated speed limits would enhance safety and reduce

dust and haze (AQ-3, AQ-4, AQ-5, AQ-6, PHX-1, PHX-9, and PLANTS-1). Rerouting travel around cultural sensitivity areas would minimize the risk of disturbance to cultural resources (ARCH-3). Implementing measures to ensure all operators maintain road-safety standards and avoid desert hazards (WILD-11, WILD-44, and WILD-45). The Project would require proper labeling and handling of hazardous-material shipments (HAZMAT-4 and HAZMAT-5) and would coordinate road-work notifications with relevant agencies for safety and regulatory compliance (ADM-15).

Vehicle-crash data from NDOT from 2021 to 2023 indicate four traffic accidents occurred on SR 164 between the California-Nevada border and Searchlight, Nevada (NDOT 2025b). The AADT averaged 2,030 vehicles per day, and the crash rate is calculated to be 1.3% on this segment of road (Table B-1.3.14.4 in Appendix B).

No nearby reasonably anticipated projects—ongoing or proposed—are likely to coincide with or be affected by traffic from the Proposed Action. Likewise, traffic from the Proposed Action is not expected to contribute to transportation impacts on adjacent developments or the broader environment. The Proposed Action would not result in any transportation-related effects.

3.14.2.5 IMPACTS OF ALTERNATIVES C – D

An assessment of Alternatives C and D indicates that transportation systems and patterns would remain unchanged from those described under the Proposed Action.

Alternative C proposes partial backfill of the south extension pit after ore extraction is complete to prevent the formation of a surface pit lake, which would involve relocating approximately 17 million tons of waste rock from the JSLA pit to the south extension pit, commencing in Operational Year 18 and extending the overall schedule by 2 years. Despite the extended duration and increased internal haulage, the type and volume of vehicles required for backfilling would be consistent with those already planned under the Proposed Action. All haulage and operational movements would occur within the mine site, and there would be no increase in off-site traffic or changes to regional transportation patterns. The existing network of access roads would continue to serve all haulage and support activities, without requiring new roads or changes to established routes. Public roads and access points would not be impacted, as all transportation would continue to be confined to existing routes, and supporting infrastructure like the underground water pipeline and 69-kV overhead power line would remain the same.

The modifications proposed under Alternative C are limited to internal mine operations and would not introduce new transportation demands or alter existing transportation routes beyond the Project Area. All major aspects of transportation—including access roads, traffic volume, vehicle types, and public access—would remain consistent with the Proposed Action. Therefore, there would be no change to regional or local transportation systems as a result of implementing either alternative.

Alternative D would add an additional three vehicles to the proposed AADT. This minor increase in project-related traffic would represent a negligible change relative to existing and proposed action traffic conditions and would not be expected to affect overall transportation conditions within the project area.

3.15 Visual Resources

Visual resources consist of the physical features that make up the visible landscape (i.e., natural features—such as land, water, vegetation, and topography—and human-made features—such as buildings, roads, utilities, and structures). These elements of the landscape can be described in terms of their form, line, color, and texture. Additionally, visual resources considers the effect of the landscape on viewers and their response to changes to the visual environment. The visual resources analysis area is defined as the area within 15 miles of the Project Area and 2 miles around the underground water pipeline

and 69-kV overhead power line ROWs. This analysis area was determined through a viewshed analysis and comparison to similarly scaled projects and confirmed through the development of visual simulations to identify the threshold where the Proposed Action could become noticeable in the landscape.

This analysis is based on BLM's visual resource management (VRM) system, which is used to provide management objectives in terms of allowable levels of disturbance and visual contrast within the VRM class for a given area established through BLM's land-use planning process. The VRM system includes a visual resource inventory (VRI) of scenic values based on an area's scenic quality, sensitivity levels, and distance zones. Similarly, NPS uses a VRI system which identifies views and scenic values that are relevant to their visitors' experience within the parks. Qualitative discussions on the Proposed Action's impact to landscape character, VRI information, dark night skies, and the results of a visual contrast and VRM conformance analysis (completed according to BLM methodology) is provided in the VRTR (SWCA 2026b).

3.15.1 Affected Environment

The VRIs for the visual resources analysis area (BLM 2010, 2022c) provided that the Project is located within scenic quality B and C areas where the landscape was found to have a moderate to low degree of visual variety; high and low viewer sensitivity areas which reflects the public's anticipated tolerance for visual changes to the landscape; and within the seldom seen, background, and foreground/middleground distance zones where the Project would be visible near viewing areas, such as roadways, or hidden by intervening topography and distance from viewing areas. Based on these VRI factors, VRI Classes II, III, and IV are present within the Project Area. Additional VRI information is provided in the VRTR (SWCA 2026b).

The VRM classes for the visual resources analysis area are established in the DRECP (BLM 2016) and 1998 Las Vegas RMP (BLM 1998b) for the portions of the Project with California and Nevada, respectively. The DRECP uses the standard VRM class objectives established in BLM Manual H-8410-1 (BLM 1986a), and the 1998 Las Vegas RMP uses a variation of those objectives (Table 3.15-1). Additional visual resource management goals are provided in the AKANM Memorandum (BLM 2025a), NPS planning documents, and San Bernardino County regulations, which are described in the VRTR (SWCA 2026b) (see also EIR Section 4.1, *Aesthetics* in Appendix A).

Table 3.15-1. Bureau of Land Management Visual Resource Management Classes

VRM Class	DRECP Objectives	1998 Las Vegas RMP Objectives
Class I	Preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.	–
Class II	Retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.	Designate 968,890 acres of public lands as VRM Class II and manage to retain the landscape's existing character. In these areas, authorized actions may not modify existing landscapes or attract the attention of casual viewers.
Class III	Partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.	Designate 1,727,870 acres of public lands as VRM Class III for partial retention of the existing character of the landscape. In these areas, authorized actions may alter the existing landscape, but not to the extent that they attract or focus attention of the casual viewer.

VRM Class	DRECP Objectives	1998 Las Vegas RMP Objectives
Class IV	Provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention; however, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.	Designate 635,135 acres of public lands as VRM Class IV, which allows activities involving major modification of the landscape's existing character. Authorized actions may create significant landscape alterations and would be obvious to casual viewers.

Source: BLM (1986a, 1998b).

The landscape around the Project Area is characteristic of the Mojave Desert and encompasses desert scenery, far-reaching scenic vistas, and relatively few human-made developments. Developments include roadways, railways, agricultural infrastructure, historic and current mining areas, and overhead utility lines. Specially designated areas where scenery may be valued by visitors occur within and around the analysis area (see Section 3.11). Dark night skies are measured at Bortle Class 2 and 3 within the analysis area; Class 2 areas are considered truly dark skies, whereas Class 3 areas have some light pollution and the visibility of some deep sky objects is impacted. Lighting associated with the Project is minimal and impacts are discussed in the VRTR (SWCA 2026b).

To assess impacts to visual resources, a viewshed exercise was completed to find where within the analysis area the Project would be visible. Based on the viewshed results, key observation points (KOPs) were selected where the Project is visible and to represent sensitive viewers which may be impacted by changes to the landscape. KOPs were also used to evaluate conformance with the VRM Class II, III, and IV lands crossed by the Project. Fifteen KOPs were identified in roadways and recreation areas within MNP, AKANM, and Walking Box Ranch; on public lands around the Project Area; and along SR 164/Nipton Road. These KOPs and viewshed analysis are described in detail in the VRTR (SWCA 2026b).

3.15.2 Environmental Consequences

3.15.2.1 ANALYSIS METHOD

The environmental consequences of the Proposed Action and Alternatives were determined in the VRTR (SWCA 2026b), and further detail regarding the analysis methodology is available in that document. In summary, three components were analyzed to assess impacts on visual resources within the analysis area: (1) landscape character, including dark night skies; (2) viewing locations and key observation points (KOPs); and (3) conformance with BLM VRM class objectives.

A contrast rating analysis was performed by comparing the Proposed Action's structural elements with structures in the existing landscape (structure contrast), extent of anticipated ground disturbance (landform contrast), and modifications to existing vegetation patterns (vegetation contrast). Impacts were evaluated based on the level of visual contrast that the Project would create—ranging from strong to weak—using the criteria from BLM Manual H-8431 (BLM 1986b). Further detail regarding the determination of impacts on landscape character, dark night skies, and on views from KOPs as well as the methods used to determine conformance with BLM VRM classes and BLM RMPs is included in the VRTR (BLM 2026).

3.15.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

Development and operation of the RFTPAs would contribute incrementally to the built environment within the visual resources analysis area. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. Identified RFTPAs in the analysis area include maintenance and

reliability improvements to the Eldorado–Pisgah–Lugo transmission line, renewal of a communication site ROW granted to the Nevada Department of Conservation and Natural Resources, and construction of the Rigo Favela Access Road. The transmission line and communication facility represent existing infrastructure, and renewal of their authorizations for continued operation and maintenance would be expected to result in minimal changes to the existing visual landscape. The Rigo Favela Access Road, located west of Nipton, would be visually consistent with existing roadway features in the surrounding area; therefore, visual contrast would likely be limited and primarily associated with localized vegetation clearing within the ROW.

3.15.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under the No Action Alternative, the BLM would not issue the ROW grants for the underground water pipeline or 69-kV overhead power line, the currently authorized MPO would remain in effect, and the Project would not be constructed. There would be no Proposed Project-specific impacts to visual resources.

3.15.2.4 IMPACTS OF PROPOSED ACTION

Impacts on visual resources during construction would primarily be associated with dust and with increased activity (e.g., the movement of vehicles and equipment) that would attract attention in the landscape. During construction, the removal of vegetation and earthwork would introduce areas of exposed soil, which would contrast with the existing setting and result in short-term impacts until vegetation has been restored.

The Project would introduce forms, lines, colors, and textures associated with the underground water pipeline, 69-kV overhead power line, and mine expansion that would alter the characteristic landscape during the operational phase of the Project. The visual impact would range in intensity depending on viewer location around the analysis area. In general, the utilities are sited near existing linear roadway developments, but in areas where no existing underground utility scars or overhead utility infrastructure occur, the Project would generate increased visual impacts. The mine expansion areas are relatively large in scale but are sited adjacent to visually similar landforms (existing topography and mining disturbance), which decreases the visual impact from that component of the Project. The Project, as viewed from SR 164/Nipton Road (KOPs 7, 11, 12, and 13) Walking Box Ranch (KOPs 8, 9, and 10), Walking Box Ranch Road (KOP 6) and Spirit Mountain (KOP 5), would be noticeable but would not attract attention. Impacts on views from adjacent NPS lands, including KOP 1 – Ivanpah Road, KOP 2 – Hart Mine Road, and KOP 3 – Lanfair Buttes, would be slightly increased due to the visibility of the proposed trapezoidal expanded heap leach pile and overburden sites associated with the expansion of mining areas which would be adjacent to and visually congruent with the existing mining operation. Impacts on views from KOP 14 – CMM Access Road would also be higher as proposed structures for the 69-kV overhead power line, a linear ground surface scar from the underground water pipeline, and the new administrative access road segment in this area would begin to attract attention with the structures repeating the patterns associated with the previously authorized and constructed power line, which was removed in 2011. Impacts on views from KOP 4 – CMM Access Road would include tall, unvegetated trapezoidal landforms associated with the heap leach pile, overburden site expansions, and structures associated with the 69-kV overhead power line, as well as the geometrically cleared underground water pipeline ROW within the foreground. Due to the close proximity, the Project would dominate views from this location. For additional detail regarding impacts from each KOP, please refer to the VRTR (SWCA 2026b).

The Project would not result in any specific impacts to the VRIs beyond the changes to the landscape described above which would occur within scenic quality B and C areas, and which would be perceived from high and low viewer sensitivity areas. The Project would not modify the identification of the visual distance zones or the determination of VRI Class II, III, and IV areas based on the other VRI factors.

Impacts to night skies associated with development of the Project would include the addition of lighted facilities within the mine area for safety and functionality. Mining operations would occur continuously (24 hours per day), so some light sources, including on buildings, vehicles, and equipment, would be illuminated overnight. The utilities would not require lighting. The long-term nighttime lighting required for mining operations would contribute to sky glow and adversely affect night skies which would last for the duration of the Project. The application of BLM BMPs and ACEPMs including the development of a lighting plan, based on BLM Technical Note 457, *Night Sky and Dark Environments: Best Management Practices for Artificial Light at Night on BLM-Managed Lands* would reduce, limit, and prevent impacts on night skies associated with development of the Project (BLM 2023a).

The assessment of conformance with BLM VRM class objectives, as well as the DRECP (BLM 2016) and Las Vegas RMP (BLM 1998), resulted in the determination the Project, including the utilities, administrative access road segment, and the mining expansion, would meet VRM Class objectives. With respect to the utilities within the LVFO, under VRM Class II and III standards which require projects to retain the existing character of the landscape and minimize visual contrast, the Project would meet management objectives. The 69-kV overhead power line structures would introduce visible elements that repeat existing patterns associated with distribution line structures near Walking Box Ranch and the previously authorized and constructed power line which was removed in 2011. The Project would also meet direction from the BLM regarding management associated with AKANM to minimize impacts from surface-disturbing activities and emphasize retention of visual resources. Visual contrast rating worksheets are available in the VRTR, including additional discussion and rationale regarding the determination that the Project would conform with VRM Class objectives and relevant RMPs (SWCA 2026b).

Implementation of ACEPMs would reduce impacts to visual resources by painting operational structures to blend with the landscape (AESTH-1), using shielded outdoor lighting (AESTH-2), developing a project-specific lighting plan (AESTH-3), and shaping reclaimed landforms to mimic natural topography (REC-29 and REC-30) (Appendix E). Additionally, the VRTR identifies a series of other applicable ACEPMs as well as four selective measures to reduce impacts on visual resources, including the use of nonspecular conductors, form, and color mitigation for the expanded mining area (SWCA 2026b). For Alternative E, the applicability of the visual resource–related design features associated the solar facility includes those from the 2024 Western Solar Plan (BLM 2024).

3.15.2.5 IMPACTS OF ALTERNATIVES C-D

Impacts on visual resources under Alternative C would be similar to the Proposed Action as the backfilling of the South Pit Lake would not introduce additional contrast in views from KOP locations and would occur within VRM Class IV areas where management activities may dominate the view and be the major focus of viewer attention.

Impacts on visual resources under Alternative D would be similar to the Proposed Action, except under Alternative D, a small solar facility would be sited west and north of the existing mining areas. The addition of the solar facility would create a geometric array of rectangular solar panels bordered by a low, angular perimeter fence that would modify landscape character but would appear adjacent to existing landscape modifications, in an area burned during the 2023 York Fire. Impacts on viewing locations and conformance with VRM class objectives are the same as the Proposed Action, except for the solar facility portion of the alternative, which is described in the VRTR (SWCA 2026b). Based on the level of contrast, the solar facility portion of Alternative E would meet BLM VRM Class III and IV objectives as assessed from KOP 15 – Castle Mountain Recreation Road, and no amendment to the DRECP (BLM 2016) would be required for this additional project feature under Alternative D.

3.16 Solid and Hazardous Wastes

This section evaluates the potential impacts of hazardous materials use, storage, and management associated with the Project. The hazardous materials analysis area covers the 908 acres of the cyanide heap leach facility—including the heap leach pad, comminution circuit, process plant, and ponds—encompassing all locations where hazardous materials are handled. Impacts to air, water, soil, and biological resources are considered, focusing on potential accidental releases during transport, storage, or use.

Hazardous materials are regulated by federal programs such as the Occupational Safety and Health Administration, Mine Safety and Health Administration, U.S. Department of Transportation, Comprehensive Environmental Response, Compensation, and Liability Act, Resource Conservation and Recovery Act (RCRA), Superfund Amendments and Reauthorization Act (Superfund), and the Oil Pollution Act of 1990, as well as California-specific agencies including the California Department of Toxic Substances Control (DTSC), RWQCBs, and local Certified Unified Program Agencies. State requirements are further established in the California Health and Safety Code Sections 25501(n) and (o) and Title 22 of the California Code of Regulations (CCR).

3.16.1 Affected Environment

The affected environment includes air, water, soil, and biological resources in and adjacent to the Project Area. These resources have the potential to be impacted by accidental releases of hazardous materials during transport, storage, use, or mining operations and mineral processing. Baseline conditions for air, biological resources, soils, and water and are described in Section 3.5*, Air Quality*; Section 3.6, *Biological Resources*; Section 3.13, *Soils*; and Section 3.17, *Water Resources*.

The hazardous materials analysis area contains an existing 126-acre heap leach pad and supporting facilities, authorized to accommodate up to 71 million tons of ore and 223 million tons of overburden. The gold processing circuit operates as a closed system, ensuring rainwater entering the pad is incorporated into the process or evaporates, preventing off-site runoff.

Based on a review of the DTSC EnviroStor database, no hazardous waste facilities or sites fall within the Project Area (DTSC 2026); however, CMV (115575 Hart Mine Road) is listed on the California State Water Resources Control Board (State Water Board) GeoTracker database as a land disposal site (State Water Board 2026). This Title 27 Mining Unit is in the southern portion of the Project Area along Hart Mine Road. The GeoTracker database recorded this facility as having an Open – Operating cleanup status as of July 22, 2020. According to the cleanup status history, a previous case was assigned Completed – Case Closed status on June 28, 2005, and another case from January 1, 2019, has a status of Open – Closed/with Monitoring. There is no potential medium of concern at this facility, so there is no potential environmental concern to the Project Area. The State Water Board GeoTracker database also identified a Leaking Underground Storage Tank site listed as the Cal Neva Border Gas Station in Nipton, California, which overlaps with the northern portion of the Project Site; however, cleanup was completed, and the site is listed as Completed – Case Closed (State Water Board 2026).

A range of hazardous materials are stored and managed on-site, including sodium cyanide (solid briquettes stored in steel tanks with secondary containment), pebble lime, cement, caustic soda, hydrochloric acid, fuels, oils, and explosives. Hazardous and solid waste management follows a comprehensive set of plans, including the Solid and Hazardous Waste Management Plan, Fire Management Plan, Health and Safety Plan, Spill Contingency Plan, Hazardous Materials Business Plan (HMBP), and Risk Management Plan (Appendix J). Used oil, batteries, and other recyclables are sent to authorized facilities, whereas hazardous wastes are managed on-site and shipped off-site by licensed contractors.

3.16.2 Environmental Consequences

3.16.2.1 ANALYSIS METHOD

The analysis of hazardous materials and waste impacts focuses on the 908-acre area associated with the cyanide heap leach facility, including the heap leach pad, comminution circuit, process plant, and ponds. This hazardous materials analysis area encompasses all locations where hazardous materials are stored, managed, or transported within the Project boundary, as well as the surrounding environment that could potentially be affected by accidental releases.

To conduct this analysis, a desktop review was performed using project-specific documents, hazardous materials inventories, and facility design plans, along with regulatory records. The evaluation considered the types of hazardous materials present on-site, how and where these materials are stored and handled, and the management plans and permits that govern their use. The assessment also examined the engineering controls in place, including containment systems and leak detection, as well as the emergency response procedures designed to prevent or minimize the risk of releases.

As part of the regulatory records review, both the DTSC EnviroStor database and State Water Board GeoTracker database were consulted to identify any known hazardous materials sites within or adjacent to the Project Area. This review provided information on the presence or absence of contaminated sites, cleanup status, and any relevant regulatory actions that could affect the Project Area or its surroundings.

The hazardous materials analyzed include both those potentially existing in the Project Area and those that would be used as part of construction, O&M, and future decommissioning. Potential existing hazards were assessed based on a review of state hazard databases and maps for the parcels composing the Project Area. Some hazardous materials would be used on a short-term basis during construction and future decommissioning, whereas other hazardous materials would be stored on-site for use during O&M. Accordingly, this analysis was conducted by evaluating the proposed chemical types, quantities, transport, storage, use, and disposal.

3.16.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

Hazards and hazardous materials impacts associated with the proposed Project are anticipated to occur independently of the reasonably foreseeable projects and actions identified in Table B-1.3.3-1 in Appendix B. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure. In total, 28 RFTPAs have been identified within or adjacent to the proposed Project Area, including the I-15 Wildlife Crossings Project, the Searchlight U.S. 95 Roadway Rehabilitation Project, and the Mojave Groundwater Bank Project. These projects may involve the short-term use or storage of hazardous materials during construction, and, in some cases, limited quantities of hazardous materials for ongoing O&M activities. Although certain projects involve substantial ground disturbance or span large geographic areas, the handling and management of hazardous materials would generally be localized, short term, and subject to project-specific regulatory controls.

In the Project vicinity, Molycorp Inc. (approximately 15 miles from the California-Nevada border and about 9.5 miles west of the Project Area) is listed on the DTSC EnviroStor database as a historical site (DTSC 2026). The EnviroStor database recorded this site as having a RCRA/Hazardous Waste Management Program cleanup status as of August 22, 1995. Based on the site's compliance with RCRA permit regulations and its distance from the Project Area, there is no potential environmental concern to the Project Area.

Given the spatial and temporal separation of these activities, as well as regulatory requirements for hazardous materials management, the potential for combined impacts related to hazardous materials storage, transportation, or disposal within the proposed Project Area would be limited. When the proposed Project is considered alongside other RFTPAs, impacts related to hazards and hazardous materials are not expected to be considerable.

3.16.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under the No Action Alternative, the BLM would not approve the proposed mine plan modifications or associated ROW grants for the underground water pipeline and 69-kV overhead power line. The CMM would continue to operate under existing authorizations, with only currently permitted activities proceeding.

Transportation and storage of hazardous materials would continue as currently authorized under the 1998 EIS/ROD (BLM 1998a). Sodium cyanide, fuels, reagents, and explosives would be transported and stored according to existing regulatory requirements and established protocols. No new sources of hazardous waste would be introduced, and there would be no changes to current transport, storage, or handling practices. The heap leach pad would continue to operate as previously authorized. Resource conditions and management trends for air, water, soil, and biological resources would remain unchanged, as documented in previous analyses and ongoing monitoring. The gold-processing circuit would continue to operate as a closed system, with no off-site runoff.

3.16.2.4 IMPACTS OF PROPOSED ACTION

Transportation of Hazardous Materials

Throughout all phases of the Project (construction, operations, and decommissioning), hazardous materials—such as concentrated sodium cyanide, fuels, reagents, and explosives—would be transported to and from the CMM on Hart Mine Road. Transportation route and methods are discussed in Section 3.14, *Transportation*. During construction, materials needed for equipment operation and initial facility setup, such as diesel fuel, lubricants, and solvents, would be delivered in U.S. Department of Transportation-certified vehicles. During operations, regular shipments of sodium cyanide, caustic soda, hydrochloric acid, cement, lime, fuels, and explosives would continue to arrive in secure, properly labeled containers. Decommissioning would require the removal of any remaining hazardous chemicals and unused reagents, which would also be transported off-site for proper recycling or disposal at licensed facilities.

Strict regulatory requirements govern all aspects of hazardous materials transportation. Drivers are trained in safe handling and emergency response, and all shipments are subject to route planning and containment protocols to minimize the risk of accidental releases. In the event of a spill during transport, the HMBP outlines emergency response procedures to ensure immediate containment and cleanup, thereby reducing the risk to human health and the environment (Appendix J). Because all transport occurs in sealed, compliant containers and along planned routes, the risk of hazardous material reaching surrounding soils, drainages, ephemeral water features, or groundwater is considered minimal. Should a release occur, rapid response measures are designed to limit or prevent contamination of these environmental resources.

Implementation of ACEPMs would reduce impacts related to the transportation of hazardous materials by ensuring secure storage of explosives in federally and locally compliant powder magazines (HAZMAT-1), requiring a hazardous materials handler permit and/or hazardous waste generator permit (HAZMAT-3), and mandating driver training in proper handling and spill cleanup (HAZMAT-5) (Appendix E). Additional measures include the use of properly labeled trucks equipped to Interstate Commerce Commission specifications (HAZMAT-4) and the preparation of a comprehensive Business

Plan for emergency releases (HAZMAT-2). Collectively, these measures minimize the risk of accidental releases during transport and ensure rapid response in the event of a spill.

Storage of Hazardous Materials

Hazardous materials storage and management practices would be scaled to match the expanded operations. During construction, fuels, oils, and chemicals would be stored in double-walled tanks or within secondary containment to prevent leaks or spills. Any hazardous waste generated, such as waste oils, solvents, and contaminated personal protective equipment, would be securely stored in labeled containers before being transported off-site by licensed contractors. Safety Data Sheets would be accessible to all workers, and storage locations would be clearly marked and regularly inspected.

During operations, the volume of hazardous materials on-site would increase, particularly fuels and sodium cyanide, which would be stored in vertical steel tanks housed within concrete secondary containment at the Process Plant. The expansion includes the installation of additional carbon-in-column tanks, effectively doubling cyanide storage capacity. Other reagents, such as pebble lime, cement, caustic soda, and hydrochloric acid, would be stored in silos or within designated containment areas. Fuels and oils would continue to be stored in double-walled tanks within the maintenance area, and explosives would be kept in secure, permitted magazines in accordance with federal and local regulations. All storage facilities are subject to routine inspections, inventory management, and ongoing maintenance to ensure containment integrity.

Hazardous and solid waste volumes would rise with increased production. Used oil, batteries, and other recyclable materials would be sent to authorized recycling facilities, while hazardous waste would be managed on-site and shipped off-site by licensed contractors for disposal or recycling. Comprehensive management plans—including the HMBP, Spill Contingency Plan, and Health and Safety Plan—are in place to guide safe storage and handling, minimize the risk of accidental releases, and ensure a rapid and effective response in the event of a spill.

These measures are specifically designed to prevent releases to surrounding soils, drainages, ephemeral water features, and groundwater. Secondary containment, regular inspections, and emergency response protocols collectively minimize the likelihood of hazardous materials migrating into the environment. In the event of a storage-related incident, rapid containment and cleanup procedures would further reduce the risk of soil or water contamination. As a result, no significant impacts to soils, drainages, ephemeral water features or groundwater are anticipated from the storage of hazardous materials under the Proposed Action.

During decommissioning, all remaining hazardous materials would be inventoried and removed from the site. Unused chemicals would be returned to manufacturers or disposed of at approved facilities. Storage tanks, piping, and containers would be cleaned and decontaminated, and all hazardous waste would be transported off-site by licensed haulers. These procedures would ensure that the site is left free of hazardous materials and that all actions are fully documented and compliant with regulatory requirements. These procedures ensure that the site is left free of hazardous materials, with no residual risk to soils, drainages, ephemeral water features, or groundwater.

Implementation of ACEPMs would reduce impacts related to the transportation of hazardous materials by ensuring secure storage of explosives in federally and locally compliant powder magazines (HAZMAT-1), requiring a hazardous materials handler permit and/or hazardous waste generator permit (HAZMAT-3), and mandating driver training in proper handling and spill cleanup (HAZMAT-5) (Appendix E). Additional measures include the use of properly labeled trucks equipped to Interstate Commerce Commission specifications (HAZMAT-4) and the preparation of a comprehensive business plan for emergency releases (HAZMAT-2). Collectively, these measures minimize the risk of accidental releases during transport and ensure rapid response in the event of a spill.

Heap Leach Facility Expansion

The phased expansion of the heap leach facility would increase the total disturbance area to approximately 841 acres, with ore stacked in successive lifts, up to a maximum height of 300 feet. During construction, synthetic liners, stormwater diversion channels, and RWQCB-approved leak detection systems with both primary and secondary containment would be installed to prevent releases. Diversion structures would reroute ephemeral drainage around the facility, minimizing impacts on natural drainages. Construction BMPs and requirements under the Stormwater Pollution Prevention Plan would be implemented to prevent stormwater pollution and accidental releases of hazardous materials.

During operations, the expanded heap leach pad would accommodate up to 332 million tons of ore. Stormwater that falls on lined areas would be directed to emergency solution storage and stormwater basins, which are sized to handle a 100-year, 24-hour storm event. The gold processing and extraction circuit would continue to operate as a closed system, ensuring that rainwater entering the pad is either incorporated into the process or evaporates, thus preventing off-site runoff. Multiple leak detection systems beneath pad liners and storage basins would provide early warning of leaks, and regular inspections and maintenance (including third-party engineering reviews) would ensure the integrity of these systems. In the event of a significant liner failure or solution release, the affected area would be promptly drained, repaired, and remediated to prevent contamination of soil, drainages, ephemeral water features, or groundwater.

During decommissioning, the heap leach pad would be detoxified by circulating rinse water or a neutralizing solution until residual cyanide levels meet regulatory standards. The ore piles would be graded to stable slopes, and micro-catchment basins would be formed to retain water and support revegetation. Any hazardous sludge or residuals would be assayed and, if necessary, transported to approved hazardous waste facilities. All reclamation activities would be conducted in accordance with the approved closure plan and regulatory requirements, ensuring that the site is restored and that any remaining environmental risks are minimized.

Implementation of ACEPMs would reduce impacts associated with the heap leach facility expansion by ensuring all hazardous and nonhazardous waste materials are disposed of at approved facilities, with waste oils recycled and hazardous wastes managed off-site by licensed contractors (WM-3) (Appendix E). Spill prevention and rapid reporting protocols for cyanide solution pipelines (HAZMAT-8 and HAZMAT-9), along with secondary containment and regular inspections, would further minimize risks of releases to the environment. During reclamation and decommissioning, all hazardous materials would be removed, and any residuals transported to approved facilities, ensuring the site is restored and environmental risks are minimized.

3.16.2.5 IMPACTS OF ALTERNATIVES C – D

Under Alternatives C and D, Full Pit Backfilling to Avoid a Pit Lake (Alternative C), and Supplemental Power via a Small Solar Array (Alternative D), activities related to hazardous materials would be consistent with the Proposed Action.

3.17 Water Resources and Geochemistry

This section of the EIS analyzes potential impacts to water resources resulting from the implementation of the Project. Issues addressed include impacts to aquatic resources (wetlands and non-wetland waters), drainages, and floodplains due to proposed long-term and short-term ground disturbances, as well as groundwater quality and quantity impacts caused by water usage during construction and mining operations. Indicators used to assess potential effects of the Project include the extent (measured in acres or linear feet) of aquatic resource and groundwater features present and affected by Project activities, the jurisdictional waters of the State (WOS) and waters of the United States (WOTUS) subject to impact, and both current and modeled groundwater levels within the designated water supply basins.

The water resources analysis area is the modeled groundwater-drawdown extent in both Lanfair and Ivanpah Valleys and the Project Area (including all Alternatives), which includes the expansion of operations at the CMM and the newly requested ROWs for the underground water pipeline and 69-kV overhead power line to support the expansion, as well as short-term ROW. The water resource and geochemistry analysis is based on review of existing resources, technical data, and applicable laws, regulations, and guidelines. Table B-1.1.3-2 in Appendix B provides a list of the water resource and geochemistry technical reports prepared for the Project.

3.17.1 Affected Environment

3.17.1.1 REGULATORY BACKGROUND

Federal

The Clean Water Act (CWA) serves as the federal regulatory structure to protect water quality. Federal jurisdiction extends to features that meet the definition of WOTUS, as defined under 33 CFR 328. The CWA and associated WOTUS definitions have undergone a series of changes in recent years. Most recently, the March 2023 *Revised Definition of Waters of the United States* (2023 WOTUS Rule) was amended on September 8, 2023, to conform the definition of WOTUS to the Supreme Court of the United States decision in the *Sackett v. Environmental Protection Agency* case (USEPA 2023a). The 2023 WOTUS Rule and amendment were developed by the USEPA and U.S. Army Corps of Engineers (USACE) to clarify nationwide regulations that define the jurisdictional extent of the CWA and the definition of WOTUS for use in regulations under the CWA. Most recently, the USEPA proposed additional changes to the definition of WOTUS (proposed 2025 changes) that were published in the *Federal Register* on November 20, 2025, and subject to a 45-day public comment period that ended January 5, 2026; however, the timeline for actual adoption of the proposed 2025 changes is unknown, and there is uncertainty as to whether additional adjustments based on public comments received would be incorporated into the final rule. The proposed 2025 changes modify and clarify the 2023 amended WOTUS Rule. SWCA has based the regulatory analysis for this Project on the 2023 amended WOTUS Rule, which is currently in effect in California and Nevada (USEPA 2023b), with the knowledge that interstate waters may not be considered "jurisdictional by rule" (without the need for additional analysis of relative permanence and connectivity) in the future based on the proposed 2025 changes.

CWA Section 401 Water Quality Certification is required for activities that are federally permitted or licensed and involve any discharges into WOTUS. In Nevada, CWA Section 401 is managed by the NDEP Bureau of Water Quality Planning. Section 401 is required only when there is cut, fill, or grading proposed and a CWA Section 404 Permit for Dredged or Fill Material application is planned for submittal to the USACE. In California, Section 401 of the CWA is implemented by California's RWQCBs. The RWQCB issues a water quality certification or waiver through the Section 401 process, which requires a proposed project to comply with water quality standards and other conditions of California law, including

an evaluation of the effects of the proposed project on both water quality and quantity (i.e., runoff). The timing of the USACE, NDEP, and RWQCB application reviews and permit decisions (if required) are coordinated, but the Section 401 certification decision is required for USACE to make a permit decision.

Stormwater discharges are regulated under the National Pollutant Discharge Elimination System (NPDES) permitting program, which was established under CWA Section 402 and is enforced in Nevada by the NDEP Bureau of Water Pollution Control (BWPC) and in California by the State Water Board. An NPDES permit (e.g., General Stormwater Permit at Construction Sites [NVR100000] in Nevada and General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities [WQ 2022-0057-DWQ] in California) is required when discharging from a point source into WOTUS.

The discharge of dredged or fill material into WOTUS is regulated by the USACE under CWA Section 404. The USACE and USEPA determine the presence/absence and jurisdictional extent of WOTUS during their jurisdictional determination process. If there are no water features that meet the definition of WOTUS in the Project Area or if WOTUS are present but would be completely avoided, Section 404 permitting would not be required. If WOTUS are present and would be impacted by the project (i.e., subject to the discharge of dredged or fill material), coverage under a Section 404 permit would be required. The appropriate permit type (standard permit [i.e., individual permit] or nationwide permit) is based on the nature and extent of WOTUS-disturbing project activities.

State (California and Nevada)

In California, under Porter-Cologne, the various RWQCBs are charged with regulating WOS, defined as "any surface water or groundwater, including saline waters, within the boundaries of the State." This definition includes all WOS, encompassing aquatic resources that exhibit an ordinary high water mark, regardless of whether they fall under federal jurisdiction. The discharge of dredged or fill material may constitute a discharge of waste that could affect the quality of WOS. Additionally, the State Water Board adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (23 CCR 2926), which states that an area is wetland if—under normal circumstances—(1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation (less than 5% areal coverage of plants at the peak of the growing season) (State Water Board 2021). Effectively, a wetland that lacks vegetation may not be federally jurisdictional but may be jurisdictional WOS. Features that are not WOTUS may still be WOS under Porter-Cologne.

For activity that could result in the discharge of dredged or fill material into WOS, where federal aquatic resource jurisdiction is absent and Section 401 water quality is not required, applicants must file a WDR application with the State Water Board (in accordance with 23 CCR 3855).

Section 1602 of the California Fish and Game Code requires a project that may affect a river, stream, or lake to notify the CDFW before beginning the project. If activities would result in the diversion or obstruction of the natural flow of a stream; substantially alter its bed, channel, or bank; or adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement may be required. A Lake or Streambed Alteration Agreement lists the CDFW conditions of approval relative to the proposed project and serves as an agreement between an applicant and the CDFW for the performance of activities subject to Section 1602. CDFW jurisdiction is interpreted as a waterway's streambed including its bed and bank and associated riparian-type vegetation, if present, for both certain natural and anthropogenic drainage features.

The NDEP enforces water pollution control laws and regulations in Nevada, including the NPDES program pursuant to CWA Section 402, CWA Section 401 Water Quality Certification, and State of Nevada Water Pollution Control Law (NRS 445A). NRS 445A.415 defines "Waters of the State" as "all waters situated wholly or partly within or bordering upon this State, including but not limited to: 1. All streams, lakes, ponds, impounding reservoirs, marshes, water courses, waterways, wells, springs, irrigation systems and drainage systems; and 2. All bodies or accumulations of water, surface or underground, natural or artificial." The NDEP BWPC regulates discharges to WOS to ensure compliance with Chapter 445A Of the NRS. A Working in Waters permit is required for work being conducted in or around a WOS; it is short-term (up to 180 days) and does not authorize discharges (NDEP 2025). A Discharge to Waters of the State Permit is required for discharges that may directly or indirectly affect WOS in Nevada (e.g., dewatering, dust suppression, and other short-term discharges) and is also issued on a temporary basis, up to 180 days.

For mining operations, Title 27 of the CCR includes specific Mining Waste Management requirements (27 CCR §22470 et seq.), which apply to discharges of mining wastes that could affect water quality. These regulations require project operators to submit a Report of Waste Discharge and obtain WDRs from the applicable RWQCB unless a waiver is granted. Mining features such as ore placement areas, heap leach pads, and associated solution management systems are regulated under Title 27 until it is demonstrated that the materials do not adversely affect water quality. The WDRs also set water quality requirements based on geochemical characterization, predictive water quality modeling, and monitoring to demonstrate that mining features will not adversely affect surface water and groundwater and will comply with applicable Basin Plan water quality objectives.

3.17.1.2 AQUATIC RESOURCES

The northwestern portion of the Project Area is in the Town of Ivanpah–Frontal Ivanpah Lake watershed (10-digit Hydrologic Unit Code [HUC] 1606001512) in the Great Basin Region (16), and the southeastern portion is in the Lower Piute Wash watershed (10-digit HUC 1503010203) and Lanfair Valley watershed (10-digit HUC 1503010202) in the Lower Colorado Region (15), as mapped by the USGS Watershed Boundary Dataset (Figure C.3.17-1 in Appendix C) (USGS 2025). Drainages in the northwestern portion of the Project Area straddling the California-Nevada border are oriented and generally flow west across the Project Area toward Ivanpah Dry Lake, a terminal basin. Drainage in the southeastern portion of the Project Area, including the mine site, are oriented and generally flow east toward Piute Wash, a tributary of the Colorado River, which is a traditional navigable water approximately 55 river miles downstream of the Project Area (USEPA and USGS 2025). With the exception of occasional large rainfall events, surface water in the Project Area would be expected to ephemeral and to evaporate, be transpired by vegetation, or percolate into the soil before reaching either Ivanpah Dry Lake or Piute Wash (Lukos 2022, 2025).

In total, 202,688 linear feet of ephemeral water features, with an area of 26.21 acres, were delineated in the Project Area (Figure C.3.17-2 in Appendix C). Approximately 76%, or 153,661 linear feet and area of 18.48 acres, of these features are within the mine site in California, and the remaining 24% are within the ROWs in California and Nevada, with a length of 49,027 feet and area of 7.73 acres. No wetland areas evaluated within the Project Area exhibited any of the three wetland indicators of hydrophytic vegetation, hydric soils, and wetland hydrology (Lukos 2022, 2025).

In Nevada, 29,573 feet and 5.98 acres of delineated ephemeral water features may be considered WOS under NDEP jurisdiction. In California, 19,274 feet and 1.75 acres of the features have been mapped as regulatory by RWQCB, and 19,274 feet and 2.65 acres are to be considered under CDFW jurisdiction (Lukos 2022, 2025).

In May 2025, CMV obtained an Approved Jurisdictional Determination (AJD), based on the 2022 aquatic resources delineation for the mine site, which confirmed that WOTUS do not occur in the evaluated area

and that USACE regulations and permitting would not apply to that portion of the mine site covered by the 2022 AJD (Lukos 2022; USACE 2025). A second aquatic resources delineation for the ROWs was completed in December 2023, April 2024, and August 2025 (Lukos 2025), and an AJD has been requested from the USACE. Because the proposed ROWs cross drainages or ephemeral water features that span the California-Nevada border, there is potential for some of these features to be jurisdictional interstate waters under the current definition of WOTUS at 33 CFR 328.3 (a)(1)(iii), and USACE permitting may be required for dredge, cut, and or fill within jurisdictional areas (unless the anticipated jurisdictional changes occur in 2026).

The Aquatic Resources Delineation Report (ARDR) completed in 2025 for the ROW portion of the Project Area that straddles the California-Nevada border notes the presence of desert riparian species in small patches associated with ephemeral washes, primarily desert willow (*Chilopsis linearis*) (listed as facultative species, meaning it grows in wetlands as well as uplands equally), and catclaw (*Senegalia greggii*) (facultative-upland species, meaning it is usually found in non-wetlands yet may occasionally occur in wetlands), where groundwater is possibly accessible by deep-rooted shrubs along ephemeral drainages; however, the vegetation adjacent to drainage features was reported to be dominated by upland desert shrubs, grasses, and herbaceous plants such as creosote bush (*Larrea tridentata*), burro weed, burrobush (*Ambrosia salsola*), Mojave rabbitbrush (*Ericameria paniculata*), blackbrush, Mojave yucca, Cooper's boxthorn (*Lycium cooperi*), and hoary saltbush (*Atriplex canescens*) (Lukos 2025). No facultative-wetland, wetland, or obligate wetland (hydrophytic) species were observed during the field assessments. Similar species were reported in the Aquatic Resources Delineation Report assessment area for the mine portion of the Project Area (desert willow, catclaw, and creosote bush), and no facultative-wetland, wetland, or obligate species were present (Lukos 2022).

3.17.1.3 FLOODPLAINS

The portion of the Project Area in California is mapped by the Federal Emergency Management Agency as Zone D, an area defined as undetermined flood hazard, and the portion in Nevada is mapped as Zone X, an area with minimal flood hazard (Federal Emergency Management Agency 2025). No special flood hazard areas are present in the Project Area.

3.17.1.4 GROUNDWATER

Baseline groundwater data for the site are detailed in the *Updated Water Supply Assessment* (Geo-Logic Associates [GLA] 2023a). Projected groundwater demand is estimated to be 830 to 1,340 AFY from each basin, with a combined annual permitted maximum of 2,250 AFY. The groundwater will be supplied by wells in the Lanfair Valley Basin (Basin 7-001) and adjacent Ivanpah Basin (Basin 6-030). The proposed monitoring well network for the CMM project site (Lanfair Valley) and Nipton water supply well are included in Table 3.17-1.

Groundwater modeling indicates that sufficient supply is available from both basins to meet Project needs; drawdown of 1,017 feet at mine dewatering wells and 75 feet at well IV-1TW. CMV, as the Proponent, may be required to implement measures to prevent groundwater quality degradation and ensure compliance with federal and state standards. Existing monitoring wells provide historical water quality data and enable ongoing continuous monitoring at the site (Figure C.3.17-3 in Appendix C).

Table 3.17-1. Proposed Monitoring Well Network and Nipton Water Supply Well (IV-1TW)

Basin	Well ID	Coordinates		Status	Year Installed	Construction Details			Depth To Water		Water Level Elevation (feet amsl)
		Latitude	Longitude			Casing Diameter (inches)	Total Depth (feet)	Screened Interval (feet bgs)	Date of Measurement	Depth to Water (feet)	
Ivanpah	Benson DW	35.4672249	−115.273884	Existing	ND	ND	ND	ND	ND	ND	ND
	Benson OW	35.4673335	−115.274874	Existing	2020	4.5	600	550–600	9/29/2021	467.37	2,549.63
	IV-1TW	35.467704	−115.275244	Existing	2021	14	1,485	500–1,465	9/29/2021	461.45	2,545.55
Lanfair	2017-2RMW	35.2596667	−115.1156	Existing	2020	4	640	580–640	6/1/2022	537.88	3,673.64
	2017-3MW	35.2781667	−115.123308	Existing	2017	4	690	630–690	6/1/2022	161.83	4,154.65
	2019-3MW	35.2425556	−115.126314	Existing	2020	4	650	500–650	4/7/2023	451.18	3,711.14
	2019-5MW	35.2589611	−115.096689	Existing	2020	4	581	430–581	4/7/2023	439.18	3,696.90
	PS-2	35.1169731	−115.013828	Virtual	ND	ND	ND	ND	ND	ND	ND
	W-19P	35.2903618	−115.144234	Proposed	ND	ND	ND	ND	ND	ND	ND
	W-25P	35.2732167	−115.087858	Existing	1988	8	960	350–940	2/24/1988	275.6	3,924.20
	W-37	35.2477	−115.165372	Virtual	1990	8	1,000	640–1,000	1/28/1997	858.65	3,691.35
	W-38	35.203925	−115.104206	Virtual	1990	8	1,100	800–1,100	1/28/1997	758.02	3,193.98
	W-3P	35.203925	−115.104206	Proposed	ND	ND	ND	ND	ND	ND	ND
	W-45P	35.307875	−115.1458	Existing	1997	8	800	530–630	12/31/2003	458.9	4,100.50

3.17.2 Environmental Consequences

3.17.2.1 ANALYSIS METHODS

The Proposed Action could potentially impact the quality and quantity of both surface water and groundwater resources within the region either directly or indirectly. The water resources and geochemical areas of analysis include the APR and a 100-foot buffer. The buffer is included to evaluate potential regional impacts. Impact analyses are as follows:

- Analysis of current conditions based on desktop analysis of proposed Project Area and surrounding groundwater and ephemeral water feature conditions (focused on Lanfair and Ivanpah Valley Basins), presence of wetlands, geologic hazards/natural potential contaminants, current well inventory from online resources, and current county/regional water use.
- Analysis of modeled water quantity impacts in the Lanfair and Ivanpah Valley Basins, based on basin-specific modeled water use (throughout lifespan), maximum daily use, well locations and associated maximum pumping rates, surface diversions or obstructions, soil disturbance and compaction zones/planned structures, and analysis of potential impacts to nearby existing wells and Piute Springs within the Lanfair Valley Basin.
- Analysis of water-quality impacts based on proposed targeted mining zones, exploration borehole locations, tailings/waste storage locations, disposal methods and locations, and current available water-quality data.

The Lanfair Valley groundwater model was developed in MODFLOW 2000 and implemented into the graphical user interface Groundwater Vistas. The model covers an area of 738 square miles of which 456 square miles are active (where heads are computed by MODFLOW). Model cells vary from a minimum of 125 to 500 square meters (410–1,640.4 square feet). Groundwater flows through the Lanfair Valley from west-northwest to east-southeast. The groundwater flow model includes three layers and assigns lithological intervals where groundwater flow may be interrupted or slowed lower vertical hydraulic conductivities. Layer 1 simulates alluvium in the central areas of the model; layer thickness varies from 32 feet to over 1000 feet in the west wellfield area. Layer 2 simulates the deep alluvial-volcanic aquifer, which includes both the volcanic aquifer and the older alluvium aquifer in the basin. Layer 2 is the thinnest on the west side of the model domain, in the New York mountains, and dips to the east. Layer 3 represents the shallow impermeable bedrock (Tertiary volcanics); the thickness of layer 3 varies from 1,362 to 6,562 feet (GLA 2024a). While recharge estimates vary widely depending on the source and drought considerations, model recharge estimates were derived using a water-balance framework (Reitz et al. 2017) that incorporates PRISM precipitation and temperature inputs.

The Ivanpah groundwater model was developed in MODFLOW 2000 and implemented in the graphical user interface Groundwater Vistas. The model domain covers 1,330 square miles, measuring 52 miles north to south and 25 miles from east to west. The basic hydrogeologic model for Ivanpah Valley is a closed basin to the south near Cima, California, and open to the northeast. Model cell dimensions vary from 660 feet to 4,538 feet, with the finer cell grids centered on the former Molycorp evaporation ponds that were present in the venter of the valley and the towns of Goodsprings, Jean, Primm, and Nipton. The model is divided into two layers. Layer 1 represents the upper portion of saturated material and was modeled as an unconfined aquifer; the thickness of Layer 1 is approximately 200 feet near the center of the valley. Layer 2 represents a confined aquifer and simulates the top of the thick salt deposit and has a thickness of approximately 900 feet (GLA 2022a).

Groundwater impacts were evaluated using the Lanfair and Ivanpah Valley Basin groundwater models. Pumping of up to 1,340 AFY was simulated in the Lanfair Valley groundwater model, and pumping of approximately 1,425 AFY was simulated in the separate Ivanpah Valley groundwater model. While the

combined project water use across both basins is 2,250 AFY, concurrent total project pumping from both basins was not simulated within a single integrated groundwater model. Groundwater modeling was conducted in stages to evaluate water supply and groundwater impacts associated with pumping from the Lanfair and Ivanpah Valley Basins. Both models assumed steady-state conditions, which were used to evaluate pre-mining (baseline) conditions and establish regional groundwater flow patterns for model development and calibration. The models were then calibrated under transient conditions by simulating historical groundwater pumping from 1991 through 2016. Modeling results of the transient scenario represent groundwater conditions following historic operational mining water use, while the pumping scenario results present impacts of the proposed expansion water use. From the baseline condition, post-2016 modeling was conducted to evaluate three scenarios: (1) continued pumping under currently permitted conditions, (2) expanded pumping associated with the Proposed Action, and (3) expanded pumping under a sustained 10-year drought scenario. For the drought scenario, precipitation data from as early as 1940 was evaluated and it was determined that a 10-year drought would reduce recharge by approximately 10% over a 10-year period. Therefore, a 10% reduction in groundwater recharge was used to simulate extreme drought conditions. For purposes of this EIS, groundwater baseline conditions are defined as the modeled groundwater conditions following historical pumping and model calibration that serve as the starting point for evaluating Project-related impacts. For the Lanfair Valley Basin, this baseline corresponds to modeled conditions at the end of 2016 following transient calibration for (1991–2016), whereas for the Ivanpah Valley Basin, baseline conditions represent the calibrated model's existing groundwater conditions immediately prior to simulation of proposed Project pumping scenarios.

The Mojave Desert has exhibited a general warming trend, which can reduce or alter recharge patterns over time in recharge-limited basins. This directional climate context was considered qualitatively in the groundwater analysis through drought scenario evaluation, and reliance on adaptive monitoring to address uncertainty over the project life (Bedsworth et al. 2019).

Mine materials were evaluated using a combination of static and kinetic geochemical characterization tests to assess acid-generation potential and the potential for metals leaching. Static tests included paste pH screening and acid-base accounting (ABA) using a modified Sobek procedure to determine acid-generating potential, acid-neutralizing potential, and derived indicators such as net neutralization potential and the neutralization potential ratio, which are used to classify materials as potentially acid generating (PAG) or non-PAG. Toxicity characterization testing included total metals analysis using USEPA Method 3050B with comparison to California Total Threshold Limit Concentrations, and the California Waste Extraction Test (WET) to evaluate soluble metals relative to Soluble Threshold Limit Concentrations (STLCs). Short-term leaching potential was further evaluated using the Meteoric Water Mobility Procedure, which simulates meteoric water percolation through mine materials. Long-term geochemical behavior was assessed using Humidity Cell Tests conducted in accordance with ASTM Method D5744, which subject samples to repeated wet and dry cycles to simulate accelerated weathering and evaluate potential changes in leachate chemistry over time (GLA 2022b, 2025b).

3.17.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

A variety of RFTPAs are planned or underway near the Project, including broadband and utility infrastructure, mining exploration, recreational events, transportation improvements, water development, intermittent energy sources, and land conservation. These projects range in scale from small (<5 acres) site-specific activities, such as communication site upgrades and well system modifications, to large linear projects spanning hundreds of miles, such as transmission lines, high-speed rail, and water lines. Short-term impacts to groundwater and aquatic resources may arise during construction phases, including ground disturbance, soil compaction, and increased potential for sedimentation, accidental spills, or runoff entering drainages or ephemeral water features. Projects involving drilling, mining, or installation of underground infrastructure (e.g., pipelines, wells) may temporarily intersect shallow groundwater or alter surface drainage patterns. Long-term impacts could include long-term changes to groundwater recharge

or flow paths, alteration of ephemeral features hydrology due to grading or infrastructure placement, potential reduction of groundwater quality or quantity from extraction or contamination, and the introduction of impervious surfaces that affect infiltration. Large-scale water development projects—and transmission projects in particular—may have lasting effects on regional water balances, and recreational and transportation projects can contribute to water impacts through repeated or ongoing disturbance. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure.

3.17.2.3 IMPACTS OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, mining operations would continue within the approved boundaries and limitations established by the existing 1998 EIS/ROD EA (BLM 1998a) and San Bernardino County CUP 90M-013 (San Bernardino County (1997). There would be no expansion of mine pits, overburden storage, or the heap leach pad beyond that currently authorized. Water use, including pit dewatering, would remain limited to the volumes and infrastructure permitted under the 1998 EIS/ROD and existing authorizations. No new water-supply infrastructure, such as pipelines or wells, would be constructed, and all water withdrawals would continue near the baseline rate of 623 AFY. After the expiration of the county CUP in 2035, any ongoing mining would be restricted to private lands with vested mineral rights and subject to local regulations, further limiting the potential for increased water use or expanded dewatering activities.

Routine groundwater and surface water monitoring would continue as currently required under the 1998 Plan, using the established monitoring plan to assess compliance with Water Quality Protection Standards (WQPSs) and state and federal regulatory requirements. Vadose zone monitoring, semiannual groundwater sampling, and the reporting of any seeps or springs would continue, supporting ongoing oversight of water quality and quantity. Because there would be no increase in water use or expansion of mining activities beyond the approved Project Area, the potential for new or increased impacts to water resources (including wetlands and non-wetland waters) would be minimal. Any effects to groundwater levels, ephemeral water features, or water quality would remain consistent with those previously analyzed and permitted, and reclamation activities would proceed according to the approved reclamation plan, further mitigating potential long-term mining impacts (Appendix K).

3.17.2.4 IMPACTS OF THE PROPOSED ACTION

Under the Proposed Action, the Project would increase the long-term disturbance area by approximately 1,510 acres for a project total of 4,285 acres, extend mine operations by 20 years, and require an additional 10 years for reclamation and monitoring. Annual groundwater withdrawals would increase in the Lanfair Valley Basin from 625 AFY to 1,340 AFY. Ivanpah Valley Basin withdrawals would occur on an as-needed basis and would not exceed the maximum permitted volume of 1,425 AFY. In total, project groundwater use would not exceed a combined 2,250 AFY (Figure C.3.17-4 in Appendix C) (GLA 2022a, 2024a). Actual pumping rates would vary over time to distribute aquifer stress, therefore basin-specific maximum pumping rates would not occur simultaneously and would average out to approximately 2,250 AFY, combined.

Groundwater modeling results indicate that dewatering activities associated with mining operations would result in a maximum drawdown of 1,017 ft when pumped at 830 gpm over the course of 21 years. Maximum drawdown would occur within the vicinity of the dewatering wells and dissipate with distance away from the wells. Specifically, the model suggests that at about four miles away from the dewatering wells, drawdown would be reduced by five to ten feet. Because Piute Spring is located approximately seven miles outside of the five to ten feet drawdown threshold area, groundwater-level impacts to the spring would be small in magnitude due to attenuation with distance from the dewatering activities. Future changes to spring conditions would require consideration of natural recharge variability and the

modeled magnitude of mining-related drawdown. Maximum drawdown in the Ivanpah Basin was modeled using a well in Nipton, CA to be 5.3 feet over the course of 22 years at a pumping rate of 1,425 AFY (GLA 2022). At approximately 1.5 miles away from the pumping well, modeled drawdown decreased to less than two feet. Further, the town of Nipton is located almost 30 miles north of Piute Spring, 26 miles beyond the 1.5-mile, two-foot drawdown threshold.

Additionally, the Proposed Action would include an updated reclamation plan, enhanced pit backfilling, and improved operational efficiency through relocated and expanded facilities. Water resources analyzed under this alternative include aquatic resources (wetlands and non-wetland resources), water rights and availability, groundwater quantity and quality, and geochemistry of mined materials.

3.17.2.4.1 Aquatic Resources, Drainages, and Floodplains

Aquatic resources mapped within the review area are non-wetland waters (ephemeral); therefore, no impacts to relatively permanent wetlands would occur due to the Proposed Action. Approximately 3.87 acres of linear ephemeral water features potentially regulated by RWQCB, CDFW, and NDEP would be temporarily impacted by the underground water pipeline and 69-kV overhead power line during construction due to surface disturbance in the staging areas and the required temporary construction easement. These areas, however, are not regulated by NDEP if there is not USACE jurisdiction over ephemeral features). Additionally, as a result of construction, approximately 1.08 acres of ephemeral water features would be permanently impacted within the disturbance footprint, as the long-term ROW for the water pipeline would remain in use to support routine operation and maintenance activities. There would be no long-term impacts resulting from the 69-kV overhead power line installation because ephemeral water features would be spanned/avoided. A new maintenance road is not required because the existing Walking Box Ranch Road/CMM Access Road would be used for facility access and during construction of the 69-kV overhead power line. A summary of impact acreages by type and jurisdiction is presented in Table B-1.3.17-1 in Appendix B. Impacts to WOTUS may occur if the ROW AJD (in progress and under review by USACE) concludes that interstate water features are present and these features might be subject to regulated short-term and long-term dredge and fill activities during installation of the water and electrical lines. Short-term impact areas would be recontoured to previous conditions after construction. Long-term impact areas would use culverts and design mechanisms as required to ensure flow paths are not interrupted or otherwise impacted beyond the direct cut-and-fill areas.

No WOTUS impacts would occur at the mine site because no federally regulated WOTUS are mapped as present (as confirmed by AJD with USACE) and because this area is within the California portion of the site, it is not under NDEP jurisdiction. Approximately 18.32 acres of long-term impacts and approximately 0.31 acre of short-term impacts to ephemeral water features under RWQCB and CDFW jurisdiction would occur within the mine expansion site and a short portion of the ROW alignment within the California portion of the site because the features would be either be permanently filled in or used or altered in the short-term, as needed, during construction and restoration (see Table B-1.3.17-1).

Riparian-type vegetation potentially under CDFW jurisdiction was mapped along ephemeral drainages within the mine expansion area and the California portion of the underground water pipeline and 69-kV overhead power line ROWs. Approximately 0.27 and 0.003 acre of this riparian-type vegetation would be temporarily impacted during construction at the mine site and in the proposed ROWs, respectively. Approximately 2.46 acres would be impacted in the long term at the mine site by the facility's expansion, and another 0.09 acre would be impacted in the long term in the water pipeline ROW associated with the pipeline maintenance road (see Table B-1.3.17-1). Requirements for revegetation of short- and long-term drainage areas would be addressed during agency permitting and reclamation planning.

Implementation of ACEPMs would reduce impacts to aquatic resources, drainages, and floodplains by maintaining compliance with all necessary permits and regulations (ADM-2), ensuring the design and operation of drainage and diversion facilities to avoid and minimize disturbance (SW-2, SW-3, and SW-9), and employing BMPs for stormwater and erosion control (SW-4 and SW-5). Ongoing monitoring and reporting further ensure that any potential impacts are promptly identified and addressed (ADM-3) (Appendix E).

3.17.2.4.2 Surface Water Monitoring

Perennial, and intermittent streams or waters are absent at the mine site, yet ephemeral water features are present in identified areas immediately following significant storm events or have potential in other areas if seeps develop along the perimeter of a waste management unit. If storm- or seep-related water is observed, CMV is responsible for ensuring its source is identified and details such as flow rate, presence of floating or suspended materials, discoloration, turbidity, odors, and weather conditions are documented for inclusion in the next semiannual monitoring report in accordance with regulatory permitting with the RWQCB for California portion of the project. If a seep is detected near waste management units, its location, flow rate, and characteristics would be reported verbally to the RWQCB within 48 hours and in writing within 7 days. Seep flow would be contained to prevent adverse impacts on ephemeral water features, and samples would be collected and analyzed according to groundwater monitoring requirements. Laboratory results would reported to the RWQCB within 7 days, and persistent seeps would be monitored and reported in each subsequent semiannual report (GLA 2023b).

3.17.2.4.3 Water Rights and Availability

CMM is currently authorized under the 1998 plan by the BLM and the County of San Bernardino to use up to 625 AFY (currently supplied from only Lanfair Valley) of groundwater, sourced from wells in the Lanfair Valley Basin (GLA 2023a). To support expanded mining operations under the Project, cumulative water demand is expected to increase to approximately 2,250 AFY, which has not yet been authorized. Water supplies would be drawn from wells within the Lanfair valley basin and a newly constructed well in Nipton. Both basins represent protected desert basins under the Desert Groundwater Management Ordinance (DGMO) of San Bernardino County, which protects groundwater resources in unincorporated and unadjudicated desert basins. CMM is currently excluded from the DGMO due to its current Conditional Use Permit and established reclamation plan. At the state level, both basins have limited socioeconomic development and relatively low groundwater reliance and are therefore designated as very low priority under the CA Sustainable Groundwater Management Act. Once authorized, up to 1,340 AFY could be obtained from existing and proposed wells in the Lanfair Valley Basin, including seven new dewatering wells, while up to 1,425 AFY could be sourced from a new well (IV-1TW on private lands near Nipton: well permit number: 2021020094), or similar infrastructure in the Ivanpah Valley (see Figure C.3.17-3 in Appendix C). Actual pumping from each basin would vary throughout the project lifespan and would be managed to result in a combined total of approximately 2,250 AFY. Water supplies from Nipton would be routed to the project by proposed water pipeline. Basin-specific groundwater modeling and supporting field investigations were used to evaluate the feasibility and potential impacts of these water supply sources over the active life of the Project, with ongoing monitoring and adaptive management providing the basis for updating groundwater management and mitigation measures as Project operations proceed.

The Lanfair Valley Basin has a coarsely estimated groundwater storage capacity of approximately 3,000,000 acre-feet (AF); however, the extractable storage (representing a fraction of the storage capacity) is not known and could be significantly less. Annual recharge rates for the Lanfair Valley Basin are estimated by the California Department of Water Resources at 1,800 AF and by recent groundwater modeling at 3,498 AFY (GLA 2024a). In the Ivanpah Valley, annual recharge is estimated at 752 AF for Ivanpah North and 1,184 AF at Ivanpah South, with Jean Valley contributing about 119 AFY (ENSR

Corporation 2008). Although reported basin pumping rates vary, the most probable estimates indicate current groundwater extraction is approximately 2,340 AFY in Ivanpah South and 2,000 AFY in Ivanpah North (GLA 2023a). These figures provide important context for assessing groundwater impacts under the Proposed Action.

Water from the Ivanpah Basin would be conveyed to CMM via a new underground water pipeline installed within existing and proposed ROWs. All wells are on private land owned or leased by CMV, providing the company with overlying and appropriative rights for beneficial groundwater use. In the Lanfair Basin, CMV's land holdings, and unpatented mine claims and mill sites, further establish significant legal rights to groundwater for mining purposes. The IV-1TW well (near Nipton) was simulated at 1425 AFY for a 22-year period from 2024 to 2045, resulting in a maximum drawdown due to project pumping of 5.3 feet; however, it would be on the order of approximately 75 feet at the production well. Modeling further indicates that under a sustained 10-year drought scenario, additional drawdown at this location would be not measurably different from non-drought conditions. ENSR Corporation constructed the initial Ivanpah Valley groundwater model in 2008 to simulate a transient period from 1972 to 2008. GLA augmented ENSR Corporation's model in 2022 to simulate the period from 2006 to 2022 and from 2023 to 2045, the period planned for active mining at CMM (GLA 2022a).

Groundwater modeling in the Lanfair Valley Basin was conducted to evaluate water supply feasibility and groundwater impacts associated with the proposed expansion. Groundwater impacts at the CMM site evaluated relative to modeled groundwater conditions representing the end of historical mine pumping (2016), which serve as the reference condition for assessing impacts under simulated scenarios. From this reference condition, post-2016 modeling was conducted to evaluate continued pumping under currently permitted conditions, expanded pumping associated with the Proposed Action, and expanded pumping under a sustained 10-year drought scenario. Groundwater modeling for the Lanfair Valley Basin indicates maximum modeled declines would exceed 1,000 feet in the immediate vicinity of mine pits and dewatering wells; however, modeled drawdown effects are largely contained within the project boundary, and simulated impacts to Piute Spring discharge do not exceed approximately a 5% reduction relative to baseline spring flow conditions, with percent change evaluated by comparing projection results to modeled water levels and spring flows at the end of the historical pumping period, under approved baseline rate (2016). Model results further indicate that groundwater-level declines associated with mine pumping are short-term, with residual drawdown effects recovering over a long-term post-operational period. Groundwater recovery was evaluated through a 100-year post-operational simulation period. Continued monitoring and management would be necessary evaluate whether expanded water use adversely affects other groundwater users or regional water resources, and to implement mitigation measures, if necessary.

3.17.2.4.4 Groundwater

Current Monitoring at the CMM Site (Lanfair Valley)

Groundwater-elevation monitoring at CMM is conducted monthly, whereas groundwater quality sampling is completed semiannually, with both sets of results reported semiannually. Water quality results are calculated for each parameter using eight rounds of sampling and USEPA's ProUCL95 software at the 95% confidence level and compared to WQPSs. Although WQPSs have been established for most analytes, some parameters lack sufficient data for calculation due to the timing of the monitoring program's implementation. Monitoring includes both field and laboratory parameters, with additional constituents of concern tested every 5 years. Section 3.1.2 in both GLA (2024b) and GLA (2025a) provides a comprehensive list of parameters.

Results from the second semiannual 2022 monitoring event indicated that the nitrate concentration of 12 milligrams per liter (mg/L) exceeded the maximum contaminant level (MCL) of 10 mg/L in well

2017-1RMW, and the sulfate concentration of 55 mg/L was below the MCL for sulfate of 250 mg/L but slightly exceeded the WQPS of 52.92 mg/L in well 2017-3MW (GLA 2023b).[14] These exceedances are not considered indicative of ongoing impacts from mining operations. Cyanide detected in a background well was attributed to laboratory artifact, and some metal and total petroleum hydrocarbon results were not directly comparable due to sampling and analytical issues. These data gaps and anomalies will be addressed in future monitoring events to ensure comprehensive evaluation of groundwater quality (GLA 2024b).

Results from the October 2024 monitoring event indicated several exceedances of WQPS and MCLs for the following monitoring wells and parameters (GLA 2025a). The pH measured at well 2017-1RMW was 6.18, which was below the applicable WQPS range of 7.053 to 8.747. Nitrate concentrations marginally exceeded applicable benchmarks in two wells, with a concentration of 12 mg/L (exceeding the MCL of 10 mg/L) at well 2017-1RMW and a concentration of 2.9 mg/L (slightly exceeding the WQPS of 2.8 mg/L) at well 2017-2RMW. Cyanide was detected at a concentration of 0.026 mg/L at well 2017-1RMW, marginally exceeding the WQPS of 0.02 mg/L; however, cyanide has been detected historically in this well prior to the commencement of heap leach pad operations, suggesting the result may reflect artifacts from earlier site operations and closure activities rather than current conditions. In addition, the sulfate concentration of 53 mg/L at well 2017-3MW was below the MCL of 250 mg/L but nominally exceeded the WQPS of 52.92 mg/L. Additional publicly available historical water quality data are available through the GeoTracker database maintained by the State Water Resources Control Board.

Vadose-zone monitoring at the mine involves sampling and measuring soil pore liquids beneath the heap leach pad, tank pond, and event pond to detect and quantify potential leakage. The heap leach pad system includes seven monitoring locations, allowing for detection and recovery of solution from both the upper leak collection and recovery system (LCRS) and the vadose zone monitoring system (VZMS) beneath the secondary liner. Each leach pad cell is individually monitored, with collected liquids conveyed by gravity to the perimeter and ultimately to the tank pond area for sampling and measurement. Locations of the recovery points are depicted in Figure 2c of GLA (2025a), and a cross section of the system is depicted in Figure 4 of GLA (2025a).

The event pond and tank pond also feature VZMS systems, each with a pan lysimeter and sump for collecting and sampling liquids that may escape the liners. Liquids in these areas are monitored using riser pipes and pumps, with flowmeters to measure volumes. In the event pond, electric sounders or transducers detect liquid accumulation, and any collected liquids are pumped to solution tanks. A leak was detected in December 2023, and CMV repaired all detected leaks in July 2024. The tank pond VZMS includes a drainage layer and central perforated pipe to capture and measure leakage, with liquids similarly conveyed to solution tanks for analysis. These systems ensure that any leakage is promptly detected, measured, and managed to minimize impacts on water resources. Cross sections of the event pond and tank pond can be found in Figures 5 and 6 of GLA (2025a), respectively.

Unsaturated-zone monitoring requires routine inspection, measurement, and reporting activities to ensure proper system performance and regulatory compliance. Monitoring includes weekly measurement of liquid levels and volumes in the event pond and tank pond VZMS and LCRS sumps, with data recorded in weekly logs, as well as quarterly field measurements of pH and electrical conductivity for any liquids present, using calibrated instruments. When liquid is first detected in any VZMS or LCRS, the RWQCB must be verbally notified within 7 days, and at least one liquid sample must be collected within 30 days and analyzed for groundwater monitoring parameters and 5-year constituents of concern (see Section 3.1.2 of GLA 2024b and GLA 2025a). Leakage rates are routinely calculated using differences between weekly measurements to confirm that liquid does not back up into the collection systems, with volumes

[14] The maximum contaminant level (MCL) is the highest concentration of a contaminant allowed in drinking water under the Safe Drinking Water Act, as enforced by the U.S. Environmental Protection Agency (USEPA).

adjusted as needed to account for liquid in drainage pipes. If leakage rates exceed reporting thresholds or moisture is observed in riser pipes, RWQCB notification and response procedures specified in Part II.F.3 of the reclamation plan will be implemented (Appendix J).

Aside from the event pond leak detection, there was an accidental release occurred during the 2024 monitoring period that required notification of the California Office of Emergency Services and a 5-day spill report to RWQCB. There was no other liquid detected in the VZMS during the 2024 monitoring period.

Proposed Monitoring at the CMM Site (Lanfair Valley)

A comprehensive groundwater monitoring program for CMM would include monthly measurement of groundwater levels in existing monitoring wells, evaluation of mine-related pumping effects on groundwater levels and Piute Spring flows using numerical modeling, and periodic model calibration using annual operational water use data. Monitoring results would be used to establish and track thresholds that, if exceeded, would trigger implementation of mitigation measures. CMM has developed this approach as the Monitor, Model, and Mitigate (3M) Program, which is intended to effectively identify potential groundwater impacts and provide a mitigation response framework should impacts occur. The iterative 3M Program would be updated annually with yearly operational pumping data and water level monitoring results to adjust for pumping variability and water level fluctuations. The mitigation actions correspond to simulated flow response at Piute Spring from two scenarios 50 years after mine closure. Each threshold and plan response can be found in Table 3.17-2 (GLA 2026a). The 3M plan is intended to be an adaptive mitigation plan that is subject to future revisions in response to changes in mine conditions and operational water use.

Under the proposed 3M plan, groundwater levels in monitoring wells would be measured regularly and evaluated against modeled groundwater levels for the Lanfair Valley Basin. This monitoring approach avoids environmental disturbance in the MNP by eliminating the need for the installation of additional monitoring wells, linking mitigation actions to modeled changes in Piute Spring flow, and tracking changes in spring flow (GLA 2024b). Unlike previous approaches that relied solely on observed water level changes, the proposed plan uses modeled changes in Piute Spring flow as the trigger for mitigation actions.

The previous monitoring plan included direct measurement of two groundwater wells that were located on land managed by other federal agencies but were plugged and abandoned following the termination of historical mining activities. There are Privately owned inholdings exist in the vicinity of the project area that could be suitable for new groundwater monitoring wells; however, these areas lack road access, thus the installation of new groundwater monitoring wells would require permitting the construction of temporary roads with another federal agency which is outside of BLM jurisdiction or ability to authorize. The proposed monitoring program is intended to remain adaptive, recognizing that future empirical monitoring options may be evaluated if conditions warrant and if land access and regulatory constraints can be resolved.

Table 3.17-2. Changes to Piute Spring Flow and Mitigation Actions

Proposed Action	Modeled Piute Spring Flow Reduction 50 Years after Mine Closure (gpm)	Percent Change (%)
Action A: No further action.	0–8	<7
Action B: Adjust mine pumping and remodel impacts; if Piute Spring flow reduction is <10%, redistribute the pattern of pumping at mine. If flow reduction remains ≥10%, proceed to Action C.	9–12	7–10
Action C1: Construct Contingency Well #1 as a new monitoring well south of the south extension pit and begin monthly monitoring.	13–15	10–12
Action C2: Construct Contingency Well #2 as a new monitoring well between the Project Area and Piute Springs and begin monthly monitoring.	16–17	12–14
Action D: Adjust and rerun the model to ensure Piute Spring flow reduction is ≤10%, then reduce pumping in Lanfair Valley and increase water use from Ivanpah Valley wells, as needed.	18–22	14–18

Groundwater Modeling Results at the CMM Mine (Lanfair Valley)

Groundwater modeling within the Lanfair Valley Basin was calibrated under transient pumping conditions using historical groundwater pumping from 1991 through 2016 as a baseline for the proposed expansion. From the baseline condition, post-2016 modeling was conducted to evaluate three scenarios: (1) continued pumping under baseline permitted conditions, (2) expanded pumping simulating Proposed Action pumping, and (3) expanded pumping under a sustained 10-year drought scenario. Pumping of up to 1,350 AFY (representing the maximum authorized pumping within the Lanfair Valley Basin) was used in simulations.

Groundwater modeling at the CMM site suggests that groundwater level impacts to Piute Spring associated with projected water use may take years to decades before becoming evident at the spring. This temporal gap increases uncertainty and requires a predictive modeling approach to infer future potential impacts to Piute Spring and other regional springs. The model estimated the potential of a maximum 5% decline in Piute Spring discharge by 2150 compared to the baseline condition. Over a 100-year mining scenario, modeling suggests a 5% maximum flow reduction at Piute Spring, which equates to a production of 37.9 to 224 gallons per minute (gpm) and suggests recharge rate multipliers of 0.8 to 1.2 of current recharge (3,497 AFY) (GLA 2024b).

Groundwater Modeling and Water Quality Results Ivanpah Valley (Well IV-1TW)

In 2021, Well IV-1TW (located in Nipton) was installed and sampled for water quality testing. The well is screened at two intervals from 499 feet to 599 feet and 616 feet to1,465 feet bgs. Additionally, planned project pumping in the basin was evaluated using a numerical groundwater model of the Ivanpah Basin (adapted from ENSR Corporation 2008). Anticipated pumping from Well IV-1TW would be 1,425 AFY over 22 years. Consistent with modeling scenarios at the CMM site in the Lanfair Valley Basin, a 10% reduction in annual recharge was used to simulate an extreme drought scenario.

In the Ivanpah Valley Basin, extended groundwater modeling at an average rate of 1,425 AFY (representing the maximum authorized pumping within the Ivanpah Valley) for 22 years (from 2024 to 2045) predicts a maximum drawdown of 5.3 feet near well IV-1TW, with no change under simulated drought conditions, simulated for 10 years (2024–2034), by reducing recharge by 10% (GLA 2022a).

Water-quality testing was conducted at the IV-1TW well in 2021 as part of the aquifer pump test following well completion. Arsenic and fluoride exceedances for primary and secondary USEPA MCL standards for drinking water were documented. Total dissolved solid concentrations were recorded below the secondary MCL standard for drinking water (GLA 2022a).

3.17.2.4.5 Pit Lake Dewatering

The 2026 hydrologic evaluation for the CMM details a multiphase operational plan involving the sequential development of the JSLA, Jumbo/Oro Belle, and South Extension pits between 2025 and 2050. Groundwater in the Project Area typically occurs below 4,000 feet amsl, a comprehensive dewatering program is necessary to facilitate safe excavation. Under the proposed Scenario 1, the project will employ seven dewatering wells alongside existing production wells to reach a maximum annual pumping rate of 1,340 AFY (830 gpm). Peak groundwater inflows are anticipated to reach approximately 300 gpm for the JSLA pit and up to 500 gpm for the South Extension pit during their respective active mining phases (GLA 2026b).

Hydraulic modeling indicates that the resulting groundwater drawdown associated with dewatering activities will be largely localized within the immediate vicinity of the mine. At the conclusion of mining in 2050, the maximum predicted drawdown is expected to reach 1,013 feet and occur near the center of the dewatering wellfield; however, these impacts attenuate rapidly with distance; outside the project boundary, drawdown levels are projected to remain below 50 feet. Once dewatering operations cease in 2050, the JSLA and Jumbo/Oro Belle pits will be backfilled, whereas the South Extension Pit will remain open to allow for the natural formation of a pit lake.

The lake is expected to reach a minimum elevation of 3,120 feet amsl and fill steadily until it reaches hydrologic stabilization after 2120. By 2150, the lake is projected to reach an elevation of 3,532 feet amsl with a total volume of 7,938 AF. A critical finding of the hydrologic simulation is that the stabilized lake level will remain below the regional groundwater table, which ranges from 3,500 to 3,800 feet amsl. Because the projected pit lake water level is lower in elevation than the regional water table, the pit lake would act as a closed system, preventing the migration of lake water into the surrounding regional aquifer. Evaporation rates exceed pit lake inflow, suggesting that the pit lake would act as a hydraulic sink where salts and other constituents will concentrate over time (GLA 2022c).

A geochemical mixing analyses was conducted to simulate the long-term water quality of the pit lake, accounting for influences from groundwater, precipitation, and wall-rock runoff. The lake is predicted to remain alkaline, with pH values maintained between 8.0 and 8.4 (GLA 2026b). Although high evaporation rates relative to inflows will cause total dissolved solids concentrations to increase over time, ranging from 586 mg/L to 677 mg/L after 105 years, natural attenuation is expected to manage trace metal concentrations. Specifically, the precipitation of minerals such as calcite, ferrihydrite, and sepiolite will lower the concentrations of iron, magnesium, and silica. The formation of amorphous ferrihydrite will also provide surfaces for the sorption of trace metals such as arsenic, lead, and copper, further improving the long-term chemical profile of the lake. The mixing model predicts that concentrations of all analytes will remain below California Aquatic Life and Wildlife standards, with the exception of chromium. The model estimates a chromium concentration of 0.094 mg/L compared to the applicable standard of 0.011 mg/L; however, the regulatory standard applies specifically to hexavalent chromium, whereas the analytical results used in the model represent total chromium.

The potential for the project to impact regional water resources, specifically Piute Spring, was also evaluated. Effects on the spring are expected to be negligible throughout the active mining period ending in 2050. Under a conservative worst-case scenario using highly cautious model parameters, a maximum decline of approximately 9% (11 gpm) in modeled baseline spring discharge could occur by 2150;

however, this projected change is within the margin of error associated with the hydrologic modeling and is not considered to differ significantly from current baseline conditions at the spring.

3.17.2.4.6 Geochemistry

Three general lithologic layers have been sampled and characterized for acid-based accounting and metals leachability throughout the history of the mine (GLA 2022b):

- Rhyolite – extrusive rock consisting primarily of quartz, potassium feldspar, sodium plagioclase and lesser amounts of muscovite, biotite, and hornblende.
- Lahar – cemented tertiary gravels determined not to contain acid-generating materials.
- Andesite – porphyritic volcanic rock with a purple, green, or grey groundmass and plagioclase, pyrite, and amphibole phenocrysts.
- The geochemical sampling efforts began in 1989 by Environmental Solutions, Inc., and were continued in 1997 by Lilburn Corporation during a characterization study for an EIS/EIR. The most recent study began in 2022 and has been revised several times with additional sampling data, most recently in 2025. Studies used previous characterization sites and analysis methods, which align with industry and California standard characterization methods (GLA 2022b).

Static testing included saturated pH, total metals, WET, and ABA. The ABA method includes acid-generating potential, acid-neutralizing potential, and neutralization potential ratio. The pH (7.78–9.43) and ABA results indicate that the samples do not have the potential to generate acid and are classified as non-PAG. All samples exceeded the 3.0 neutralization-potential ratio threshold.

No samples submitted for total metals testing exceeded a total threshold limit concentration. Two samples had total metals concentrations higher than the STLC, which triggered WET:

- South pit ore sample – mercury (2.9 milligrams per kilogram [mg/kg]) exceeded the STLC threshold of 2.0 mg/kg
- JSLA pit ore sample – arsenic (71 mg/kg) exceeded the STLC threshold of 50 mg/kg

All samples were submitted for WET and analyzed for California Administrative Manual (22 CCR 66261.24) metals after extraction; most metals were below detection limit except for lead, which was an order of magnitude lower than the STLC.

Additional geochemical testing was completed in 2025 to supplement the 2024 testing on the waste rock and (overburden) ore rock that will be mined at the CMM. Samples were taken from Project expansion areas from the South Extension, JSLA, and Oro Belle Pits, each major lithology, waste rock zones, and pit-specific lithologies intersecting future pit wall/floor locations that could be subject to oxidation and weathering. Samples were subject to both static and kinetic testing methods including paste pH, ABA, toxicity characterization, total metals, WET, meteoric water mobility procedure, and humidity cell tests (GLA 2025b).

The result of the 2025 analyses indicate that waste rock samples were non-PAG, based on the paste pH and ABA tests. Total metals analyses had no samples exceed their total threshold limit concentration and one sample exceeded the STLC threshold for arsenic (sample CMM-327). All samples were submitted for WET and results of both tests indicate that no samples would be considered hazardous. Short-term meteoric water mobility procedure tests indicate that mine rock leachates are alkaline, with pH values ranging from 7.65 to 8.99, and exhibit low concentrations of leached salts and metals, consistent with waste characterization results. Long-term humidity cell tests, which were conducted over 42 weeks and continue now, show that leachates are generally alkaline to slightly acidic, with pH values ranging from 5.44 to 7.63, and similarly low concentrations of salts and metals. Two samples exhibited relatively lower pH values

during later test periods; however, these conditions are not attributed to sulfide oxidation, as acid-base accounting results indicate less than 0.01 weight-percent PAG sulfur. Continued humidity cell testing is being conducted to confirm pH stabilization, with coordination with regulatory agencies to determine the appropriate duration of testing (GLA 2025b). Geochemical characterization completed to date is limited by the availability of representative material for testing. As mining progresses and additional materials become available, CMV will conduct additional geochemical sampling and testing.

Existing geochemical testing for CMM of waste rock, ore, and processed materials, including static tests (paste pH, ABA, total metals, and WET), indicates that these materials are non-PAG and are not expected to leach metals at concentrations exceeding applicable STLCs (GLA 2022b, 2025b).

3.17.2.4.7 Geotechnical

The geotechnical feasibility of the Castle Mountain project expansion was evaluated in 2020 by Call & Nicholas, Inc. (Call & Nicholas), to establish updated slope design parameters (Call & Nicholas 2020). This comprehensive study used new laboratory testing, geo-mechanical drilling data, and an updated three-dimensional geologic model to refine recommended inter-ramp slope angles and bench design criteria. The findings provide a framework for managing stability across various pit sectors, including the JSLA, South Extension, Jumbo, and Oro Belle pits.

The project site is situated within the Castle Mountains Volcanic sequence, which includes Miocene-era trachyandesite, rhyolite flow domes, and tuffs. Structural stability is primarily dictated by a dominant north-northeast to northeast striking fault system that typically dips steeply to the southeast. Analysis of historical performance indicates that previous slope instabilities were largely triggered by the presence of weak, clay-altered materials, specifically mixed-layer illite and smectite, frequently located near major fault zones. Identifying and modeling these clay bodies is essential for maintaining the integrity of the proposed pit walls.

Geo-mechanical logging and laboratory testing was conducted to determine the strength of various lithological units. Andesite was identified as the highest quality rock type, with an average rock quality designation of 64.5% and a geological strength index of 54.7. Other units, such as autoclastic rocks and porphyritic rhyolite, exhibited lower average rock quality designation values of 26.4% and 29.6% and geological strength index values of 34.4% and 36.6%, respectively. Rock-mass shear strengths were calculated using a method that integrates intact rock strength with the shear strength of fractures, adjusted for the degree of fracturing observed in the core samples.

Slope design recommendations specify inter-ramp slope angles ranging from 48° to 52° for generic domains, with significant reductions to 40° or 46° in zones surrounding major named faults. The bench design assumes a triple-bench configuration with a 60-foot vertical height and a 27-foot catch-bench width, which adheres to the Modified Ritchie Criterion for rockfall containment. Achieving these angles requires the implementation of high-quality controlled blasting, specifically single-pass pre-splitting over the full 60-foot increment, to minimize rock-mass damage and ensure the reliability of the bench faces.

The final stability of the pit designs was verified through two-dimensional limit-equilibrium modeling, using a minimum Factor of Safety of 1.20 as the design acceptance criterion. While most analyzed sections met this requirement, a 300-foot exclusionary setback from the pit crest is recommended for critical infrastructure near the South Extension pit to mitigate risks associated with the Maverick Fault. Although the initial feasibility study assumed dry conditions, subsequent evaluations incorporating updated groundwater models indicate that proposed dewatering measures should maintain the necessary factor of safety through the completion of mining. Call & Nicholas (2020) recommends ongoing monitoring, including drone-based audits of bench performance and the installation of piezometers, to validate these design assumptions as mining progresses.

3.17.2.5 IMPACTS OF ALTERNATIVES C – D

3.17.2.5.1 Aquatic Resources, Drainages, and Floodplains

Under Alternative C, backfilling to avoid surface expression of the south pit lake, additional impacts would not occur to aquatic resources (ephemeral features), drainages, or floodplains because the proposed backfill area in the south extension pit is within an existing pit, and these resources are not present.

Under Alternative D, Small Solar Facility for supplementation, a photovoltaic solar facility would be constructed in an approximately 90-acre area in the northwestern corner of the mine site. Two ephemeral water features cross the solar facility but lie within avoidance areas that would not be disturbed by the solar array installations. The solar facility design is incomplete, and it is unknown if internal access roads and underground collector lines would need to cross the two ephemeral water features. If crossings are needed, short-term and long-term impacts to ephemeral features and drainages would occur. No impacts to floodplains would occur because there are no regulatory floodplains in the mine site.

3.17.2.5.2 Groundwater

A review of Alternatives C and D indicates that none of the alternatives would result in new or additional impacts to groundwater resources. Although each alternative involves variations in reclamation strategies, and power supply configurations, these differences do not translate into changes in existing water uses or impacts within the Project Area boundaries. The Alternative Actions would not change water resource use or impacts, and any variations are contained within the existing Project footprint.

Impacts associated with groundwater withdrawal and dewatering activities would result in a modeled maximum 5% decline in Piute Spring discharge by 2150 compared to the baseline conditions. Should the South Expansion pit develop into a pit lake, groundwater impacts would be negligible as the pit lake elevation would remain below the local water table resulting in a closed system. Additionally, evaporation rates would exceed inflows (groundwater and direct precipitation) to the pit lake which would maintain its low water level while allowing salts and other constituents to concentrate within the lakebed.

Under Alternative C, backfilling to avoid surface expression of the south pit lake, the additional water quality impacts discussed above would not occur.

3.18 Paleontology

This section describes the paleontological setting of the project area and evaluates the potential impacts of ground-disturbing activities associated with the Project on paleontological resources. As defined by the Paleontological Resources Preservation Act of 2009 (16 U.S.C. 470aaa), paleontological resources are 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. They are considered nonrenewable resources because the organisms they represent no longer exist, and such resources, if destroyed, cannot be replaced. The technical studies completed for paleontological resources can be found in Appendix B in Table B-1.1.3-2.

3.18.1 Affected Environment

The Project is in the Great Basin, a subset of the larger Basin and Range Geomorphic Province (herein referred to as Basin and Range). The Basin and Range is the largest geomorphic province in the United States and includes parts of northern Mexico. It is bounded by the Colorado Plateau on the north and east and Sierra Nevada Mountains on the west (California Geological Survey 2002). The Great Basin exhibits 1.8 billion years of geologic history, beginning with the formation of a crystalline basement from the

suturing of continents, followed by deposition of sedimentary strata along a generally passive continental margin that was punctuated by mountain-building events (e.g., Antler and Nevada Orogenies) during the Paleozoic (541–251.9 million years ago [Ma]), Mesozoic (251.9–66 Ma), and Cenozoic Eras (66 Ma–present). Later tectonic extension, volcanism, and sedimentary deposition occurred during the Cenozoic (Glazner et al. 2002). Since that time, the Great Basin has developed its current geomorphology, with linear north-south-trending mountain ranges consisting of faulted Paleozoic and Mesozoic rocks separated by basins infilled with alluvial sediments and ephemeral lacustrine deposits from internal drainage (Parsons 2006).

3.18.1.1 WATER AND POWER LINE ROWS

The paleontological resources analysis area totals 450 acres and includes a 100-foot wide buffer on the proposed water pipeline and power line ROWs only.

There are 22 mapped geologic units within the analysis area ranging from very low (Potential Fossil Yield Classification [PFYC] 1) to low (PFYC 2) and unknown (PFYC U) sensitivities (see Table B-1.3.18-1 in Appendix B) (Miller 2012; Schmidt and McMackin 2006. The analysis area does not include any geologic units of moderate (PFYC 3), high (PFYC 4), or very high (PFYC 5) sensitivities. Approximately 79.08% of the analysis area has low sensitivity (PFYC 2), 10.63% has very low (PFYC 1), and 10.29% are geologic units with unknown sensitivity (PFYC U).

3.18.1.2 MINE PLAN OF OPERATIONS

Previous NEPA analyses evaluated the affected environment for paleontological resources within the MPO and established the baseline conditions for these resources (BLM 1997). Because the current review tiers to and relies on the information and conclusions presented in those previously completed NEPA documents, no new information regarding the affected environment for paleontological resources within the MPO is presented here. The existing analyses remain applicable to the MPO boundary and continue to adequately characterize the paleontological resource setting for the area.

3.18.2 Environmental Consequences

It is unlikely that construction activities would encounter paleontological resources in geologic units with very low (PFYC 1) or low (PFYC 2) sensitivity; therefore, effects to paleontological resources in these units are unlikely; however, construction activities in areas mapped at the surface of the disturbance area as having unknown paleontological sensitivity (PFYC U) could result in potential effects if previously undocumented resources are present.

3.18.2.1 ANALYSIS METHOD

Desktop evaluations (SWCA 2025c, 2025d) identified the mapped geologic units within the analysis area using the BLM's national PFYC data (BLM 2023b), along with geologic maps of the project area at more refined scales (Miller 2012; Schmidt and McMackin 2006), to more specifically identify individual geologic units where possible. Results of a paleontological field survey were used to determine provisional PFYC assignments to more accurately characterize the paleontological resource potential and sensitivity (SWCA 2026c, 2026d). This analysis uses the provisional PFYC values provided in these reports.

3.18.2.2 RFTPAS COMMON TO ALL ALTERNATIVES

A variety of RFTPAs are planned or underway near the Project, including broadband and utility infrastructure, mining exploration, recreational events, transportation improvements, water development, intermittent energy sources, and land conservation. These projects range in scale from small (<5 acres) site-specific activities—such as communication site upgrades and well system modifications—to large linear projects spanning hundreds of miles—such as transmission lines, high-speed rail, and water lines. As described in Section 3.3, the Proposed Action and alternatives have limited spatial overlap with the RFTPAs, and the only overlapping projects involve existing transmission infrastructure.

3.18.2.3 IMPACTS OF NO ACTION ALTERNATIVE

Under Alternative A (No Action), no additional ROWs would be granted for the underground water pipeline or 69-kV overhead power line, and the currently authorized MPO would remain in effect. Mining would continue within the existing mine plan boundary, but no new surface disturbance would occur outside it. No additional impacts to paleontology would occur under this alternative, as all potential impacts are analyzed under existing environmental documentation.

3.18.2.4 IMPACTS OF PROPOSED ACTION

An assessment of the potential effects on paleontological resources considers the extent of ground disturbance (horizontal and vertical) and the paleontological potential of the geological unit impacted. It is unlikely that construction activities related to the ROWs would encounter paleontological resources in units with very low (PFYC 1) or low (PFYC 2) sensitivity; therefore, effects to paleontological resources are unlikely in these geologic units; however, construction activities mapped in the 10.29%, or approximately 46 acres, of the analysis area mapped as unknown PFYC U areas could result in potential impacts to paleontological resources.

Results of paleontological field surveys did not identify any new paleontological resources within the analysis area which included a buffer of the ROW areas only (SWCA 2026c, 2026d). In addition, the desktop analysis conducted prior to the field surveys did not identify any previously recorded fossil localities within the analysis area, and no known localities were close enough to the analysis area to warrant reexamination during the field effort.

For the MPO, previous NEPA analyses evaluated the potential environmental consequences to paleontological resources and disclosed the anticipated effects of mining activities on these resources (BLM 1997). The current analysis tiers to and relies on the impact analysis presented in those previously completed NEPA documents. Because the proposed action and environmental context remain consistent with those evaluations, no new or additional analysis of environmental consequences to paleontological resources is provided here for the MPO.

To minimize potential impacts and prevent disturbing or destroying paleontological resources, CMV will not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. If previously undiscovered paleontological resources are encountered during surface-disturbing activities, the resources will be left intact and immediately reported to the BLM Authorized Officer. If significant paleontological resources are identified, avoidance, recordation, and/or data recovery will be required at the expense of CMV (PALEO-1) (Appendix E).

In areas mapped as PFYC U, construction activities have an unknown potential to encounter fossils at the surface or in the shallow subsurface. The discovery, successful documentation, and salvage of fossils that meet significance criteria as paleontological resources could advance the scientific study of the types of organisms encountered and their time periods. These effects would be permanent, as the fossils would

become part of the scientific record and would extend beyond the geographic extent of the proposed Project area, as the fossils and the resulting scientific information is disseminated among the scientific community and general public. The damage or destruction of paleontological resources by the Proposed Action construction activities could also occur. Effects include the loss of these fossils and the potential scientific contribution of these fossils to the scientific community and general public. These effects are permanent, as paleontological resources are nonrenewable.

3.18.2.5 IMPACTS OF ALTERNATIVES C-D

Alternatives C and D would impact paleontological resources similarly to that described under the Proposed Action. Previous NEPA analyses evaluated the potential environmental consequences to paleontological resources within the authorized MPO and disclosed the anticipated effects of mining activities on these resources (BLM 1997). The current analysis tiers to and relies on the impact analysis presented in the previously completed NEPA document, which remains adequate for evaluating impacts within the MPO. Alternatives C and D represent operational options related to the mine and do not introduce new conditions that would alter the nature or scope of impacts to paleontological resources beyond what has already been analyzed in previous NEPA analysis (BLM 1997); therefore, the conclusions of the previous NEPA analyses remain applicable, and no additional impact analysis is warranted.

CHAPTER 4: REFERENCES

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APPENDIX A

Environmental Impact Report (EIR)

APPENDIX B

Referenced Tables

CHAPTER 1. TABLES

Table B-1.1.3-1. Previously Completed NEPA/CEQA and Associated Decisions for the CMM

Short Name	Document Title	Reference
1990 Plan	Record of Decision for the Castle Mountain Mine Project Environmental Impact Statement (EIS No. 890053/State Clearinghouse No. 88062708)	BLM 1990a
1990 EIS/EIR	Environmental Impact Statement/Environmental Impact Report for the Castle Mountain Mine Project (EIS No. 890053/State Clearinghouse No. 88062708)	BLM 1990b
1991 EA	Castle Mountain Mine 69 kV Power Transmission Line Environmental Assessment	BLM 1991
1997 EIS/EIR	Final Environmental Impact Statement/Environmental Impact Report for the Castle Mountain Mine Expansion Project (EIS No. DES 97-10/State Clearinghouse No. 95081031)	BLM 1997
1998 Plan	Record of Decision for the Castle Mountain Mine Expansion Project (EIS No. DES 97-10/State Clearinghouse No. 95081031)	BLM 1998a
2020 EA	Environmental Assessment, Castle Mountain Mine, Modification of Castle Mountain Mine Plan of Operations (DOI-BLM-CA-D090-2020-002-EA)	BLM 2020a
2020 Plan Update	Decision Record, Modification of Castle Mountain Mine Plan of Operations (DOI-BLM-CA-D090-2020-002-EA)	BLM 2020b

Table B-1.1.3-2. Technical Survey Reports

Technical Report Title	Author	Date
Bats		
Bat Habitat Assessment for the Castle Mountain Mine Project	BioResource Consultants, Inc. (BRC)	2018
Mine Surveys for Bats and Other Wildlife at Castle Mountain Mine Project, San Bernardino County, California	Brown-Berry Biological Consulting (Brown-Berry)	2018
Winter Mine Surveys for Bats and Other Wildlife at Castle Mountain Mine Project, San Bernardino County, California	Brown-Berry	2019
Bighorn Sheep		
Bighorn Sheep Use of Mine Sites	WestLand Engineering & Environmental Services (WestLand)	2022
October 2019 Desert Bighorn Sheep Helicopter Surveys	California Department of Fish and Wildlife	2019
Focused Fall Rare Plant and Desert Bighorn Sheep Survey and Habitat Assessment Report, Castle Mountain Mine Expansion Project	ECORP Consulting, Inc.	2021a
Cultural Resources		
Class III Cultural Resources Inventory of 1,091 Acres for the Castle Mountain Venture Project	ASM Affiliates	2018
Class III Cultural Resources Inventory of Approximately 1,550 Acres, Castle Mountain Mine	SWCA	2021
Class III Results for the Nevada Portion of the Castle Mountain Mine Phase II Expansion Project	SWCA	2025b
Results of Testing Plan for Cultural Resource Sites P-36-005872/CA-SBR-5872 and P-36-032492/CA-SBR-32492/H (Prehistoric Component)	SWCA	2024
Desert Tortoise		
Castle Mountain Mine Presence/Absence Survey and Density Estimate	Bio Logical, LLC	2020

Technical Report Title	Author	Date
Flora and Fauna		
Castle Mountain Mine Biology Compilation Report	WestLand	2022
Golden Eagle and Raptors		
Recommended Buffer Zones for Ground-based Human Activities around Nesting Sites of Golden Eagles in California and Nevada	U.S. Fish and Wildlife Service California	2021b
Proposal-2026 GOEA Aerial Surveys – CMM Phase 2 Project	BRC	2025
Castle Mountain Mine Golden Eagle Trapping Report Status Update #1	BRC	2021
Update #2 on Golden Eagle Movements and Trapping in 2022	BRC	2022
Castle Mountain Mine Golden Eagle Progress Report #3	BRC	2023
ROWs		
Report of Biological Surveys for the Ivanpah Underground Waterline and 69kV Overhead Powerline Rights-of-Way Project Located in Unincorporated San Bernardino County, California and Unincorporated Clark County, Nevada	Glenn Lukos Associates, Inc. (Lukos)	2024
General Vegetation		
Report of Biological Surveys for the Ivanpah Underground Waterline and 69kV Overhead Powerline Rights-of-Way Project Located in Unincorporated San Bernardino County, California and Unincorporated Clark County, Nevada	Lukos	2024
Castle Mountain Mine Biology Compilation Report	WestLand	2022
Castle Mountain Mine Vegetation Analysis	California Department of Conservation Office of Mine Reclamation	2000
Results of a Creosote Bush Ring Survey for the Castle Mountain Mine Expansion Project, San Bernardino County, California	ECORP Consulting, Inc. (ECORP)	2021c
Noxious Weeds and Invasive Species		
Results of the 2018 Spring and Fall Blooming Seasons Special-status Plant Surveys for the Castle Mountain Mine South Water Exploration Project Located	ELMT Consulting (ELMT)	2019
Addendum Report for Focused Rare Plant Survey	ECORP	2021b
BLM Special-Status Plant Surveys for the Castle Mountain Mine Project	SWCA Environmental Consultants (SWCA)	2023
Bureau of Land Management Special-Status Plant Surveys for the Castle Mountain Mine Project	SWCA	2025a
Special-Status Species – Plants		
Castle Mountain Mine Biology Compilation Report	WestLand	2022
Focused Fall Rare Plant and Desert Bighorn Sheep Survey and Habitat Assessment Report, Castle Mountain Mine Expansion Project	ECORP	2021a
Addendum Report for Focused Rare Plant Survey (Spring 2021) for the Castle Mountain Mine Expansion Project	ECORP	2021b
BLM Special-Status Plant Surveys for the Castle Mountain Mine Project	SWCA	2023
Bureau of Land Management Special-Status Plant Surveys for the Castle Mountain Mine Project	SWCA	2025a
Cactus and Yucca Species		
Results of the Inventory/Assessment of Joshua Trees (*Yucca brevifolia* var. *jaegeriana*) within the South Over Burden Target Area at the Castle Mountain Mining Site	ELMT	2021
Focused Fall Rare Plant and Desert Bighorn Sheep Survey and Habitat Assessment Report, Castle Mountain Mine Expansion Project	ECORP	2021a

Technical Report Title	Author	Date
Addendum Report for Focused Rare Plant Survey (Spring 2021) for the Castle Mountain Mine Expansion Project	ECORP	2021b
BLM Special-Status Plant Surveys for the Castle Mountain Mine Project	SWCA	2023
Report of Biological Surveys for the Ivanpah Underground Waterline and 69kV Overhead Powerline Rights-of-way Project	Lukos	2024
Bureau of Land Management Special-Status Plant Surveys for the Castle Mountain Mine Project	SWCA	2025a
Transportation		
Castle Mountain Mine Trip Assessment	Urban Crossroads	2025
Visual Resources		
Visual Resources Technical Report for the Castle Mountain Mine Phase II Expansion Project	SWCA	2026b
Water Resources and Geochemistry		
Jurisdictional Delineation of the Castle Mountain Mine Phase II Expansion Project Site, Located at the Castle Mountain Mine, San Bernardino County, California	Lukos	2022
Jurisdiction Delineation Report for Ivanpah Underground Waterline and 69kv Overhead Power Line Rights-of-Way Project Associated with Castle Mountain Mine Located in San Bernardino County, California and Clark County, Nevada (	Lukos	2025
Approved Jurisdictional Determination for the Castle Mountain Mine Phase II Expansion Project (File No. SPL-2019-00042-BLR)	U.S. Army Corps of Engineers	2025
Updated Water Supply Assessment	Geo-Logic Associates (GLA)	2023
Lanfair Valley Groundwater Model Report	GLA	2024a
Castle Mountain Mine Geochemical Characterization Report	GLA	2022a
Evaluation of Planned Pumping in Ivanpah Basin	GLA	2022b
Results of Testing Plan for Cultural Resource Sites P-36-005872/CA-SBR-5872 and P-36-032492/CA-SBR-32492/H (Prehistoric Component), Castle Mountain Mine, San Bernardino County, California	Winslow	2024
Paleontology		
Paleontological Assessment Report for the Castle Mountain Mine Phase II Expansion Project (Nevada Segment), Clark County, Nevada	SWCA	2025c
Paleontological Assessment Report for the Castle Mountain Mine Phase II Expansion Project, San Bernardino County, California	SWCA	2025d
Paleontological Survey Report for the Castle Mountain Mine Phase II Expansion Project (Nevada Segment), Clark County, Nevada	SWCA	2026c
Paleontological Survey Report for the Castle Mountain Mine Phase II Expansion Project (California Segment), San Bernardino County	SWCA	2026d

CHAPTER 2. TABLES

Table B-1.2.3-1. Alternatives Considered but Eliminated from Detailed Analysis

Category	Alternative Considered but Eliminated	Rationale for Elimination
Power Generation Alternative	100% diesel generator power	Not economically feasible with technical constraints
	Diesel for supplemental power generation	Not economically feasible with technical constraints
	100% solar power	Not under BLM authority, and not economically feasible
	Solar for intermittent power generation	Not economically feasible, limited availability of developable land within MPO boundary
	100% LNG micro-turbines	Not technically feasible
	Nuclear micro-reactor	Not technically feasible
Mining Activities Alternative	Reduce mining throughput rates by 5–10%	Not economically feasible
	Reduce mining throughput rates enough to avoid new off-site utilities	Not economically feasible
	Change order in which the pits are mined	Not under BLM authority
	Underground Mining	Not economically feasible
ROW Alternative	Joint trench to contain both underground water pipeline and power line	Not economically feasible
	Burying the Electric Line or the Pipeline within the Existing CMM Access Road/Walking Box Ranch Footprint	Not economically or technically feasible, Public Safey Risk
	Buried 69kV Electrical Transmission Powerline	Not economically or technically feasible
	Bury power line underground through Walking Box Ranch	Not economically or technically feasible
	Co-location of overhead electric line located south of Walking Box Ranch from substation	Not technically feasible, Public Safety Risk

CHAPTER 3. TABLES

Table B-1.3.1-1. Issues Dismissed from Detailed Analysis

Resource Topic	Rationale for Dismissal from Detailed Analysis
Aquatic Resources and Fisheries	Issue eliminated because there are no aquatic resources/fisheries within the Project Area.
Fuels and Fire Management	Construction activities, vehicle traffic, and LNG-related operations would be conducted in compliance with applicable BLM California Desert District Fire Prevention Orders issued pursuant to 43 CFR 9212, which regulate ignition sources and establish enforceable requirements for equipment use, spark arrestors, hot work, and other activities during periods of elevated fire danger. Since the Project Area is largely disturbed with limited fuel continuity, and enforceable fire prevention measures would apply, the Proposed Action would not result in a substantial change in wildfire risk or fire management needs.
Geology and Minerals	Geological and mineral resources are dismissed from detailed analysis because previous NEPA documents adequately evaluated general impacts to these resources, and the Proposed Action would not introduce new mining activities, alter mineral development potential, or affect mineral ownership. There are over 600 patented mining claims within the Mine Plan boundary, all held by Castle Mountain Venture or Viceroy Gold Corp., which convey exclusive title to the locatable minerals; the Proposed Action would not alter the validity or use of these claims. Two active lode claims (NV101826548 and NV101826549) intersect or occur near the Utility ROW, but the action would not preclude mineral development, and land tenure considerations are addressed in the Lands and Access section. Existing mineral material site ROW records identified in MLRS are also addressed in the Lands and Access section. Accordingly, no new or significant impacts to geological or mineral resources are anticipated, and detailed analysis is not warranted.
Greenhouse Gases	Issue eliminated because neither the National Environmental Policy Act nor its implementing regulations require agencies to quantify or exhaustively evaluate emissions where such analysis would be speculative or would not meaningfully inform decision-making. However, the Castle Mountain Mine 2022 Plan Amendment Technical Support Document for Air Quality, Climate, and Energy Analyses (AQTSD) (prepared by Ramboll Americas Engineering Solutions, Inc. [Ramboll] 2025a) provides a focused and proportional assessment of greenhouse gas (GHG) emissions, emphasizing the potential change in emissions attributable to implementation of the proposed Project. Consistent with NEPA's rule of reason, the analysis evaluates those emissions that can be reasonably estimated and that are relevant to informed decision-making. GHG emissions would be generated during both Project construction and ongoing operations, including fuel combustion from heavy equipment, on-site activities, and associated energy use. These emissions and their potential effects are analyzed in detail in Chapter 6 of the AQTSD, with quantitative estimates summarized in Table 6.5.
Lands with Wilderness Characteristics	Issue eliminated because there are no Lands with Wilderness Characteristics within the Project Area.
Livestock and Grazing	Issue eliminated because there are no grazing allotments within the Project Area.
Tribal Treaty Rights	Issue eliminated because there were no issues regarding Tribal Treaty rights within the Project Area.
Wild and Scenic Rivers	Issue eliminated because there are no Wild and Scenic Rivers within the Project Area.
Wild Horse and Burro Herd Management Areas	Issue eliminated because there are No Wild Horse and Burro Herd Management Areas within the Project Area.
Wilderness Study Areas	Issue eliminated because there are no WSAs or WLDs are within the mine plan of operations boundary or the right-of-way.

Table B-1.3.3-1. Reasonably Foreseeable Environmental Trends and Planned Actions Identified for the Project

Project	Size and Location	Current Status and Length of Operation	Project Summary
American Adventure Off-Highway Vehicle (OHV) Tours (DOI-BLM-NV-S010-2018-0109-DNA)	445 miles (Clark County)	National Environmental Policy Act (NEPA) completed	This is a 5-year SRP for non-speed commercial OHV tours in the Jean/Roach Dry Lakes Special Recreation Management Area. Tours use all-terrain vehicles, utility-terrain vehicles, and motorcycles. All touring activities occur on existing roads and trails.
Brightline West – Las Vegas to Victor Valley High-Speed Rail Project	218 miles (Nevada and California)	NEPA completed. Design and construction 2024–2028.	In December 2023, the Nevada Department of Transportation (NDOT), in partnership with Brightline West, an intercity passenger high-speed rail service company, was awarded $3 billion from the U.S. Department of Transportation toward the Las Vegas-to-Los Angeles high-speed rail system. The 218-mile, all -electric high-speed rail service would include a flagship station in Las Vegas, Nevada, with additional stations in Apple Valley, Hesperia, and Rancho Cucamonga, California. At 186+ miles per hour, trains would take passengers from Las Vegas to Southern California in 2 hours and 10 minutes, twice as fast as the average drive time. The Federal Railroad Administration (FRA) is the lead federal agency for the environmental review process for the project. FRA, in cooperation with the Bureau of Land Management (BLM), Surface Transportation Board (STB), Federal Highway Administration (FHWA), and the National Park Service (NPS), completed the Final EIS and Record of Decision in 2011. Reevaluations of the Final EIS and ROD were completed by the FRA in 2020 and 2023. Utility and other preliminary construction began in early 2024. Once major construction begins, it is expected to take approximately 4 years to build.
Desert Antimony Drill Project (DOI-BLM-CA-D090-2025-0021-CX and DOI-BLM-CA-D090-2025-0013-CX)	<5 acres (San Bernardino County [SBC])	NEPA completed. Exploration authorized for 2025–2026.	Locksley Resources Limited, dba Enigma Strategic Minerals (ESM), submitted a proposal to conduct reverse circulation drilling exploration activities at the Desert Antimony Mine near Mountain Pass, California. The exploration activities would determine the presence of antimony, a critical mineral as defined at 30 United States Code (USC) 1606(a)(3) and 2022-04027 (87 *Federal Register* (FR) 10381), or a "critical military metal" used in military-grade ammunition, flame-retardant aircraft, semiconductors for targeting systems and communications equipment. This project would contribute to the overall goal of securing the domestic supply of critical minerals for U.S. economic security and national defense. ESM's mine plan of operations (MPO) proposes to drill 16 total core holes from 11 drill pads with a maximum depth of 100 meters. The proposed total acreage disturbance is estimated at 0.96 acres on lands managed by the Bureau of Land Management (BLM).
Desert Star Critical Minerals Drill Project (DOI-BLM-CA-D090-2025-0029-CX)	<5 acres (SBC)	NEPA completed. Exploration authorized for 2025–2026.	BMM Nevada LLC submitted a proposal to conduct reverse circulation drilling exploration activities near Mountain Pass, California. The exploration activities would determine the presence of Sb, a critical mineral as defined at 30 USC 1606(a)(3) and 2022-04027 (87 FR 10381), or "critical military metal" used in military-grade ammunition, flame-retardant aircraft, semiconductors for targeting systems and communications equipment, and other rare earth elements if present. This project would contribute to the overall goal of securing the domestic supply of critical minerals for U.S. economic security and national defense.

Project	Size and Location	Current Status and Length of Operation	Project Summary
Eldorado Pisgah Lugo TLRR Project (DOI-BLM-CA-D010-2023-0005-EA)	175 miles (Clark County and SBC)	NEPA in progress	The Eldorado Pisgah Lugo 220-kV Project is in San Bernardino County, California, and Clark County, Nevada, crossing federal lands managed by the BLM and National Park Service (NPS); state lands managed by the California Department of Fish and Wildlife (CDFW), and roads managed by California Department of Transportation; railroad crossings managed by BNSF Railway and UPRR; municipal lands managed by SBC, Clark County, and City of Boulder City, Nevada; private lands; and lands owned and managed by SCE. The BLM California Desert District (CDD) Office, BLM Las Vegas Field Office (LVFO), and Mojave National Preserve – NPS unit have received applications to amend the existing authorizations to address SCE's subtransmission line reliability issues.
GridLiance West Core Upgrades (DOI-BLM-NV-S030-2023-0008-RMP-EIS)	155 miles (Clark and Nye Counties)	NEPA in progress.	GridLiance West LLC has applied for four ROWs to build 61 miles of transmission line, as well as substations, switchyards, and ancillary facilities in Clark County, Nevada. The Applicant has requested a 30-year 275-foot-wide ROW for the 230-kV transmission line.
Interstate 15 (I-15) Wildlife Crossings	<5 acres (SBC)	Construction 2025–2027	Caltrans, CDFW, and Brightline West have entered into an agreement to design and construct three dedicated wildlife overcrossings across I-15 and the future Brightline West high-speed rail system, which would connect Las Vegas, Nevada, and Southern California. These overcrossings would provide safe and sustainable passage for wildlife—particularly bighorn sheep—across both the existing highway lanes and the planned high-speed rail within the I-15 median.
Ivanpah Substation Right-of-Way (ROW) (DOI-BLM-CA-D090-2022-0007-EA)	575 acres (SBC)	NEPA completed. Long-term ROW authorized.	SCE and DesertXpress received ROWs to construct substations and transmission lines to support the Brightline West rail project.
Jean-Apex Dry Lakebed Events Special Recreation Permits (SRPs) (DOI-BLM-NV-S010-2025-0063-CX)	<5 acres (Clark County)	NEPA completed. Multiple races per year authorized for 5 years.	The BLM LVFO has received multiple SRP applications to conduct Commercial/Organized Events on Apex and Jean Dry Lakebed. The first two proposed events would include a Las Vegas Drum Circle event and a Desert Biennial Project event. In addition, other Organized/Commercial Events on either Jean or Apex Dry Lakebed, not to exceed a total of 15 similar events per year, are being proposed. Each event would be similar as far as setup, length of time, and area of use. All applicants would be required to submit an operations plan 30 days before the proposed event for BLM approval.
Jeep Jamboree SRP (DOI-BLM-CA-D090-2025-0006-DNA)	450 miles (SBC)	NEPA completed. SRP authorized 2025–2035.	Shawn Gulling submitted an application to the BLM Needles Field Office for an event to occur twice in between the months of April and October, that would consist of a commercial, motorized, guided jeep tour on public lands between the Needles, Barstow, and Palm Springs South Coast Field Offices, California. Upon authorization, the SRP would be issued for up to 10 years (through October 30, 2035), as long as the same routes and staging area are used and all stipulations of the permit are adhered to for the event each year.

Project	Size and Location	Current Status and Length of Operation	Project Summary
LA-Barstow to Vegas Dual Sport Event (LAB2V) (DOI-BLM-CA-D080-2024-0001-CX)	200 miles (SBC)	NEPA completed. SRP authorized 2023–2028.	The LAB2V event consists entirely of street legal, licensed motorcycles in a 2-day, non-speed, non-timed, touring event through the desert between Palmdale, California, and Las Vegas, Nevada. The yearly event occurs on designated open OHV routes (routes approved by the various plan amendments that address OHV use on BLM-managed public land). The event would occur across the BLM Barstow, Ridgecrest, and Needles Field Offices within the CDD.
McCullough Springs Southern Nevada Public Land Management Act (SNPLMA) Acquisition (DOI-BLM-NV-S010-2024-0096-EA)	40 acres (Clark County)	NEPA completed.	The McCullough Springs Land Acquisition was nominated and approved for Environmentally Sensitive Land Acquisition through the Round 18 application process for the SNPLMA. The purpose for the nomination was federal protection of the property's cultural, vegetative, wildlife, and scenic resources and consolidation of public land in the South McCullough Mountain Range. As part of the Round 18 review process, there was a 45-day public comment period from March 1 to April 14, 2021. After successful completion of the screening and evaluation process involving the U.S. Departments of the Interior and Agriculture, the nomination was approved for acquisition funding by the Secretary of the Interior on October 7, 2021 (BL66, Priority 18-1). The subsequent EA was completed in 2024.
McCullough-Victorville (MCCVIC) Transmission Lines 1 and 2	160+ miles (California and Nevada)	California Environmental Quality Act completed. Construction 2026–2028. Long-term ROW.	MCC-VIC Transmission Lines 1 and 2 are existing 500-kV power lines supported by approximately 1,740 single-circuit towers, spanning over 160 miles from Nevada's McCullough Switching Station through mountain ranges and the Mojave Desert to the Victorville Switching Station in California. Originally placed in service by the City of Los Angeles Department of Water and Power (LADWP) in 1936 and 1939 at 287.5 kV, both lines were upgraded to 500 kV by 1980. These lines are part of 14 high-voltage transmission lines on the West of River Path 46, which facilitates energy movement from southeastern California and Nevada to the Colorado River. Recent and ongoing improvements to the MCC-VIC lines aim to increase LADWP's transmission capacity on Path 46, supporting the transition to renewable energy in alignment with Los Angeles's 2021 commitment to 100% carbon-free energy. Upgrades would allow for the delivery of additional renewable energy from the East territory region and increase transmission capacity by 475 megawatts—enough to power 300,000 homes for 1 year.
Middle Mile Broadband 155, 154, 153 (DOI-BLM-CA-D090-2025-0014-CX)	100+ miles (SBC)	NEPA in progress.	The California Middle Mile Broadband Initiative proposes to install broadband fiber optic infrastructure along portions of Interstate 15, Interstate 40, and U.S. Route 95 within the BLM Needles Field Office jurisdiction. This initiative is part of a statewide effort led by the California Department of Technology to expand high-capacity, open-access middle-mile broadband networks, improving connectivity for underserved and rural communities and supporting future last-mile service providers. The project is currently under BLM review and was initiated in coordination with multiple state, local, and federal agencies to address critical gaps in digital infrastructure across California's desert region. The proposed action involves installing fiber optic cable primarily within existing transportation and utility line to minimize new ground disturbance and environmental impacts. The goal is to enhance broadband resiliency, promote economic development, and ensure equitable access to high-speed internet for residents, businesses, and public services.

Project	Size and Location	Current Status and Length of Operation	Project Summary
Mojave Groundwater Bank	Over 300+ miles of pipeline across 2,000 square-mile watershed (multiple states and counties)	Permitting and NEPA in progress. Planned construction 2026–2028. Potential long-term ROW.	The Mojave Groundwater Bank is a proposed regional groundwater supply and banking initiative in eastern San Bernardino County. The proponents (Fenner Valley Water Authority and Fenner Gap Mutual Water Company, with Cadiz Inc. as a private partner) seek to manage groundwater in the Fenner Valley Groundwater Basin and adjacent Cadiz Valley, and to convey water through conversion of portions of a formerly idled petroleum pipeline ("Northern Pipeline") and a proposed connection to the Colorado River Aqueduct ("Southern Pipeline"). Federal actions which are reasonably foreseeable at this time include: (1) a BLM EA to consider a FLPMA right-of-way (ROW) for use of the Northern Pipeline across BLM-managed lands and certain Department of Defense lands (NEPA No. DOI-BLM-CA-D090-2025-0018-EA), and (2) an exploratory, non-binding Memorandum of Understanding between the Bureau of Reclamation and local project entities to coordinate technical information regarding potential integration with Colorado River system management. Hydrologically, the project area lies within the Fenner Valley Groundwater Basin, a basin southwest of Lanfair Valley watershed.
Nevada Department of Conservation and Natural Resources Communication (NDCNR) Site ROW (DOI-BLM-NV-S010-2025-0044-CX)	<5 acres (Clark County)	NEPA in progress.	The BLM received an application from NDCNR to renew their ROW, serialized as NVNV 105962798, for the operations and maintenance (O&M) of an existing communication facility. The facility provides private mobile radio services to emergency responders in the area. The existing facility includes an 8 × 10–foot equipment shelter on a concrete pad on New York Mountain, approximately 5 miles west of Walking Box Ranch. No new construction or disturbance is proposed with the ROW renewal application. The total acres of existing disturbance for the facility are 0.01 acres, and the total acres of existing disturbance for the existing access road is 1.81 acres.
Nevada Multi-District OHV SRP Programmatic Environmental Assessment (EA) (DOI-BLM-NV-0000-2023-0004-EA)	28,712,700 acres (Nevada)	NEPA completed. SRP authorized for 5–10 years.	The BLM Nevada State Office developed a programmatic EA that covers a range of SRPs for OHV events in Nevada. The development of this EA aids BLM staff in responding to private party applications for events on BLM-administered land throughout Nevada. The BLM has engaged the Ely, Southern Nevada, Battle Mountain, and Carson City District Offices. The planning area for the program is 28,712,700 acres. The programmatic EA streamlines the current SRP process for OHV events and lower the cost burden for applicants who bring valuable economic income to the region, in addition to alleviating processing time for BLM staff. Analysis in the programmatic EA would be limited to existing routes currently or previously used for OHV events in the region.
Rebelle Rally (DOI-BLM-CA-D070-2025-0011-CX)	1,500 miles (California and Nevada)	NEPA completed. SRP authorized for 5–10 years.	Rebelle Rally Enterprises is proposing a multiday women's driving and navigation event across portions of Nevada and California on designated, open routes to be held in October 2025. The event focus would be learning and using maps and compass navigation skills, with an expected field of up to 65 two-person teams (130 total competitors). Teams would use maps, compasses, and road books to navigate from Nevada to Southern California over 8 days of driving. The course would cover approximately 1,500 miles (2,500 kilometers). Teams would work to reach approximately 15–25 checkpoints per day and return to the appropriate base camp location each evening. There would be approximately 70–85 staff using approximately 15 vehicles and up to eight designated media vehicles.

Project	Size and Location	Current Status and Length of Operation	Project Summary
Rigo Favela Access Road ROW (DOI-BLM-CA-D090-2024-0003-CX)	<5 acres (SBC)	NEPA completed. Long-term ROW.	A ROW has been authorized to provide a private landowner access to an inholding west of Nipton, California. The route is designed to minimize ground disturbance and avoid areas with major vegetation.
Searchlight Abandoned Mine Lands (AML) Closures (DOI-BLM-NV-S010-2024-0042-CX)	31 AML sites (Clark County)	NEPA completed.	The BLM AML program enhances public safety by reducing or eliminating the effects of past hard-rock mining in Southern Nevada District. The project is a joint effort between the BLM, U.S. Army Corps of Engineers, Nevada Division of Minerals, and Bureau of Reclamation. The Proposed Action would be performed shortly after receiving approval by BLM due to the increased public recreation activities in the area. The Proposed Action is to close 31 AML features in southern Nevada. These 31 AML hazards are associated with the historic mining activities surrounding Searchlight, Nevada.
Searchlight U.S. Route (U.S.) 95 Roadway Rehabilitation	21 miles (Clark County)	Construction currently underway.	NDOT is undertaking a roadway rehabilitation project on U.S. 95 in Clark County, improving approximately 20.41 miles from Milepost 17.442 to Milepost 37.849 near Searchlight. Work is expected to enhance roadway conditions and safety while extending the lifespan of this key transportation corridor. The project scope includes milling and paving, new signage and striping, hydraulic and drainage enhancements, fence repair, and tortoise fencing to protect local wildlife. These enhancements would contribute to safer and more efficient travel for motorists along this arterial route, which serves both commuter and freight traffic.
Shadow Valley Well System (SVWS) Modification (DOI-BLM-CA-D090-2025-0028-CX)	5 acres (Clark County)	NEPA completed. Construction through 2025.	MP Materials has proposed an amendment to its existing MPO (CACA-056118) to install approximately 1,750 feet of underground pipeline to connect the well to its existing SVWS. The pipeline would cross BLM-managed land, resulting in approximately 2.24 acres of temporary surface disturbance, and would be installed using horizontal directional drilling to minimize impacts.
Southern Nevada Off Road Enthusiasts (SNORE) 250-Night Race (DOI-BLM-NV-S010-2019-0017-DNA)	85 miles (Clark County)	NEPA completed.	SNORE is proposing to organize an off-highway vehicle race event in the Jean, Nevada area. The race would consist of approximately 70 off-road truck and buggies competing for time and/or points on an 85-mile-long course. All activities would be on existing roads, trails, and other disturbed areas.
Southern California Edison (SCE) Boulder-Chino Transmission Line (NVNV106086177)	51 miles (California and Nevada)	Existing transmission line. Long-term ROW.	Regular O&M activities would include access road grading/repair, tensioning/pulling sites or amp-jack to lift towers and reduce wire sag, and removing or mowing vegetation to comply with fire and fuels stipulations.
SCE Cima-Eldorado-Pisgah 223-kilovolt (kV) Transmission Line (NVNV105968604)	30 miles (California and Nevada)	Existing transmission line. Long-term ROW.	Regular O&M activities would include access road grading/repair, tensioning/pulling sites or amp-jack to lift towers and reduce wire sag, and removing or mowing vegetation to comply with fire and fuels stipulations.
SCE Eldorado-Lugo-Mohave 500-kV Transmission Line (NVNV105847280)	26 miles (California and Nevada)	Existing transmission line. Long-term ROW.	Regular O&M activities would include access road grading/repair, tensioning/pulling sites or amp-jack to lift towers and reduce wire sag, and removing or mowing vegetation to comply with fire and fuels stipulations.

Project	Size and Location	Current Status and Length of Operation	Project Summary
Southern Nevada Supplemental Airport (DOI-BLM-NV-S010-2025-0035-RMP-EIS)	6,000 acres (Clark County)	NEPA in progress.	The Clark County Department of Aviation—owner of Harry Reid International Airport (LAS)—is proposing the development and operation of the Southern Nevada Supplemental Airport (SNSA) in Clark County, Nevada. The Federal Aviation Administration and BLM are joint lead agencies for the preparation of an environmental impact statement (EIS) in compliance with the NEPA of 1969, as amended (42 USC 4321 et seq.). BLM has determined the project may require a Resource Management Plan Amendment (RMPA), and as a result, the document would be a combined EIS/RMPA. The proposed RMPA would consider modifying the Visual Resource Management class to evaluate the established Ivanpah Transportation and Utilities Corridor, which would require amending the existing 1998 Las Vegas Resource Management Plan (BLM 1998b).
Union Pacific Railroad (UPRR) Communication Use Lease Amendment (DOI-BLM-CA-D090-2024-0004-CX)	<5 acres (SBC)	NEPA completed. Long-term ROW authorized.	The BLM has approved an application from UPRR to amend their existing communication-use lease site, BLM serial number CACA053713. This amendment would include replacing their existing 60-foot-tall guyed tower with an 80-foot-tall self-supporting tower to comply with current Telecommunications Industry Association standards.
West-Wide Energy Corridor 224-225	86 miles and 36,236 acres (Clark County)	Proposed and dependent on land use planning decisions.	Corridor 224-225 extends northwest to southeast along the southwestern Nevada border with California. Federally designated portions of this corridor are entirely on BLM-administered lands, with a width of 3,500 foot width. Corridor 224-225 is designated as multimodal and can therefore accommodate both electrical transmission and pipeline projects. It was not established as a corridor prior to its designation as a Section 368 energy corridor. The corridor is under the jurisdiction of the BLM Southern Nevada District and Pahrump Field Office and LVFO in Nevada

Table B-1.3.4-1. Federal and State Ambient Air Quality Standards

Pollutant	NAAQS Primary Standards		NAAQS Secondary Standards		CAAQS Level (Averaging Time)
	Level	Averaging Time	Level	Averaging Time	
CO	9 ppm (10 mg/m^3)	8-hour*	None	N/A	9 ppm (10 mg/m^3)
	35 ppm (40 mg/m^3)	1-hour*	None	N/A	20 ppm (23 mg/m^3)
Pb	0.15 $\mu g/m^3$	Rolling 3-month average†	0.15 $\mu g/m^3$	Rolling 3-month average†	None (N/A)
NO_2 (or NO_x)	53 ppb (100 $\mu g/m^3$)	Annual (arithmetic average)	53 ppb (100 $\mu g/m^3$)	Annual (arithmetic average)	30 ppb (57 $\mu g/m^3$)
	100 ppb (188 $\mu g/m^3$)	1-hour‡	None	N/A	180 ppb (339 $\mu g/m^3$)
PM_{10}	150 $\mu g/m^3$	24-hour§	150 $\mu g/m^3$	24-hour§	50 $\mu g/m^3$ (1-hour) 20 $\mu g/m^3$ (annual)
$PM_{2.5}$	9.0 $\mu g/m^3$	Annual¶ (arithmetic average)	15.0 $\mu g/m^3$	Annual¶ (arithmetic average)	12.0 $\mu g/m^3$
	35 $\mu g/m^3$	24-hour#	35 $\mu g/m^3$	24-hour#	N/A
O_3	0.070 ppm (137 $\mu g/m^3$)	8-hour**	0.070 ppm (137 $\mu g/m^3$)	8-hour**	0.070 ppm (8-hour) 0.09 ppm (1-hour)
SO_2 (or SO_x)	75 ppb (196 $\mu g/m^3$)	1-hour††	10 ppb‡‡	Annual	0.25 ppm (1-hour) 0.04 ppm (24-hour)

Source: U.S. Environmental Protection Agency (2025d); California Air Resources Board ([CARB] 2024).

Notes:

N/A = not applicable.

$\mu g/m^3$ = micrograms per cubic meter.

mg/m^3 = milligrams per cubic meter.

ppb = parts per billion.

ppm = parts per million.

* Not to be exceeded more than once per year.

† Not to be exceeded.

‡ To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

§ Not to be exceeded more than once per year on average over 3 years.

¶ To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not be exceeded.

To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 $\mu g/m^3$ (effective December 17, 2006).

** To attain this standard, the 3-year average of the fourth highest daily maximum 8-hour average O_3 concentrations measured at each monitor within an area over each year must not exceed 0.070 ppm.

†† To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

‡‡ Annual mean, averaged over 3 years.

Table B-1.3.6-1. Wildlife Species Documented during Surveys within the Disturbance Footprint

Common Name	Scientific Name	Listing Status*
Birds		
American crow	*Corvus brachyrhynchos*	
American kestrel	*Falco sparverius*	
Anna's hummingbird	*Calypte anna*	
Ash-throated flycatcher	*Myiarchus cinerascens*	
Band-tailed pigeon	*Patagioenas fasciata*	
Barn owl	*Tyto alba*	
Bendire's thrasher	*Toxostroma bendirei*	BCC, BLM S
Black phoebe	*Sayornis nigricans*	
Black-tailed gnatcatcher	*Polioptila melanura*	
Black-throated sparrow	*Amphispiza bilineata*	
Cactus wren	*Campylorhynchus brunneicapillus*	
Canyon wren	*Catherpes mexicanus*	
Cassin's kingbird	*Tyrannus vociferans*	
Common nighthawk	*Chordeiles minor*	BLM S
Common poorwill	*Phalaenoptilus nuttallii*	
Common raven	*Corvus corax*	
Costa's hummingbird	*Calypte costae*	BCC
Gambel's quail	*Callipepla gambelii*	
Gilded flicker	*Colaptes chrysoides*	BCC, BLM S
Golden eagle	*Aquila chrysaetos*	BLM S, BGEPA
Great horned owl	*Bubo virginianus*	
Greater roadrunner	*Geococcyx californianus*	
Great-tailed grackle	*Quiscalus mexicanus*	
Horned lark	*Eremophila alpestris*	
House finch	*Carpodacus mexicanus*	
Juniper titmouse	*Baeolophus ridgewayi*	
Killdeer	*Charadrius vociferus*	
Ladder-backed woodpecker	*Picoides scalaris*	
Lesser goldfinch	*Spinus psaltria*	
Lesser nighthawk	*Chordeiles acutipennis*	
Loggerhead shrike (nesting)	*Lanius ludovicianus*	BLM S
Merlin	*Falco columbarius*	
Mourning dove	*Zenaida macroura*	
Northern flicker	*Colaptes auratus*	
Northern mockingbird	*Mimus polyglottos*	
Phainopepla	*Phainopepla nitens*	BLM S
Pinyon jay	*Gymnorhinus cyanocephalus*	BCC, BLM S

Common Name	Scientific Name	Listing Status*
Red-tailed hawk	*Buteo jamaicensis*	
Rock wren	*Salpinctes obsoletus*	
Say's phoebe	*Sayornis saya*	
Scott's oriole	*Icterus parisorum*	BCC
Song sparrow	*Melospiza melodia*	
Swainson's hawk	*Buteo swainsoni*	BLM S
Turkey vulture	*Cathartes aura*	
Verdin	*Auriparus flaviceps*	BLM S
Western kingbird	*Tyrannus verticalis*	
Western meadowlark	*Sturnella neglecta*	
Western tanager	*Piranga ludoviciana*	
White-crowned sparrow	*Zonotrichia leucophrys*	
White-throated swift	*Aeronautes saxatilis*	
Wilson's warbler	*Wilsonia pusilla*	
Yellow-rumped warbler	*Dendroica coronata*	
Mammals		
American badger	*Taxidea taxus*	
Big brown bat	*Eptesicus fuscus*	BLM S
Botta's pocket gopher	*Thomomys bottae*	BLM S
California ground squirrel	*Spermophilus beecheyi*	
California myotis	*Myotis californicus*	BLM S
Canyon bat	*Parastrellus hesperus*	BLM S
Coyote	*Canis latrans*	
Desert bighorn	*Ovis canadensis nelsoni*	BLM S
Desert kangaroo rat	*Dipodomys deserti*	
Desert woodrat	*Neotoma lepida*	
Fringed myotis	*Myotis thysanodes*	BLM S
Kit fox	*Vulpes macrotis*	
Mexican free-tailed bat	*Tadarida brasiliensis*	BLM S
Mountain lion	*Puma concolor*	
Mule deer	*Odocoileus hemionus*	
Pallid bat	*Antrozous pallidus*	BLM S
Small footed myotis	*Myotis ciliolabrum*	BLM S
Townsend's big-eared bat	*Corynorhinus townsendii*	BLM S
White-tailed antelope squirrel	*Ammospermophilus leucurus*	
Yuma bat	*Myotis yumanensis*	BLM S
Reptiles		
Common side-blotched lizard	*Uta stansburiana*	

Common Name	Scientific Name	Listing Status*
Desert horned lizard	*Phrynosoma platyrhinos*	BLM S
Desert iguana	*Dipsosaurus dorsalis*	BLM S
Desert spiny lizard	*Sceloporus magister*	
Desert tortoise	*Gopherus agassizii*	BLM S, FT
Gopher snake	*Pituophis catenifer*	
Great Basin whiptail	*Aspidoscelis tigris tigris*	
Long-nosed leopard lizard	*Gambelia wislizenii*	
Mojave patch-nosed snake	*Salvadora hexalepis mojavensis*	
Zebra-tailed lizard	*Callisaurus draconoides*	

Notes:

*Federal Status Codes:

BCC = Birds of Conservation Concern.
BGEPA = Bald and Golden Eagle Protection Act.
BLM S = Bureau of Land Management: Sensitive.
FT = Federally Listed Threatened.

Table B-1.3.6-2. LANDFIRE Land Cover Types within the Analysis Area

Land Cover	Number of Acres in the Analysis Area
Mojave Mid-Elevation Mixed Desert Scrub	4,009.97
Quarries-Strip Mines-Gravel Pits-Well and Wind Pads	479.71
Developed-Roads	93.38
North American Warm Desert Bedrock Cliff and Outcrop	54.71
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	51.22
North American Warm Desert Pavement	36.30
North American Warm Desert Ruderal & Planted Grassland	11.28
Sonora-Mojave Semi-Desert Chaparral	5.56
Inter-Mountain Basins Semi-Desert Grassland	3.08
Sonora-Mojave Mixed Salt Desert Scrub	2.00
North American Warm Desert Badland	0.44
North American Warm Desert Wash Shrubland	0.44
North American Warm Desert Volcanic Rockland	0.44
North American Warm Desert Ruderal & Planted Scrub	0.22
Developed-Low Intensity	0.22
Western Warm Temperate Urban Shrubland	0.16
Total	**4,749.14**

Source: LANDFIRE (2024).

Table B-1.3.6-3. Special-Status Wildlife Species with the Potential to Occur in the Project Area

Common Name (*Scientific Name*)	**Special Status***	**Range or Habitat Requirements**	**Presence in the Study area**
Invertebrates			
Monarch butterfly	FC	Found in coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum*, *Phacelia, Clarkia, Dendromecon, Eschscholzia,* and *Eriogonum*.	Unlikely to occur. The study area is outside of the known wintering range for this species; thus, focused surveys were not conducted for this monarch population. However, the presence of Mojave milkweed (*Asclepias nyctaginifolia*) within the Project boundary suggests that suitable summer breeding and foraging habitat may be present.
Reptiles			
Banded gila monster (*Heloderma suspectum cinctum*)	BLM_S	Inhabits the lower slopes of rocky canyons and arroyos, but is also found on desert flats among scrub and succulents. Eggs are laid in soil in excavated nests; thus, soil must be sandy or friable.	Unlikely to occur. Desert scrub may provide some cover/foraging, but habitat features and local suitability appear limited. Was not observed during surveys.
Desert horned lizard (*Phrynosoma platyrhinos*)	BLM_S	Occurs in open, sparsely to moderately vegetated desert flats and valleys with sandy to gravelly soils, including alluvial fans, washes, and dunes; commonly associated with creosote-bursage flats and Mojave Desert scrub where loose soils support burrowing/cover and prey availability.	Present. Suitable habitat is present, and the species was confirmed present during surveys.
Desert iguana (*Dipsosaurus dorsalis*)	BLM_S	Associated with warm desert scrub and wash habitats, with greatest abundance in sandy creosote flats; also uses desert washes, succulent shrub habitats, and alkaline scrub, and may occur in rocky or hilly areas where suitable cover is present. Not available in CNDDB element descriptions.	Present. Suitable habitat is present, and the species was confirmed present during surveys.
Desert tortoise (*Gopherus agassizii*)	FT, SCE, BLM_S	Most common in desert scrub, desert wash, and Joshua tree habitats; occurs in almost every desert habitat. Require friable soil for burrow and nest construction. Creosote bush habitat with large annual wildflower blooms preferred.	Present. Suitable habitat is present, and the species was confirmed present during surveys.

Common Name (*Scientific Name*)	**Special Status***	**Range or Habitat Requirements**	**Presence in the Study area**
Birds			
Bendire's thrasher (*Toxostoma bendirei*)	SSC, BLM_S	Migratory; local spring/summer resident in flat areas of desert succulent shrub/Joshua tree habitats in Mojave Desert. Nests in cholla, yucca, palo verde, thorny shrub, or small tree, usually 0.5 to 20 feet above ground.	Present. Desert scrub nesting/foraging species; documented as present.
Black-chinned sparrow (*Spizella atrogularis*)	BLM_S	Arid brushlands on rugged mountain slopes, open chaparral, and sagebrush.	Unlikely to occur. Habitat is typically chaparral/rocky brushy slopes; not anticipated in the desert scrub study area and not expected. Was not observed during surveys.
Burrowing owl (*Athene cunicularia*)	SC, BLM_S	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Likely to occur. Suitable habitat is present; occupancy depends on suitable burrows/colonial ground squirrels and confirmation per CDFW (2012). Suitable burrows were observed during protocol surveys in the utilities ROW.
Common nighthawk (*Chordeiles minor*)	BLM_S	Mountains and plains in open and semi-open areas, consisting of open coniferous forests, savanna, grasslands, fields, and in the vicinity of cities and towns.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Ferruginous hawk (wintering) (*Buteo regalis*)	BLM_S	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Likely to occur (foraging only). Suitable foraging habitat is present during the wintering season; nesting is not expected within the study area. Was not observed during surveys.
Golden eagle (*Aquila chrysaetos*)	FP, BGEPA, BLM_S	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Occurs. Suitable foraging habitat is present, and the species was confirmed present during surveys.
Le Conte's thrasher (*Toxostoma lecontei*)	SSC, BLM_S	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.	Likely to occur. Suitable desert scrub habitat is present; species may occur at low frequency and detectability may be seasonal. Was not observed during surveys.
Loggerhead shrike (nesting) (*Lanius ludovicianus*)	SSC, BLM_S	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Phainopepla (*Phainopepla nitens*)	BLM_S	Desert scrub, mesquite, juniper and oak woodland, tall brush, riparian woodland and orchards.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.

Common Name (*Scientific Name*)	**Special Status***	**Range or Habitat Requirements**	**Presence in the Study area**
Pinyon jay (*Gymnorhinus cyanocephalus*)	BLM_S	Piñon-juniper woodland, and less frequently pine woodland.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys/observations.
Sagebrush sparrow (*Artemisiospiza nevadensis*)	BLM_S	Breeds in shrubsteppe habitats consisting of big sagebrush, saltbush, rabbitbrush, shadscale, and bitterbrush.	Likely to occur. Suitable habitat may be present depending on local shrub composition; species may occur seasonally or intermittently. Was not observed during surveys.
Swainson's hawk (*Buteo swainsoni*)	ST, BLM_S	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Likely to occur. Suitable habitat is present, and the species has potential to forage on site. Was not observed during surveys.
Mammals			
American badger (*Taxidea taxus*)	SSC, BLM_S	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Desert kit fox (*Vulpes macrotis arsipus*)	CPF	Desert kit fox occurs in a wide range of desert habitats consisting of desert scrub and washes, and may also occur in grasslands or ruderal habitats.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
California myotis (*Myotis californicus*)	BLM_S	Variety of habitats including desert, chaparral, woodland, and forest. The species forages insects in canyon areas, woodlands, forests, and shrublands.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys (Brown-Berry 2018).
Canyon bat (*Parastrellus hesperus*)	BLM_S	Occurs in deserts, grasslands, and woodlands, and is the most abundant bat species in desert habitats. The species forages insects in canyon/cliff areas and over water. Roosting and maternal colonies occur in rock crevices.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys (Brown-Berry 2018).
Hoary bat (*Lasiurus cinereus*)	BLM_S	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	Likely to occur. Suitable foraging habitat is present; occurrence may be seasonal/transient (Brown-Berry 2018). Was not observed during surveys.
Pallid bat (*Antrozous pallidus*)	SSC, BLM_S	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys (Brown-Berry 2018).

Common Name (*Scientific Name*)	**Special Status***	**Range or Habitat Requirements**	**Presence in the Study area**
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	Not expected to occur. Suitable foraging habitat is present; however, the project is outside of the range for this species. Was not observed during surveys.
Townsend's big-eared bat (*Corynorhinus townsendii*)	SSC, BLM_S	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Western mastiff bat (*Eumops perotis californicus*)	SSC, BLM_S	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	Likely to occur. Suitable foraging habitat is present; roosting potential depends on availability of appropriate roost features within the study area. Was not observed during surveys.
Western yellow bat (*Lasiurus xanthinus*)	SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.	Not expected to occur. Suitable foraging habitat is present; however, the project is outside of the range for this species. Was not observed during surveys.
Mexican free-tailed bat (*Tadarida brasiliensis*)	BLM_S.	Occurs in open habitats in grasslands, shrublands, woodlands, and forests. The species forages insects at higher flying elevations (around 100-feet-high) around waterbodies and other occupied habitats. Roosting and maternal colonies occur in caves, mines, buildings, and crevices.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys. Was not observed during surveys.
Spotted bat (*Euderma maculatum*)	SSC, BLM_S	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. Feeds over water and along washes. Feeds almost entirely on moths. Needs rock crevices in cliffs or caves for roosting.	Likely to occur. Suitable foraging habitat is present; roosting potential depends on availability of appropriate roost features within the study area. Was not observed during surveys.
Big brown bat (*Eptesicus fuscus*)	BLM_S	variety of habitats, except for the hottest deserts and highest mountain slopes. The species forages for insects in open habitats. Roosting and material colonies occur primarily in buildings, although some records have indicated that caves, mines, and trees may also be utilized.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
California leaf-nosed bat (*Macrotus californicus*)	SSC, BLM_S	Desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub and palm oasis habitats. Needs rocky, rugged terrain with mines or caves for roosting.	Likely to occur. Suitable foraging habitat is present; roosting potential depends on availability of appropriate roost features within the study area. Was not observed during surveys.

Common Name (*Scientific Name*)	**Special Status***	**Range or Habitat Requirements**	**Presence in the Study area**
Yuma myotis (*Myotis yumanensis*)	BLM_S	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Fringed myotis (*Myotis thysanodes*)	BLM_S	In a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood and hardwood-conifer. Uses caves, mines, buildings or crevices for maternity colonies and roosts.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Long-legged myotis (*Myotis volans*)	BLM_S	Most common in woodland and forest habitats above 4000 ft. Trees are important day roosts; caves and mines are night roosts. Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or buildings.	Likely to occur. Suitable foraging habitat is present; roosting potential depends on availability of appropriate roost features within the study area. Was not observed during surveys.
Small-footed myotis (*Myotis ciliolabrum*)	BLM_S	Wide range of habitats mostly arid wooded and brushy uplands near water. Seeks cover in caves, buildings, mines, and crevices. Prefers open stands in forests and woodlands. Requires drinking water. Feeds on a wide variety of small flying insects.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Big free-tailed bat (*Nyctinomops macrotis*)	SSC, BLM_S	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	Likely to occur. Suitable foraging habitat is present; roosting potential depends on availability of appropriate roost features within the study area. Was not observed during surveys.
Desert bighorn sheep (*Ovis canadensis nelsoni*)	FP, BLM_S	Widely distributed from the White Mtns in Mono Co. to the Chocolate Mts in Imperial Co. Open, rocky, steep areas with available water and herbaceous forage.	Occurs. Suitable habitat is present, and the species was confirmed present during surveys.
Mountain lion (*Puma concolor*)	SC	Occupies a broad range of California habitats (including redwood and mixed forests, coastal brushlands, and mountainous terrain), generally using areas that provide cover and an adequate prey base and occurring over large home ranges.	Likely to occur. Suitable habitat is present, the Project is within the mountain lion range, and supports suitable habitat, including vegetation and topography. Two known observations over the past 30 years.

Table B-1.3.6-4. Special-Status and Threatened or Endangered Wildlife Analysis Area and Indicators

Species	Spatial Analysis Area (Where and Why)	Impact Indicators
Desert tortoise (*Gopherus agassizii)*	• Disturbance footprint intersecting suitable and/or critical habitats tortoise habitat plus a 150-meter (500-foot buffer) to account for edge effects (Desert Tortoise Council 2017) • Captures direct mortality risk, habitat loss, and fragmentation	• Change in quality/loss of habitat acreage and critical habitat • Calculated tortoise population
Desert bighorn sheep (*Ovis canadensis nelsoni)*	• Disturbance footprint plus a 500-meter (1,640-foot) buffer encompassing adjacent rugged terrain. This area includes core breeding habitat surveyed by ECORP (2021) and aligns with established extents for helicopter surveys (CDFW 2019). • Encompasses adjacent rugged terrain to account for displacement from high-use areas and sensitive lambing period (February 1–May 31)	• Presence of individuals during surveys • Loss of habitat and movement corridor acreage
Golden eagle (*Aquila chrysaetos*)	• Disturbance footprint plus a 1-mile (nesting) and a 2-mile (near blasting) buffer (USFWS 2021b) and (DRECP 2016; LUP-BIO-IFS-2, Table 22) • Captures potential disturbance to foraging corridors and active/historic nest sites	• Number of eagle foraging observations • Distance to nearest active or historic nest • Determination of an Eagle Take Permit requirement
Monarch butterfly (*Danaus plexippus*)	• Disturbance footprint plus a 200-foot buffer around milkweed patches or flowering foraging habitat (USFWS 2023) • Captures risks to breeding and migratory stopover habitat	• Presence of individuals or milkweed • Loss of habitat acreage
Special-Status Bats	• Disturbance footprint plus a 500-foot buffer to encompass adjacent areas that may contain daytime, nighttime, or maternity roosting habitat (DRECP 2016; LUPA-BIO-BAT-1) • Accounts for sensitivity to light, noise, and vibration near roosting sites	• Acres of foraging habitat disturbed • Number of active roosts detected
Special-Status Avian Species	• Disturbance footprint plus a 500-foot buffer to encompass adjacent nesting habitat (BLM 2016; DFA-BIO-IFS-1 & 2, Table 21 and 22) • Captures noise and visual disturbance and direct habitat removal that could impact nesting activity	• Presence of individuals during surveys • Loss of habitat acreage
Special-Status Mammals	• Disturbance footprint plus a 50-foot buffer (DRECP 2016; LUPA-BIO-IFS-29) • Captures habitat loss and fragmentation	• Presence of individuals during surveys • Loss of habitat acreage
Special-Status Reptiles	• Disturbance footprint plus a 50-foot buffer (DRECP 2016; CONS-BIO-DUNE-1) • Captures habitat loss and fragmentation	• Presence of individuals during surveys • Loss of habitat acreage
Western burrowing owl (*Athene cunicularia hypugaea*)	• Disturbance footprint plus a 150-meter (500-foot) buffer (CDFW 2012) • Protects burrows and individuals from noise and visual disturbance	• Presence of individuals during surveys • Loss of habitat acreage

Table B-1.3.6-5. Landfire Land Cover Data for the Vegetation Analysis Area

Cover Class Name	Acres*	Percent Cover
Mojave Mid-Elevation Mixed Desert Scrub	3602	84%
Quarries-Strip Mines-Gravel Pits-Well and Wind Pads	480	11%
North American Warm Desert Bedrock and Outcrop	55	1%
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	44	1%
Developed Roads	40	1%
North American Warm Desert Pavement	36	1%
North American Warm Desert Ruderal and Planted Grassland	11	<1%
Sonora-Mojave Semi-Desert Chaparral	6	<1%
Inter-Mountain Basins Semi-Desert Grassland	3	<1%
Sonora-Mojave Mixed Salt Desert Scrub	2	<1%
North American Warm Desert Badland	<1	<1%
North American Warm Desert Wash Shrubland	<1	<1%
North American Warm Desert Volcanic Rockland	<1	<1%
North American Warm Desert Ruderal & Planted Scrub	<1	<1%
Developed-Low Intensity	<1	<1%
Western Warm Temerate Urban Shrubland	<1	<1%
Total	**4279**	**100**

Notes:

* Rounded to the nearest whole acre.

Table B-1.3-7-1. Cultural Resources Documented in the Project Area

Cultural Resource Type	California	Nevada	Total
Listed	0	1	1
Eligible	3	2	5
Unevaluated	8	0	8
Not Eligible*	78	48	126
Isolates†	132	51	183
Total	**221**	**102**	**323**

Notes:

* Archaeological and historic built-environment resources that have been determined or are recommended not eligible for the National Register of Historic Places (NRHP).

† Isolates are generally not considered eligible for listing on the NRHP.

Table B-1.3.9-1. Existing Land Use Authorizations in the Analysis Area

Authorization Type	Metric (count/acres)
Roads	Five authorizations/161 acres
Railroad	Two authorizations/30 acres
Pipeline	Three authorizations/233 acres

Authorization Type	Metric (count/acres)
Power transmission lines	Eight authorizations/66 acres
Mineral material sites	Two authorizations/6 acres
Land Acquisition	One authorization/13 acres
Active mining claims: lode claims	352
Active mining claims: placer claims	38
Active mining claims: milling site	716
Active mining/minerals operations	1

Table B-1.3.11-1. Estimation of Annual Visits in the Recreation Analysis Area

Zone	Description	Annual Visits	Acres	Annual Visits per Acre
1	3-mile circle from center of mine	1,620	18,000	0.09
2	Remainder of Castle Mountain ERMA, ACEC, and NM	1,260	14,000	0.09
3	Remainder of the recreation analysis area	37,800	420,000	0.09
Total		**40,680**	**452,000**	**0.09**

Notes:
ACEC = Area of critical environmental concern.
ERMA = Extensive Recreation Management Area.
NM = National Monument.

Table B-1.3.11-2. Disturbance Breakdown for Special Designations

Special Designation	Total Area (acres)	Acres In Approved 1998 Mine Plan Boundary	Acres In Proposed Mine Boundary Expansion (no proposed disturbance)	Acres of Proposed Short-Term Disturbance*	Acres of Proposed Long-Term Disturbance†
CMNM‡	21,000	N/A	N/A	N/A	N/A
AKANM	506,814	N/A	N/A	190	53
MTNM§	1,600,000	N/A	N/A	N/A	N/A
Castle Mtn. ERMA	7,915	1,474	997	10	1,430
Ivanpah Valley ERMA	25,982	N/A	N/A	33	7
Southern Nevada ERMA	2,500,000	N/A	N/A	175	85.5
National Trails SRMA (and Old Spanish National Historic Trail) §	484,000	N/A	N/A	N/A	N/A
Castle Mountain ACEC	3,270	N/A	N/A	2	1
Piute-Eldorado ACEC	323,690	N/A	N/A	177	51
Ivanpah ACEC	78,190	N/A	N/A	16	7
Piute-Fenner ACEC§	155,710	N/A	N/A	N/A	N/A
MNP§	1,600,000	N/A	N/A	N/A	N/A

Special Designation	Total Area (acres)	Acres In Approved 1998 Mine Plan Boundary	Acres In Proposed Mine Boundary Expansion (no proposed disturbance)	Acres of Proposed Short-Term Disturbance*	Acres of Proposed Long-Term Disturbance†
Wee Thump Joshua Tree Wilderness§	6,050	N/A	N/A	N/A	N/A
Mojave Wilderness§	695,200	N/A	N/A	N/A	N/A

Notes:

N/A indicates that the boundary of the special designation does not overlap with the specified disturbance category.

* Temporary disturbance refers to impacts associated with utility construction.

† Permanent disturbance persists through O&M and reclamation and may result from either Project operation or utilities.

‡ Although the main CMM Access Road (Walking Box Ranch Road) appears to cross CMNM in the figures provided, there is no overlap with the CMNM under the Proposed Action.

§ The Special Designation was present in the 15-mile-buffer included in the visual resources analysis area but does not overlap the Project footprint.

Table B-1.3.11-3. Change in Recreational Visits by Impact Severity

Effects Level	Assigned Percent Reduction in Visits (%)
None or negligible	0.0
Very low	5.0
Low	10.0
Medium-low	17.5
Medium	25.0
Medium-high	32.5
High	40.0
Very high	80.0

Table B-1.3.11-4. Estimated Reductions in Recreational Visits

Project Phase	Zone	Annual Visits	Assigned Effects Level	Percent Reduction in Visits (%)	Annual Reduction in Visits
Construction	1	1,620	High*	40.0	648
	2	1,260	Medium†	25.0	315
	3	37,800	Very low‡	5.0	1,890
	Combined	**40,680**	**N/A**	**7.0**	**2,853**
Operation and Reclamation	1	1,620	Medium-high§	32.5	527
	2	1,260	Medium-low¶	17.5	221
	3	37,800	Negligible#	0.0	0
	Combined	**40,680**	**N/A**	**1.8**	**747**

Notes:

N/A = Not applicable.

* Development of new mine pits and other infrastructure could result in increases in noise, traffic along Walking Box Ranch Road/CMM Access Road, dust, and changes in visual resources. These would be highest in Zone 1, which immediately surrounds the mine, and which is assigned a high effects level on average. Impacts are expected to be highest close to the mine and would decrease with distance across Zone 1.

† Development of new mine pits and other infrastructure could result in increases in noise and changes in visual resources in Zone 2. These would lower in Zone 2 than in Zone 1. Zone 2 is assigned a medium effects level on average. Impacts are expected to be highest closer to the mine and would decrease with distance across Zone 2.

‡ During construction, Zone 3 would primarily be affected by traffic and by construction of the waterline and the power line. These would result in traffic, noise, dust, and changes in visual resources near their routes. The vast majority of Zone 3 would be unaffected. Zone 3 is assigned a very low effects level on average.

§ Operation and reclamation activities would likely have continued noise, dust, and potential changes in visual resources within Zone 1. The assigned effects level of medium-high reflects a slight decrease in activity compared to construction.

¶ Similarly, the effects level is expected to be less in Zone 2 during O&M and reclamation than during construction, resulting in a change from medium to medium-low.

The vast majority of Zone 3 would be unaffected or minimally affected during O&M reclamation activities. Thus, it is assigned an effects level of negligible.

Table B-1.3.12-1. Population Between 2010 and 2023 in the Analysis Area

Population Metric	California	San Bernardino County	Nevada	Clark County
2010 Population	36,637,290	2,005,287	2,633,331	1,895,521
2023 Population	39,242,785	2,187,816	3,141,000	2,293,764
Population Change (2010–2023)	2,605,495	182,529	507,669	398,243
Percentage Change in Population (2010–2023)	7.1%	9.1%	19.3%	21.0%
Median Age, 2010	34.9	31.2	35.9	35.1
Median Age, 2023	37.6	34.4	38.9	38.3

Source: U.S. Department of Commerce (2023a).

Table B-1.3.12-3. Housing in the Analysis Area

Housing Statistic	California	San Bernardino County	Nevada	Clark County
Total Housing Units	14,532,683	738,535	1,307,338	935,960
Occupied	13,434,847	668,004	1,183,393	847,378
Vacant	1,097,836	70,531	123,945	88,582
For rent	256,828	8,535	35,043	27,817
Rented, not occupied	47,842	1,478	5,284	4,018
For sale only	65,471	4,624	8,274	5,827
Sold, not occupied	56,032	2,517	4,686	3,492
Seasonal, recreational, occasional	361,608	38,012	36,351	25,075
For migrant workers	2,659	34	233	62
Other vacant	307,396	15,331	34,074	22,291
Median Rent	$1,956	$1,706	$1,489	$1,518
Median Home Value	$695,400	$475,000	$406,100	$400,800

Source: U.S. Department of Commerce (2023b).

Table B-1.3.12-4. Housing in Towns Near the Project Area

Housing Statistic	Cal-Nev-Ari Nevada (CDP)	Henderson Nevada (City)	Las Vegas, Nevada (City)	Laughlin, Nevada (CDP)	Searchlight, Nevada (CDP)
Total Housing Units	188	136,901	263,958	5,431	421
Occupied	131	127,507	244,429	4,364	232
Vacant	57	9,394	19,529	1,067	189
For rent	0	2,101	5,318	104	0
Rented, not occupied	0	771	812	12	0
For sale only	0	999	1,548	32	0
Sold, not occupied	12	374	881	0	13
Seasonal, recreational, occasional	7	3,608	4,242	794	93
For migrant workers	0	0	28	0	0
Other vacant	38	1,541	6,700	125	83
Median Rent	$835	$1,750	$1,456	$991	$475
Median Home Value	$66,700	$465,000	$395,300	$255,000	$128,200

Source: U.S. Department of Commerce. (2023b)

Table B-1.3.12-5. Hotel Rooms in Locations Near the Project Area

Hotel Statistic	Clark County	Las Vegas	Laughlin
Room Inventory (2024)	164,182	153,719	8,864
Room Inventory (2025)	160,894	150,220	8,864
Percent Room Inventory Change 2024 to 2025	−2.0%	−2.3%	0.0%
Occupancy Levels Over Time			
2023 Third Quarter	N/A	82.7%	55.9%
2023 Fourth Quarter	N/A	83.2%	42.0%
2024 First Quarter	80.8%	82.7%	47.0%
2024 Second Quarter	83.8%	85.6%	53.6%
2024 Third Quarter	N/A	82.9%	54.1%
2024 Fourth Quarter	N/A	83.0%	41.5%
2025 First Quarter	79.8%	81.8%	45.4%
2025 Second Quarter	80.4%	82.1%	52.6%
Net Occupancy Level Change			
Third Quarter 2023 to 2024	N/A	0.2%	−1.8%
Fourth Quarter 2023 to 2024	N/A	−0.1%	−0.5%
First Quarter 2024 to 2025	−0.9%	−0.8%	−1.6%
Second Quarter 2024 to 2025	−3.4%	−3.5%	−1.0%

Source: Travel Nevada (2025).

Note:

N/A = Not available.

Table B-1.3.12-6. Jobs by Industry in the Analysis Area

Industry	California	San Bernardino County	Nevada	Clark County
Non-Services Related	**3,203,954 (12.7%)**	**126,384 (10.6%)**	**227,268 (11.0%)**	**129,141 (8.5%)**
Farm	228,186 (0.9%)	2,466 (0.2%)	5,208 (0.3%)	437 (0.0%)
Forestry, fishing, and agricultural services	259,767 (1.0%)	1,201 (0.1%)	2,214 (0.1%)	491 (0.0%)
Mining (including fossil fuels)	36,926 (0.1%)	1,603 (0.1%)	19,165 (0.9%)	1,726 (0.1%)
Construction	1,259,662 (5.0%)	61,113 (5.1%)	129,422 (6.3%)	93,558 (6.1%)
Manufacturing	1,419,413 (5.6%)	60,001 (5.0%)	71,259 (3.5%)	32,929 (2.2%)
Services Related	**19,317,589 (76.4%)**	**921,714 (77.2%)**	**1,652,611 (80.2%)**	**1,270,542 (83.4%)**
Utilities	67,516 (0.3%)	4,112 (0.3%)	4,612 (0.2%)	2,899 (0.2%)
Wholesale trade	773,657 (3.1%)	49,500 (4.1%)	48,807 (2.4%)	32,949 (2.2%)
Retail trade	2,090,805 (8.3%)	116,117 (9.7%)	191,956 (9.3%)	141,831 (9.3%)
Transportation and warehousing	1,474,413 (5.8%)	177,757 (14.9%)	153,001 (7.4%)	115,664 (7.6%)
Information	727,797 (2.9%)	8,061 (0.7%)	25,517 (1.2%)	19,593 (1.3%)
Finance and insurance	1,318,004 (5.2%)	43,147 (3.6%)	122,182 (5.9%)	95,406 (6.3%)
Real estate and rental and leasing	1,454,721 (5.7%)	48,684 (4.1%)	130,455 (6.3%)	95,228 (6.3%)
Professional and technical services	2,231,632 (8.8%)	50,533 (4.2%)	121,060 (5.9%)	88,272 (5.8%)
Management of companies	284,267 (1.1%)	5,669 (0.5%)	37,971 (1.8%)	31,130 (2.0%)
Administrative and waste services	1,581,853 (6.3%)	94,572 (7.9%)	146,587 (7.1%)	116,287 (7.6%)
Educational services	554,586 (2.2%)	16,960 (1.4%)	23,945 (1.2%)	18,131 (1.2%)
Health care and social assistance	2,942,827 (11.6%)	140,876 (11.8%)	170,804 (8.3%)	127,645 (8.4%)
Arts, entertainment, and recreation	617,031 (2.4%)	15,433 (1.3%)	61,968 (3.0%)	46,868 (3.1%)
Accommodation and food services	1,775,446 (7.0%)	79,767 (6.7%)	314,012 (15.2%)	263,173 (17.3%)
Other services, except public admin.	1,423,034 (5.6%)	70,526 (5.9%)	99,734 (4.8%)	75,466 (5.0%)
Government	**2,779,431 (11.0%)**	**145,583 (12.2%)**	**181,992 (8.8%)**	**123,514 (8.1%)**
Total Number of Jobs	**25,300,974 (100.0%)**	**1,193,681 (100.0%)**	**2,061,871 (100.0%)**	**1,523,197 (100.0%)**
Residual	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Source: U.S. Department of Commerce (2023c).

Table B-1.3.12-7. Employment and Income in the Analysis Area

Economic Indicator	California	San Bernardino County	Nevada	Clark County
Avg. Annual Unemployment Rate, 2024	5.3%	5.1%	5.6%	5.8%
Per Capita Income, 2000 (2024 $s)	$60,445	$41,394	$58,045	$56,495

Economic Indicator	California	San Bernardino County	Nevada	Clark County
Per Capita Income, 2022 (2024 $s)	$82,582	$52,818	$66,555	$63,408
Percent Change in Per Capita Income, 2000 to 2022	36.6%	27.6%	14.7%	12.2%
Median Household Income	$96,334	$82,184	$75,561	$73,845
Personal Income (2024 $s)	$3,223,125,885,232	$115,863,523,440	$211,495,842,656	$147,296,693,504
Percent of People Below Poverty	12.0%	13.6%	12.6%	13.2%

Source: U.S. Department of Commerce (2023a, 2023c); U.S. Department of Labor (2025a).

Table B-1.3.12-8. Average Annual Wages by Industry in the Analysis Area

Industry	California	San Bernardino County	Nevada	Clark County
Private	**$92,160**	**$58,608**	**$65,730**	**$63,292**
Non-Services Related	**$98,692**	**$76,100**	**$80,152**	**$76,110**
Natural Resources and Mining	$48,093	$64,766	$100,649	$52,354
Agriculture, forestry, fishing & hunting	$44,431	$44,180	$50,690	$43,379
Mining (incl. fossil fuels)	$139,209	$110,081	$118,640	$91,161
Construction	$89,521	$79,975	$79,308	$79,508
Manufacturing (Incl. forest products)	$122,737	$73,725	$75,411	$69,297
Services Related	**$90,856**	**$55,913**	**$63,342**	**$61,712**
Trade, Transportation, and Utilities	$70,898	$59,194	$59,227	$57,778
Information	$287,353	$97,804	$126,107	$123,015
Financial Activities	$141,934	$77,787	$91,245	$86,914
Professional and Business Services	$132,172	$58,099	$83,407	$80,253
Education and Health Services	$65,625	$59,427	$65,325	$64,490
Leisure and Hospitality	$41,381	$29,546	$44,410	$46,343
Other Services	$54,664	$48,907	$50,782	$49,200
Unclassified	$87,123	$57,397	$90,731	$82,575
Government	**$92,274**	**$81,657**	**$77,519**	**$78,363**
Federal Government	$105,537	$94,158	$93,965	$92,506
State Government	$107,550	$82,424	$78,724	$78,521
Local Government	$86,138	$79,967	$73,940	$75,757
Overall Average	**$92,177**	**$62,314**	**$67,055**	**$64,854**

Source: U.S. Department of Labor (2025b).

Table B-1.3.13-1 Soil Map Units in the Soils Analysis Area

Map Unit Symbol	Soil Map Unit	Proposed Action (Alternative B) (acres)	Proposed Action (Alternative B) (%)	Alternative C (acres)	Alternative C (%)	Alternative D (acres)	Alternative D (%)
502	Dumps, mine	20.37	1	20.37	1	20.39	1
3420	Hartpeak-Highland association, 15 to 50 percent slopes	346.29	19	346.29	19	346.29	18
414	Helendale-Caruthers-Castaneda complex, 1 to 4 percent slopes	359.92	20	359.92	20	359.92	19
418	Highland-Nipton complex, 15 to 50 percent slopes	184.12	10	184.12	10	184.12	10
4230	Hoppswell-Ustidur association, 4 to 30 percent slopes	90.55	5	90.55	5	90.55	5
680	Lanfair-Hoppswell association	89.88	5	89.88	5	89.88	5
160	Lanip-Kidwell association	19.72	1	19.72	1	19.72	1
404	Lecyr very gravelly sandy loam, 4 to 30 percent slopes	74.61	4	74.61	4	74.61	4
805	Lithic Haplargids–Lithic Torriorthents association, 2 to 15 percent slopes	147.24	8	147.24	8	152.61	8
4220	Minehart gravelly fine sandy loam, 2 to 8 percent slopes	374.50	21	374.50	21	457.86	24
801	Nippeno-Newera association	27.79	2	27.79	2	27.79	1
4180	Peskah-Arizo association	55.15	3	55.15	3	55.15	3
506	Pits-Dumps association	18.33	1	18.33	1	18.33	1
Total		**1,808.48**	**100**	**1,808.48**	**100**	**1897.23**	**100**

Source: Natural Resources Conservation Service and Esri (2024).

Notes:

Sums may not be exact due to rounding.

Shaded rows are dominant soil features with ≥10% coverage and cumulatively cover approximately 70% of the soils analysis area.

Table B-1.3.13-2. Soil Vulnerability Ratings in the Soils Analysis Area

Soil Characteristic (Classification)	Alternative B Footprint (acres)	Alternative C Footprint (acres)	Alternative D Footprint (acres)
Wind Erosion			
Slight (WEGs 5–8)	1,769.78	1,769.78	1,858.51
Moderate (WEGs 3, 4, and 4L)	0	0	0
Severe (WEGs 1 and 2)	0	0	0
Not rated	38.70	38.70	38.72
Water Erosion (K factor)			
Slight (0.05–0.25)	712.49	712.49	795.85
Moderate (0.25–0.40)	379.64	379.64	379.64
Severe (> 0.40)	677.65	677.65	683.02
Not rated	38.70	38.70	38.72
Runoff Potential			
Low (HSG A)	449.80	449.80	449.79
Moderate (HSG B)	55.15	55.15	55.16
Moderately high (HSG C)	559.39	559.39	642.75
High (HSG D)	705.44	705.44	710.81
Not rated	38.70	38.70	38.72
Susceptibility to Compaction			
Low	265.59	265.59	270.96
Medium	1,504.19	1,504.19	1,587.55
High	0	0	0
Not rated	38.70	38.70	38.72
Fragile Soil Index			
Slightly Fragile	0	0	0
Moderately Fragile	0	0	0
Fragile	1,483.93	1,483.93	1,571.98
Highly Fragile	286.53	286.53	286.53
Not rated	38.70	38.70	38.72
Total Disturbance	**1,808.48**	**1,808.48**	**1897.23**

Source: Natural Resources Conservation Service (NRCS) (2025b); NRCS and Esri (2024).

Table B-1.3.14-1. Current and Historical AADT in the Transportation Analysis Area

Road	2015 AADT	2024 AADT	Percent Change (2015–2024)	10-Year Average
I-15 (Nevada)	5,300	3,100	−42%	3,425
SR 164	550	860	56%	782
U.S. Route 95*	8,100	10,400	28%	8,700
Castle Mountain Mine Access Road/Walking Box Ranch Road	–	–	–	–
Hart Mine Road	–	–	–	–

Sources: Caltrans (2025b); Nevada Department of Transportation (2025a).

Notes:

* 2015 data are from 2017 because no data were provided in earlier years.

– = Data are not available because the road is a smaller two-track not maintained by NDOT or Caltrans.

Table B-1.3.14-2. Existing Transportation Network in the Immediate Vicinity of the Project Site

Route Identification	Route Description
Interstate 15 (I-15)	I-15 is a major north-south four-lane freeway with two lanes in each direction that runs in a southwest-northeast alignment for approximately 287 miles from the Mexican border to the Nevada state line. I-15 serves as a crucial transportation route for both commercial and passenger traffic, connecting cities and communities throughout San Bernardino County, Los Angeles County, and points farther southwest, as well as cities and communities in Nevada and to points farther northeast, e.g., San Diego, Riverside, Barstow, and Las Vegas .
State Route 164 (SR 164)	Commonly referred to as Nipton Road or the Joshua Tree Highway, this state highway is in southern Clark County, Nevada. Together with the unnumbered Nipton Road in California (San Bernardino County Road Number 594650020), it links U.S. 95 in Nevada to I-15 in California, just south of Primm, passing through the small town of Nipton, California. Most of the highway runs through the Avi Kwa Ame National Monument.
U.S. Route 95 (U.S. 95)	U.S. 95 is a primary north-south highway through the state of Nevada, passing directly through Las Vegas and offering connections to Carson City and Reno. For 95 miles, U.S. 95 shares its route with Interstate 80 between Winnemucca and a junction 32 miles north of Fallon, before continuing northward into Oregon at McDermitt.
Castle Mountain Mine Access Road/Walking Box Ranch Road	Primary access road to the mine north-south from SR 164
Hart Mine Road	Primary access road at the entrance of the mine running west-east from Castle Mountain Mine road

Sources: California Department of Transportation (2025a); Nevada Department of Transportation (2025a).

Table B-1.3.14.3. Speed Limits in the Analysis Area

Category	Type of Road	Speed Limit (mph)	Ownership
Interstate 15 (I-15)	Interstate	65–75	Caltrans
State Route 164 (SR 164)/Nipton Road/ San Bernardino County Road 594650020	State Highway	25-55	NDOT
U.S. Route 95 (U.S. 95)	U.S. Highway	65	NDOT (on Nevada side)
Castle Mountain Mine Access Road/Walking Box Ranch Road	2-lane road	35	BLM

Category	Type of Road	Speed Limit (mph)	Ownership
Hart Mine Road	2-lane road	35	BLM

Sources: California Department of Transportation (2025a); Nevada Department of Transportation (2025a).

Table B-1.3.14-4. Crash Rates

Category	Annual Average Daily Traffic (2022–2024)	Total Crashes (2022–2024)	Total Crash Rate (%) (3-year average)
Interstate 15 (I-15)	13,550	82	27.3
State Route 164 (SR 164)	2,030	4	1.3
U.S. Route 95 (U.S. 95)	17,750	17	5.7
Castle Mountain Mine Access Road/Walking Box Ranch Road	–	–	–
Hart Mine Road	–	–	–

Source: California Department of Transportation (Caltrans) (2025b); Nevada Department of Transportation (NDOT) (2025b).

– = Data are not available because the road is a smaller two-track not maintained by NDOT or Caltrans.

Table B-1.3.15-1. Bureau of Land Management Visual Resource Management Classes

VRM Class	DRECP Objectives	1998 Las Vegas RMP Objectives
Class I	Preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.	–
Class II	Retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.	Designate 968,890 acres of public lands as VRM Class II and manage to retain the landscape's existing character. In these areas, authorized actions may not modify existing landscapes or attract the attention of casual viewers.
Class III	Partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.	Designate 1,727,870 acres of public lands as VRM Class III for partial retention of the existing character of the landscape. In these areas, authorized actions may alter the existing landscape, but not to the extent that they attract or focus attention of the casual viewer.
Class IV	Provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention; however, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.	Designate 635,135 acres of public lands as VRM Class IV, which allows activities involving major modification of the landscape's existing character. Authorized actions may create significant landscape alterations and would be obvious to casual viewers.

Source: BLM (1986a, 1998b).

Table B-1.3.17-1. Surface Water Feature Impact Summary

Jurisdiction	Component	Impact Type	Resource	Acres
ROW				
CDFW	Electric and waterline TCEs, staging areas	Temporary	Ephemeral channel	1.50
			Riparian	0.27
	Long-term ROW for underground water pipeline maintenance activities	Permanent	Ephemeral channel	0.43
			Riparian	0.09
RWQCB	Electric and waterline TCEs, staging areas	Temporary	Ephemeral channel	1.18
	Long-term ROW for underground water pipeline maintenance activities	Permanent		0.33
NDEP	Electric and waterline TCEs, staging areas	Temporary	Ephemeral channel	1.18
	Long-term ROW for underground water pipeline maintenance activities	Permanent		0.33
CMM				
CDFW	Mine expansion	Temporary	Stream	0.18
			Riparian	0.003
		Permanent	Stream	9.32
			Riparian	2.46
RWQCB		Temporary	Stream	0.13
		Permanent	Stream	9.00

Table B-1.3.17-2. Proposed Monitoring Well Network and Nipton Water Supply Well (IV-1TW)

Basin	Well ID	Coordinates		Status	Year Installed	Construction Details			Depth To Water		Water Level Elevation (feet amsl)
		Latitude	Longitude			Casing Diameter (inches)	Total Depth (feet)	Screened Interval (feet bgs)	Date*	Depth to Water (feet)	
Ivanpah	Benson DW	35.4672249	−115.273884	Existing	ND	ND	ND	ND	ND	ND	ND
	Benson OW	35.4673335	−115.274874	Existing	2020	4.5	600	550–600	9/29/2021	467.37	2,549.63
	IV-1TW	35.467704	−115.275244	Existing	2021	14	1,485	500–1,465	9/29/2021	461.45	2,545.55
Lanfair	2017-2RMW	35.2596667	−115.1156	Existing	2020	4	640	580–640	6/1/2022	537.88	3,673.64
	2017-3MW	35.2781667	−115.123308	Existing	2017	4	690	630–690	6/1/2022	161.83	4,154.65
	2019-3MW	35.2425556	−115.126314	Existing	2020	4	650	500–650	4/7/2023	451.18	3,711.14
	2019-5MW	35.2589611	−115.096689	Existing	2020	4	581	430–581	4/7/2023	439.18	3,696.90
	PS-2	35.1169731	−115.013828	Virtual	ND	ND	ND	ND	ND	ND	ND
	W-19P	35.2903618	−115.144234	Proposed	ND	ND	ND	ND	ND	ND	ND
	W-25P	35.2732167	−115.087858	Existing	1988	8	960	350–940	2/24/1988	275.6	3,924.20
	W-37	35.2477	−115.165372	Virtual	1990	8	1,000	640–1,000	1/28/1997	858.65	3,691.35
	W-38	35.203925	−115.104206	Virtual	1990	8	1,100	800–1,100	1/28/1997	758.02	3,193.98
	W-3P	35.203925	−115.104206	Proposed	ND	ND	ND	ND	ND	ND	ND
	W-45P	35.307875	−115.1458	Existing	1997	8	800	530–630	12/31/2003	458.9	4,100.50

Note:

*Date of measurement.

Table B-1.3.17-3. Changes to Piute Spring Flow and Mitigation Actions

Proposed Action	Modeled Piute Spring Flow Reduction 50 Years after Mine Closure (gpm)	Percent Change (%)
Action A: No further action.	0–8	<7
Action B: Adjust mine pumping and remodel impacts; if Piute Spring flow reduction is <10%, re-distribute the pattern of pumping at mine. If flow reduction remains ≥10%, proceed to Action C.	9–12	7–10
Action C1: Construct Contingency Well #1 as a new monitoring well south of the south extension pit and begin monthly monitoring.	13–15	10–12
Action C2: Construct Contingency Well #2 as a new monitoring well between the Project Area and Piute Springs and begin monthly monitoring.	16–17	12–14
Action D: Adjust and rerun the model to ensure Piute Spring flow reduction is ≤10%, then reduce pumping in Lanfair Valley and increase water use from Ivanpah Valley wells, as needed.	18–22	14–18

Source: GLA (2026a).

Table B-1.3.18-1. Acreage of Geologic Units and PFYCs within the Analysis Area and Project Area

Geologic Units	Map Symbol	PFYC	Analysis Area (acres)	Analysis Area (%)
Abundant hillslope deposits/Felsic plutonic rocks	Qha/fp	1	20.19	4.49
Abundant hillslope deposit/Felsic plutonic bedrock that weather to grus	Qha/fpg	1	7.73	1.72
Abundant hillslope deposit/Felsic plutonic bedrock that weather to grus + Mafic plutonic bedrock	Qha/fpg+mp	1	2.79	0.62
Abundant hillslope deposit/Felsic plutonic bedrock that weather to grus + Metamorphic bedrock	Qha/fpg+mr	1	0.52	0.12
Abundant hillslope deposits/Felsic volcanic rocks	Qha/fv	1	0	0
Abundant hillslope deposit/Mafic plutonic bedrock	Qha/mp	1	8.58	1.91
Abundant hillslope deposits/Mafic volcanic rocks	Qha/mv	1	8.01	1.78
Abundant hillslope deposits/Partly consolidated materials	Qha/pc	U	11.62	2.58
Intermediate alluvial fan deposit	Qia	2	94.38	20.98
Intermediate alluvial fan deposit/Old alluvial fan deposit	Qia/Qoa	U	2.62	0.58
Intermediate alluvial fan deposit + Old alluvial fan deposit	Qia+Qoa	2	2.86	0.64
Intermediate alluvial fan deposit + Young alluvial fan deposit	Qia+Qya	2	43.01	9.56
Intermediate alluvial fan deposit + Young alluvial fan deposit	Qia+Qya	U	10.01	2.23
Intermediate alluvial fan deposit + Young alluvial fan deposit composed of grus	Qia+Qyag	U	6.59	1.47
Old alluvial fan deposit	Qoa	2	37.15	8.26
Extremely old alluvial fan deposit	QToa	2	10.13	2.25

Geologic Units	Map Symbol	PFYC	Analysis Area (acres)	Analysis Area (%)
Young alluvial fan deposit	Qya	2	86.71	19.28
Young alluvial fan deposit + Active alluvial fan deposit	Qya+Qaa	2	16.08	3.58
Young alluvial fan deposit + Intermediate alluvial fan deposit	Qya+Qia	2	65.38	14.54
Young alluvial fan deposit composed of grus/Felsic plutonic bedrock	Qyag/fp	U	0.41	0.09
Young alluvial fan deposit composed of grus + Active wash deposit	Qyag+Qaw	U	1.58	0.35
Young alluvial fan deposit composed of grus + Older alluvial fan composed of debris flows and grus	Qyag+Qyaog	U	13.44	2.99

Table B-1.3.18-2. Acres of PFYC Units for Alternatives C and D

Alternative	PFYC 1 (acres)	PFYC 2 (acres)	PFYC U (acres)
C	43.82	2.87	N/A
D	N/A	89.35	0.29

Note:
N/A = Not applicable.

APPENDIX C

Referenced Figures

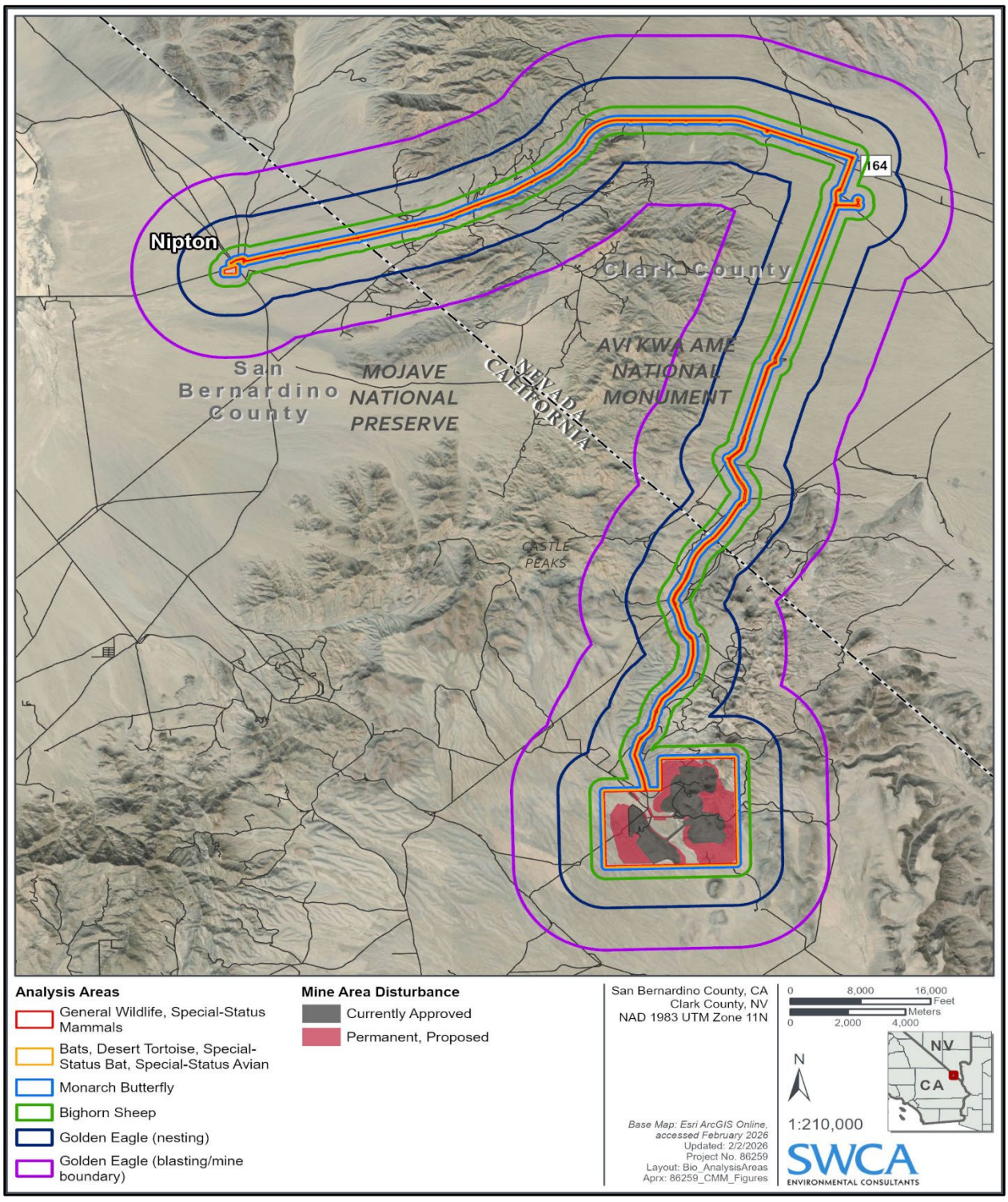


Figure C.3.6-1. Special Status Wildlife Species in the Biological Resources Analysis Area

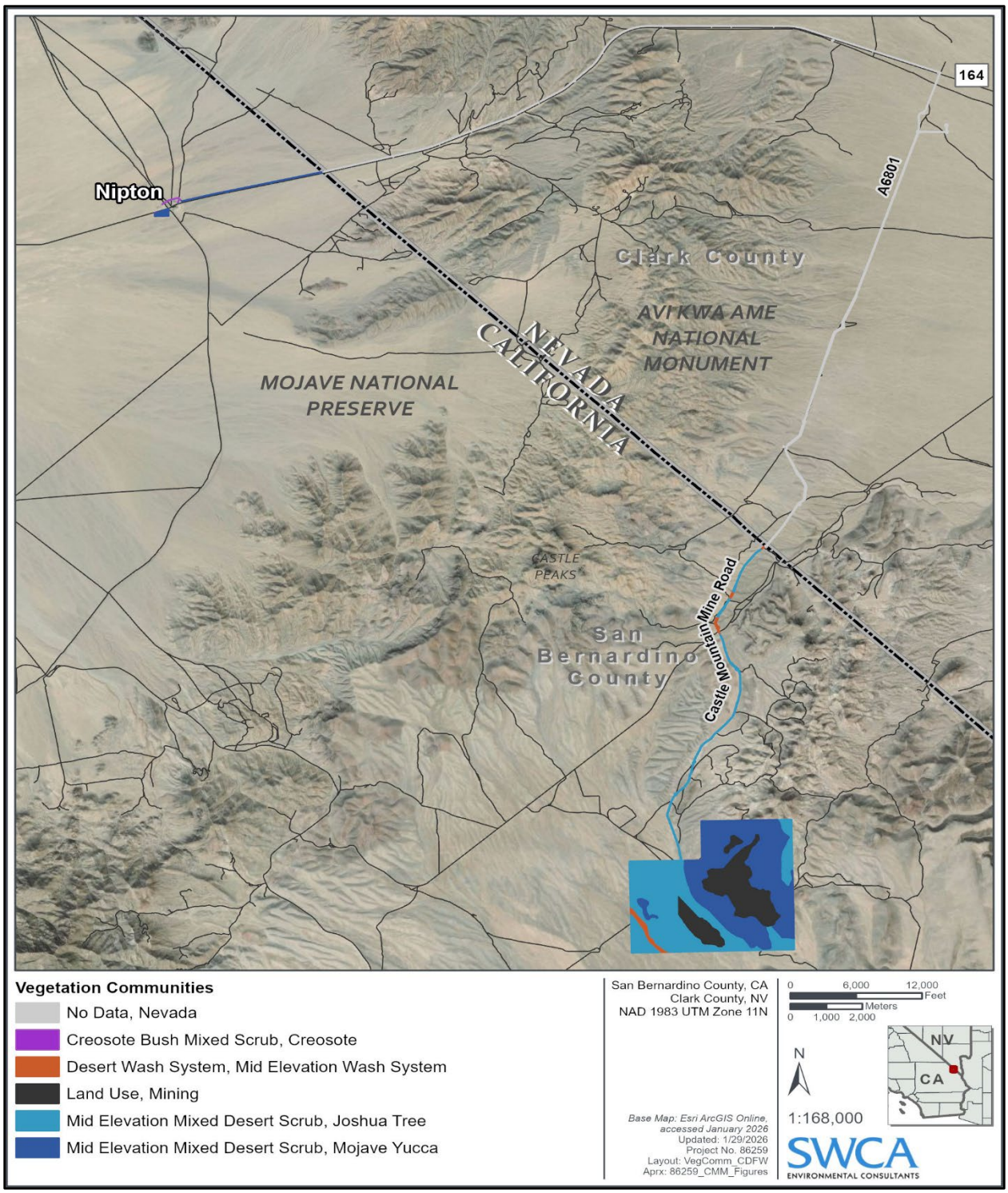


Figure C.3.6-2. Vegetation Communities in the Biological Resources Analysis Area

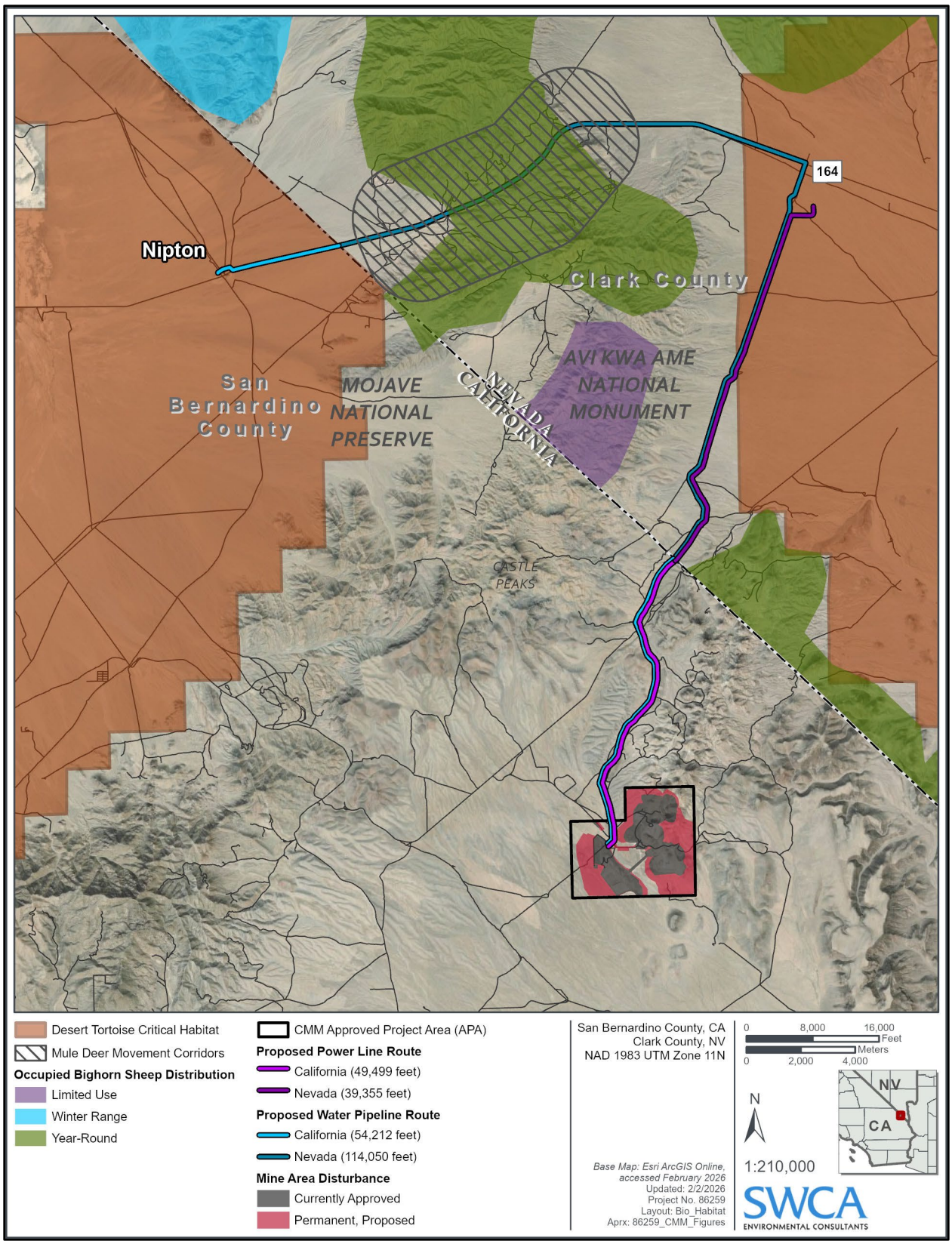


Figure C.3.6-3. Special-Status Wildlife Species Analysis Area

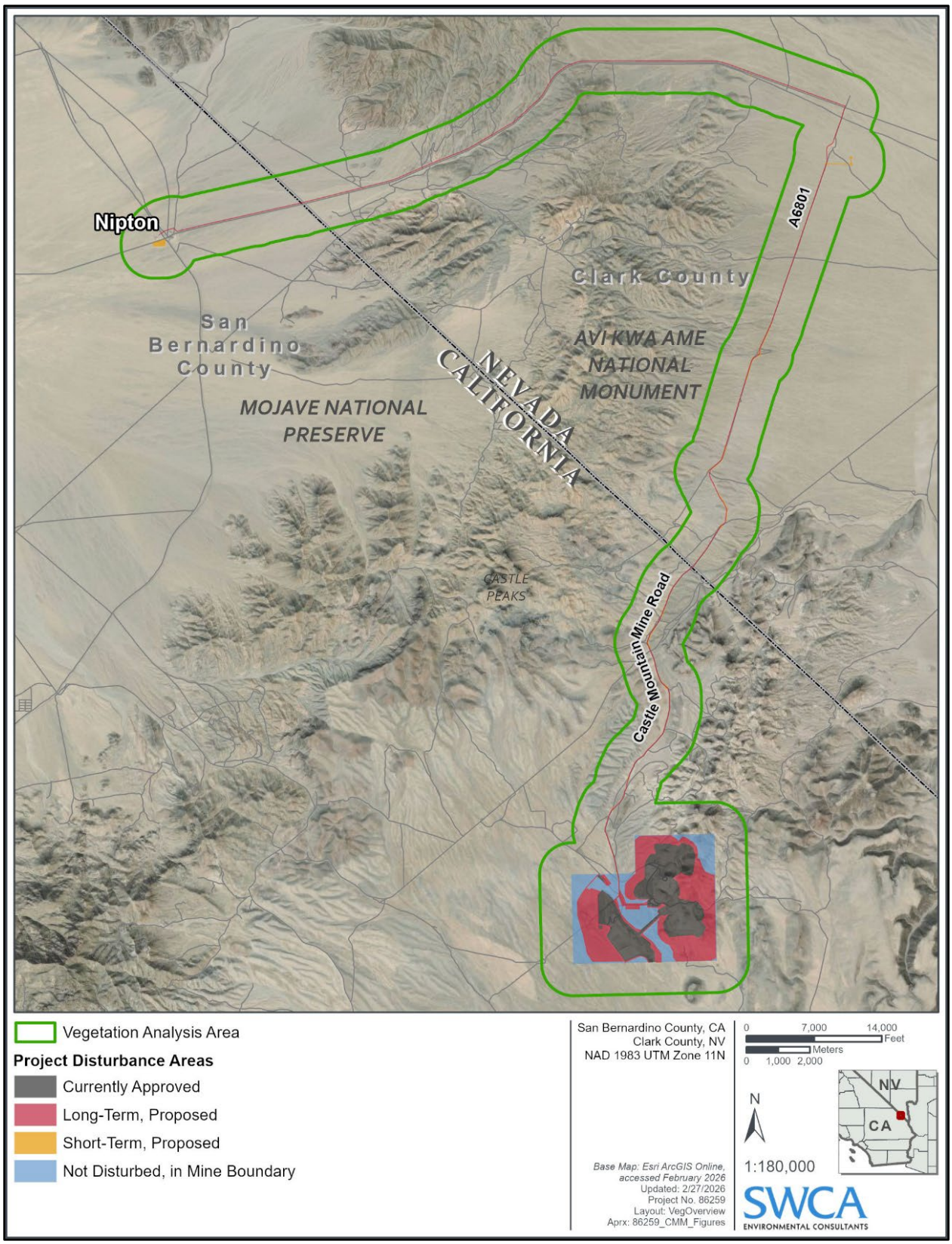


Figure C.3.6-4. Special Status Species Habitat Assessment Analysis Area

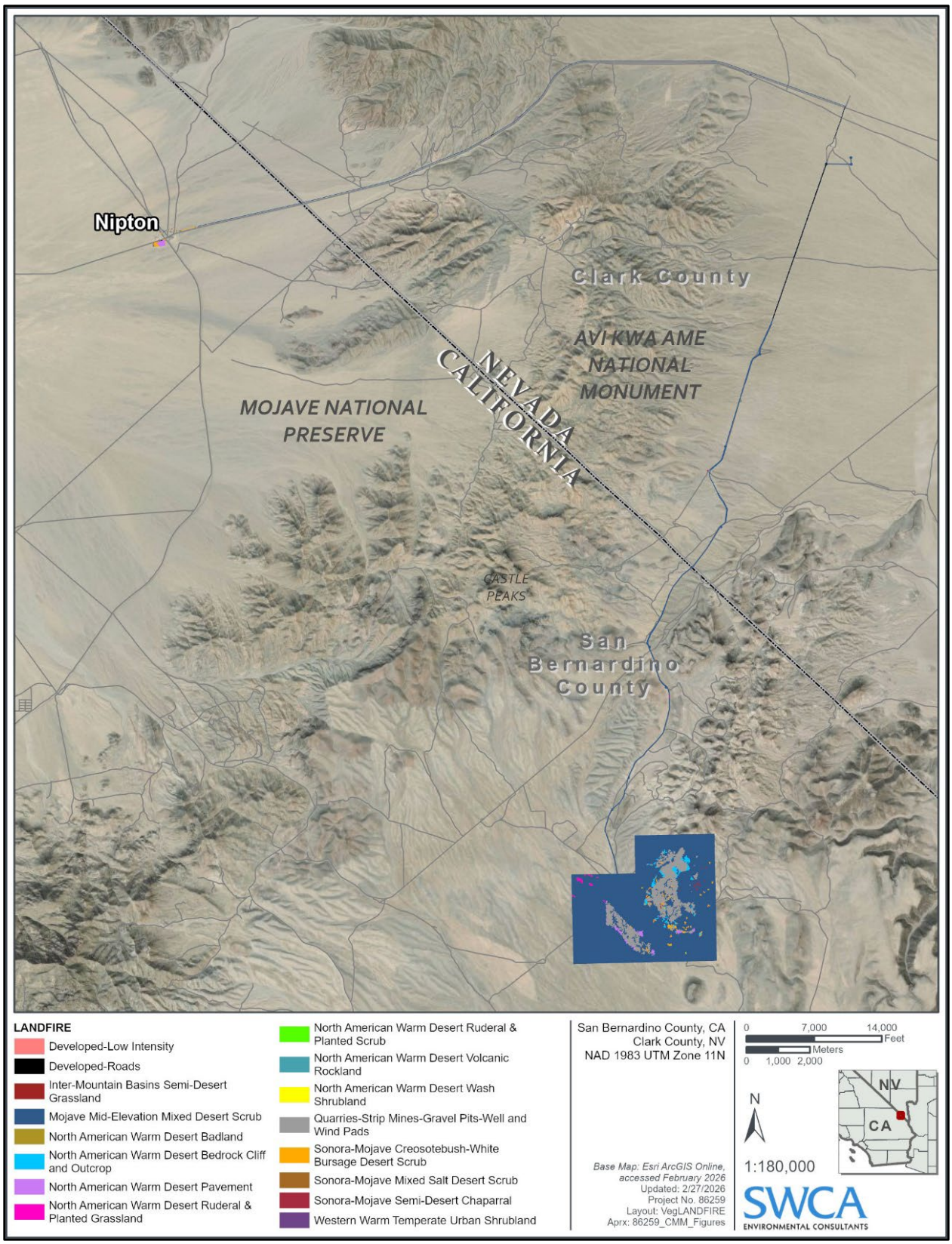


Figure C.3.6-5. Landfire Land Cover Classes in the Analysis Area

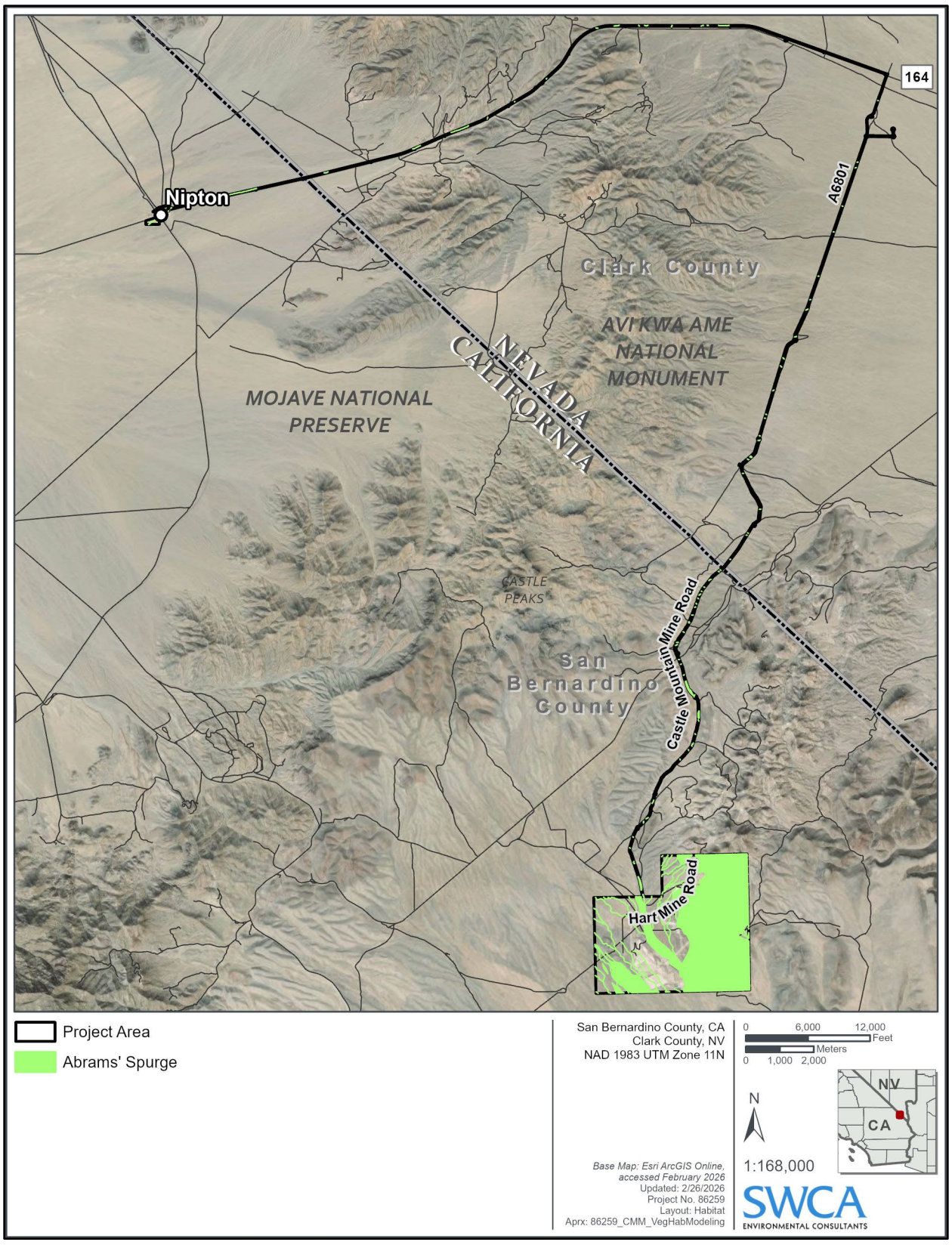


Figure C.3.6-6. Potential Abrams' Spurge Habitat within the Analysis Area

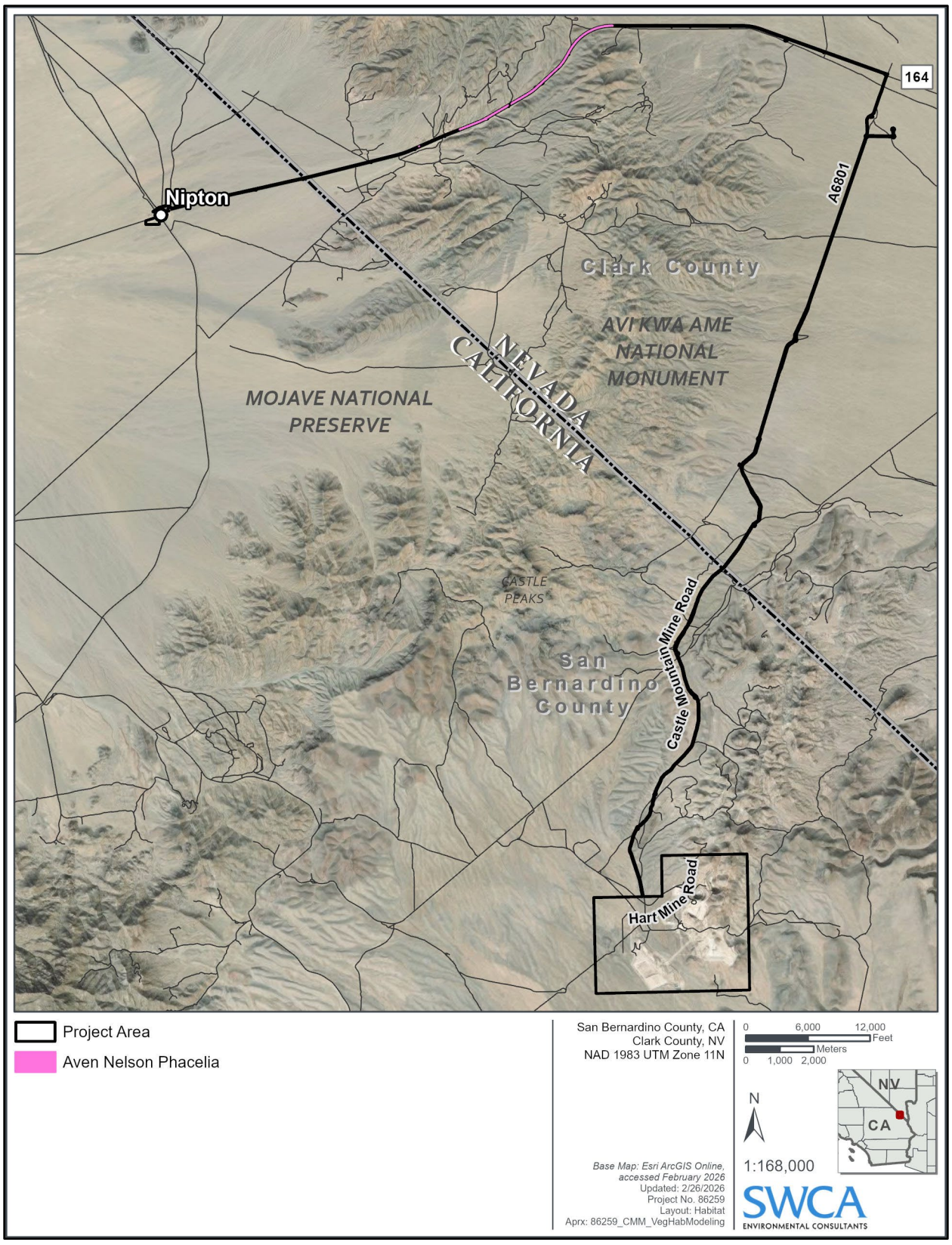


Figure C.3.6-7. Potential Aven Nelson Phacelia Habitat within the Analysis Area

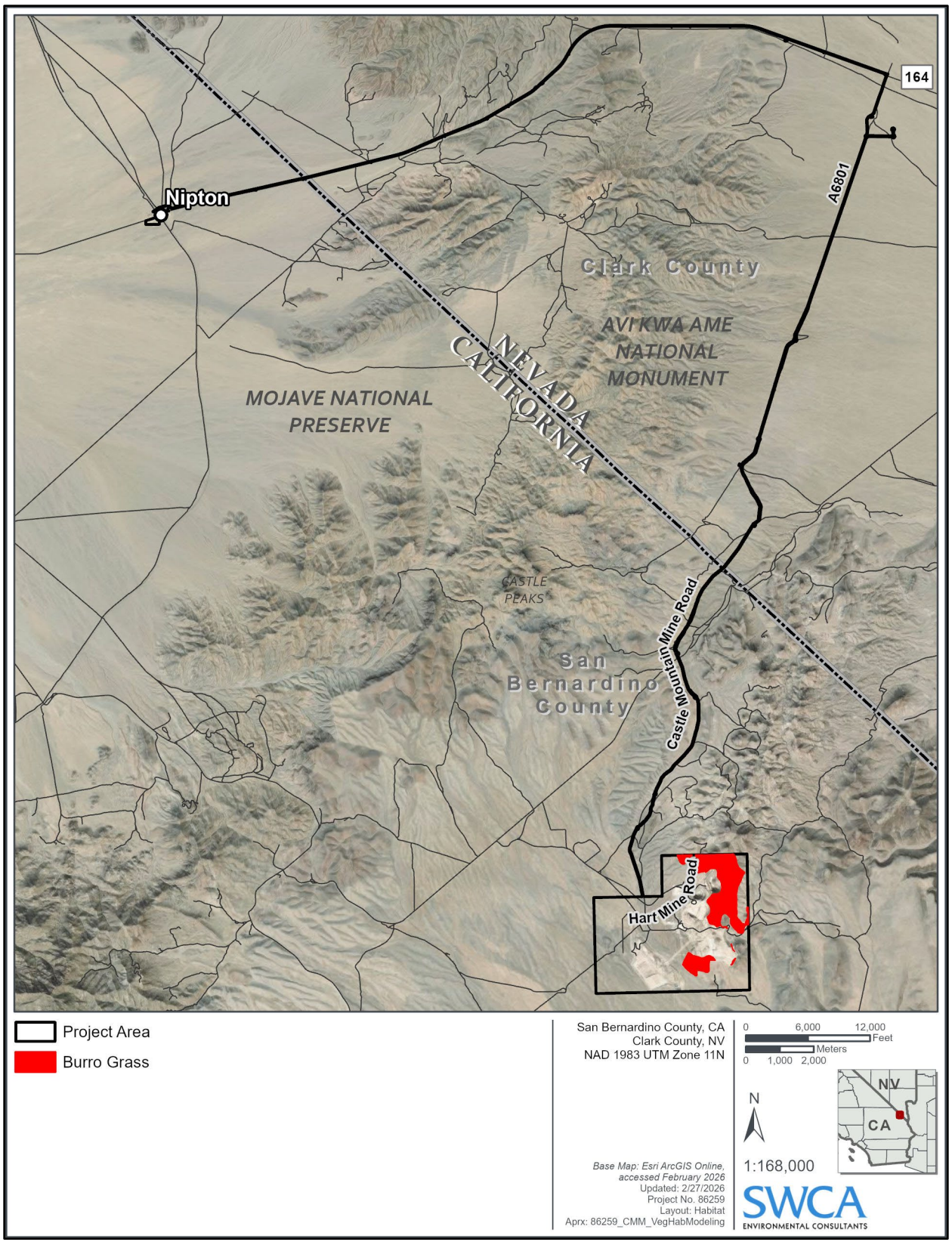


Figure C.3.6-8. Potential Burro Grass Habitat within the Analysis Area

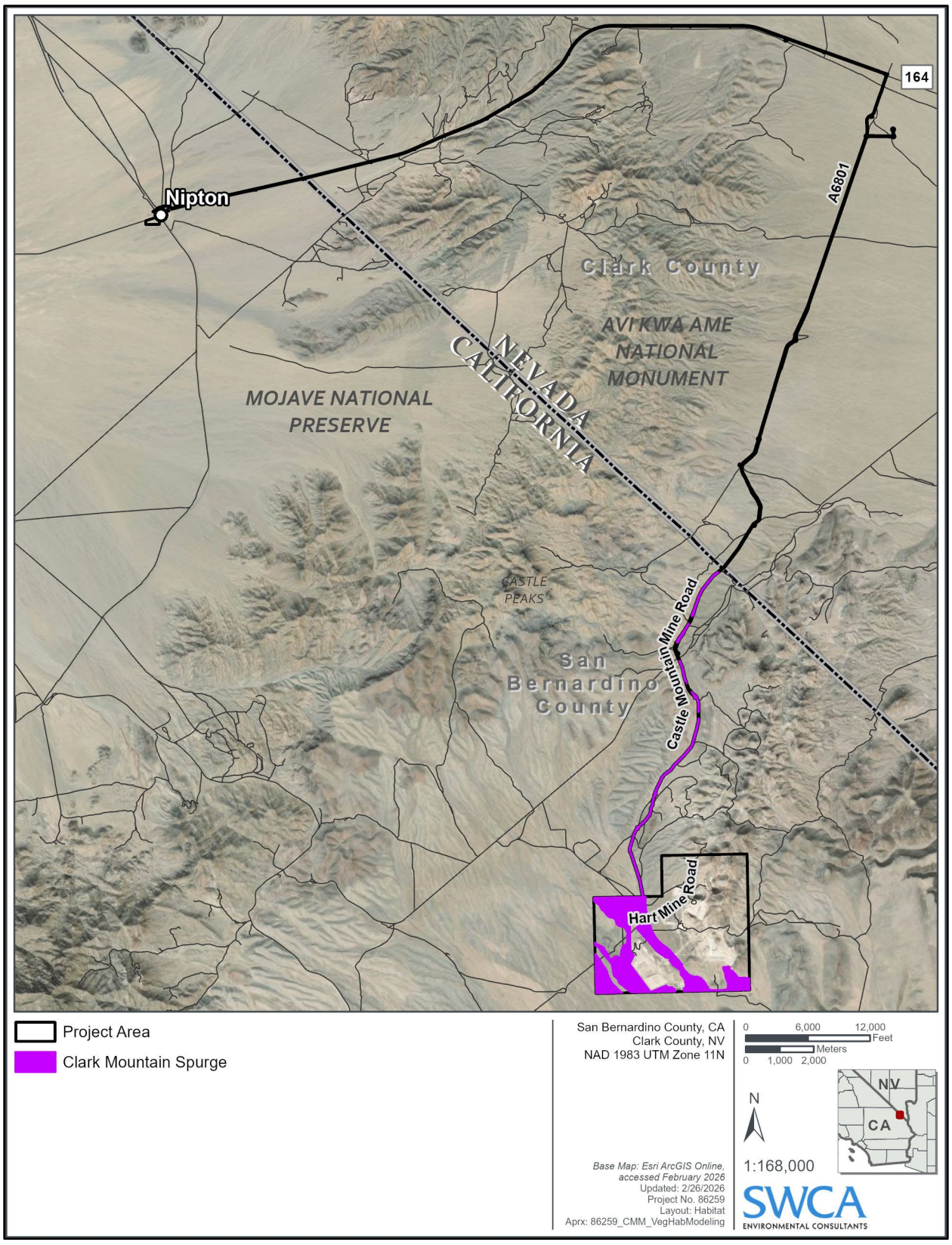


Figure C.3.6-9. Potential Clark Mountain Spurge Habitat within the Analysis Area

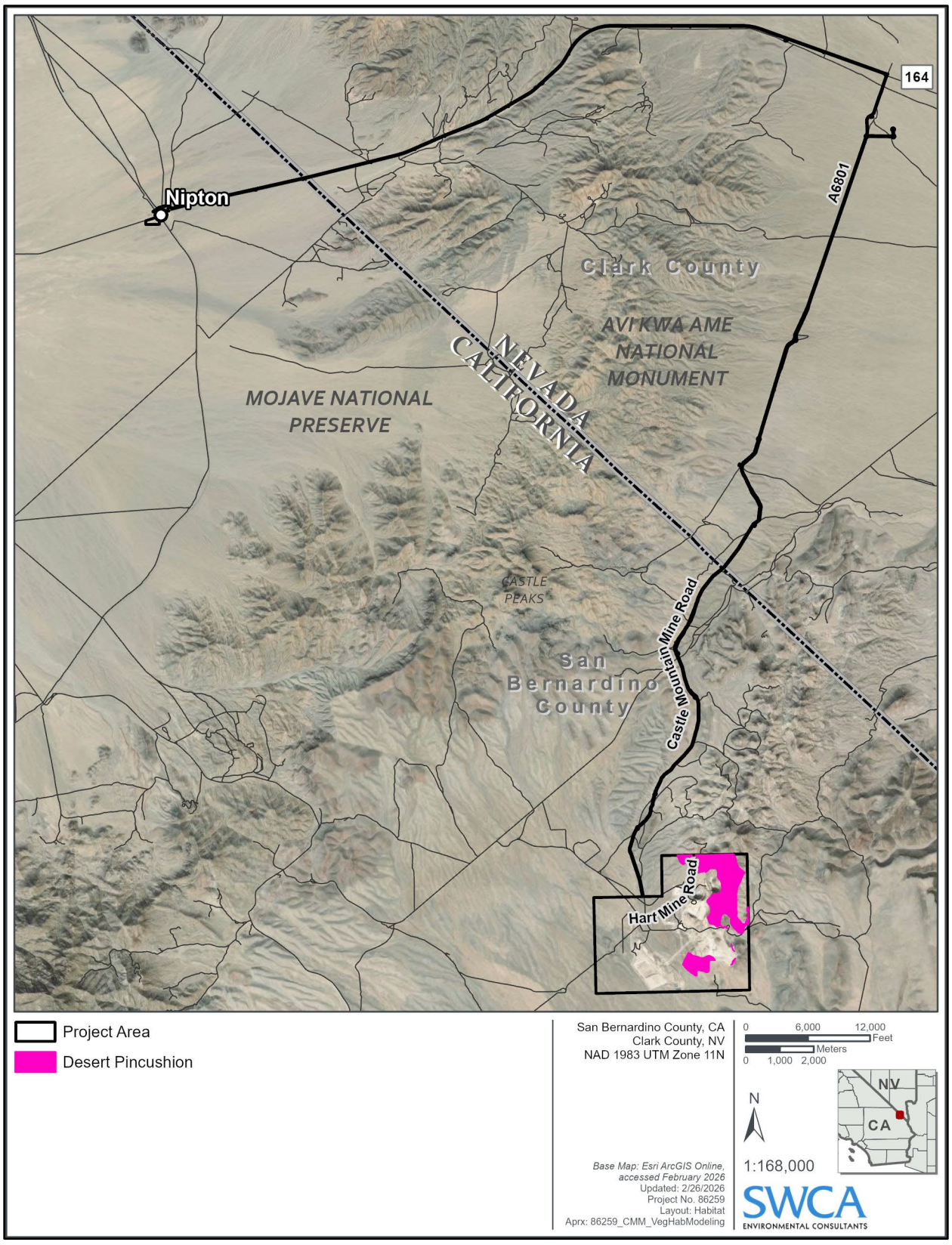


Figure C.3.6-10. Potential Desert Pincushion Habitat within the Analysis Area

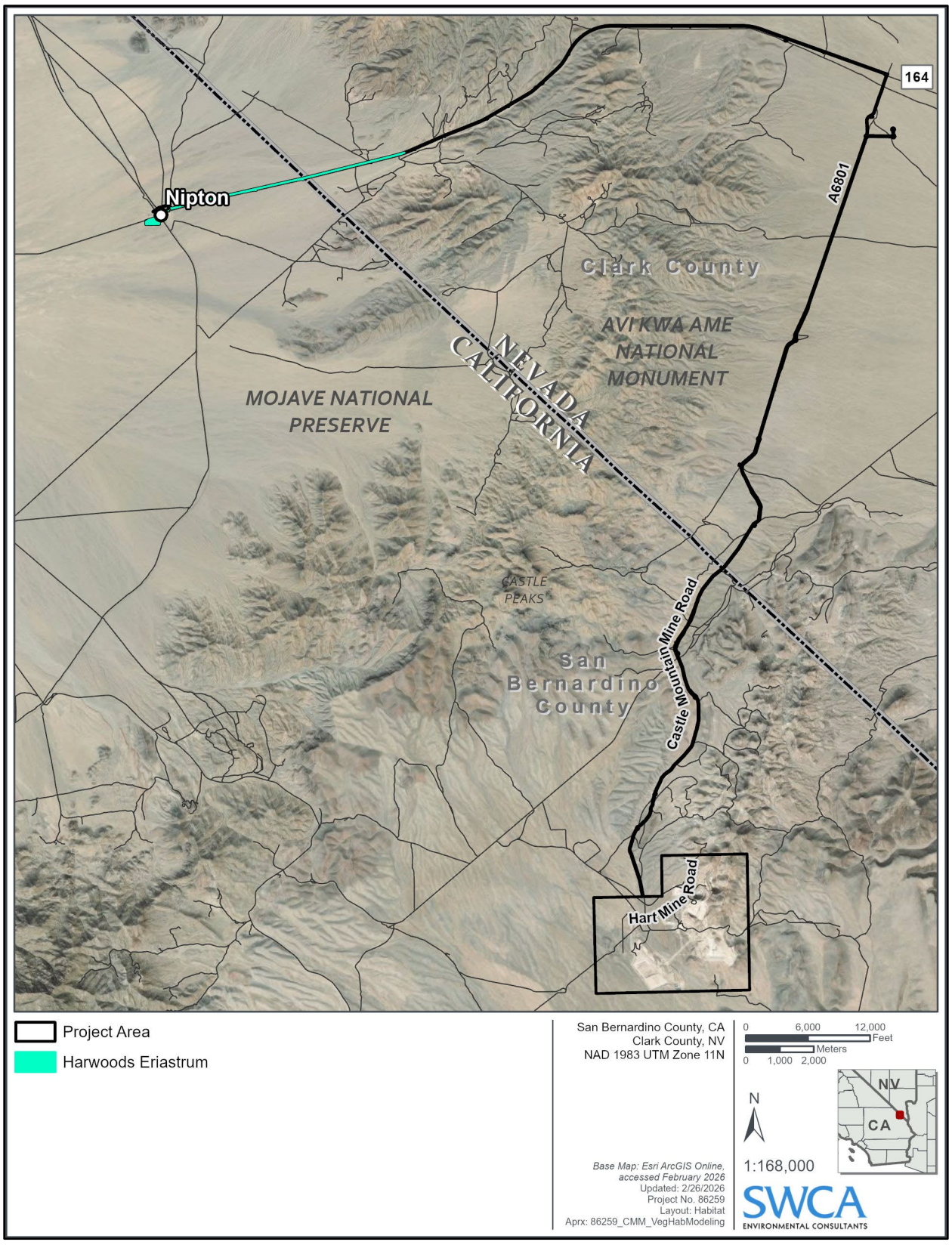


Figure C.3.6-11. Potential Hardwoods Eriastrum Habitat within the Analysis Area

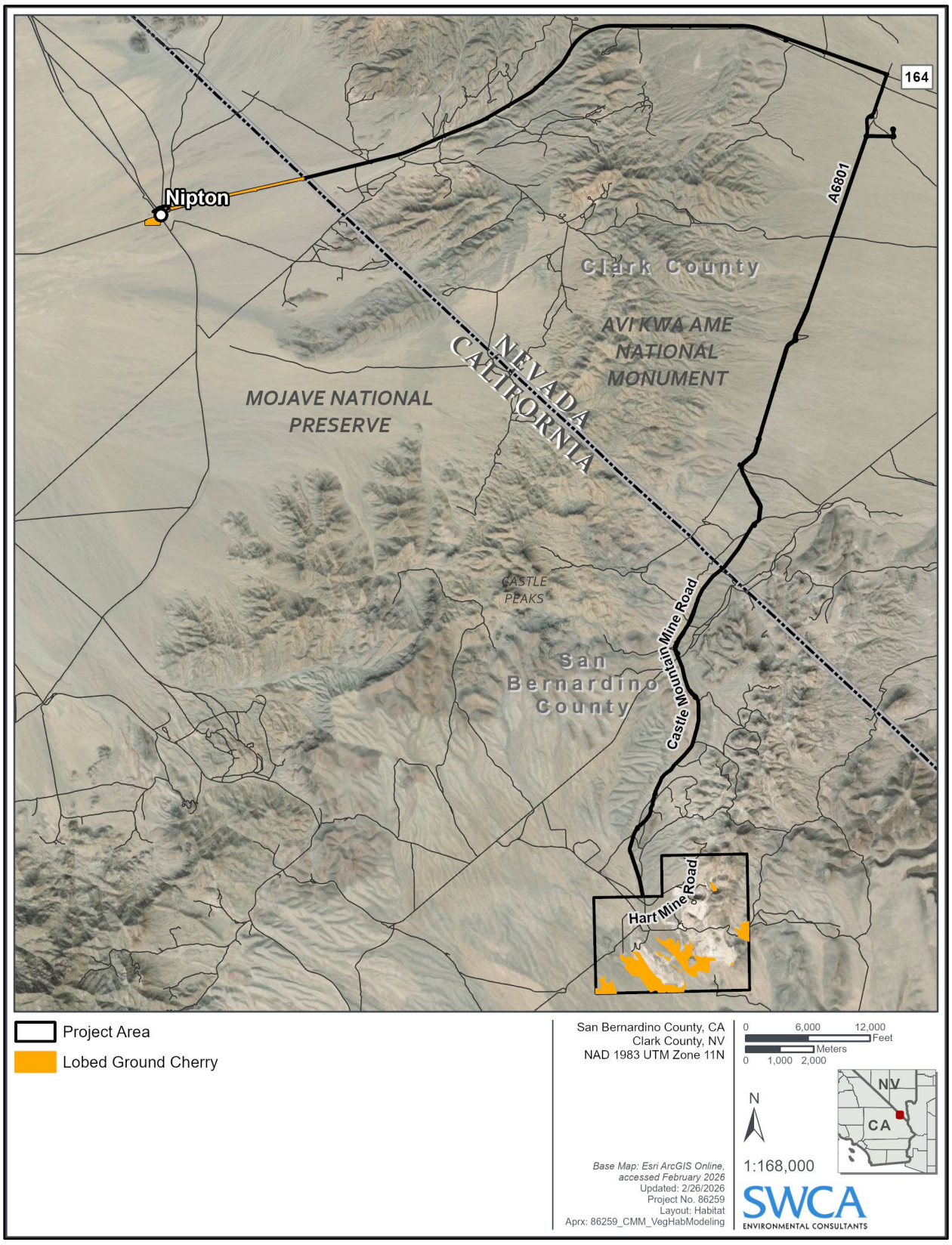


Figure C.3.6-12. Potential Lobed Ground Cherry Habitat within the Analysis Area

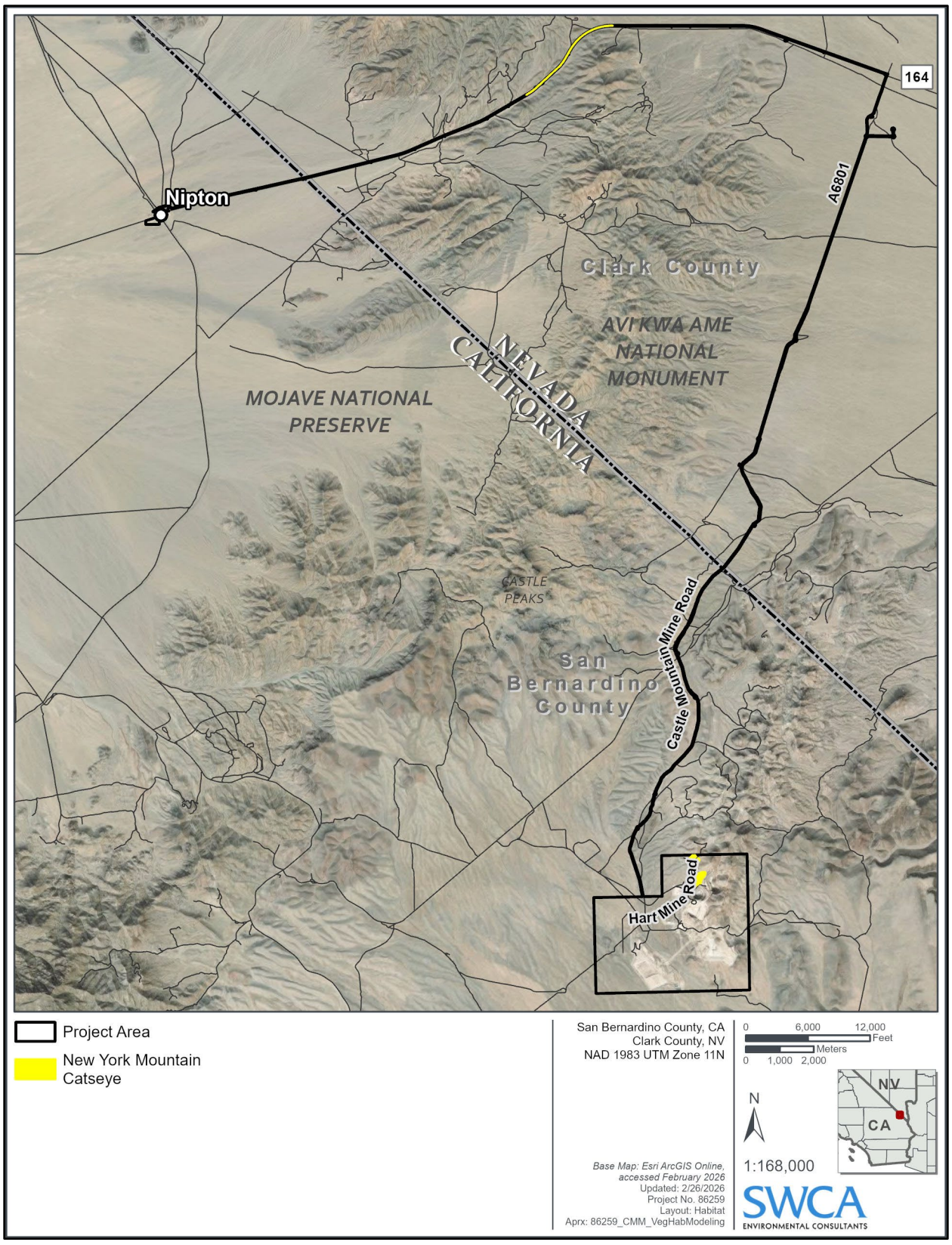


Figure C.3.6-13. Potential New York Mountain Catseye Habitat within the Analysis Area

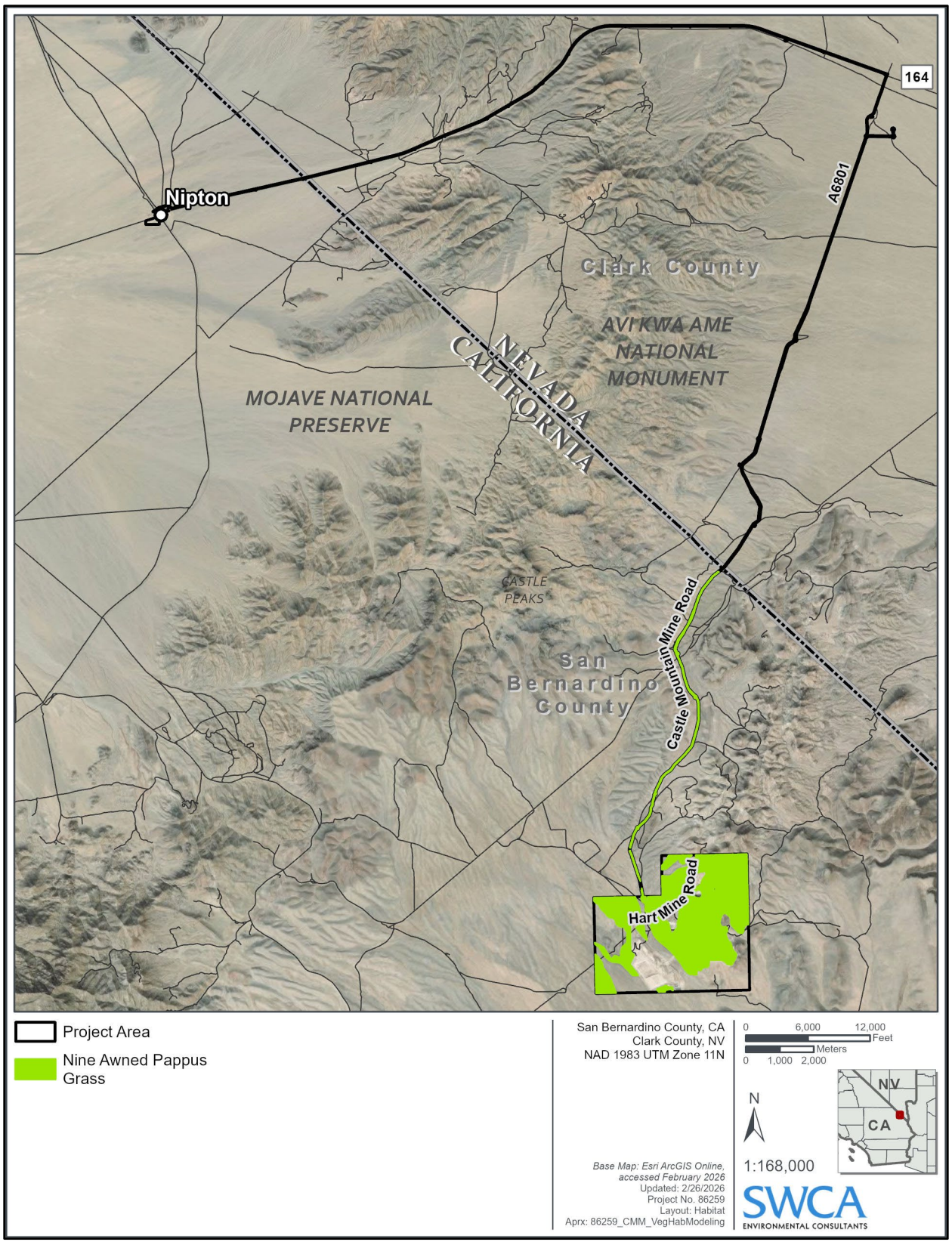


Figure C.3.6-14. Potential Nine Awned Pappus Grass Habitat within the Analysis Area

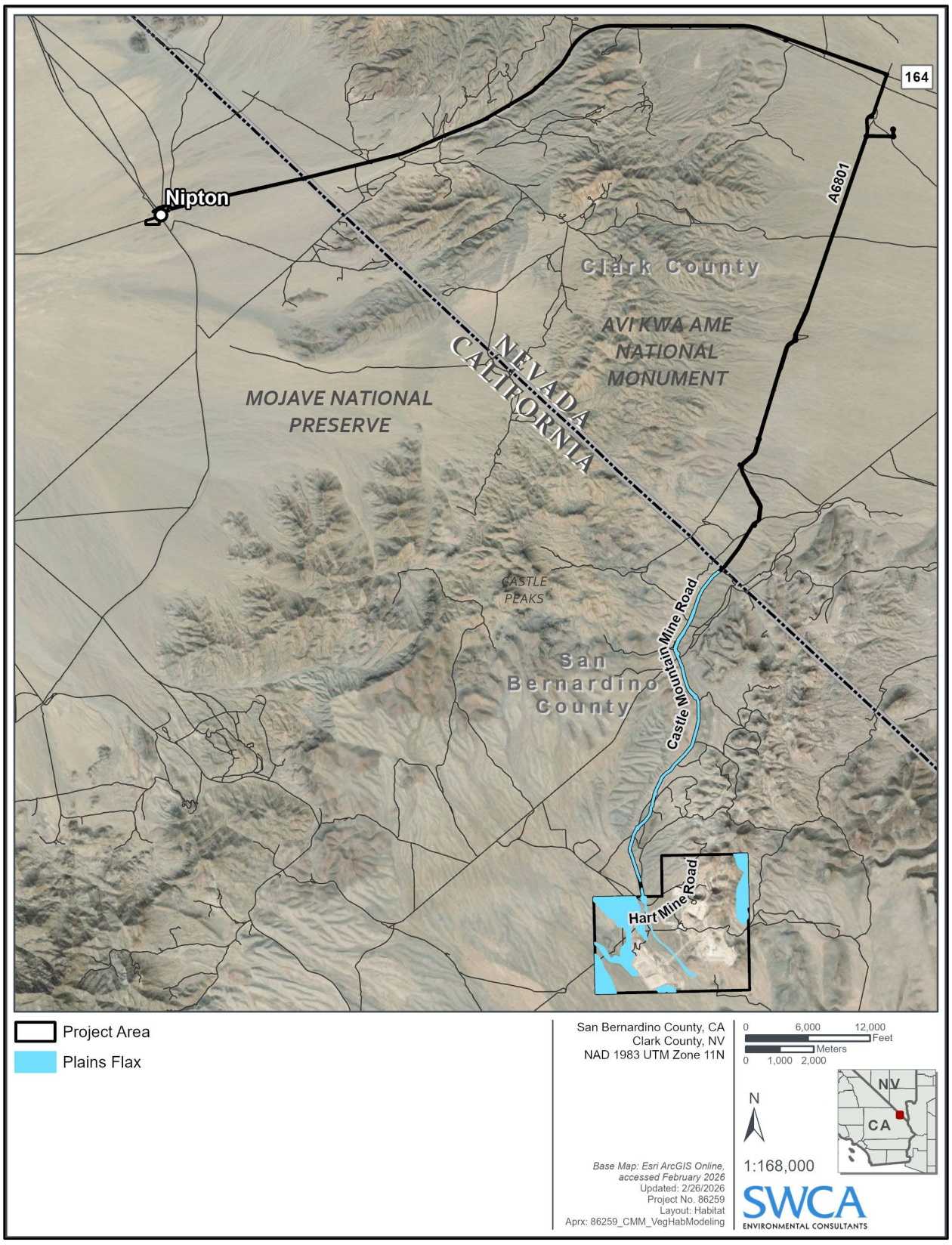


Figure C.3.6-15. Potential Plains Flax Habitat within the Analysis Area

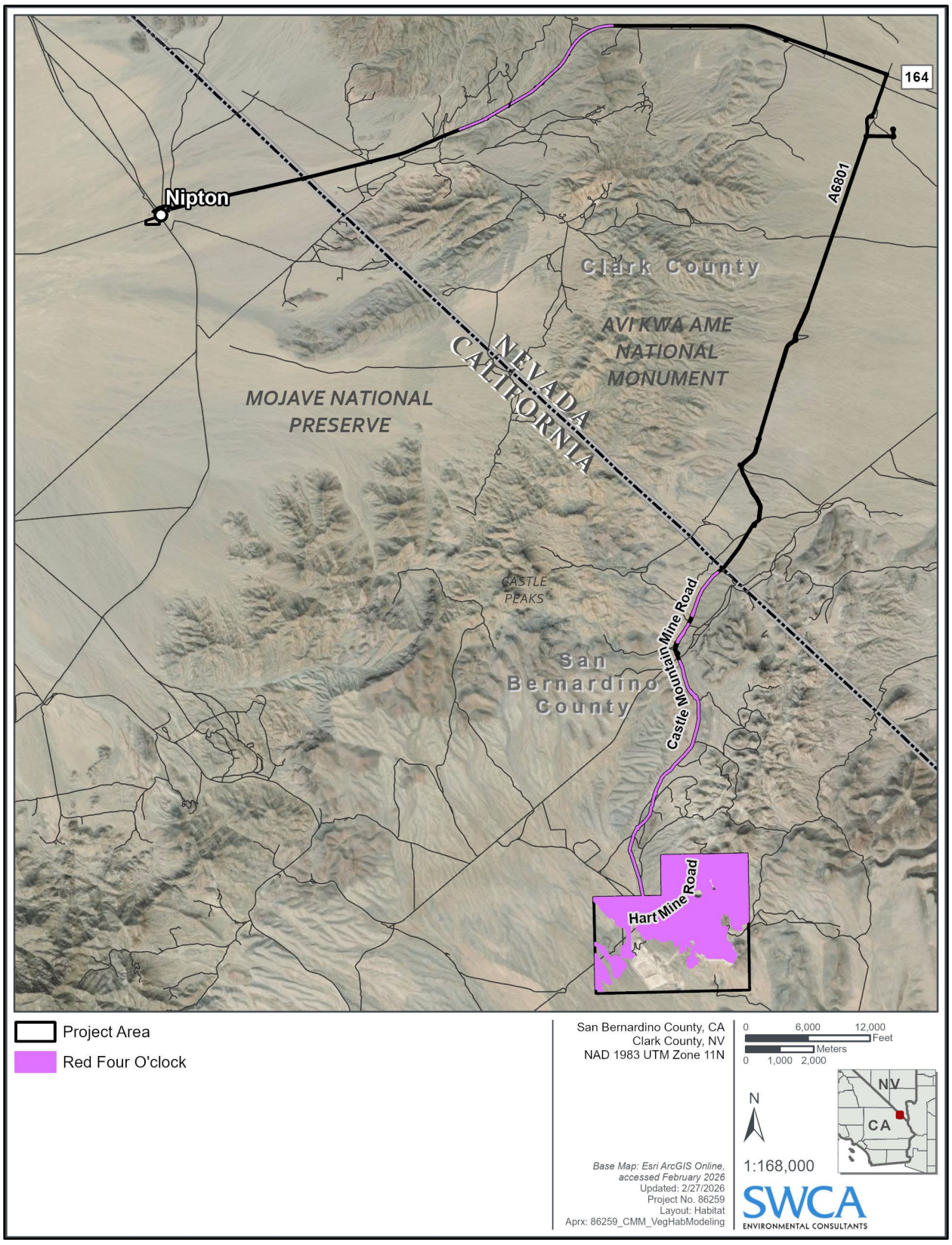


Figure C.3.6-16. Potential Red Four O'clock Habitat within the Analysis Area

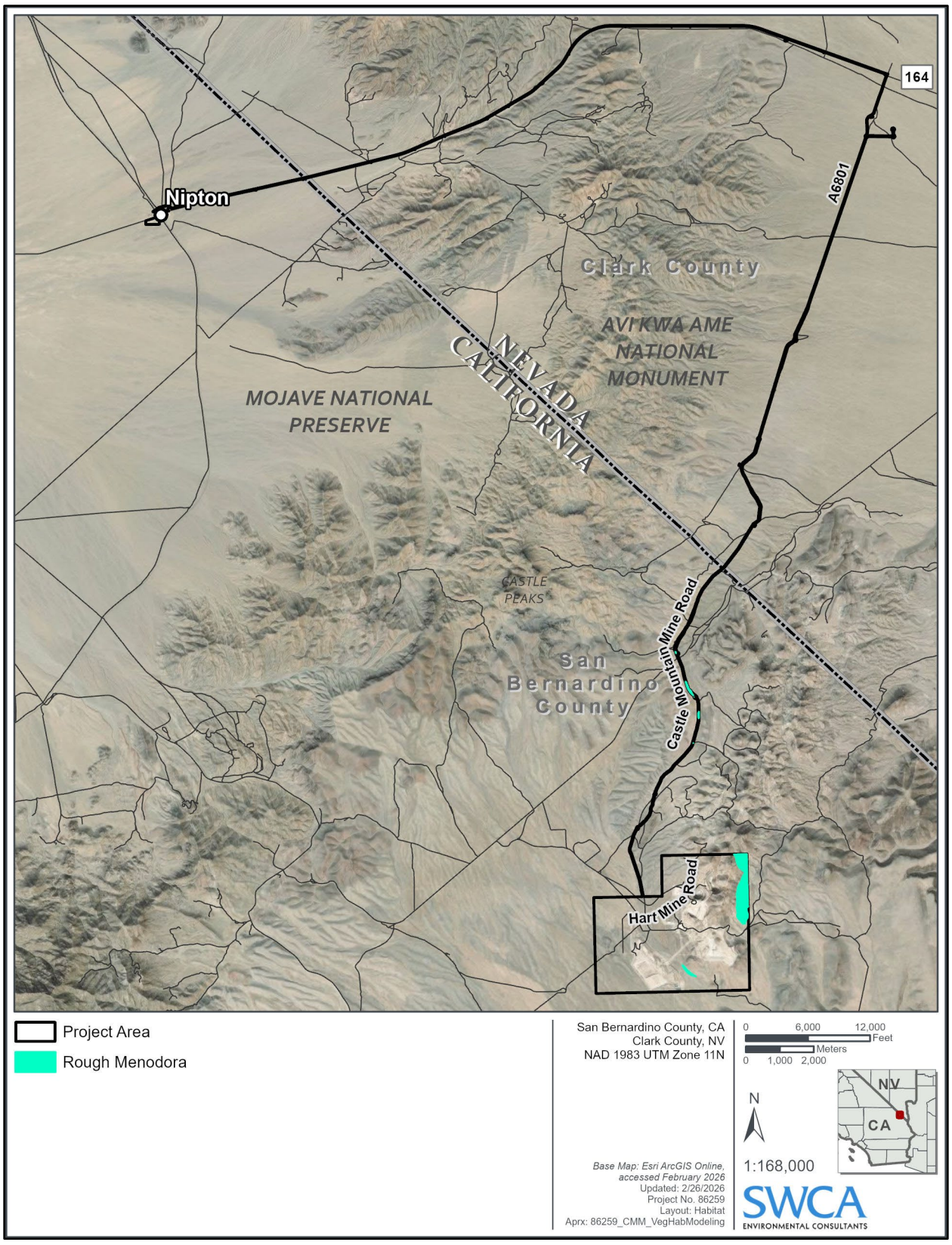


Figure C.3.6-17. Potential Rough Menodora Habitat within the Analysis Area

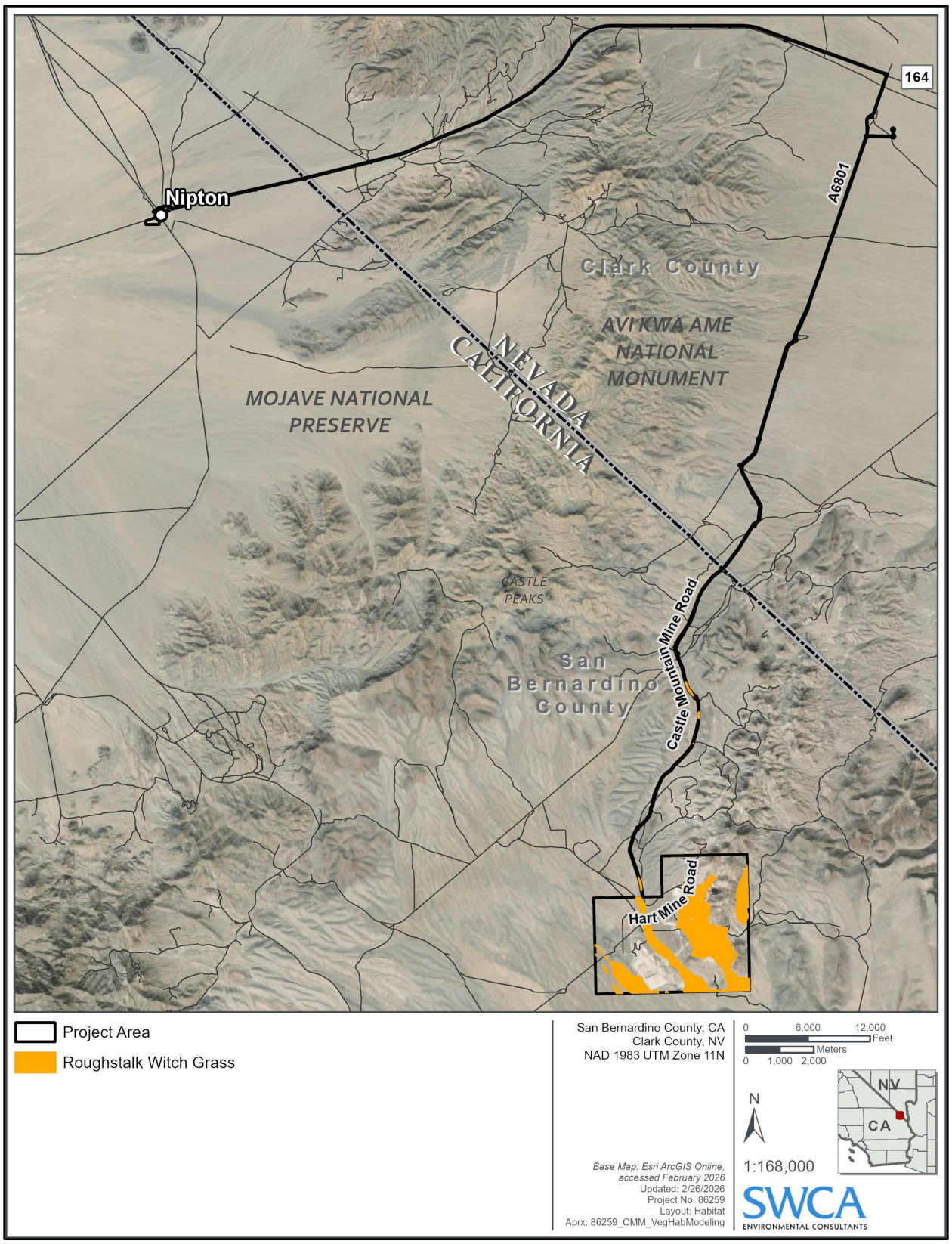


Figure C.3.6-18. Potential Roughstalk Witch Grass Habitat within the Analysis Area

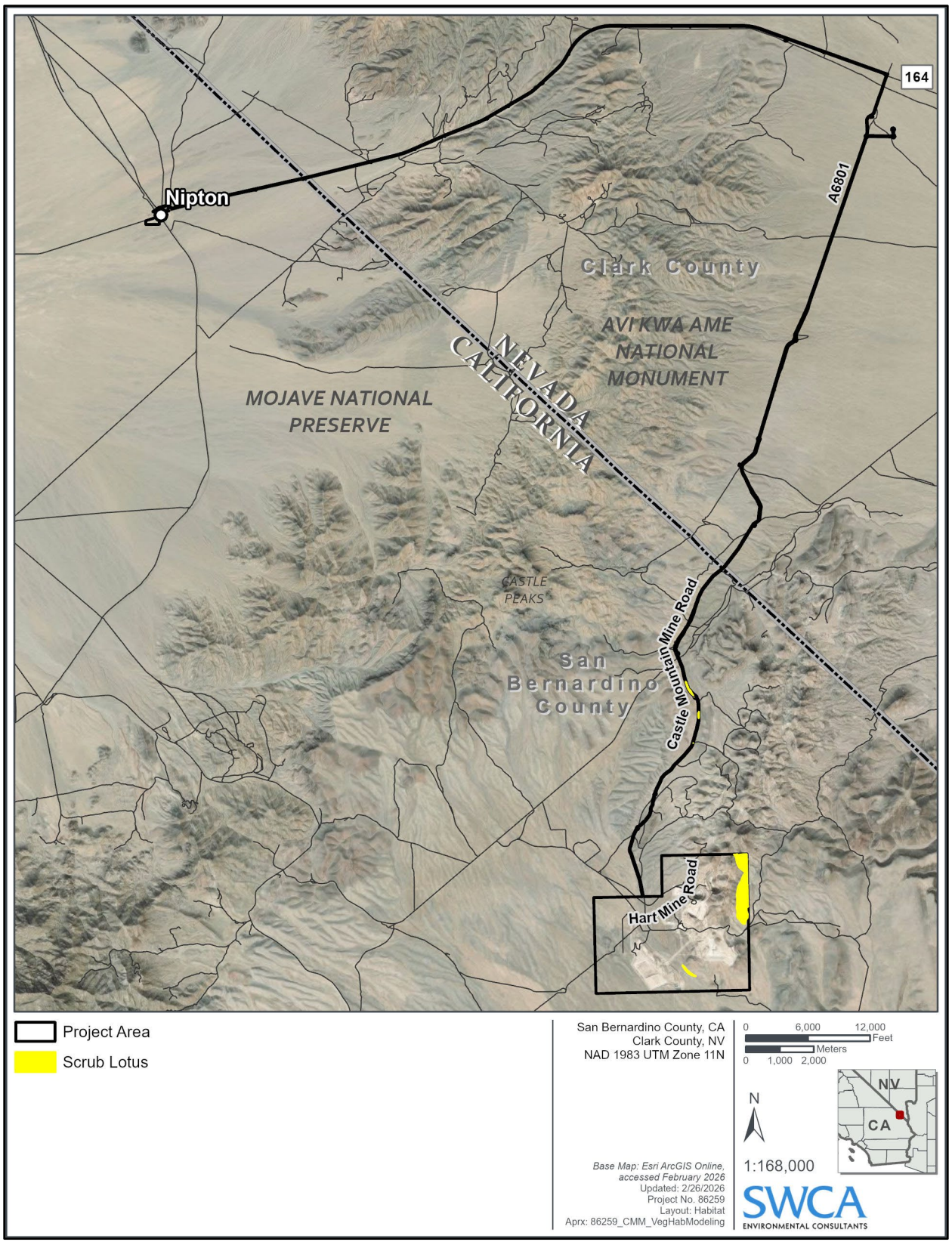


Figure C.3.6-19. Potential Scrub Lotus Habitat within the Analysis Area

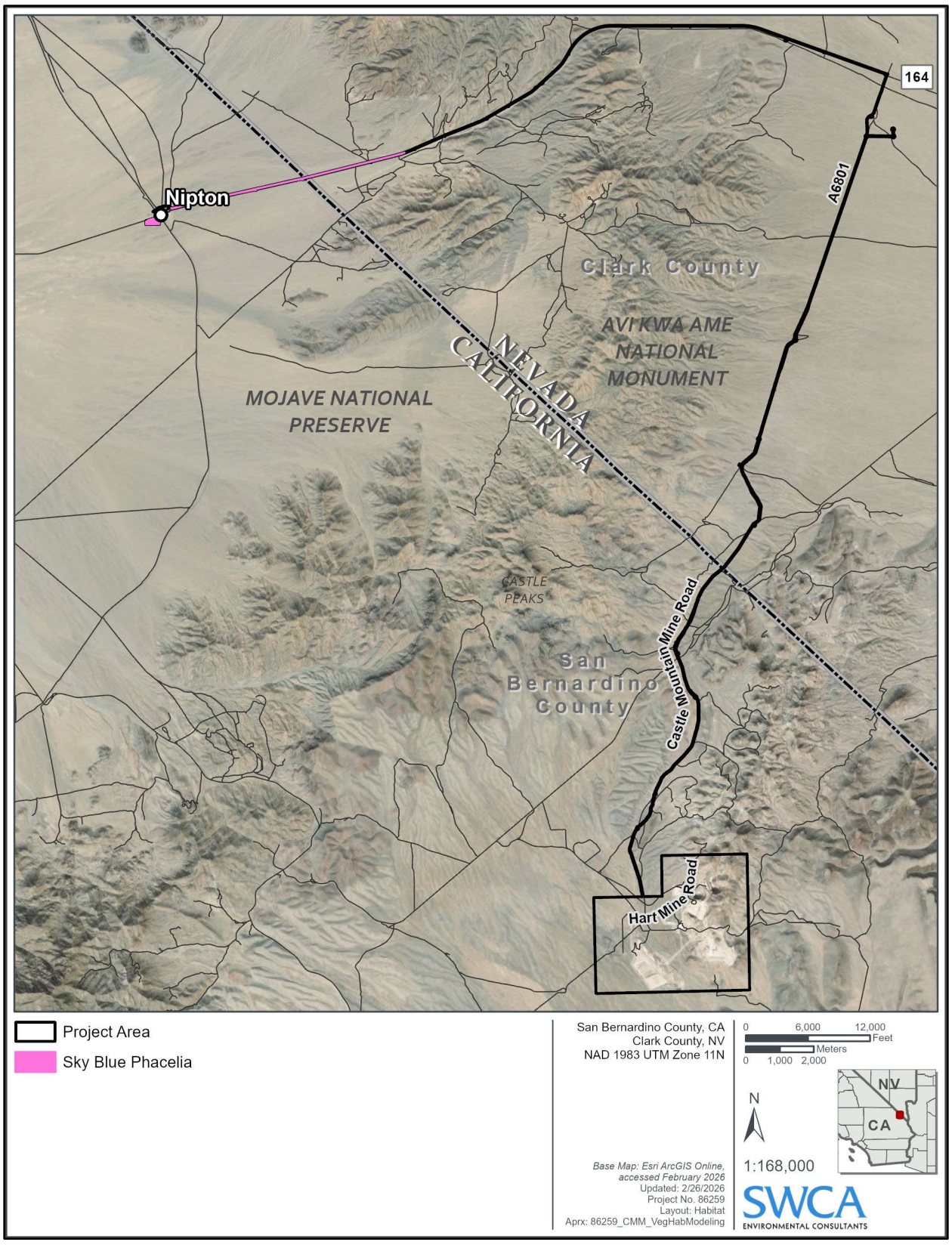


Figure C.3.6-20. Potential Sky Blue Phacelia Habitat within the Analysis Area

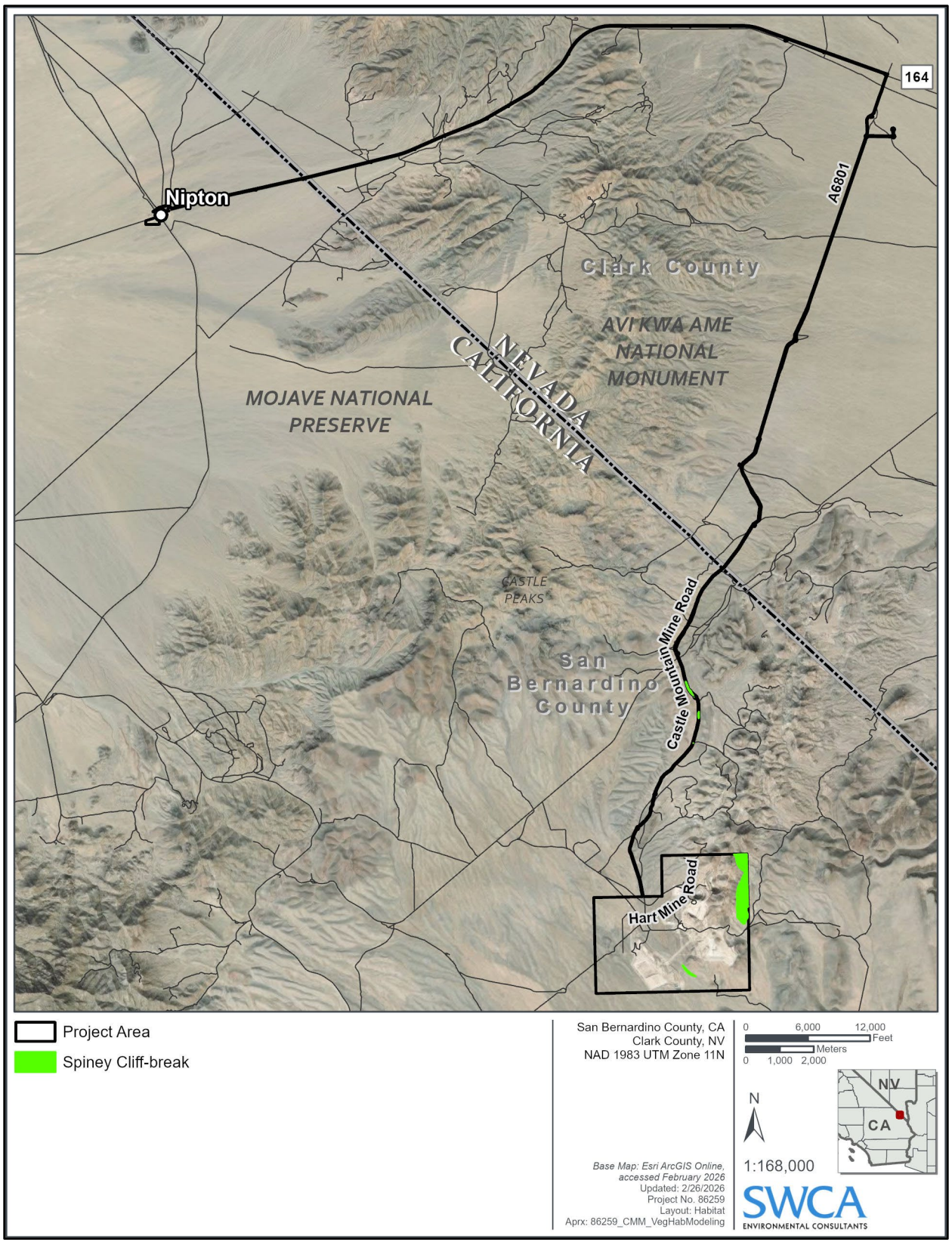


Figure C.3.6-21. Potential Spiney Cliff-break Habitat within the Analysis Area

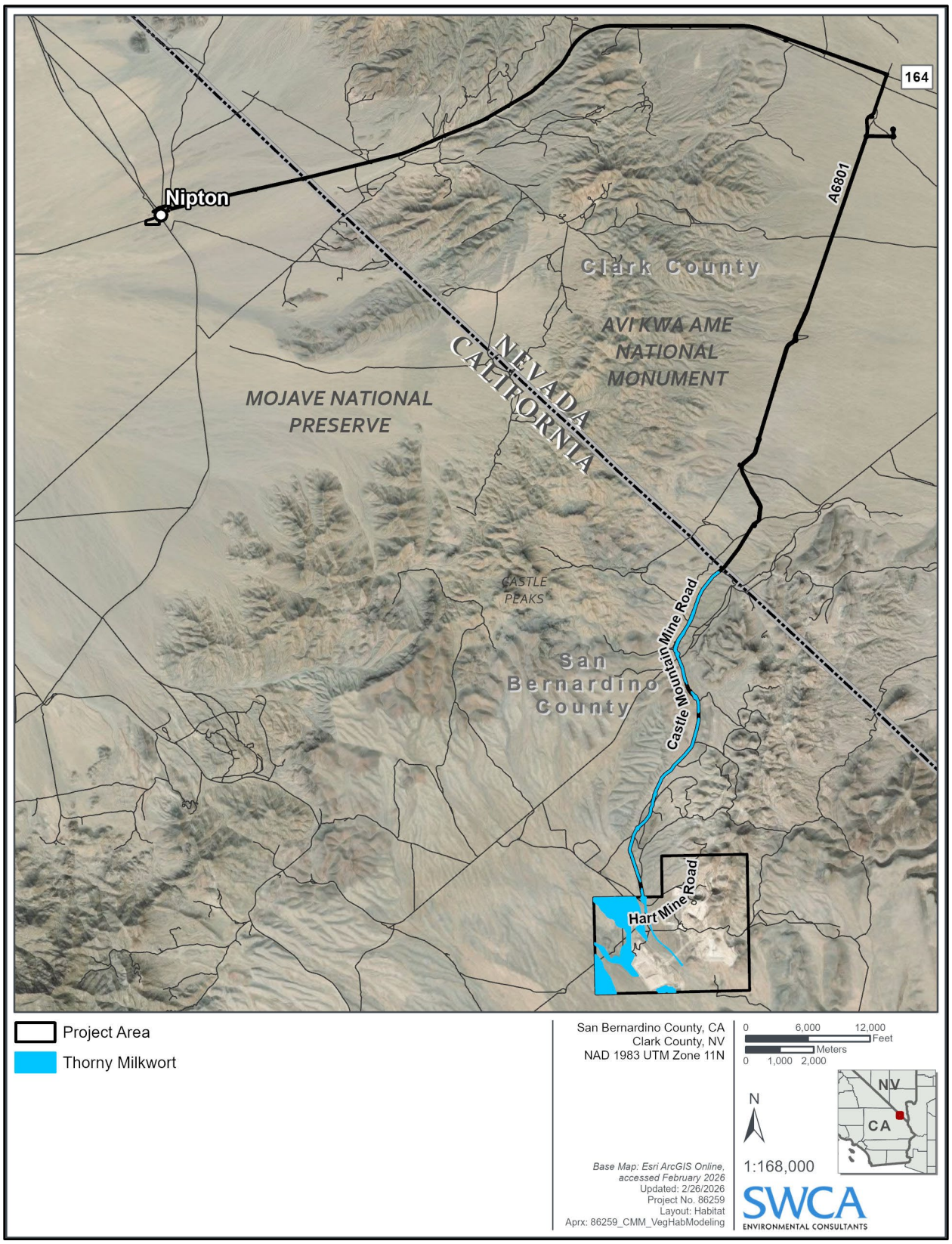


Figure C.3.6-22. Potential Thorny Milkwort Habitat within the Analysis Area

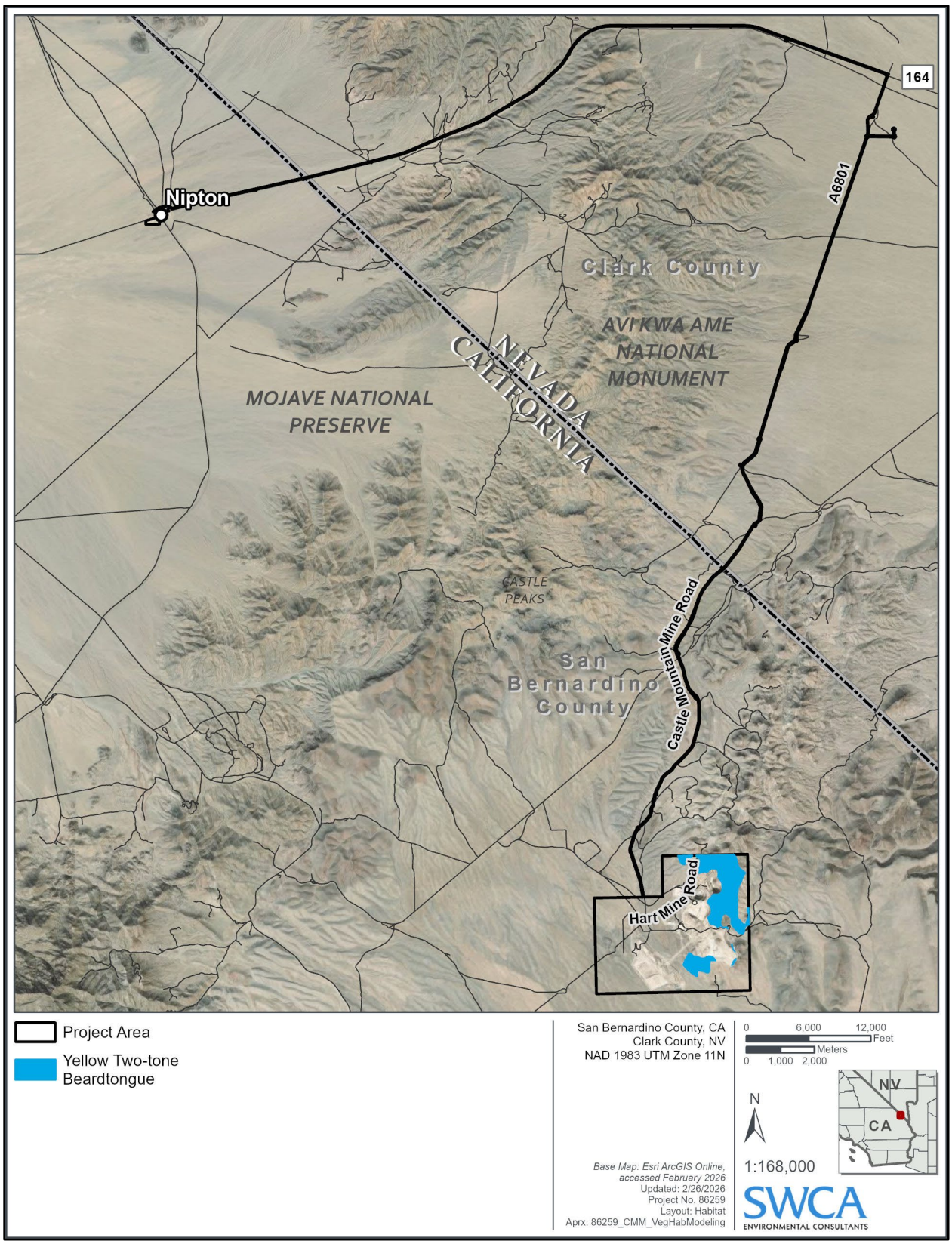


Figure C.3.6-23. Potential Yellow Two-tone Beardtongue Habitat within the Analysis Area

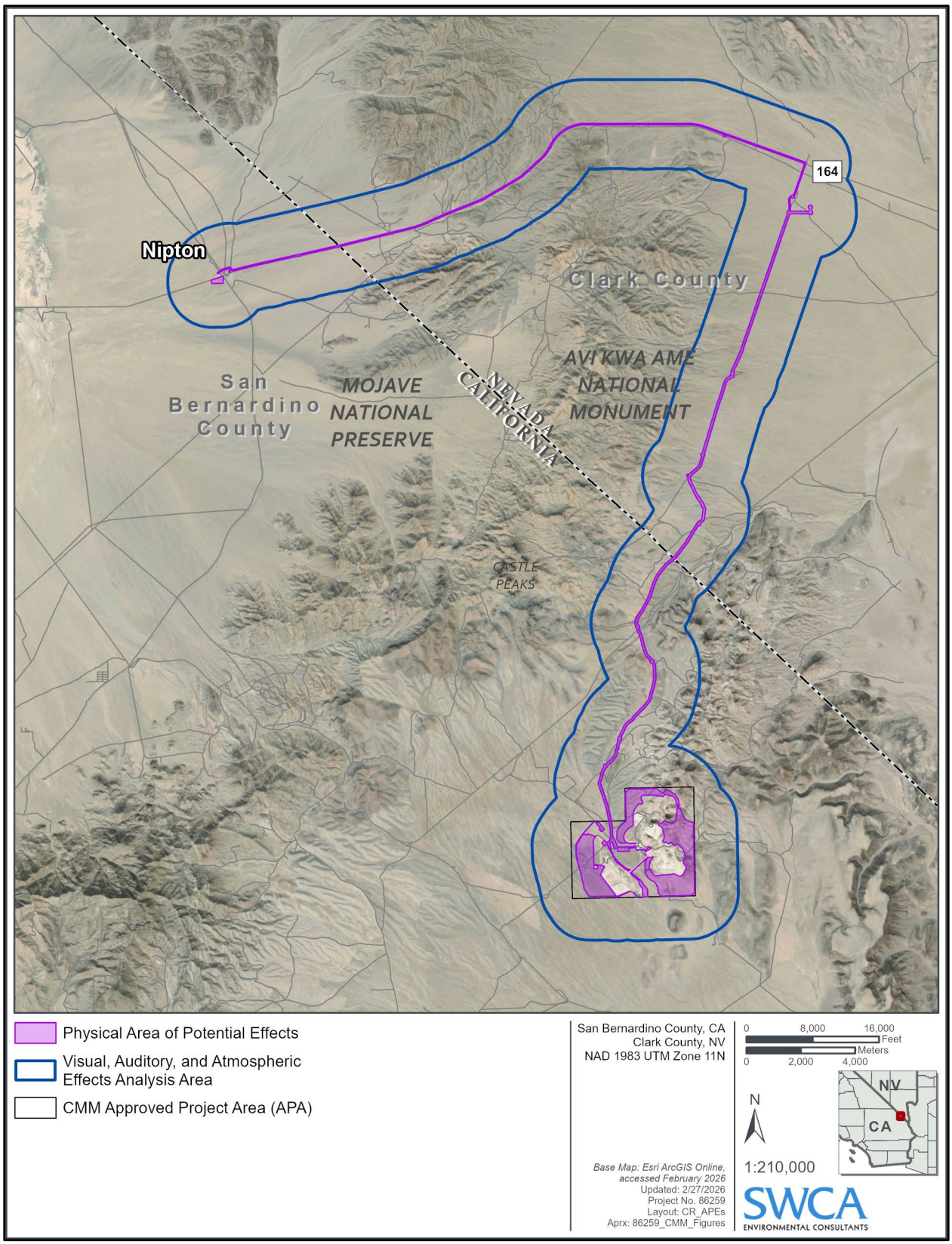


Figure C.3.7-1. Section 106 Undertaking APE and Cumulative Effects Area

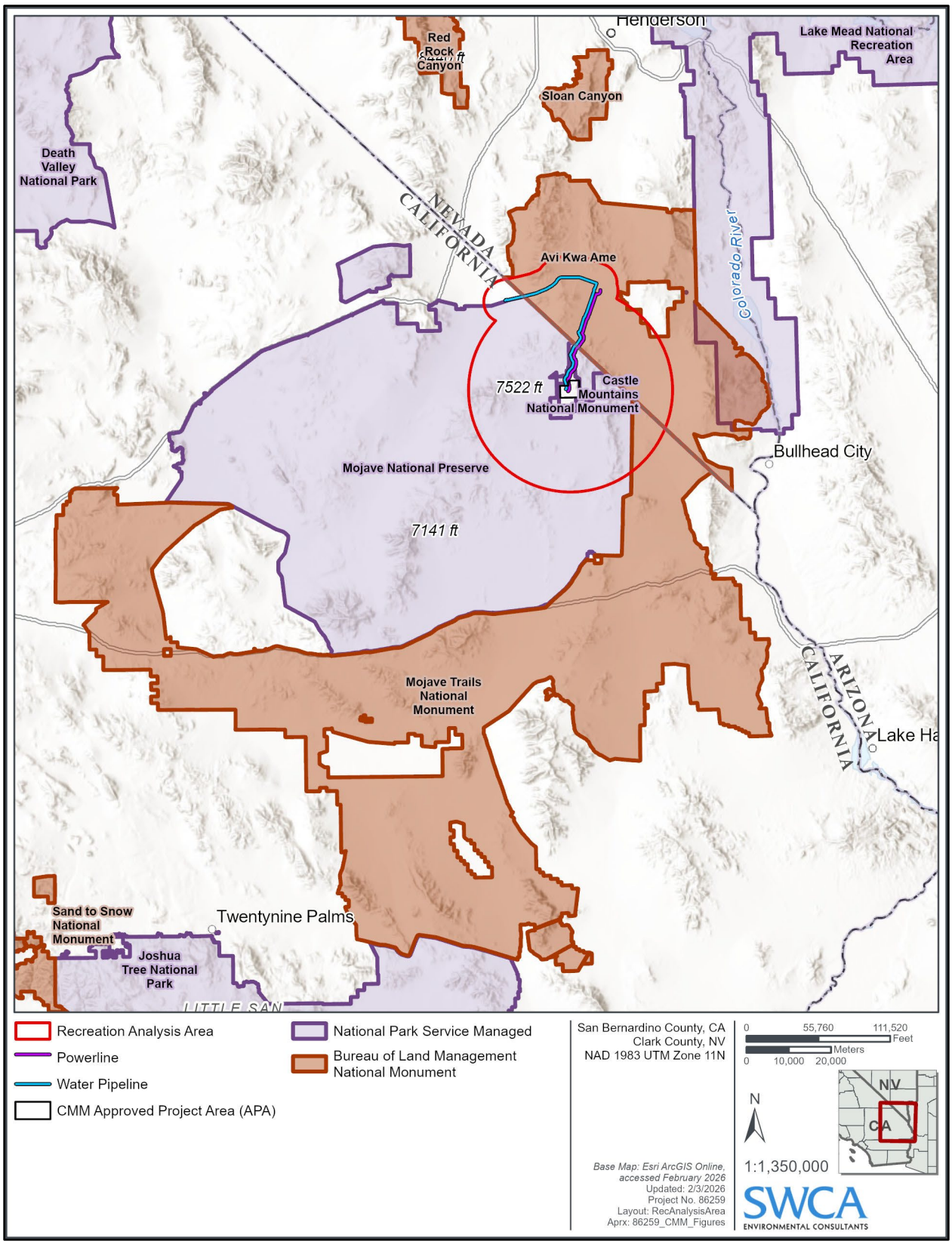


Figure C.3.11-1. Recreation and Special Designations Analysis Area Map

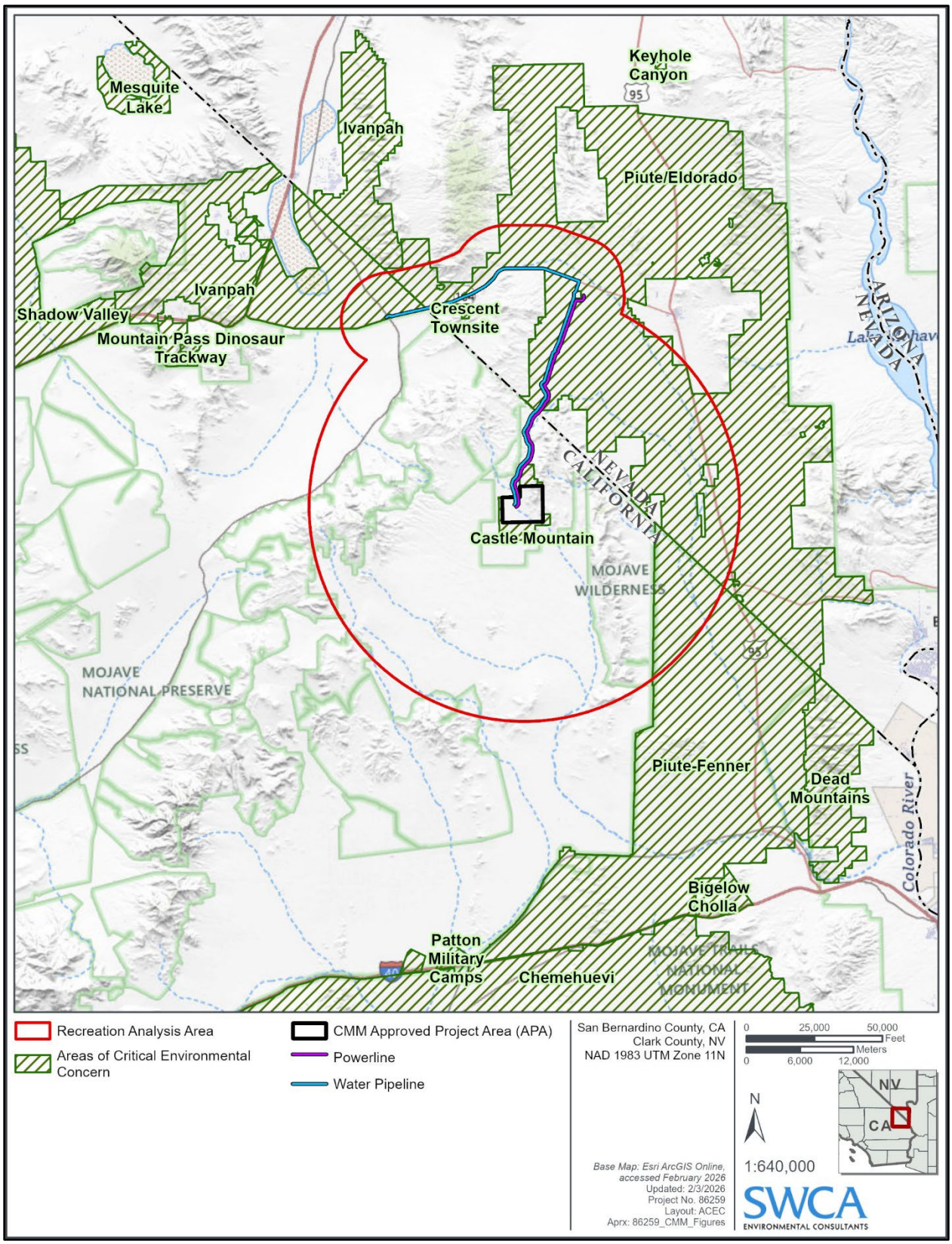


Figure C.3.11-2. Areas of Critical Environmental Concern in the Recreation and Special Designations Analysis Area

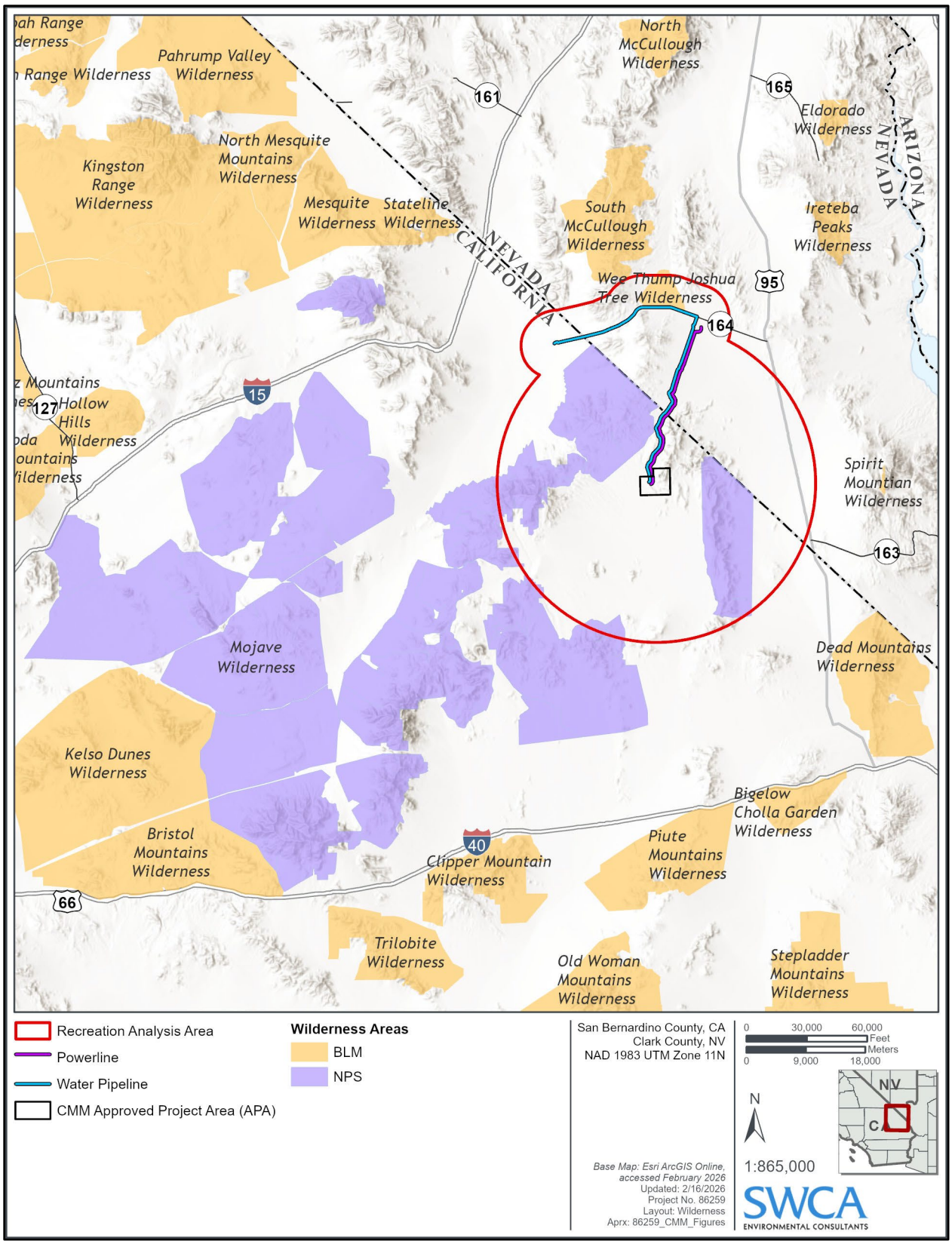


Figure C.3.11-3. Wilderness Areas in the Recreation and Special Designations Analysis Area

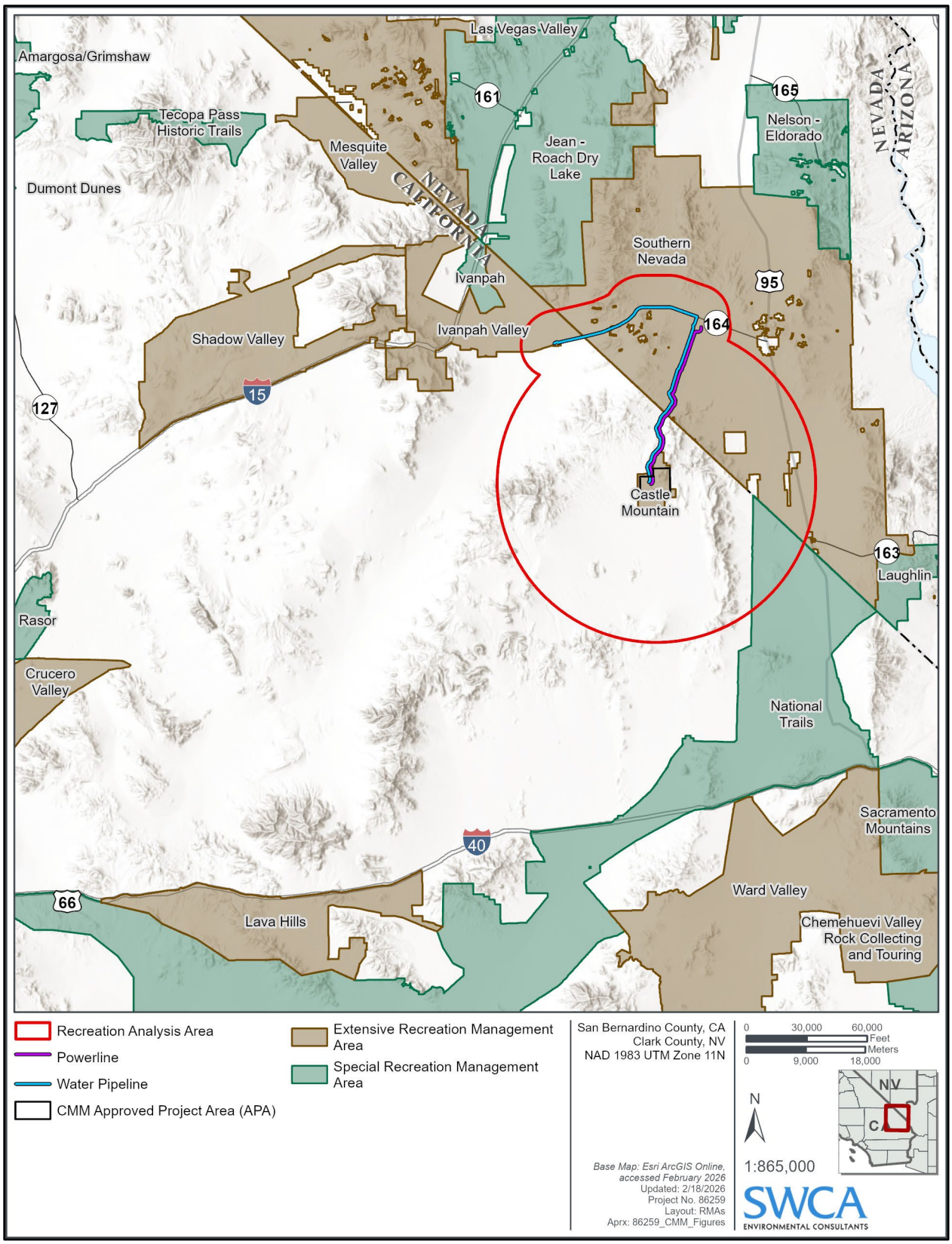


Figure C.3.11-4. Recreation Management Areas in the Recreation and Special Designations Analysis Area

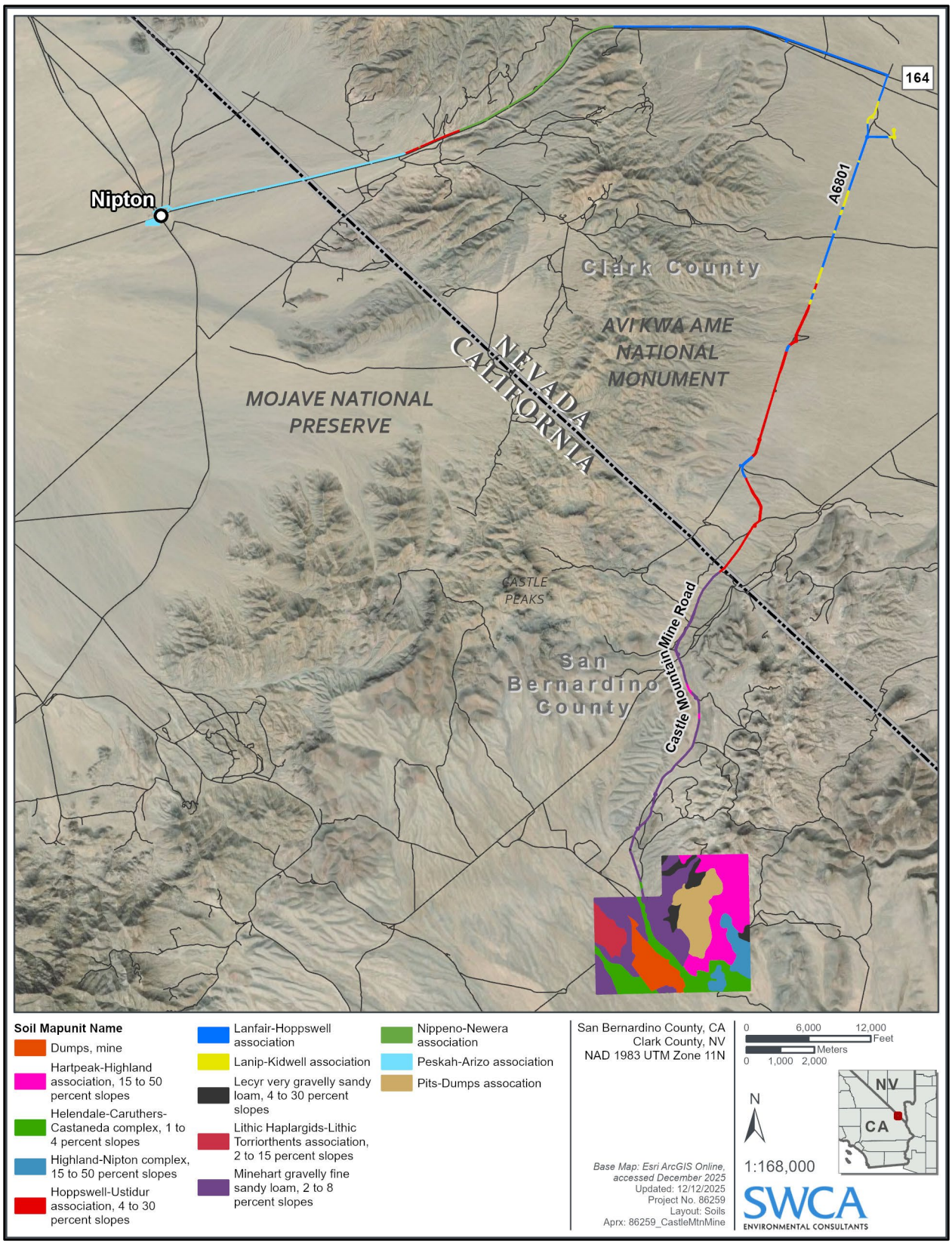


Figure C.3.13-1. Soil Map Units in the Soils Analysis Area

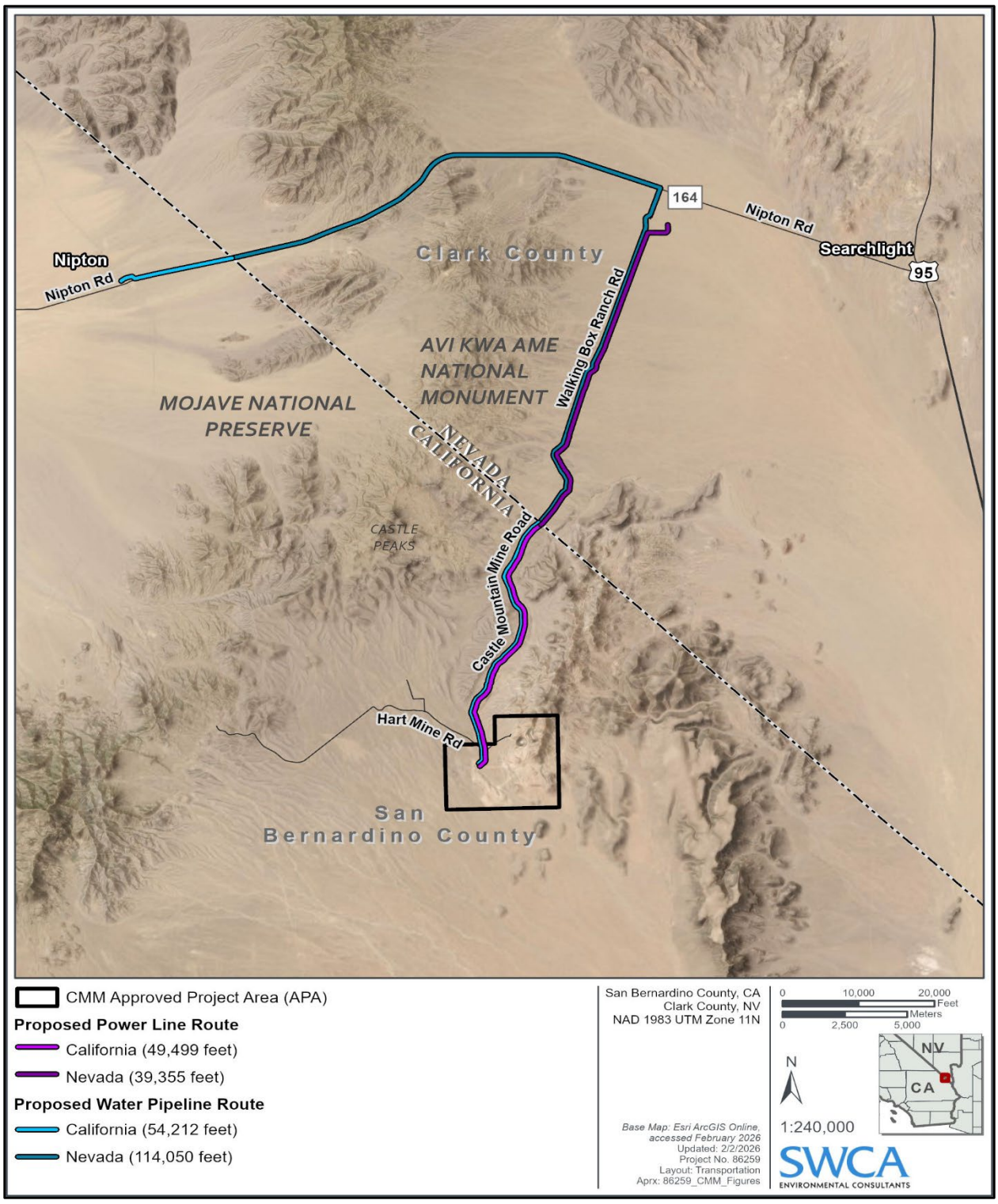


Figure C.3.14-1 Transportation Routes in the Transportation Analysis Area

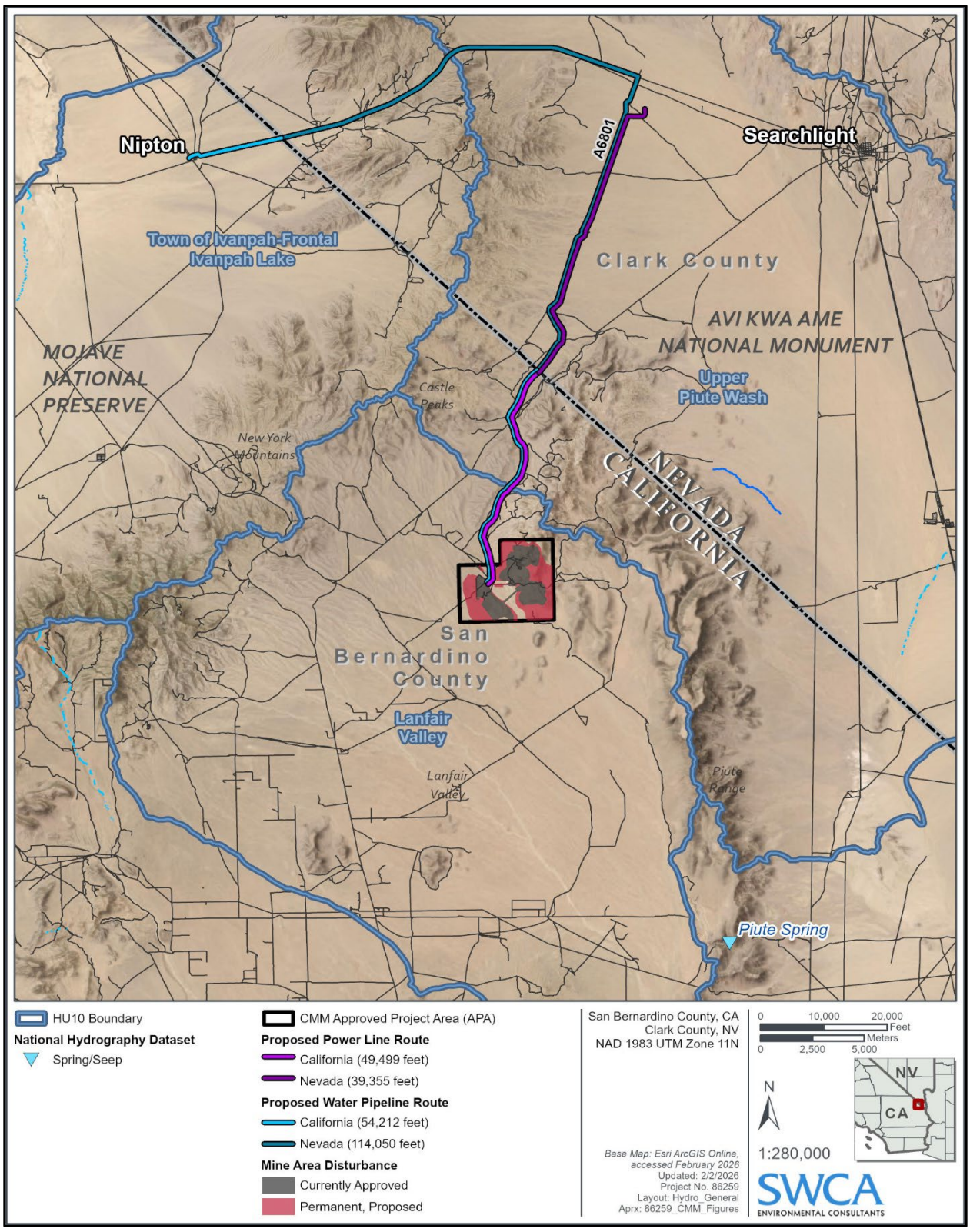


Figure C.3.17-1. General Water Resources in the Water Resources Analysis Area

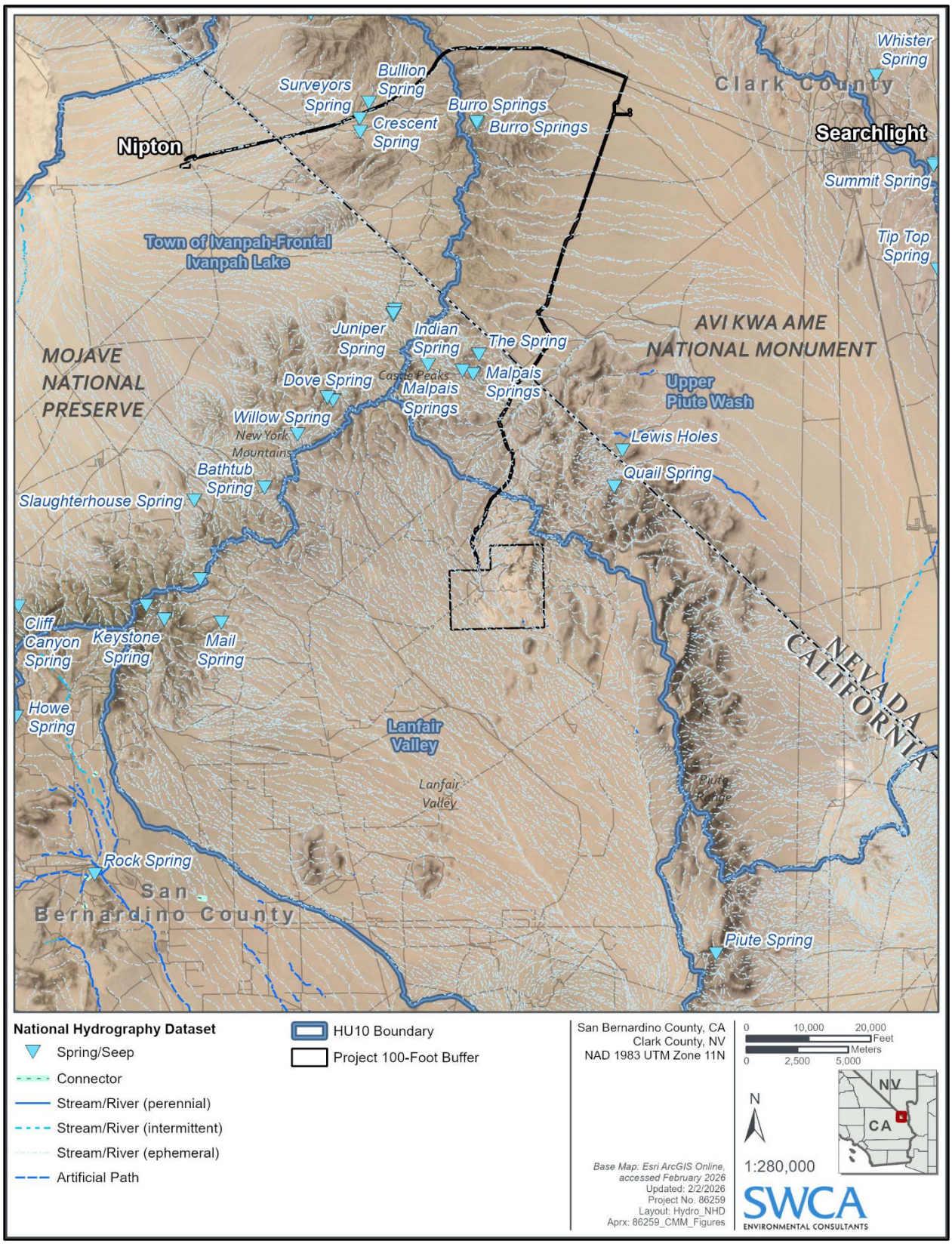


Figure C.3.17-2: Surface Water Features in the Water Resources Analysis Area

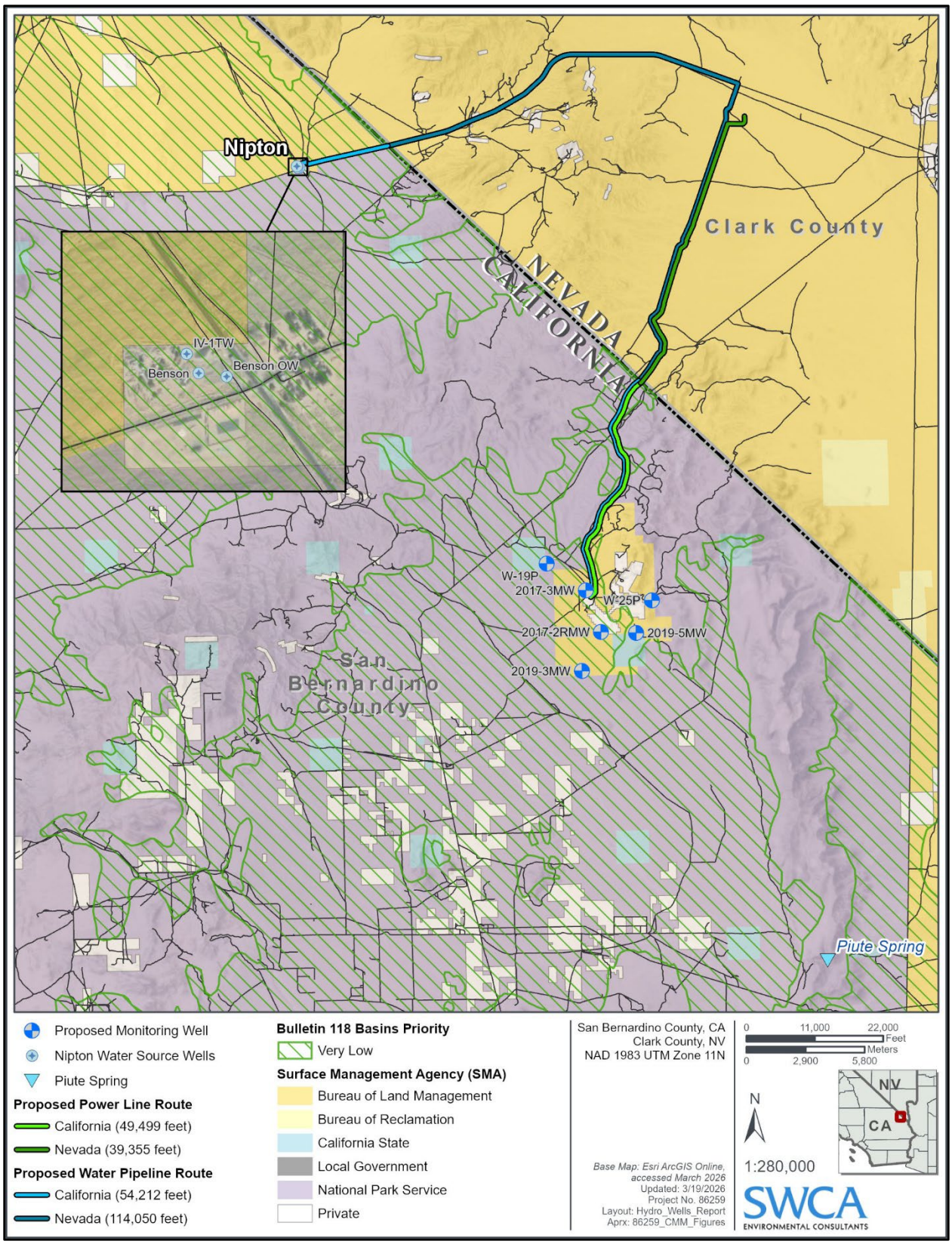


Figure C.3.17-3. Monitoring Wells and Proposed Dewatering Wells in the Water Resources Analysis Area

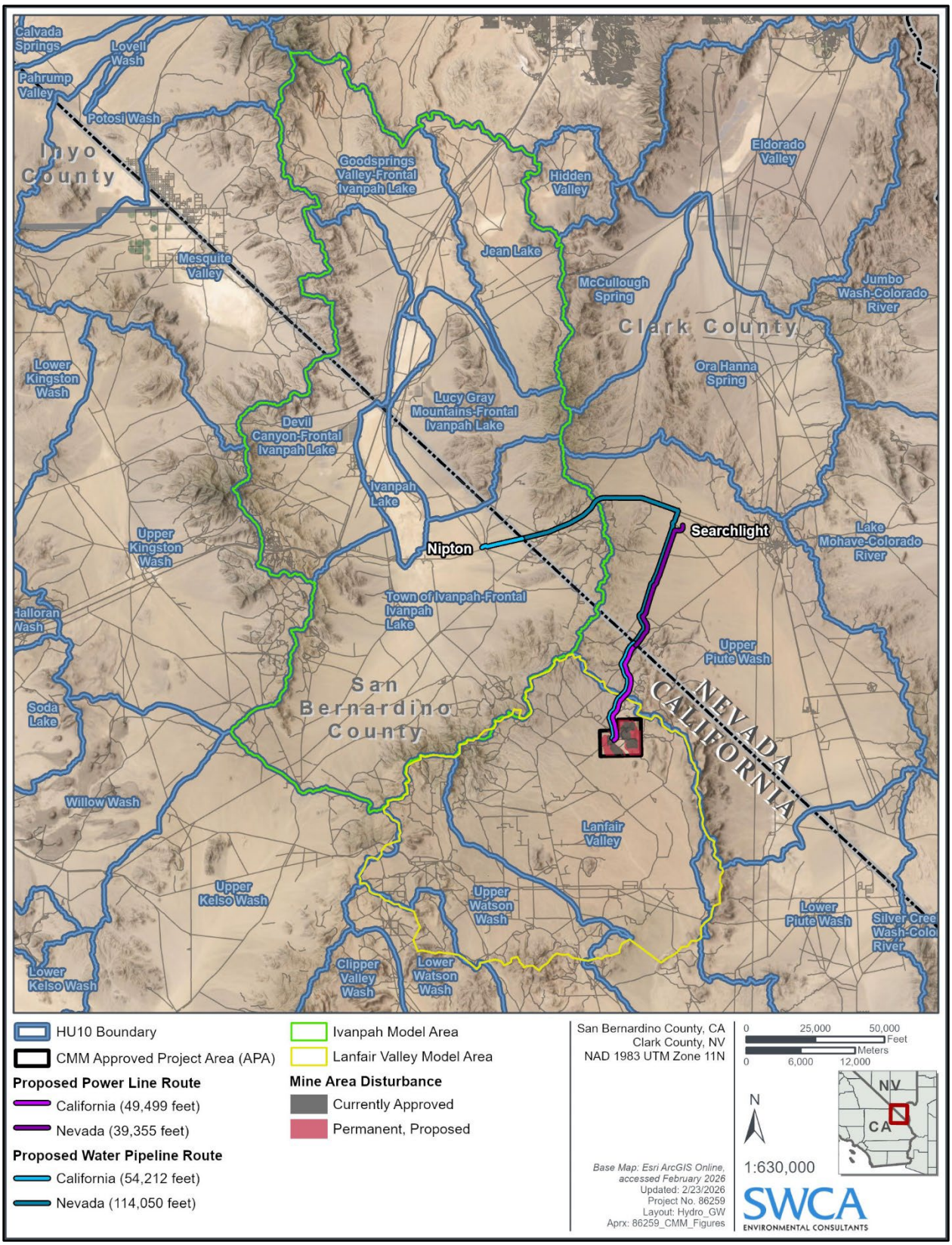


Figure C.3.17-4: Groundwater Modeling Areas in the Water Resources Analysis Area

APPENDIX D

Consultation, Coordination, and Public Involvement

1 INTRODUCTION

The purpose of consultation, coordination, and public involvement is not only to meet regulatory requirements but to encourage interaction between the Bureau of Land Management (BLM) and the County of San Bernardino (County) with other federal, state, and local agencies; Native American Tribes; and the public. The BLM and the County's roles are to inform the public about the Project and solicit input to assist in analysis and decision-making. The BLM and the County have made formal and informal efforts to involve, consult with, and coordinate with these entities to ensure that the most appropriate data have been gathered and analyzed and that agency policy and public sentiment and values are considered and incorporated. The BLM and the County began conducting consultation, coordination, and public participation in preparation for drafting this environmental impact statement (EIS)/environmental impact report (EIR) prior to the start of the official National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) processes (i.e., publishing of the Notice of Intent [NOI] and Notice of Preparation [NOP]) and will continue throughout the EIR process.

2 CONSULTATION AND COORDINATION

Agencies and organizations that have jurisdiction and/or special expertise in the Project Area were contacted prior to scoping, during scoping, during resource inventory, and before the publication of the EIS and EIR. This appendix describes the consultation and coordination activities with agencies, Tribes, stakeholders, and the public that occurred throughout the NEPA and CEQA processes, including the scoping process and public review of the EIS/EIR.

2.1 Cooperating Agencies

The BLM—through the California State Office—and the County are the Lead Agencies responsible for preparing this EIS/EIR in accordance with the Department of the Interior (DOI) NEPA Implementing Regulations (43 CFR Part 46), 516 Department Manual (DM) 1 (DOI 2026), and State CEQA Guidelines (14 California Code of Regulations Chapter 3, Section 15121). The BLM has the authority to permit construction on affected BLM-administered land through their decision-making process. Similarly, the County has the authority to permit construction on affected unincorporated County land through their decision-making process. The federal, state, and local Cooperating Agencies and their roles are described in Chapter 1 of the EIS/EIR and are listed in Table D-1.

Pursuant to the DOI's Handbook of National Environmental Policy Act Implementing Procedures (516 DM 1) (DOI 2026), Authorized Officers (AOs) for the lead agencies are expected to make reasonable efforts to identify and invite eligible state, local, and other agencies with jurisdiction by law or special expertise to participate in the environmental review process. The BLM and the County invited 36 federal, state, and county agencies and Native American Tribes to participate in the NEPA and CEQA process and coordination as Cooperating Agencies; 11 entities accepted NEPA cooperating or participating agency status, and five entities accepted FAST-41 cooperating or participating agency status. Table D-1 lists the agencies and Native American Tribes that the BLM invited and the invitation status as of the date of this report.

Table D-1. Agencies and Native American Tribes Invited for NEPA/CEQA Process Participation

Type/Entity	Status
Federal Agencies	
Advisory Council on Historic Preservation	FAST-41 participating agency
Bureau of Reclamation	Declined
U.S. Army Corps of Engineers (USACE)	Declined
USACE South Pacific Division (California)	No Response Received
U.S. Environmental Protection Agency (USEPA)	FAST-41 cooperating agency
USEPA (Region 9)	NEPA cooperating agency
U.S. Fish and Wildlife Service (USFWS)	NEPA cooperating agency; FAST-41 cooperating agency
USFWS Carlsbad Fish and Wildlife Office (formerly Palm Springs and Southern Nevada Fish and Wildlife)	NEPA cooperating agency
U.S. Forest Service San Bernardino National Forest	No Response Received
U.S. National Park Service	NEPA participating agency
State Agencies	
California Department of Conservation (CDOC)	NEPA participating agency
CDOC Division of Mining Reclamation	NEPA participating agency
California Department of Fish and Wildlife (CDFW)	NEPA participating agency
California Department of Parks	No Response Received
California Department of Water Resources	Declined
California Environmental Protection Agency	No Response Received
CDFW (Region 6 Inland Desert)	NEPA participating agency
California Regional Water Quality Control Board (Region 7)	No Response Received
California State Lands Commission	No Response Received
Nevada Department of Transportation	Declined
Nevada Department of Wildlife (NDOW) (Southern Region)	Declined
Nevada Division of Forestry	No Response Received
NDOW (Headquarters)	Declined
Nevada Division of Natural Heritage	No Response Received
Nevada State Historic Preservation Office	Declined
State of Nevada, Commission on Mineral Resources, Division of Minerals	Declined
Regional and Area Agencies	
Clark County Department of Environment and Sustainability	NEPA participating agency
Inland Empire Resources Conservation District	No Response Received
San Bernardino County	FAST-41 participating agency
Mojave Desert Air Quality Management District	No Response Received
Native American Tribes	
Barona Band of Diegueno Mission Indians	No Response Received
Big Pine Paiute Tribe of the Owens Valley	No Response Received
Campo Band of Diegueno Mission Indians	No Response Received

Type/Entity	Status
Chemehuevi Tribe	Accepted
Cocopah Indian Tribe	No Response Received
Colorado River Indian Tribes	No Response Received
Fort Independence Indian Community	No Response Received
Fort Mojave Tribe	No Response Received
Hualapai Tribe	Accepted
Las Vegas Paiute Tribe	No Response Received
Lone Pine Paiute-Shoshone Tribe	No Response Received
Moapa Band of Paiutes	No Response Received
Pahrump Paiute Tribe	No Response Received
Paiute Indian Tribe of Utah	No Response Received
Pueblo of Zuni	No Response Received

Note:
FAST-41 = Fixing America's Surface Transportation Act, Title 41.

2.2 Section 106 Consultation

In accordance with Section 106 (54 United States Code [USC] 306108) of the National Historic Preservation Act (NHPA), federal agencies are required to consider the effects of the agencies' undertakings on historic properties listed in—or eligible for listing in—the National Register of Historic Places, and provide the Advisory Council of Historic Preservation (ACHP) an opportunity to comment. Given this requirement, the BLM and the County prepared this EIS/EIR in coordination with studies and analyses required by the NHPA, as amended (54 USC 300101 et seq.). The regulations also specify that the BLM must conduct consultation with applicable State Historic Preservation Offices (SHPOs) and Tribal Historic Preservation Offices (THPOs), Indian Tribes, the applicant, and other interested parties during all phases of Section 106 compliance. Tribes identified for consultation are listed in Table C-2 below; the chairperson, cultural point of contact, and THPO (when available) from each Tribe were invited to participate in consultation. The BLM initiated Section 106 consultation by sending letters to Indian Tribes on April 18 and May 3, 2025 (see specifics on Tribal outreach in Sections 2.3 and 2.4 below) and to the California and Nevada SHPOs on June 12, 2025 ,(see Section 3.7, *Cultural Resources* in the EIS/EIR), and providing the ACHP an opportunity to comment on June 10 2025.

BLM received letters from 29 Palms Band of Mission Indians on May 7, 2025; from the Chemehuevi Indian Tribe on May 9, 2025 and a follow up on June 11th, 2025; ; from the Hualapai Tribe on May 12, 2025, from the CA SHPO on July 24, 2025; from the Ft Mojave Tribe on November 20, 2025; and 29 Palms Band of Mission Indians on January 25,2026.

At the time of public distribution and comment on the draft EIS/EIR, Section 106 consultation is ongoing and will be completed before finalization of the EIS/EIR. Future Section 106 consultation meetings will include consultation on resource eligibility, determination of effects to cultural resources, and mitigation measures for eligible resources, should such properties be determined.

2.3 Government-to-Government Consultation

2.3.1 Section 106 Consultation

As sovereign nations, Native American Tribes have legal rights and benefits with respect to their relationships with the U.S. government. This relationship is founded on the U.S. government's trust responsibilities to safeguard Tribal sovereignty and self-determination, as well as Tribal lands, assets, and resources reserved by treaty and other federally recognized rights. Pursuant to Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments, November 6, 2000), the BLM recognizes Tribal sovereignty, self-determination, and self-government in the development of agency policy, land use decisions, and other actions that may impact Tribal communities. The BLM participates in regular, meaningful consultation and collaboration with Tribal governments following established policy direction in BLM Manual 1780 – *Tribal Relations*, which is implemented through BLM Handbook H-1780-1 –*Improving and Sustaining BLM-Tribal Relations* (BLM 2016a, 2016b). Government-to-government consultation involves seeking, discussing, and considering Tribes' views on policies, undertakings, and decisions, such as the environmental review of this Project. Government-to-government consultation has generally involved formal letters, submission of material via U.S. Postal Service certified mail and email, with follow-up telephone contact, virtual and in person meetings, and site visits.-

The BLM initiated formal government-to-government consultation with the Native American Tribes listed in Table D-2 through certified letters sent on April 18th and May 3, 2025 along with a digital courtesy copy via email regarding the project to inform them of the Project; to inquire about their interest in continuing government-to-government consultation and participating in Section 106 consultation; and to ask that Tribes share Indigenous knowledge and relevant information about sacred sites, traditional cultural properties (TCPs), cultural landscapes, and/or natural resources that could be affected by the Project.

Table D-2. Native American Tribes Involved in Formal Government-to-Government Tribal Consultation

Tribe/Entity	Involved in Consultation	Tribe/Entity	Involved in Consultation
Barona Band of Diegueno Mission Indians	No	Lone Pine Paiute-Shoshone Tribe	No
Big Pine Paiute Tribe of the Owens Valley	No	Las Vegas Paiute Tribe	Yes
Campo Band of Diegueno Mission Indians	No	Moapa Band of Paiutes	Yes
Chemehuevi Indian Tribe	Yes	Paiute Indian Tribe of Utah	No
Cocopah Indian Tribe	No	Pahrump Paiute Tribe	No
Colorado River Indian Tribes	No	Pueblo of Zuni	No
Fort Independence Indian Community	No	San Juan Southern Paiute Tribe	No
Fort Mojave Indian Tribe	Yes	San Pasqual Band of Diegueno Mission Indians	No
Havasupai Tribe	No	Timbisha Shoshone Tribe	No
Hualapai Tribe	Yes	Twenty-Nine Palms Band of Mission Indians	Yes
Hopi Tribe	No	Yavapai-Apache Indian Nation	No
Jamul Indian Village	No	Yavapai-Prescott Indian Tribe	No
Kaibab Band of Paiute Indians	No	Utu Utu Gwaitu Paiute Tribe	No

As of December 8, 2025, the Chemehuevi Indian Tribe and Hualapai Tribe have accepted formal government-to-government consultation with the BLM. BLM invited Tribal Representatives to site visitx

on November 4th, 2025 and January 14, 2026. Representatives from the Chemehuevi Indian Tribe, Twenty-Nine Palms Band of Mission Indians, Fort Mojave Indian Tribe, and the Las Vegas Paiute Tribe attended the January 14th visit to learn more about the project and discuss potential impacts to resources important to their Tribe in the project area.

At the time of public distribution and comment on the draft EIS, government-to-government consultation is ongoing and will continue through the life of the project.. . The BLM and the County will continue to consult and coordinate with the Tribes listed in Table D-2 and with any additional Native American Tribes who request government-to-government consultation for Project.

2.3.2 Assembly Bill 52

An initial letter requesting consultation under Section 106 of the NHPA and Assembly Bill 52 (AB 52) was sent by the BLM on behalf of the County on April 18, 2025. The letters informed Tribes of the Project; inquired about their interest in engaging in government-to-government consultation with the County under AB 52; and ask if the Tribes would like to share indigenous knowledge and relevant information about sacred sites, TCPs, cultural landscapes, and/or natural resources that could be affected by the Project. The initiation letters were sent via certified U.S. mail to the following 22 Native American Tribes: Big Pine Paiute Tribe of the Owens Valley, Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes, Fort Independence Indian Community, Fort Mojave Indian Tribe, Fort Yuma Quechan Tribe, Havasupai Tribe, Hopi Tribe, Hualapai Indian Tribe, Jamul Indian Village, Kaibab Band of Paiute Indians, Las Vegas Paiute Tribe, Las Vegas Tribe of Paiute Indians, Lone Pine Paiute-Shoshone Tribe, Moapa Band of Paiute Indians, Pahrump Paiute Tribe, Timbi-Sha Shoshone Tribe, Twenty-Nine Palms Band of Mission Indians, Utu Utu Gwaitu Paiute Tribe, Yavapai-Apache Indian Nation, and Yavapai-Prescott Indian Tribe.

An additional eight Native American Tribes (Barona Band of Diegueno Mission Indians, Campo Band of Diegueno Mission Indians, Fort Independence Indian Community, Moapa Band of Paiutes, Paiute Indian Tribe of Utah, Pueblo of Zuni, San Juan Southern Paiute Tribe, and San Pasqual Band of Diegueno Mission Indians) were sent letters requesting consultation under Section 106 and AB 52 via certified U.S. mail on May 3, 2025.

The Chemehuevi Indian Tribe, Hualapai Indian Tribe, and Twenty-Nine Palms Band of Mission Indians responded to the letter and requested consultation for the project. Tribal representative conducted a site visit on January 14, 2026. Representatives from the Chemehuevi Indian Tribe, Twenty-Nine Palms Band of Mission Indians, Fort Mojave Indian Tribe, and the Las Vegas Paiute Tribe attended to learn more about the project and discuss potential impacts to resources important to their Tribe in the project area. Tribal consultation for the project under AB 52 is ongoing and has not yet been completed for the project.

2.4 Other Tribal Coordination

On April 18, 2025, BLM sent an initial letter requesting consultation under Section 106 of the National Historic Preservation Act and the Native American Graves and Protection and Repatriation Act (NAGPRA) was sent via certified U.S. mail to the following 22 Native American Tribes on April 18, 2025: Big Pine Paiute Tribe of the Owens Valley, Chemehuevi Indian Tribe, Cocopah Indian Tribe, Colorado River Indian Tribes, Fort Independence Indian Community, Fort Mojave Indian Tribe, Fort Yuma Quechan Tribe, Havasupai Tribe, Hopi Tribe, Hualapai Indian Tribe, Jamul Indian Village, Kaibab Band of Paiute Indians, Las Vegas Paiute Tribe, Las Vegas Tribe of Paiute Indians, Lone Pine Paiute-Shoshone Tribe, Moapa Band of Paiute Indians, Pahrump Paiute Tribe, Timbi-sha Shoshone Tribe,

Twenty-Nine Palms Band of Mission Indians, Utu Utu Gwaitu Paiute Tribe, Yavapai-Apache Indian Nation, and Yavapai-Prescott Indian Tribe.

An additional eight Native American Tribes (Barona Band of Diegueno Mission Indians, Campo Band of Diegueno Mission Indians, Fort Independence Indian Community, Moapa Band of Paiutes, Paiute Indian Tribe of Utah, Pueblo of Zuni, San Juan Southern Paiute Tribe, and San Pasqual Band of Diegueno Mission Indians) were sent letters requesting consultation under Section 106 and NAGPRA via certified U.S. mail on May 3, 2025.

The Chemehuevi Indian Tribe, Hualapai Indian Tribe, and Twenty-Nine Palms Band of Mission Indians responded to the initial letter and requested consultation for the project. BLM invited Tribal Representatives to a site visit on January 14, 2026. Representatives from the Chemehuevi Indian Tribe, Twenty-Nine Palms Band of Mission Indians, Fort Mojave Indian Tribe, and the Las Vegas Paiute Tribe attended to learn more about the project and discuss potential impacts to resources important to their Tribe in the project area.

At the time of public distribution and comment on the draft EIS, additional Tribal coordination is ongoing and will be completed before finalization of the EIS. Future coordination efforts will include additional site visits to the Project Area or cultural resources documented within. The BLM will also conduct additional meetings with individual Tribal representatives, or councils, if and when requested.

2.5 Endangered Species Act Section 7 Consultation

The BLM's obligations under Section 7 of the Endangered Species Act (ESA) include using agency authorities in furtherance of the purposes of the act by carrying out programs for the conservation of endangered species and threatened species. Relevant actions may include providing up-front exclusion areas and design features to protect and assist in recovery of threatened and endangered species and early coordination with the USFWS to allow development of appropriate conservation efforts. BLM has coordinated and communicated with the USFWS throughout the NEPA process for the Project, including Cooperating Agency meetings and document reviews, working group meetings, and other coordination meetings prior to formally initiating consultation. As part of ongoing communication between federal agencies, the USFWS was invited to review internal documents that preceded publication of the draft EIS/EIR. Information received from the USFWS has been incorporated into the draft EIS/EIR. Additionally, SWCA—on behalf of the BLM—is preparing a Biological Assessment to evaluate the potential impacts of the Project on species listed as threatened or endangered under the ESA and on designated critical habitats within the Project Area. The BLM will submit the Biological Assessment to the USFWS to initiate formal Section 7 consultation. The BLM would not sign the ROD until the USFWS issues a Biological Opinion and the formal Section 7 consultation is complete.

2.6 USC 139 Coordination Plan

Title 23 USC Section 139 requires the BLM to develop a Coordination Plan for all projects for which an EIS is prepared under NEPA. The Coordination Plan outlines how the lead agencies allocate the responsibilities for compliance with the various components of Section 139 environmental review process. Additionally, the plan details the mechanisms by which lead agencies will facilitate opportunities for input from the public and other agencies, in accordance with all relevant laws and regulations. Consistent with 23 USC 139(g)(1)(B), the plan is required to include a project schedule for completing the Section 139 environmental review process and identify key coordination points.

3 PUBLIC INVOLVEMENT

Mandatory and discretionary scoping and public involvement for the BLM are being conducted in accordance with the Department of the Interior's Handbook of National Environmental Policy Act Implementing Procedures (516 DM 1) (DOI 2026), while the County is following the public involvement requirements set forth in Section 21083.9 of the California Public Resources Code and Section 15089 of the State CEQA Guidelines.

The County published an NOP for the joint EIS/EIR for the Project on October 17, 2025 [*Castle Mountain Mine Phase II Expansion Project Environmental Impact Statement and Environmental Impact Report – Final Scoping Report* [Scoping Report] [BLM 2025:Appendix A]). Pursuant to NEPA, the BLM separately published a NOI to prepare an EIS/EIR in the *Federal Register* on October 20, 2025 (BLM 2025:Appendix B). Publication of the NOP and NOI initiated a 30-day public scoping comment period to solicit public scoping comments on the scope of the analysis, including issues and alternatives. The entities listed in Table D-3 received printed or electronic copies of the NOI and NOP prepared for this EIS/EIR. Additional details of the scoping process, scooping objectives, scoping comment analysis, and scoping comment summaries are further outlined in the Scoping Report (BLM 2025).

The BLM and the County will provide the Draft EIS/EIR for a 30-day public comment period from April 17 to May 16, 2026, and will respond to all substantive comments. Following commencement of the public comment period, the BLM and the County will publish the Final EIS/EIR and issue the final ROD (NEPA) and Notice of Determination (CEQA).

Table D-3. Notice of Intent and Notice of Preparation Distribution List

Agency/Entity	Address
Federal Agencies	
Mike Gauthier, National Park Service (NPS) Lake Mead National Recreation Area (NRA), Interior Region 8	601 Nevada Highway Boulder City, Nevada 89005
Wyatt Medley, NPS Lake Mead NRA, Interior Region 8	601 Nevada Highway Boulder City, Nevada 89005
Lena Lee, NPS	333 Bush Street, Suite 500 San Francisco, California 94104
Lara Rozzell, NPS	333 Bush Street, Suite 500 San Francisco, California 94104
Brian Croft, U.S. Fish and Wildlife Service (USFWS), Palm Springs and Southern Nevada Fish and Wildlife Office	777 East Tahquitz Canyon Way, Suite 208 Palm Springs, California 92262
Peter Sanzenbacher, USFWS, Palm Springs and Southern Nevada Fish and Wildlife Office	777 East Tahquitz Canyon Way, Suite 208 Palm Springs, California 92262
Richard Tung, USFWS, Palm Springs and Southern Nevada Fish and Wildlife Office	602 South Tippecanoe Avenue San Bernardino, California 92408
Ray McPadden, NPS, Mojave National Park	90942 Kelso Cima Road Kelso, California 92309
Peter Sanzenbacher, USFWS	777 East Tahquitz Canyon Way, Suite 208 Palm Springs, California 92262
Frankie Green, USFWS	777 East Tahquitz Canyon Way, Suite 208 Palm Springs, California 92262
Juita Martinez, USFWS	777 East Tahquitz Canyon Way, Suite 208 Palm Springs, California 92262

Agency/Entity	Address
Megan Borthwick, Advisory Council on Historic Preservation	401 F Street NW, Suite 308 Washington, D.C. 20001
Rose Pettiette, BLM Needles Field Office (NFO)	1303 South Highway 95 Needles, California 92363
Carrie Woods, BLM NFO	1303 South Highway 95 Needles, California 92363
Ron Nuckles, BLM NFO	1303 South Highway 95 Needles, California 92363
Arleen Garcia-Herbst, BLM NFO	1303 South Highway 95 Needles, California 92363
Sabrina Bice, BLM NFO	1303 South Highway 95 Needles, California 92363
Matthew McDonald, BLM NFO	1303 South Highway 95 Needles, California 92363
Justin Saiz, BLM NFO	1303 South Highway 95 Needles, California 92363
Ramona Daniels, BLM NFO	1303 South Highway 95 Needles, California 92363
John Russell Hansen, BLM NFO	1303 South Highway 95 Needles, California 92363
Mark Masser, BLM NFO	1303 South Highway 95 Needles, California 92363
Brandon Anderson, BLM NFO	1303 South Highway 95 Needles, California 92363
Michelle Van Der Linden, BLM NFO	1303 South Highway 95 Needles, California 92363
Collen Cepero Rios, BLM NFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Elizabeth Moody, BLM Las Vegas Field Office (LVFO)	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Eamon Brennan, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Joe Varner, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Bruce Sillitoe, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Jimmy Linares, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Peter (Evan) Meyers, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Lillian Setters, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Tiffany Arend, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Steve Leslie, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Meredith Shankwitz, BLM LVFO	4701 North Torrey Pines Drive Las Vegas, Nevada 89130
Jean Prijatel, U.S. Environmental Protection Agency (USEPA) Region 9	75 Hawthorne Street San Francisco, California 94105

Agency/Entity	Address
Sarah Samples, USEPA Region 9	75 Hawthorne Street San Francisco, California 94105
Robin Truitt, USEPA Region 9	75 Hawthorne Street San Francisco, California 94105
Ann Magliaro, USEPA Region 9	75 Hawthorne Street San Francisco, California 94105
Deanna Cummings, U.S. Army Corps of Engineers (USACE)	450 Golden Gate Avenue, 4th Floor San Francisco, California 94102
Aaron Allen, USACE	450 Golden Gate Avenue, 4th Floor San Francisco, California 94102
Shonna Dooman, Bureau of Reclamation (Reclamation)	P.O. Box 61470 Boulder City, Nevada 89006
Mike Boyles, Reclamation	P.O. Box 61470 Boulder City, Nevada 89006
Shane Hunt, Reclamation	P.O. Box 61470 Boulder City, Nevada 89006
Lindsay Gilham, National Park Service (NPS) Pacific West Region	333 Bush Street, Suite 500 San Francisco, California 94104
Matthew Caire, NPS Pacific West Region	333 Bush Street, Suite 500 San Francisco, California 94104
Neal Darby, NPS Pacific West Region	333 Bush Street, Suite 500 San Francisco, California 94104
Julia Brunner, NPS Pacific West Region	333 Bush Street, Suite 500 San Francisco, California 94104
Richard Thornburgh, NPS Pacific West Region	333 Bush Street, Suite 500 San Francisco, California 94104
State Agencies	
Paul Fry, Division of Mining Reclamation, California Department of Conservation (CDC)	430 G Street, #4164 Davis, California 95616
Gezahegn Hora, Division of Mining Reclamation, CDC	715 P Street, MS 1805 Sacramento, California 95814
Heidi Calvert, California Department of Fish and Wildlife	3602 Inland Empire Boulevard, Suite C-220 Ontario, California 91764
California State Lands Commission	100 Howe Avenue, Suite 100 South Sacramento, California 95825
California Department of Parks	1925 Las Virgenes Road Calabasas, California 91302
California Department of Food and Agriculture	1220 N Street Sacramento, California 95814
Art Krupicz, Southern Resource Management Officer, Nevada State Historic Preservation Office	901 South Stewart Street, Suite 3002 Carson City, Nevada 89701
Chandler Parker, Nevada Division of Forestry	4747 Vegas Drive Las Vegas, Nevada 89108
Shane Littlefield, California Department of Forestry and Fire Protection	3800 Sierra Way San Bernardino, California 92405
Jamey McClinton, Nevada Division of Natural Heritage	901 South Stewart Street, Suite 5002 Carson City, Nevada 89701
Chris Young, Nevada Department of Transportation	1263 South Stewart Street Carson City, Nevada 89712

Agency/Entity	Address
California Department of Water Resources	715 P Street Sacramento, California 95814
California Air Resources Board	P.O. Box 2815 Sacramento, California 95812
Colorado River Basin Regional Water Quality Control Board	73-720 Fred Waring Drive, Suite 100 Palm Desert, California 92260
Nevada Division of Minerals	375 East Warm Springs Road, Suite 205 Las Vegas, Nevada 89119
Nevada Department of Wildlife (NDOW) Headquarters	6980 Sierra Center Parkway, #190 Reno, Nevada 89511
Tracy Kipke, NDOW, Southern Region	3373 Pepper Lane Las Vegas, Nevada 89120
Regional/County/Local Agencies	
Marci Henson, Clark County Department of Environment and Sustainability	4701 West Russell Road, Suite 200 Las Vegas, Nevada 89118
Claire Cozad, Chief of Staff, San Bernardino County Third District Supervisor	63665 Twentynine Palms Highway Joshua Tree, California 92252
Dakota Higgins, Chief of Staff, San Bernardino County First District Supervisor	14955 Dale Evans Parkway Apple Valley, California 92307
Dan Walsh, Mining Program Manager, San Bernardino County	385 North Arrowhead Avenue, First Floor San Bernardino, California 92415-0187
Aron Liang, Planning Manager, San Bernardino County	385 North Arrowhead Avenue, First Floor San Bernardino, California 92415-0187
Reuben Arceo, Planner, San Bernardino County	385 North Arrowhead Avenue, First Floor San Bernardino, California 92415-0187
Jason Searles, Supervision Deputy County Counsel, San Bernardino County	385 North Arrowhead Avenue, First Floor San Bernardino, California 92415-0187
Alan De Salvio, Deputy Air Pollution Control Officer, Mojave Desert Air Quality Management District (MDAQMD)	14306 Park Avenue Victorville, California 92392
Sheri Haggard, Permitting Supervisor, MDAQMD	14306 Park Avenue Victorville, California 92392
Daniel Concho, Air Quality Engineer, MDAQMD	14306 Park Avenue Victorville, California 92392
Jose Cortez, Land Disposal Program Manager, Colorado River Basin Regional Water Quality Control Board (RWQCB)	73-720 Fred Waring Drive, Suite 100 Palm Desert, California 92260
Bryanna Allen, Engineering Geologist, Colorado River Basin RWQCB	73-720 Fred Waring Drive, Suite 100 Palm Desert, California 92260
Mandy Parkes, Inland Empire Resources Conservation District	P.O. Box 232586 Redlands, California 92374-4515
Elected Officials	
U.S. Senator, Alex Padilla	255 East Temple Street, Suite 1860 Los Angeles, California 90012
U.S. Representative, Raul Ruiz (CA-R-25)	77933 Las Montanas Road, Suite 100 Palm Desert, California 92211
U.S. Representative, Jay Obernolte (CA-R-23)	9700 Seventh Avenue, Suite 201 Hesperia, California 92345

Agency/Entity	Address
Assembly Member, Jeff Gonzalez	P.O. Box 942849 1021 O Street, Suite 4230 Sacramento, California 94249
California Senator, Steve C. Padilla	1021 O Street, Suite 7630 Sacramento, California 95814
U.S. Senator, Adam Schiff	112 Hart Senate Office Building Washington, D.C. 20510
Tribal Governments	
Barona Band of Diegueno Mission Indians	1095 Barona Road Lakeside, California 92040
Big Pine Paiute Tribe of the Owens Valley	P.O. Box 700 825 South Main Street Big Pine, California 93513
Campo Band of Diegueno Mission Indians	36190 Church Road, Suite 1 Campo, California 91906
Chemehuevi Indian Tribe	P.O. Box 1976 1991 Palo Verde Drive Havasu Lake, California 92363
Cocopah Indian Tribe	14515 South Veterans Drive Somerton, Arizona 85350
Colorado River Indian Tribes	26600 Mohave Road Parker, Arizona 85344
Fort Independence Indian Community	P.O. Box 67 131 North Highway 395 Independence, California 93526
Fort Mojave Indian Tribe	500 Merriman Avenue Needles, California 92363
Fort Yuma Quechan Tribe	350 Picacho Road Winterhaven, California 92283
Havasupai Tribe	P.O. Box 10 Supai, Arizona 86435
Hopi Tribe	P.O. Box 123 Kykotsmovi, Arizona 86039
Hualapai Indian Tribe	P.O. Box 179 Peach Springs, Arizona 86434
Jamul Indian Village	P.O. Box 612 Jamul, California 91935
Kaibab Band of Paiute Indians	HC 65, Box 2 Fredonia, Arizona 86022
Las Vegas Paiute Tribe	1 Paiute Drive Las Vegas, Nevada 89106
Lone Pine Paiute-Shoshone Tribe	P.O. Box 747 1103 South Main Street Lone Pine, California 93545
Moapa Band of Paiutes	P.O. Box 340 1 Lincoln Street Moapa, Nevada 89025
Pahrump Paiute Tribe	P.O. Box 3411 Pahrump, Nevada 89041

Agency/Entity	Address
Paiute Indian Tribe of Utah	440 North Paiute Drive Cedar City, Utah 84721
Pueblo of Zuni	P.O. Box 339 1203-B State Highway 53 Zuni, New Mexico 87327
San Juan Southern Paiute Tribe	P.O. Box 2950 Tuba City, Arizona 86045
San Pasqual Band of Diegueno Mission Indians	P.O. Box 365 Valley Center, California 92082
Timbisha Shoshone Tribe	P.O. Box 1779 Bishop, California 93514
Twenty-Nine Palms Band of Mission Indians	46-200 Harrison Place Coachella, California 92236
Utu Utu Gwaitu Paiute Tribe	25669 Highway 6 PMBI Benton, California 93512
Yavapai-Apache Indian Nation	2400 West Datsi Street Camp Verde, Arizona 86322
Yavapai-Prescott Indian Tribe	530 East Merritt Street Prescott, Arizona 86301
Big Pine Paiute Tribe of the Owens Valley	P.O. Box 700 Big Pine, California 93513
Other Groups, Businesses, and Entities	
California Native Plant Society (CNPS), Senior Director, Public Affairs, Liv O'Keefe Nick Jensen, Conservation Program Director	707 K Street, Suite 1 Sacramento, California 95816-5130
CNPS, Conservation Program Director, Nick Jensen	707 K Street, Suite 1 Sacramento, California 95816-5130
Center for Biological Diversity	2100 Franklin Street, Suite 375 Oakland, California 94612
Defenders of Wildlife – California, Senior California Representative, Jeff Aardahl	P.O. Box 401 Folsom, California 95763
Friends of Desert Mountains	P.O. Box 1281 Palm Desert, California 92261
Mojave Desert Land Trust	P.O. Box 1544 60124 Twentynine Palms Highway Joshua Tree, California 92252
Sierra Club, National Headquarters	2101 Webster Street, Suite 1300 Oakland, California 94612
The Wilderness Society	1801 Pennsylvania Avenue NW, Suite 200 Washington, D.C. 20006
The Nature Conservancy, California State Program	830 South Street Sacramento, California 95811
Red Rock Audubon Society	P.O. Box 96691 Las Vegas, Nevada 89193
Conservation Lands Foundation, California Field Office Program Director, Elyane Stefanick	835 East Second Avenue, #305 Durango, Colorado 81301
Great Basin Bird Observatory	1755 East Plumb Lane, Suite 256A Reno, Nevada 89502
Get Outdoors Nevada	21 North Pecos Road, Suite 106 Las Vegas, Nevada 89101

Agency/Entity	Address
Friends of Avi Kwa Ame	P.O. Box 1324 Searchlight, Nevada 89046
Nevada Conservation League	P.O. Box 61378 Las Vegas, Nevada 89160
Battle Born Progress	675 South Tenaya Way, Suite 200 Las Vegas, Nevada 89113

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Bureau of Land Management (BLM). 2008. *National Environmental Policy Act*. BLM Handbook H-1790-1. Washington, D.C.: U.S. Department of the Interior, Bureau of Land Management. Available at: https://www.blm.gov/sites/blm.gov/files/BLM%20NEPA%20Handbook%20h-1790-1.pdf. Accessed January 2026.

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APPENDIX E

Applicant-Committed Environmental Protection Measures

Table E-1. Applicant-Committed Environmental Protection Measures and Applicability to the Proposed Action

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
ADMIN AND REPORTING: Covered under SBC CUP (1997),* BLM ROD (1998),† RWQCB WDRs,‡ and pending MPO (Appendix J) and POD (Appendix K)			
ADM-1	Annually, the Applicant shall provide a report summarizing mining progress in accordance with the authorized Mine Plan of Operations and Reclamation Plan. The report shall summarize the key elements of the forecasted sequential mine development and include appropriate maps that display annual progression. The report shall identify any deviations from the approved plan that may be anticipated and identified specific reclamation activities for the upcoming year.	X	
ADM-2	This approval is conditioned upon the Applicant obtaining all necessary county, state, or federal permits and complying with all applicable local, state, and federal laws and regulations.	X	X
ADM-3	An environmental specialist or contracted consultant meeting BLM's qualifications shall be employed by the Applicant to monitor the effectiveness of wildlife mitigation measures and the revegetation program. Results shall be reported to the BLM, San Bernardino County, and Clark County monthly as concerns wildlife measures and annually concerning the revegetation program.	X	X
ADM-4	Personnel trained in security shall be on-site on a 24-hour basis to deter entry to potentially hazardous areas by unauthorized persons.	X	
ADM-5	Training programs shall be implemented to familiarize personnel with their specific jobs, including the handling of hazardous substances such as cyanide, and first aid procedures.	X	X
ADM-6	Fences and earthen berms to block vehicular access into open pit areas shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors.	X	
ADM-7	The Applicant shall comply with the provisions of the Mitigation Compliance Program, which has been adopted pursuant to California Public Resources Code (PRC) Section 21081.6(a).	X	
ADM-8	In accordance with the Mitigation Compliance Program, remedial action shall not be delayed by dispute resolution proceedings for an emergency out of compliance condition.	X	
ADM-9	The Applicant shall implement measures to stabilize and secure the site during periods of inactivity in accordance with the approved Mine Plan of Operations and Reclamation Plan. An Interim Management Plan, as required by PRC Section 2770(h), shall be submitted to San Bernardino County, Land Use Services Planning Department for review and approval within 90 days of the mining operations becoming idle.	X	
ADM-10	**Financial Assurance** CMV shall obtain and maintain adequate assurances of financial responsibility for closure and post-closure maintenance at CMM in accordance with California Code of Regulations (CCR), Title 27, Section 22510.	X	
ADM-11	**Financial Assurance** *Financial Assurances Approval.* Within 90 days of the adoption of these Waste Discharge Requirements (WDRs), the Applicant shall demonstrate to the Regional Water Quality Control Board (RWQCB) that it has established acceptable financial assurance mechanisms described in subchapter 3 ("Allowable Mechanisms") of CCR, Title 27, Division 2, Subdivision 1, Chapter 6 to meet—at a minimum—the cost estimate amount for closure and post-closure maintenance approved by the RWQCB's Executive Officer.	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
ADM-12	**Financial Assurance** *Yearly Financial Assurances Report.* CMV shall submit a report calculating the increase in the cost estimates for closure and post-closure maintenance due to the inflation factor (specified in 27 CCR Section 22236) by June 1 of each year for the previous calendar year.	X	
PUBLIC HEALTH AND SAFETY: Covered under SBC CUP (1997), BLM ROD (1998), and pending MPO (Appendix J) and POD (Appendix K)			
PHX-1	Fences and earthen berms to block vehicular access into open pit areas shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors. The Applicant shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted.	X	
PHX-2	Vehicular access to the pit rims shall be prevented by constructing berms at all locations along the pit perimeter that would otherwise be accessible to vehicles.	X	
PHX-3	Earthen berms shall be constructed where necessary—as determined by the BLM—to restrict access to mine pits from recreational areas such as the East Mojave Heritage Trail, the agate field, or viewpoints or historic markers.	X	
PHX-4	CMM shall comply with applicable Mine Safety and Health Administration (MSHA) standards to achieve a safe working environment. Rules and regulations of Division of Environmental Health Services (DEHS) shall be followed to ensure that no significant public health hazard would be created.	X	
PHX-5	A vehicle shall be on-site for emergency response in the event of an accident. The Applicant shall maintain first aid and fire suppression equipment on-site. Procedures for emergency response shall be developed for use in the event of an accident.	X	
PHX-6	Test results that show potable water source quality and quantity standards shall be submitted to San Bernardino County Department of Public Health, Environmental Health Services.	X	
PHX-7	Monitoring for hydrogen cyanide shall be conducted routinely at the processing facilities as a requirement of the employee Health and Safety Plan implemented according to MSHA regulations. In addition, the Applicant shall periodically perform airborne hydrogen cyanide surveys to verify that the potential public exposure to cyanide is inconsequential.	X	
PHX-8	Lime, sodium hydroxide, or other alkaline material shall be added to the cyanide solution to reduce the potential for emitting hydrogen cyanide.	X	
PHX-9	CMV shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted.	X	
PHX-10	Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed off-site by a County-licensed hauler.	X	
PHX-11	CMV will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work, including giving notices, erecting and maintaining all safeguards, and complying with all laws, ordinances, regulations, codes and lawful orders of any public agency. CMV will maintain a safety program in conjunction with the Contractor's safety procedures and construction activities	X	X

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
PHX-12	Signs will be posted to alert the public of construction activities, minimizing dangers to the public along the County and NDOT ROWs for the Water Line Project. All signs will meet BLM standards and approval, and/or County and NDOT standards, as necessary. Approved traffic control measures will be implemented, as necessary	X	X
FIRE PREVENTION AND CONTROL: Covered under SBC CUP (1997), BLM ROD (1998), and pending MPO (Appendix J) and POD (Appendix K)			
FIRE-1	All structures and facilities shall meet applicable seismic buildings safety standards.	X	X
FIRE-2	All new construction shall comply with applicable sections of the California Fire Code (CFC), County Development Code, and any other laws regarding fires and fire prevention adopted by the state or county.	X	X
FIRE-3	All flammable vegetation shall be removed a minimum distance of 30 feet from any building material, including any finished structure—with the exception of the nursery. Before removing any vegetation, the Applicant shall contact—and comply with any requirements of—the BLM Needles Field Office.	X	X
FIRE-4	Establish and maintain an industrial fire brigade approved by the County Fire Warden. Provide fire engine, equipment, and trained personnel as approved by the County Fire Warden.	X	X
FIRE-5	Each chimney used in conjunction with any fireplace or any heating appliance in which solid or liquid fuels are used shall be maintained with an approved spark arrester as identified in the Uniform Fire Code.	X	
FIRE-6	The Applicant shall submit the approved plot plans (brown-line or original) for a land use compliance review before obtaining building permits.	X	X
FIRE-7	The Applicant shall submit a detailed plant site plan showing: all building equipment, structures, and road improvements (public and private). The map shall also include parking, access, and handicap improvements, if applicable.	X	
FIRE-8	The Applicant shall provide plans showing that project facilities that are exposed to view (i.e., conveyor systems, processing facilities, etc.) shall be painted with colors that blend into the surrounding landscape. Project facilities on the patented mining claims shall not exceed 35 feet in height or as approved by the County Office of Building and Safety.	X	
FIRE-9	Fire hydrants must be no closer than 150 feet from propane tanks and may not be placed at the ends of the tanks.	X	
FIRE-10	Soil testing for the sewage disposal system shall meet the requirements of the DEHS. Submit test results and the appropriate fee to the DEHS.	X	
FIRE-11	All buildings and vehicles shall be equipped with a fire extinguisher.	X	X
FIRE-12	All federal, state, and county laws, ordinances, rules, and regulations, which pertain to prevention, pre-suppression, and suppression of fires, will be strictly adhered to, including fire safety requirements and reliability standards established by the Electric Reliability Organization (per 43 CFR 2805.21[c][3]). All personnel will be advised of their responsibilities under the applicable fire laws and regulations. It will be the responsibility of CMV to notify the BLM Las Vegas Interagency Communication Center at (702) 631-2350, if a Project-related fire occurs within or adjacent to the construction area in Nevada, and to 911 if a Project-related fire occurs in California.	X	X

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
FIRE-13	Fire extinguishers will be available in the construction area. Water from a water truck that may be used for construction and dust control will be available for firefighting.	X	X
FIRE-14	CMV or its contractors would employ all fire-fighting measures for which they are trained, to safely extinguish a fire caused by or related to CMV's utility construction.	X	X
GEOLOGIC HAZARDS: Covered under SBC CUP (1997), BLM ROD (1998), RWQCB WDRs, and pending MPO (Appendix J) and POD (Appendix K)			
GEOL-1	The mining operation shall be conducted in a uniform manner with exterior slopes and floors trimmed as the mining operation proceeds. Excavation shall be conducted so as to leave them in a reasonably neat and trim manner. Final pits shall be excavated and trimmed according to the approved Mine and Reclamation Plan.	X	
GEOL-2	Slope monitoring shall be implemented to ensure that unnecessary hazards are not created with the active or final reclaimed slopes.	X	
GEOL-3	Pit walls shall be constructed in accordance with the standards of MSHA.	X	
GEOL-4	Project facilities shall be located so that earthquake-induced landslides will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed.	X	
GEOL-5	**Slopes/Geotech** CMV shall promptly notify the RWQCB of any slope failure occurring at a mining unit. The Discharger shall promptly correct any failure that threatens the integrity of containment features or the unit, in accordance with the method approved by the RWQCB's Executive Officer.	X	
GEOL-6	**Earthquake** Following an earthquake that generates significant ground shaking (Modified Mercalli Intensity Scale V or greater) at or near CMM, the Discharger shall submit a detailed Post-Earthquake Inspection and Corrective Action Plan. The plan shall address damage to and corrective measures for containment structures; leachate control and stormwater management systems; wells and equipment to monitor groundwater; and any other system/structure potentially impacted by static and seismic deformations of the mining unit. The Discharger shall notify the RWQCB's Executive Officer immediately—but no later than 24 hours after—damage to CMM due to an earthquake and provide a post-earthquake inspection report within 15 business days.	X	X
Hazardous Material Management: Covered under SBC CUP (1997), BLM ROD (1998), RWQCB WDRs, CalARP Risk Management Plan¶, and pending MPO (Appendix J) and POD (Appendix K)			
HAZMAT-1	Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting.	X	X
HAZMAT-2	A Business Plan, as defined in Chapter 6.95 of the Health and Safety Code, detailing the plan for emergency release or threatened release of hazardous materials and wastes shall be required. Obtain clearance from County Fire Warden/Hazardous Materials Division.	X	X
HAZMAT-3	A hazardous materials handler permit and/or hazardous waste generator permit shall be required.	X	X
HAZMAT-4	Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications	X	X

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
HAZMAT-5	Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials.	X	X
HAZMAT-6	Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill.	X	X
HAZMAT-7	Fuels shall be stored in double-walled aboveground storage tanks (ASTs).	X	
HAZMAT-8	**Planning and Reporting** *Spill Prevention Plan*. Within 90 days of the adoption of this Order (*WDRs Order No. R7-2020-004)*. *CMV* shall submit the Spill Prevention Plan for approval by the RWQCB's Executive Officer. The Discharger shall develop and implement a plan for immediate detection of leaks or failures in the aboveground pipelines carrying leaching, barren, or pregnant effluent. An alarm or shutoff device shall be installed on the pump used in leaching, barren, or pregnant effluent pipelines. Pumping of leaching, barren, or pregnant effluent shall be suspended immediately following major pipeline failure. The plan shall include daily inspection of the entire length of aboveground line in operation at the time and the maintenance of a daily log. Minor leaks shall be repaired immediately upon being identified. Lines should be sign-posted or marked to identify the fluid being pumped and alerting the public of the potential danger.	X	X
HAZMAT-9	**Planning and Reporting** *Cyanide Solution Spill Reporting.* If leaks or failures in the aboveground pipelines carrying cyanide solution occur or there is any spill of cyanide solution, the Discharger shall do the following: a. Verbally report to the RWQCB office and the Office of Emergency Services within 24 hours of when the Discharger becomes aware of the incident. If noncompliance occurs outside of business hours, the Discharger shall leave a message on the RWQCB's office voicemail. b. Provide a written report within 5 business days of the time the Discharger becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause; period of noncompliance; anticipated time to achieve full compliance; and steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance. The Discharger shall estimate the total volume as well as the vertical and horizontal extent of the spill/leak/release. c. Submit a follow-up report within 30 days that includes confirmation sampling results indicating that cleanup goals have been achieved.	X	
HAZMAT-10	Maintain a Risk Management Plan for the storage of sodium cyanide, in compliance with applicable laws. The Risk Management Plan and facilities will be inspected each year and revised every 5 years. The Risk Management Plan describes the material handled, protective measures, and worst-case and alternate release scenarios.	X	
HAZMAT-11	All construction vehicles will be maintained in accordance with the manufacturers' recommendations. All vehicles will be inspected for leaks prior to entering the jobsite. All discovered leaks will be contained with a bucket of absorbent materials until repairs can be made.		X
HAZMAT-12	Pursuant to 43 CFR 8365.1-1(b)(3), no sewage, petroleum products, or refuse will be dumped from any trailer or vehicle.		X
HAZMAT-13	Hazardous material storage and equipment repair will be conducted at least 100 feet away from ephemeral drainages.		X
HAZMAT-14	Spilled materials of any type will be cleaned up immediately. A shovel and spill kit will be maintained on site at all times to respond to spills.		X

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
HAZMAT-15	All construction, operation, and maintenance activities will comply with all applicable federal, state, and local laws and regulations regarding the use of hazardous substances. CMV will be responsible for maintaining compliance with all applicable laws and regulations.		X
HAZMAT-16	Hazardous substances utilized at the Project during construction will primarily include diesel fuel, gasoline, lubricating grease, and other substances used by mobile construction equipment. Diesel fuel and gasoline will be stored in fuel delivery systems (i.e., manufacturer installed gas tanks) on construction equipment and support vehicles. Lubricating grease and other substances will be transported by support vehicles and may be stored in the temporary staging areas.		X
HAZMAT-17	Diesel fuel will be transported in a truck-bed mounted external tank and in internal vehicle fuel tanks. Gasoline will be transported in hand-held containers and in internal vehicle fuel tanks. All containers of hazardous substances will be labeled and handled in accordance with NDOT and/or California Highway Patrol regulations.		X
HAZMAT-18	CMV and contractor on-road light-duty vehicles are generally maintained and refueled off-site. Off-road construction equipment will be regularly maintained and fueled at the project site. If a reportable amount of hazardous or regulated materials is spilled, measures will be taken to control the spill and the BLM and other appropriate agencies will be notified, as required. Any hazardous substance spills will be cleaned immediately and any resulting waste will be transferred off site in accordance with all applicable local, state, and federal regulations. Contract construction crews will maintain spill kits on site for use in case of a spill.		X
WASTE MANAGEMENT: Covered under SBC CUP (1997) and pending MPO (Appendix J) and POD (Appendix K)			
WM-1	The Applicant shall maintain the mine site and premises in a neat and orderly manner at all times. No refuse shall be maintained at any time in pit excavations, channel ditches or work areas. All trash shall be disposed of at an approved sanitary landfill site.	X	
WM-2	All trash storage shall be maintained in closed containers.	X	X
WM-3	Nonhazardous waste materials generated on the site shall be disposed at approved facilities. Waste oils shall be recycled. Other hazardous wastes shall be disposed of off-site, using services and procedures approved by the Department of Toxic Substance (DTSC) and the U. S. Environmental Protection Agency (USEPA).	X	X
WM-4	All sanitary waste will be collected in portable, self-contained toilets in the temporary use area and managed in accordance with local requirements.		X
WM-5	All solid waste will be disposed of in a state, federal, or local designated site.		X
WM-6	The construction areas and temporary staging areas will be kept in orderly conditions throughout the period of construction. A minimal amount of general refuse associated with work operations will be created. All refuse generated during the Project will be managed at the Project site using ten- or 20-cubic-yard closed top roll-off bins. Bins will be periodically removed and disposed of in an authorized off-site landfill facility, consistent with applicable regulations. No refuse will be disposed of or left on site. Portable chemical toilets will be used during the time the construction crew is on site.		X

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
AESTHETICS/VISUAL RESOURCE: Covered under SBC CUP (1997) BLM ROD (1998), and pending MPO (Appendix J) and POD (Appendix K)			
AESTH-1	Operational structures and solution storage shall be painted to blend with the predominant background as viewed from surrounding roads. Colors used shall be selected by the BLM and the County.	X	X
AESTH-2	Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to direct lighting to the area of activity.	X	X
AESTH-3	CMV shall minimize impacts on dark night skies and visual resources from nighttime operations by implementing a project-specific lighting plan. The lighting plan will incorporate applicable concepts and best management practices from the 1998 Record of Decision, BLM Technical Note 457 (Light Pollution and Lighting Best Management Practices), and other relevant guidance, and will address fixture type, shielding, placement, height, color temperature, and operational controls. The lighting plan will be developed during project design and submitted to the BLM for review and approval prior to installation or modification of outdoor lighting.	X	X
AIR QUALITY: Covered under SBC CUP (1997), Air District rules, Authority To Construct, and pending MPO (Appendix J) and POD (Appendix K)			
AQ-1	The Applicant shall apply to the Mojave Desert Air Quality Management District (MDAQMD) and obtain the required permits for the installation and operation of all stationary fossil fuel equipment used on-site.	X	
AQ-2	The Applicant shall submit detailed drawings and specifications to the MDAQMD regarding the type of equipment that will be purchased and particle collection system that will be used.	X	
AQ-3	A number of measures shall be incorporated into the project design to control the generation of particulate matter 10 microns or less in diameter (PM_{10}). They include: a. Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained. Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.	X	
AQ-4	b. Speed restrictions shall be enforced on mine roads to minimize surface disturbance of the roadways.	X	
AQ-5	c. Unauthorized vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.	X	
AQ-6	d. Vehicle travel to and from the project site shall be reduced by the promotion of vanpools/busing for workers.	X	
AQ-7	e. During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the MDAQMD for review before use. The debris collecting devices shall have a minimum design efficiency of 90%.	X	
AQ-8	f. The live storage portion of the coarse ore stockpile shall be covered to minimize windblown dust.	X	
AQ-9	g. Blasting during high winds shall be minimized or curtailed to minimize windblown dust.	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
AQ-10	h. The primary, secondary, and tertiary crushers and screens and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow the generation of windblown dust. Dust suppression for secondary/tertiary ore-crushing operations shall be controlled using baghouses constructed to specifications acceptable to the MDAQMD.	X	
AQ-11	As required by the MDAQMD, PM_{10} concentrations shall be monitored at several locations near the project boundaries. The monitoring data shall be routinely submitted to the MDAQMD to demonstrate that the project is not violating ambient air quality standards.	X	
AQ-12	Emissions from mobile equipment and vehicular engines shall be controlled by: a. Using only low sulfur fuels.	X	X
AQ-13	b. Implementing a routine maintenance program to avoid operating inefficiencies.	X	
AQ-14	c. Using busing/vanpooling.	X	
AQ-15	Water and dust-inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period.	X	X
AQ-16	All internal combustion engine (ICE)–driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.	X	X
AQ-17	Annually report the throughput of fuel for dispensing equipment to the MDAQMD.	X	
AQ-18	**Fuel ASTs/Dispensing** CMV shall maintain a log of all inspections, repairs, and maintenance on equipment subject to Mojave Desert Air Quality Management District (MDAQMD): District Rule 461. Such logs or records shall be maintained at the facility for at least 2 years and available to the MDAQMD upon request.	X	
AQ-19	**Fuel ASTs/Dispensing** Any modifications or changes to the piping or control fitting of the vapor recovery system require prior approval from the MDAQMD.	X	
AQ-20	**Fuel ASTs/Dispensing** Pursuant to Executive Order (EO) VR-402, vapor vent pipes are to be equipped with Husky 5885 pressure relief valves or as otherwise allowed by the EO.	X	
AQ-21	**Fuel ASTs/Dispensing** CMV shall perform the following tests within 60 days of construction completion and annually thereafter in accord with the following test procedures: Determination of static pressure performance of vapor recovery systems at gasoline dispensing facilities with ASTs shall be conducted in accordance with EO VR-404 Exhibit 6;	X	
AQ-22	**Fuel ASTs/Dispensing** Leak rate and cracking pressure of pressure/vacuum vent valves in accordance with Vapor Recovery Test Procedure-201.1E or TP-201.1E;	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
AQ-23	**Fuel ASTs/Dispensing** Phase I adapters, emergency vents, spill container drain valve, dedicated gauging port with drop tube and tank components, all connections and fittings shall NOT have any detectable leaks; test methods shall be in accordance with EO VR-402-D Table 2-1; and	X	
AQ-24	**Fuel ASTs/Dispensing** Liquid removal test (if applicable) in accordance with TP-201.6.	X	
AQ-25	**Fuel ASTs/Dispensing** Pursuant to California Health and Safety Code Sections 39600, 39601, and 41954, ASTs shall be installed and maintained in accordance with EO VR-402 for Enhanced Vapor Recovery (EVR) Phase I and EO VR-302 – standing loss requirements.	X	
AQ-26	**Fuel ASTs/Dispensing** Pursuant to EO VR-402, maintenance and repair of system components, including removal and installation of such components in the course of any required tests, shall be performed by Morrison Bros.–certified technicians or as allowed by Executive Officer.	X	
AQ-27	**Fuel ASTs/Dispensing** Pursuant to EO VR-402, maintenance intervals for Morrison Bros. tank gauge components, dust caps emergency vents, Phase I product and vapor adapters, and spill container drain valves shall be conducted by a Morrison Bros.–trained technician on an annual basis.	X	
AQ-28	**ICE Power Generators** The gasoline throughput would be reported to MDAQMD annually by the end of February. The annual total shall not exceed the volume authorized by MDAQMD.	X	
AQ-29	**ICE Power Generators** Tier 4 final stationary compression-ignited ICE and its associated emission control systems shall be installed, operated, and maintained in strict accordance with those recommendations of the manufacturer/supplier and/or sound engineering principles that produce the minimum emissions of air contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.	X	
AQ-30	**ICE Power Generators** The diesel particulate filter shall be installed with a backpressure monitor that notifies the Applicant when the high backpressure limit of the engine is approached.	X	
AQ-31	**ICE Power Generators** Diesel ICE shall not be operated unless all the following engine emission systems are properly functioning: engine control module, diesel particulate filter, diesel oxidation catalyst, selective catalytic reduction–urea system, and exhaust gas recirculation. Furthermore, no changes shall be made to any of the above systems unless done so by a factory-certified technician.	X	

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AQ-32	**ICE Power Generators** Diesel ICE equipment shall only be fired on diesel fuel that meets the following requirements or an alternative fuel approved by the Airborne Toxic Control Measure (17 CCR Section 93115) for Stationary Compression Ignition Engines: a. Ultra-low sulfur concentration of 0.0015% (15 parts per million) or less, b. A cetane index or aromatic content, as follows: 1. A minimum cetane index of 20 or 2. A maximum aromatic content of 35 volume percent. (Note: the use of California Air Resources Board Ultra-Low Sulfur Diesel fuel satisfies this requirement.)	X	
AQ-33	**ICE Power Generators** CMV shall conduct inspection, whichever is more frequent—at least once every calendar quarter or after every 2,000 hours of engine operation. An inspection includes any testing, maintenance, and/or other procedures that ensure the ICE is operated in strict accordance with the manufacturer's specifications and in continual compliance with the provisions of this rule.	X	
AQ-34	**ICE Power Generators** CMV shall maintain an operations log for this unit, current and on-site (or at a central location), for a minimum of 5 years, and this log shall be provided to MDAQMD, state, and federal personnel upon request. The log shall include, at a minimum, the information specified below: a. Quarterly fuel use and quarterly hours. b. The date and a summary of each engine inspection including any testing and maintenance performed. c. Fuel sulfur concentration (may use the fuel supplier's certification of sulfur content if it is maintained as part of this log). d. Records of any corrective action taken after digital engine monitoring has notified the Applicant of malfunction.	X	
AQ-35	**Baghouse (Dust)** CMV shall operate and maintain dust collectors in strict accordance with those recommendations of the manufacturer/supplier and/or sound engineering principles.	X	
AQ-36	**Baghouse (Dust)** CMV shall comply with all applicable rules and regulations of the MDAQMD. Applicable rules include MDAQMD Rules 401 – Visible Emissions, 402 – Nuisance, 403 – Fugitive Dust Control, and 430 – Breakdowns.	X	
AQ-37	**Baghouse (Dust)** Dust collected by the control equipment shall be maintained in closed containers.	X	

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AQ-38	**Baghouse (Dust)** CMV shall conduct a minimum program of inspection and maintenance on this equipment. CMV shall maintain current and on-site for 5 years a log of the following information, which shall be provided to MDAQMD personnel upon request: a. Monthly baghouse stack observation date and result (using USEPA Method 22 and USEPA Method 9 if Method 22 detects opacity); b. Quarterly bag and bag suspension system inspection date and results; c. Date of bag replacements; and, d. Date and nature of any system repairs.	X	
AQ-39	**Baghouse (Dust)** All baghouse doors, hatches, and airlocks shall remain secured and closed during operation of this equipment.	X	
AQ-40	**Baghouse (Dust)** CMV shall maintain on-site, as a minimum, an inventory of replacement filter cartridges that ensures compliance with applicable rules of MDAQMD Regulation IV.	X	
AQ-41	**Reagent (Lime/Cement) Metering Silo (Dust)** Lime or cement shall not be added to the guppy and/or silo unless the guppy and/or silo are vented to a properly functioning bin vent.	X	
AQ-42	**Reagent (Lime/Cement) Metering Silo (Dust)** CMV shall comply with all applicable rules and regulations of the MDAQMD. Applicable rules include the following: Rules 401, 402, 403, and 430.	X	
AQ-43	**Reagent (Lime/Cement) Metering Silo (Dust)** The throughput to this equipment shall not exceed the tons stated on the permit.	X	
AQ-44	**Reagent (Lime/Cement) or Metering Silo (Dust)** A facility log must be maintained on-site for at least 5 years and made available to MDAQMD personnel upon request. This log shall contain, as a minimum: a. Total tons of cement added to the cement guppy and cement silo per month and per each consecutive 12-month period; b. Semiannual inspection of the bin vent enclosure and cartridge filters, including dates and any corrective actions taken; c. Date and nature of any system repairs.	X	
AQ-45	**Reagent (Lime/Cement) or Metering Silo (Dust)** The transfer of cement at the metering silo screw conveyor transfer point must be controlled using either shrouding or enclosure.	X	
AQ-46	CMV shall obtain and maintain a MDAQMD-approved Dust Control Plan as set forth by the requirements of MDAQMD Rule 403.	X	
AQ-47	During Project construction, the disturbed soil will be wetted, chemically treated, or treated by other means satisfactory to the Authorized Officer, sufficiently to effectively reduce airborne dust and reduce soil erosion. Additionally, prudent vehicle speeds will be maintained to minimize fugitive dust created by travel		X

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AQ-48	Construction and maintenance activities will be conducted to minimize disturbance to vegetation adjacent to the ROWs.		X
AQ-49	All construction vehicle movement outside the ROWs will be restricted on federal land where there is no prior authorization.		X
AQ-50	A facility-wide Comprehensive Emission Inventory for all emitted criteria and toxic air pollutants must be submitted to the MDAQMD, in a format approved by the MDAQMD, upon MDAQMD request.	X	
ARCHAEOLOGY: Covered under SBC CUP (1997), BLM ROD (1998), and pending MPO (Appendix J) and POD (Appendix K)			
ARCH-1	Pursuant to 43 CFR 10.4(g), CMV will notify the BLM authorized officer, by telephone, and with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2). Further pursuant to 43 CFR 10.4, CMV will immediately stop all activities in the vicinity of the discovery and not commence again until a notice to proceed is issued by the BLM authorized officer.	X	X
ARCH-2	Any cultural resource discovery by CMV, or any person working on their behalf, during the course of activities on federal land will be immediately reported to the authorized officer by telephone, and with written confirmation. The permit holder will suspend all operations in the immediate area of the discovery and an exclusion buffer may be defined by the BLM to protect it until an evaluation of the discovery can be made by the authorized officer. This evaluation will determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. CMV will be responsible for the cost of evaluation and mitigation. Operations will resume only upon written authorization to proceed from the authorized officer.	X	X
ARCH-3	Access roads to areas of high cultural sensitivity in the project's vicinity in the project vicinity shall be closed or rerouted.	X	
ARCH-4	The Applicant shall construct the chain-link fence with lockable gate around the Hart Cemetery and post a descriptive sign within the fence within 6 months. Overburden placed in the North Overburden site shall not be placed closer than 50 feet from the cemetery and a berm shall be constructed, in association with growth media salvage, at the maximum extent of the footprint configuration of the North Overburden site as designed to prevent loose erratic overburden from encroaching upon areas not approved for surface-disturbing activities.	X	
ARCH-5	The Applicant shall implement an informational program for employees to increase their awareness of the value of cultural resources and the need for their preservation. This program shall be achieved by providing a section on the prehistory and history of the project area in the employee manual. This section shall stress the fragility of the archaeological record and the responsibility of employees in preserving these resources. The Applicant shall establish, with the approval of the BLM, a buffer zone to ensure the temporary or long-term preservation of any site and the safety of visitors to the sites. The manual shall be updated, as necessary, to reflect new research findings that may occur relative to the history and prehistory of the area.	X	X
ARCH- 6	The four unevaluated archaeological sites—P-36-005705, P-36-005706, P-36-005708, and P-36-005707—shall be avoided. There shall be a 100-foot buffer extending from the sites to the nearest mining activity.	X	

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PALEONTOLOGY: Covered under SBC CUP (1997)			
PALEO-1	CMV will not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. If previously undiscovered paleontological resources are discovered by CMV in the performance of any surface disturbing activities, the item(s) or condition(s) will be left intact and immediately brought to the attention of the BLM authorized officer. If significant paleontological resources are found, avoidance, recordation, and/or data recovery will be required, and at the expense of CMV.	X	X
BIOLOGY (WILDLIFE): Covered under BLM ROD (1998), Reasonable and Prudent Measures set forth in the California Department of Fish and Wildlife's (CDFW's) Incidental Take Permit (ITP) for desert tortoise,# US FWS BO, BLM DR (2020)††, and pending MPO (Appendix J) and POD (Appendix K)**			
WILD-1	Measures to isolate cyanide processing solutions from wildlife have been incorporated into project design plans. Specific measures to be employed have been confirmed for their effectiveness during completed testing programs. a. The solution storage area shall use steel storage tanks.	X	
WILD-2	b. The solution storage area shall be designed so that solutions are unavailable to wildlife.	X	
WILD-3	c. The solution storage area shall include fencing or and netting over the emergency storage basin, designed to preclude access by birds and bats.	X	
WILD-4	d. The solution storage area shall employ hazing techniques if process solutions enters the stormwater storage basin.	X	
WILD-5	If avian entanglement becomes a problem, the Applicant shall replace the netting over the emergency storage basin with a different type of net or will implement another method to prevent entanglement.	X	
WILD-6	**Heap Leach Piles Area:** 1. Active heap leach pads shall be surrounded by chain-link fence.	X	
WILD-7	**Heap Leach Piles Area:** 2. Drip irrigation methods shall be used to distribute solution directly on the heaps, including both tops and sides, to minimize potential ponding of water available to birds and other animals.	X	
WILD-8	**Heap Leach Piles Area:** 3. Drip irrigation tubing shall be mostly buried within the upper surface of placed ore on the heap leach pad to minimize potential ponding of water and to reduce evaporative water loss.	X	
WILD-9	The cyanide solution system shall be operated as a closed circuit, with solution transported from heap piles to storage tanks, to the processing plant, and back to the heap piles in a system of pipes, rather than open ditches. Open ditches will be used only to carry heavy storm runoff.	X	
WILD-10	Cyanide-related animal mortalities must be reported monthly to the BLM Needles Field Office no later than the 10th of each month. The report shall include the following information: The number and kind of each mortality attributed to cyanide. “Kind” will be reported under one of the following categories: raptors, songbirds, upland game birds, waterfowl, shorebirds, mammals, and other; location where the dead animal was found; and other information requested by the BLM.	X	

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WILD-11	A program to educate employees about area wildlife shall be implemented by the Applicant in connection with the safety program. The Applicant shall acquaint personnel with laws protecting vegetation and wildlife, characteristics of desert wildlife, and proper procedures if wildlife is encountered. Drivers shall be educated about potential hazards of desert-road driving, driving at proper speeds, and the importance of not harassing or interfering with the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations.	X	X
WILD-12	Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times.	X	X
WILD-13	**Desert Tortoise** The Applicant shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status.	X	X
WILD-14	**Desert Tortoise** A project sponsored program of busing/vanpooling to the project from locations in the Las Vegas valley shall be implemented. At a minimum 75% of the work force shall travel to the project by bus/vanpool.	X	X
WILD-15	**Desert Tortoise** The Applicant shall locate and flag on-site tortoise burrows before initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with the BLM and U.S. Fish and Wildlife Service (USFWS).	X	X
WILD-16	**Desert Tortoise** Project waste shall be properly managed, and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife.	X	X
WILD-17	**Birds** Power lines shall be constructed in a manner to discourage raven nesting/roosting. As part of the on-site biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to the BLM annually to assess whether unusual increases in raven populations are occurring.	X	X
WILD-18	**Desert Tortoise** The Applicant shall implement the terms and conditions to comply with the reasonable and prudent measures set forth in the USFWS Biological Opinion (BO).	X	X
WILD-19	**Desert Tortoise** The Applicant shall implement the terms and conditions to comply with the reasonable and prudent measures set forth in the CDFW ITP.	X	X
WILD-20	**Desert Tortoise** **Reasonable and Prudent Measure a:** Worker education program and well-defined operational procedures shall be implemented to avoid the take of desert tortoises and their habitat during project activities.	X	X
WILD-21	**Desert Tortoise Reasonable and Prudent Measure b.** Take of desert tortoises, through injury or death due to the straying of equipment or vehicles beyond project areas, shall be reduced through establishment of clearly defined work areas.	X	X

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
WILD-22	**Desert Tortoise Reasonable and Prudent Measure c.** Take of desert tortoises, through injury or death, shall be avoided through the removal of these animals to undisturbed areas out of harm's way when they are not otherwise avoidable.	X	X
WILD-23	**Desert Tortoise Reasonable and Prudent Measure d.** Attraction of common ravens and other potential desert tortoise predators to project areas shall be reduced to the maximum extent possible.	X	X
WILD-24	**Terms and Conditions a.1:** The BLM shall appoint an official project representative who shall be responsible for compliance with all mitigation measures. This person (who may also be an authorized biologist) shall have authority to stop all project-related actions that could cause death or injury to a desert tortoise.	X	X
WILD-25	**Terms and Conditions a.2.** All persons associated with the project shall participate in a desert tortoise education program. The program shall include, at a minimum, the following topics: the occurrence of desert tortoises at the mine site and along the access road, sensitivity of the species to human activities, legal protection for desert tortoises, penalties for violations of federal laws, general activity patterns of the desert tortoise, reporting requirements, measures to protect desert tortoises, and measures users can take to promote the conservation of desert tortoises. All persons shall be informed of their responsibility to report any form of take to the official project representative. An inventory of all trained personnel will be kept by CMV and be submitted to the BLM Needles Field Office by December 31 of each year.	X	X
WILD-26	**Terms and Conditions a.3.** Because desert tortoise may seek shade underneath equipment of vehicles, all on-site employees shall be responsible for surveying under parked vehicles prior to moving them. An authorized biologist shall be contacted to remove any desert tortoise found prior to moving a vehicle or the vehicle shall be left in place until the animal moves of its own accord.	X	X
WILD-27	**Terms and Conditions a.4.** All open holes shall be inspected at the beginning, middle, and end of the day for trapped desert tortoises. If desert tortoises are trapped, the biological monitor shall be notified immediately. The desert tortoises shall be allowed to escape or shall be carefully removed and relocated by an authorized biologist before work continues in that location.	X	X
WILD-28	**Terms and Conditions a.5.** Any activities that may disturb native habitat shall be limited to areas that have already been cleared of desert tortoises by the authorized biologist(s) and enclosed in a fence to exclude desert tortoises. When feasible, during the installation of the fence to exclude desert tortoise, vegetation shall be crushed rather than bladed.	X	X
WILD-29	**Terms and Conditions a.6.** The BLM shall ensure that CMV has installed fencing to exclude desert tortoises around the perimeter of its work area prior to surface disturbance. The fence design and location shall be approved by both USFWS and CDFW. Any proposals to alter the fence design or location shall be submitted to the USFWS and CDFW for approval prior to use. The authorized biologist or environmental specialist shall conduct periodic inspections of the fence to ensure its integrity and to inspect for trapped wildlife. Particular attention shall be given to wash areas after rainstorms.	X	
WILD-30	**Terms and Conditions a.7.** Fencing to temporarily exclude desert tortoises, if determined by the authorized biologist to be needed, shall consist of an approved design, maintained at zero ground clearance. It does not need to be buried. The fence shall be supported as necessary to prevent access by desert tortoise to the project site. The fence shall be removed immediately on completion of project activities in the fenced area.	X	

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WILD-31	**Terms and Conditions a.8.** If CMV fails to comply with any of the reasonable and prudent measures or terms and conditions of the BO or similar requirements of the ITP, the BLM shall suspend the authorization allowing for the activities until such time that CMV complies with these terms and conditions.	X	X
WILD-32	**Terms and Conditions a.9**. Firearms shall be prohibited on the CMM site, except for those borne by authorized security personnel, CDFW game wardens, and BLM rangers.	X	X
WILD-33	**Terms and Conditions a.10.** Each authorized biologist shall maintain a daily log recording all desert tortoises that are encountered. The annual report shall be forwarded to the USFWS and CDFW detailing the locations of each occurrence, the general condition and health of each individual, diagnostic markings, and any actions undertaken.	X	X
WILD-34	**Terms and Conditions a.11.** Reclamation activities shall include the removal from the site and proper disposal of all hazardous wastes that could be harmful to wildlife.	X	
WILD-35	**Terms and Conditions b.1.** Expansion areas shall be fenced prior to onset of mining operations. All workers shall be instructed that their activities must be confined to within these areas.	X	
WILD-36	**Terms and Conditions b.2.** If heavy equipment must be used outside the fence built for the long-term exclusion of desert tortoises, the work areas shall be clearly staked, flagged, or temporarily fenced prior to the onset of project activities. If such an area is staked or flagged, the authorized biologist shall be present at all times that activities are being conducted that could result in injury to or mortality of desert tortoises.	X	
WILD-37	**Terms and Conditions c.1.** The authorized biologist(s) shall accompany the fence construction crew to ensure that desert tortoises are not killed or injured during this activity. Where possible, the fence shall be routed to place occupied burrows of the desert tortoise outside of the mining area.	X	
WILD-38	**Terms and Conditions c.2**. After fencing to exclude desert tortoises has been installed and prior to ground disturbance, authorized biologists shall examine the mine expansion areas for desert tortoises and their burrows. The inspection shall provide 100% coverage of the area within the expansion zone.	X	
WILD-39	**Terms and Conditions c.3.** The fence around the existing leach pad shall remain intact until the native habitat between it and the new fence can be thoroughly searched for desert tortoises.	X	
WILD-40	**Terms and Conditions c.4.** Desert tortoises shall only be handled by biologists who are authorized by the USFWS and/or the CDFW. The BLM shall submit the names and credentials of CMV biologists to the USFWS for its review and approval at least 15 days prior to the time they will need to handle desert tortoises. Biologists who have been authorized by the USFWS to handle desert tortoises for the existing CMM project may continue with this task for the expansion without additional authorization. Desert tortoises and their eggs shall be handled according to the procedures outlined in Desert Tortoise Council (1996). ‡‡	X	X
WILD-41	**Terms and Conditions c.5.** Any desert tortoises found within the expansion areas shall be relocated outside the exclusion fence in undisturbed habitat. The relocation site shall be as close as possible to the capture site where suitable habitat is present. All excavation of desert tortoise burrows shall be done by hand by an authorized biologist. The desert tortoise shall be placed in a burrow of appropriate size or in a shady location under a large shrub. If relocation occurs during the normal dormant period, the desert tortoise shall be moved and placed in a burrow only. If no burrows are available for relocating the desert tortoises, artificial burrows shall be used. Protocols developed by the Desert Tortoise Council (1996) shall be followed for construction of artificial burrows.	X	

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WILD-42	**Terms and Conditions d.** All personnel that enter the expansion area shall be required to contain all food stuffs, trash, or other waste that may attract predators. Any trash receptacles shall be equipped with latching or locking lids.	X	X
WILD-43	**Desert Tortoise** During the active season from March–October, routine road repair work is monitored by an authorized biologist. The biologist has full authority to suspend work if a tortoise is in the project area or if a burrow is found adjacent to the roadway and marked for avoidance. Biologists are approved by the Needles BLM Field office biologist and if required, by USFWS; it is assumed here that a biologist approved by one U.S. Department of the Interior (DOI) agency (BLM) would also be approved by any other DOI agency. Biologists are not approved to handle the tortoise during normal road repair work. Standard procedure is for work to halt until the tortoise moves away from the active work area.	X	X
WILD-44	**Desert Tortoise** During the inactive winter period for the desert tortoise, any scheduled road maintenance may or may not include monitoring by a biologist, but at a minimum an observer will monitor the advance of road repair equipment to monitor for potential burrows adjacent to the road, which will be marked for avoidance.	X	X
WILD-45	**Desert Tortoise** CMV trains all staff and contractors on desert tortoise awareness, as well as maintains company policies that help prevent the take of any endangered species.	X	X
WILD-46	**Bats/Birds** Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to direct lighting to the area of activity.	X	X
WILD-47	To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall be left open or barricaded in a manner acceptable to the BLM to permit animal ingress/egress.	X	
WILD-48	**Bat/Birds** An examination of former mine shafts and adits shall be completed prior to earth-moving activities in the area to estimate whether they are occupied by bats or other species. The evaluation shall be completed during the winter hibernation period by an ecologist familiar with bat fauna. If a colony is found or substantial use by individual bats is indicated, blasting or heavy-equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by a colony will be required for project development, a mitigation program shall be completed.	X	
WILD-49	**Bats/Birds** Design and construction of electric power-distribution poles shall incorporate provisions for raptor safety.	X	X
WILD-50	**Bats/Birds** Areas of significant cyanide solution ponding will be covered with netting or other similar material to prevent bird access to the solution.	X	
WILD-51	**Bighorn Sheep** Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement.	X	

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WILD-52	**Birds** Conduct vegetation removal outside the active nesting bird season that runs from March 1 through August 31. Vegetation clearance that does occur inside the active nesting bird season (March through August) must be preceded by a nesting bird survey to document the absence of nesting birds.	X	X
WILD-53	**Bat/Birds** When fencing is necessary, bird- and bat-compatible design standards shall be used.	X	
WILD-54	**Bat/Birds** Lighting and shield lighting that does not attract birds and bats or their prey to project sites shall be used.	X	X
WILD-55	**Bat/Birds** Drilling and mining activities will avoid features with identified owl nests in the spring and summer. During the winter, drilling and mining through bat habitat features on the east side of CMM shall not be done in the winter unless bats are temporarily excluded in the fall first. Therefore, wildlife exclusion and/or closure shall be done during the late summer and early fall (September–October).	X	
WILD-56	**Bats/Birds** If mining is renewed in the areas where bat habitat features are located, features will either be closed with bat and wildlife exclusion as described above or closed with a bat-compatible cupola or gate.	X	
WILD-57	**Bighorn Sheep** CMV shall report any bighorn sheep mortalities, whatever the cause, to the BLM Needles Field Office wildlife biologist within 48 hours of discovery.	X	X
WILD-58	When conducting drilling operations, all sumps shall be fenced with temporary plastic construction fencing to limit ingress of wildlife into the sump. As an additional safety measure, all sumps shall have one end ramped to facilitate escape in the unlikely event wildlife does get through the perimeter fence.	X	
WILD-59	**Bighorn Sheep** Existing wildlife drinkers shall be maintained and/or relocated as appropriate.	X	
PLANTS/WEEDS: Covered under BLM DR (2020) and pending MPO (Appendix J) and POD (Appendix K)			
PLANTS-1	Prior to grading of new pads or roads, preconstruction surveys would be conducted by a qualified biologist on new pad and road alignments to determine whether rosy two-toned beardtongue is present on-site. At locations in which the species is found, the seed and seed-bearing topsoil shall be collected (prior to land disturbance) and stored appropriately for revegetation on the site or other favorable areas on the mine site. In addition, the on-site vegetation will be crushed to the extent practicable, and pushed to the perimeter and pushed back over the site during reclamation.	X	X
WEED-1	If noxious weeds are encountered within the construction area, mitigation measures will be instituted in consultation with the BLM weed specialist, and/or County and NDOT. ROW monitoring and weed abatement following construction will be conducted as required by the applicable agency. To avoid the spread of noxious weeds, all vehicles brought in from out of the area will go through high pressure washing of the undercarriages at a commercial carwash prior to arriving on site and before being used on the Project		X

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
BIOLOGY (RECLAMATION AND REVEGETATION): Covered under BLM ROD (1998), SBC CUP (1997), Reclamation, RWQCB WDRs, and pending MPO (Appendix J) and POD (Appendix K)			
REC-1	The Applicant shall continue to maintain its revegetation program that includes the following measures: a. Review of all available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.	X	
REC-2	b. Continue ongoing revegetation research programs, as necessary, to meet the reclamation and revegetation goals defined in the approved Reclamation Plan.	X	
REC-3	c. Revegetation success shall be determined by measuring the density and diversity of perennial species. "Density" here means the number of live perennial individuals per unit area; "diversity" here means the number of perennial species (with live individuals) per unit area. These standards are further defined in the approved Reclamation Plan.	X	
REC-4	d. Stockpiling of available soil. Redistribution of these soils over disturbed areas shall be done following completion of activities on an area. Studies shall been completed that defined how available soil would be most effectively used.	X	
REC-5	e. Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation shall be completed, and such plants will be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25% of barrel cactus and 25% of the following species with the size classification shown:	X	
REC-6	Joshua tree – 3 to 10 feet in height, unbranched or with few branches.	X	
REC-7	Mojave yucca – well-developed, single-stemmed plants that have not developed a vertical trunk.	X	
REC-8	Blue yucca – well-developed, single-stemmed plants that have not developed a vertical trunk.	X	
REC-9	Barrel cactus – plants no smaller than 8 inches in diameter and no taller than 14 inches.	X	
REC-10	f. The nursery will continue to support the revegetation research program and mine reclamation.	X	
REC-11	g. A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations; this is known as concurrent reclamation. The goal will be to initiate revegetation procedures within 6 months following completion of project activities over an area.	X	
REC-12	h. Potential invasion of exotic species shall be monitored. Prior research conducted at the CMM has shown that concentrations of exotic species (such as Russian thistle) decrease at a rate inversely proportional to the density (and success) of native vegetation established under the Reclamation Plan.	X	
REC-13	i. Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.	X	
REC-14	j. Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
REC-15	k. Ground-preparation procedures shall include ripping and harrowing of compacted soils. Intervening areas between planted soil islands on overburden–waste-dump deck surfaces shall be ripped to decrease compaction and improve rainfall infiltration, reduce runoff, and provide a suitable seed bed for plant dispersal.	X	
REC-16	l. Implementation of a monitoring program to verify revegetation results, based upon the goals for diversity and density.	X	
REC-17	The revegetation bond for any specific area will not be released until the Applicant demonstrates, based on monitoring of the revegetation of that area (including at least 2 full years in which the vegetation is completely self-sufficient) that the density and diversity standards set forth in the Reclamation Plan have been met.	X	
REC-18	Vegetation considered unnecessary for reclamation shall be made available to the public during agreed-upon plant donation events.	X	
REC-19	Vegetation considered unnecessary for reclamation shall be made available to commercial plant harvesters according to the terms of any such agreement made between the Applicant and the BLM and the County.	X	
REC-20	Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed—instead of bulldozed—to enhance recovery.	X	
REC-21	Waste rock (overburden) will be backfilled into final excavated mine pits when the action can occur concurrently with the mining schedule. Normally, this means that the last mine pit excavated would not be backfilled or would be only partially backfilled.	X	
REC-22	The Applicant shall comply with all reclamation and other requirements set forth in the Mine Plan and Reclamation Plan for CMM as approved and amended by the County Planning Commission.	X	
REC-23	The Applicant shall continue to post a letter of credit, cash, or surety bond jointly with the County and the BLM to ensure compliance with all conditions of the Plan of Operations and Reclamation Plan and Memorandum of Understanding for the Reclamation of CMM. That bond amount shall continue to be reviewed for adequacy at 2-year intervals. The bond amount shall be adjusted as set forth in detail in the Reclamation Plan. Portions of the bond shall be released to the Applicant upon certification by the BLM and the County that all reclamation conditions applicable to a given reclamation area have been complied with, as specified in detail in the Reclamation Plan. The County has agreed to administer the bond, subject to Regulation Plan Regulation No. 21(1)(2).	X	
REC-24	Revegetation efforts shall be initiated as soon as practicable during the project operation period as use of specific disturbed areas is completed.	X	X
REC-25	Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring revegetation until operations are completed.	X	
REC-26	At the time of project decommissioning, all equipment, buildings, structures, and refuse shall be removed from the site, all hazards mitigated, and reclamation completed according to the approved Mine/Reclamation Plan.	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
REC-27	Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion in accordance with the Reclamation Plan. Final slope lengths and appropriate mid-slope benches/terraces shall be reexamined prior to completion of final grading to determine adequacy of erosion control measures. Necessary corrections to ensure proper drainage and minimal erosion will be accomplished prior to acceptance for final reclamation of grading/earthwork activity and bond release.	X	X
REC-28	Upon project completion, the Applicant shall remove all operating facilities—including structures, equipment, transmission lines, and fencing—in conformance with the Reclamation Plan requirements.	X	
REC-29	Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce the impact of straight-line geometrics and potential contrast in form and line. A revised plot plan shall be submitted and approved by the BLM and the County Planning Department showing final footprint configurations and cross sections that reflect the final mitigation imposed in the Reclamation Plan approval, such as Stipulations 20 and 92 of the BLMs March 1998 Record of Decision approving the mine plan of operation and reclamation plan changes analyzed in its 1997 EIS (No. DES 97-10).	X	
REC-30	At project decommissioning, final slopes shall be 2:1 (horizontal to vertical) for the overburden pile and 2.5:1 for the heap leach piles. Exceptions may be made based on individual slope characteristics and desired visual resource objectives by using the options described in the Reclamation Plan. Final slopes shall be contoured as provided for in the Reclamation Plan and shall incorporate to the extent available a final covering of darker material that blends with the surrounding landscape. Final slope angles shall mimic the natural topography as much as possible. Any exceptions must be authorized in writing and interested parties notified.	X	
REC-31	At the cessation of active mining, the Applicant shall secure separate financial assurance that will ensure that any pits created by mining activities in which a pit lake forms will be backfilled to a level at least 5 feet above the high-water lake level in the event monitoring of pit-lake water demonstrates: (1) that acidic conditions due to oxidation of sulfide minerals or (2) other poor water quality due to concentrations of metals would pose a substantial threat to health and the environment, as determined by state law, are likely to develop. Monitoring of pit-lake water would be conducted for the duration of the 10-year closure period unless: (1) pit-lake water toxic constituents exceed appropriate maximum allowed standards, according to state law, and pit backfilling is commenced or (2) appropriate state-of-the-art analytical techniques demonstrate the pi- lake waters would not exceed current state or federal water quality standards in the future. Backfill material shall have a high neutralization potential. The surface of any backfilled material placed in pits as a result of this circumstance should be loose, uncompacted, coarse cobble-sized material to inhibit ponding of surface water during and after precipitation events. This financial assurance shall be in place commencing at the beginning of the 10-year closure period and shall be maintained for the entire period unless released by the County and the BLM.	X	
REC-32	**Reclamation and Closure** New and existing mining units shall be closed so that they no longer pose a threat to water quality. No post-closure land uses shall be permitted that might impair the integrity of containment structures.	X	
REC-33	**Reclamation and Closure** The Discharger shall notify the RWQCB in writing of the final closure or partial final closure of a mining unit at least 180 days prior to beginning any final closure activities. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations.	X	

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REC-34	**Reclamation and Closure** CMV shall carry out closure of a mining unit or a portion of a unit only in accordance with a Closure and Post-Closure Maintenance Plan approved by the RWQCB through the issuance of closure WDRs	X	
REC-35	Power line closure includes removing and recycling the overhead wiring, cutting the wood poles at or near ground level, and removing cable supports or other ancillary surface equipment.		X
REC-36	Water pipeline closure includes draining the water line, excavating both ends of the pipeline, and sealing the pipeline at those locations, followed by reburial. This closure technique is the industry standard for buried utilities known as closure-in-place. Any surface equipment or vaults will also be removed, and the pipeline will be sealed and reburied at those locations.		X
REC-37	During initial ground preparation and construction, affected vegetation will be crushed rather than bladed when it is feasible to do so. Vegetation that is not salvaged will be removed and stockpiled out of the way. This material can be reapplied during reclamation for use as a vertical mulch; it has also proven beneficial for seed stabilization during the germination period.		X
REC-38	Growth media will be salvaged primarily during the construction of the water pipeline because subsurface disturbance will be minimal for the overhead power line and power pole installation. The latter consists of installing the tension cables and small-diameter auger drilling for the poles. Pole locations will be as near as possible to the existing CMM Access Road, so temporary roads will not be required. Growth media will be furrowed adjacent to the water pipeline trench and will remain in place until short-term reclamation begins. Reclamation of the short-term water line ROW is estimated to begin within 12 months from the time of disturbance.		X
REC-39	The short-term water line ROW area will be seeded with a local certified weed-free seed mixture. The seed mix and application method will be preapproved by the BLM and included in a final reclamation plan. Seed will either be collected locally or purchased from a commercial vendor. Prior to beginning reclamation, a post-reclamation watering and monitoring schedule will be provided to the BLM for review and approval.		X
REC-40	Monitoring for reclamation success will follow the methods stated in the Castle Mountain Mine 2022 MPO and Reclamation Plan (2022 Plan). Standardized linear transects or plots (typically two meters by ten meters in size) will be used to record perennial plant density and diversity. Revegetation monitoring will be conducted to qualitatively evaluate native plant establishment and vigor, to identify and make recommendations for correcting problems (weeds, lack of progress), and to quantitatively measure the development of the reclaimed habitat to determine its progress to the established success criteria. An Annual Revegetation Monitoring Report will be prepared to summarize revegetation and monitoring efforts for ten years or until deemed successful by the observed results and review by the BLM. Based on the monitoring results, and upon consultation with the BLM, additional remedial activities may include additional seeding, plant protections, and/or a change of seed mix.	X	X
WATER (SURFACE): Covered under SBC CUP (1997), BLM ROD (1998), RWQCB WDRs, and pending MPO (Appendix J) and POD (Appendix K)			
SW-1	Adequate provisions shall be made to intercept and conduct the off-site tributary drainage flow around or through the site in a manner that will not adversely affect adjacent or downstream properties.	X	
SW-2	The Applicant shall obtain a California Fish and Game Code Section 1603 permit from the CDFW before altering any stream channels.	X	

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SW-3	The heap leach piles shall be constructed to avoid disruption of the large drainage that passes through the western portion of the CMM. Minor drainages that would be restricted by heap pad construction shall be diverted around the heap piles. Facilities shall be constructed to avoid major drainages.	X	
SW-4	**Stormwater and Erosion** CMV shall maintain all overburden and stockpiles to prevent excess erosion and stormwater ponding through the use of best management practices, such as micro-catchments from machine tracks; coarse rock riprap armoring if nearby ephemeral surface water flow; rock mulching; and seeding with native seed mix collected on-site.	X	
SW-5	**Stormwater and Erosion** The perimeter of all Group C mining units shall be inspected monthly for erosion, ponding, excessive plant growth, and incompatible wastes.	X	
SW-6	**Stormwater and Erosion** CMM shall be designed, operated, and maintained to prevent inundation, washout, or erosion of wastes or covering material, which could occur as a result of floods having a predicted frequency of once in 100 years.	X	
SW-7	**Stormwater and Erosion** Surface and subsurface drainage from outside of a mining unit shall be diverted from the unit.	X	
SW-8	**Stormwater and Erosion** Leached ore residual shall not be placed in perennial, intermittent, or ephemeral stream channels, unless provisions are made to divert runoff around the waste in a nonerosive manner. Waste shall not be placed where they can be eroded by stream flows or cause accelerated stream bank erosion.	X	

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SW-9	**Stormwater and Erosion** Diversion and drainage facilities shall be designed, constructed, and maintained to: a. Accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the mining unit. b. Effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities. c. Prevent surface erosion through the use of energy dissipaters where required to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent erosion. d. Control and intercept run-on drainage to isolate uncontaminated surface waters from water that might have come into contact with waste. e. Take into account: (i) For closed mining units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern. (ii) For operating portions of mining units other than surface impoundments, the unit's drainage pattern at any given time. (ii) The possible effects of the mining unit's drainage pattern on and by the regional watershed. (iv) The design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no CMM. f. Preserve the system's function. The Discharger shall periodically remove accumulated sediment from sedimentation or detention basins as needed to preserve the design capacity of the system.	X	
SW-10	**Stormwater and Erosion** Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system.	X	
GROUNDWATER QUALITY: Covered under SBC CUP (1997), BLM ROD (1998), RWQCB WDRs, and pending MPO (Appendix J) and POD (Appendix K)			
GW-QUAL-1	The Applicant shall abate potential impacts to surface water and groundwater from on-site storage of fossil fuels, chemicals, explosives, and reagents, as well as the use of dust-binding agents, through compliance with all applicable regulations of the Colorado River Basin RWQCB, County DEHS and County Fire Marshal. Use of ASTs requires the preparation of a contingency plan for secondary containment of potential leaks to the satisfaction of the RWQCB and the County DEHS, including the following:	X	
GW-QUAL-2	A containment area designed to accommodate the volume of the tank plus a 24-hour, 100-year storm.	X	
GW-QUAL-3	If a series of tanks are involved, containment shall be provided for 10% of the combined capacity plus a 24-hour, 100-year storm.	X	
GW-QUAL-4	Belowground storage tanks shall be subject to the following RWQCB regulatory criteria:	X	
GW-QUAL-5	All tanks shall be registered with the RWQCB and shall conform to RWQCB construction standards. The County DEHS will be responsible for and will issue permits for implementation of these requirements and standards.	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
GW-QUAL-6	Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed off-site by a County-licensed hauler.	X	
GW-QUAL-7	The Applicant shall meet all the requirements of the RWQCB Waste Discharge Order and make all monitoring data and correspondence available to the BLM.	X	
GW-QUAL-8	A Spill Prevention, Control, and Countermeasures Plan shall be developed to establish procedures for spill prevention and cleanup	X	
GW-QUAL-9	Pit-water drainage shall be independently monitored and evaluated for acid mine water conditions. Should acidic water conditions develop during mining activity, an appropriate remediation plan shall be prepared. All work shall be conducted under the direct supervision of the BLM.	X	
GW-QUAL-10	The Applicant shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids, including: a. Impermeable liners for process solution basins and heap leach pads.	X	
GW-QUAL-11	b. Sealed drainage and collection facilities to transport or contain leaching solution.	X	
GW-QUAL-12	c. Diked leach pads to confine and control drainage from the leach piles.	X	
GW-QUAL-13	d. Storage basins with adequate freeboard to safely contain storm runoff from within the heap leach system and drain-down of solution from the leach pads in the event pumps cannot operate because of a power failure.	X	
GW-QUAL-14	e. Drainage or diversion ditches outside the heap leach system to preclude entry of storm runoff into the system.	X	
GW-QUAL-15	f. A leakage detection monitoring system for the leach pads, emergency solution storage, and stormwater storage basins. Detected leaks shall be reported verbally to BLM within 72 hours and in writing describing the nature of leaks within 10 working days. The BLM shall be promptly provided copies of all correspondence with RWQCB regarding monitoring and leaks.	X	
GW-QUAL-16	g. Regularly prepared monitoring reports on the current status of operations, and copies will be provided to the BLM.	X	
GW-QUAL-17	h. Final rinsing and neutralization confirmation of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion.	X	
GW-QUAL-18	**Groundwater Monitoring** CMV must submit an Unsaturated Zone Monitoring Work Plan for installing unsaturated/vadose zone monitoring systems under the Class B mining units that meet the requirements of 27 CCR Section 20415.	X	
GW-QUAL-19	**Stormwater** The final surfaces, interim surfaces, and top deck areas of the heap leach pad will be sloped to promote controlled stormwater runoff that falls directly onto the pad. Channels, basins, and other drainage control structures will be constructed during various phases of construction and operations.	X	

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GW-QUAL-20	**Stormwater** CMV must comply with all pertinent stormwater requirements contained in 27 CCR and in the WDR Order.	X	
GW-QUAL-21	**Financial Assurance** Within 90 days following the issuance of a new or revised Order, CMV must provide appropriate assurances of financial responsibility in compliance with 27 CCR.	X	
GW-QUAL-22	**Waste Discharge** CMV is prohibited from waste discharge classified as hazardous, as defined in 27 CCR Section 20164.	X	
GW-QUAL-23	**Waste Discharge** Group B mining waste other than the permitted discharge is prohibited. Group B mining waste is defined in 27 CCR Section 22480.	X	
GW-QUAL-24	**Waste Discharge** The discharge of any waste other than mining waste at CMM is prohibited. Prohibited wastes may include oil, grease, solvents, other petroleum products, and toxic and hazardous materials.	X	
GW-QUAL-25	**Waste Discharge** The discharge of wastes outside of the mining unit(s) or portions of a mining unit specifically designed for their containment is prohibited.	X	
GW-QUAL-26	**Waste Discharge** The discharge of Class B mining wastes to the unsaturated/vadose zone or to groundwater is prohibited.	X	
GW-QUAL-27	**Waste Discharge** The discharge of mining waste to land not owned or controlled by the Discharger is prohibited.	X	
GW-QUAL-28	**Waste Discharge** The discharge of waste to any surface water or surface drainage courses is prohibited.	X	
GW-QUAL-29	**Waste Discharge** The storage, treatment, or disposal of wastes at CMM shall not cause contamination, pollution, or nuisance as defined in California Water Code Section 13050, Subdivisions (k), (l), and (m).	X	
GW-QUAL-30	**Waste Discharge** Wastes shall be discharged only into mining units specifically designed for their containment and/or treatment, as described by an approved RWQCB Order (WDRs).	X	
GW-QUAL-31	**Waste Discharge** CMV shall not cause the concentration of any Constituent of Concern (including laboratory monitoring parameters), as specified in the Monitoring and Reporting Plan for groundwater, MRP R7-2020-0004 and incorporated herein by reference, to exceed its representative concentration limit in any monitoring medium (i.e., exceed the Water Quality Protection Standard). The concentration limit for each constituent will be set in accordance with the MRP. Data analysis shall be performed in accordance with the MRP.	X	
GW-QUAL-32	**Waste Discharge** Mining waste shall be treated or neutralized whenever feasible to minimize the threat to water quality and minimize the need to install waste containment structures.	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
GW-QUAL-33	**Waste Discharge** All mining units shall be operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater, including the capillary fringe.	X	
GW-QUAL-34	**Waste Discharge** CMV shall promptly remove and properly dispose of any unpermitted wastes that are discharged at CMM in violation of these requirements.	X	
GW-QUAL-35	**Leak Detection and Monitoring** The leachate collection and removal system (LCRS) for each Group B mining unit shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the unit.	X	
GW-QUAL-36	**Leak Detection and Monitoring** Leachate generation by an LCRS for a mining unit shall not exceed 85% of the design capacity of (a) the LCRS or (b) the sump pump. If leachate generation exceeds this value and/or if the depth of the fluid in an LCRS exceeds the minimum needed for safe pump operation, the Discharger shall immediately notify the RWQCB in writing within 7 days. Notification shall include a timetable for a remedial action to repair the containment structures or other action necessary to reduce leachate production.	X	
GW-QUAL-37	**Leak Detection and Monitoring** Each LCRS shall be operated to function without clogging through the scheduled closure of the applicable mining unit and during the post-closure maintenance period. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with results of earlier test completed under comparable conditions.	X	
GW-QUAL-38	**Leak Detection and Monitoring** CMV shall notify the RWQCB within 7 days if fluid is detected in a previously dry LCRS or unsaturated zone monitoring system or if a progressive increase is detected in the volume of fluid in an LCRS th exceeds the previously observed range of volumes for that location or exceeds the Leakage Rate specified in the MRP.	X	
GW-QUAL-39	**Leak Detection and Monitoring** CMV shall maintain sufficient freeboard in Group B mining units to accommodate seasonal precipitation and to contain a 24-hour, 100-year storm event but in no case no less than 2 feet of freeboard (measured vertically).	X	
GW-QUAL-40	**Leak Detection and Monitoring** Any direct-line discharge to Group B mining units shall have fail-safe equipment or operating procedures to prevent overfilling. Discharges shall be stopped in the event of any containment system failure that causes a threat to water quality.	X	
GW-QUAL-41	**Leak Detection and Monitoring** All visible portions of synthetic liners shall be inspected weekly until all free liquid is removed from the Group B mining unit as part of closure. If, during the active life of the impoundment, the wastes are removed and the bottom of the impoundment is cleaned down to the liner, an inspection shall be made of the bottom of the liner prior to refilling of the impoundment.	X	

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GW-QUAL-42	**Leak Detection and Monitoring** LCRS maintenance and repair plans shall be submitted to the RWQCB in advance of any work. Group B mining unit repair plans and liner Construction Quality Assurance (CQA) Plans shall be developed and stamped by a licensed professional experienced in this type of work.	X	
GW-QUAL-43	**Leak Detection and Monitoring** Within the heap leach pad, the Discharger shall maintain devices installed in the ore piles that measure solution depth (hydraulic head) within each ore pile over the liner.	X	
GW-QUAL-44	**Waste Discharge** Cyanide solutions shall be contained only in the heap leach pad, solution conveyance system, tank pond, event pond, and/or other leakproof containers.	X	
GW-QUAL-45	**Waste Discharge** CMV shall prohibit wind transport of cyanide solution or ore containing cyanide away from the heap leach pad area.	X	
GW-QUAL-46	**Waste Discharge** Standby emergency facilities shall be available to ensure continual circulation of the leaching solution if a planned processing configuration or rate could, in an emergency, result in a flow in excess of existing Event Pond capacity.	X	
GW-QUAL-47	**Mining Unit Specifications** Construction shall be performed in accordance with a CQA Plan that complies with 27 CCR Section 20324 and is prepared by a California Registered Civil Engineer or Certified Engineering Geologist.	X	
GW-QUAL-48	**Mining Unit Specifications** The CQA Program, including all relevant aspects of construction quality control, shall provide evidence that materials and procedures used in the placement of the any containment feature at any mining unit will be tested and monitored to ensure the structure is constructed in accordance with the design specifications approved by the RWQCB.	X	
GW-QUAL-49	**Reporting** Preconstruction Notice. At least 60 days prior to the commencement of construction of each phase/component of CMM, the Discharger shall submit a technical report to the RWQCB for approval by the Executive Officer, which shall include a plan showing in detail the proposed construction of that phase/component. Any portion of the 60-day requirement may be waived in writing by the Executive Officer at the request of the Discharger.	X	
GW-QUAL-50	**Reporting** Pre-Operations Notification. At least 10 days prior to commencement of operations at any new component or at least 20 days prior to loading ore onto any new heap leach pad phase, the Discharger shall submit a certificate to the RWQCB signed by a California Registered Civil Engineer or Certified Engineering Geologist stating that the pads, containment basins, leakage detection system, flood protection and attendant facilities, and/or disposal areas are constructed in accordance with the respective technical report, as approved by the Executive Officer to meet the requirements of this Order.	X	

ACEPM #	ACEPM Description	Mine Plan of Operation	Plan of Development
GW-QUAL-51	**Reporting** CQA Final Report. Within 90 days of the completion of construction, the Discharger shall submit a final CQA report documenting the construction process and containing the quality assurance documentation described in the Report of Waste Discharge and required by 27 CCR Section 20324(d).	X	
GW-QUAL-52	**Reporting** For all mining units in a corrective action program to address a release from the unit, the Discharger shall implement all corrective measures necessary to remediate the release and to ensure that the Discharger achieves compliance with the Water Quality Protection Standard (as defined in the MRP) adopted for that unit. To show cleanup of all water-bearing media affected by the release, the Discharger shall complete the demonstration required under 27 CCR Section 20430(g).	X	
GW-QUAL-53	**Reporting** The cessation of any corrective action measure (e.g., leachate and groundwater extraction) is prohibited without written approval from the RWQCB Executive Officer. If routine maintenance or a breakdown results in cessation of corrective action for greater than 24 hours, the Discharger shall notify RWQCB staff.	X	
GW-QUAL-54	**Monitoring** CMV shall implement MRP R7-2020-0004 and any revisions thereto to detect at the earliest opportunity unauthorized discharges of waste constituents from CMM, or any impairment of beneficial uses that result from discharges of waste to CMM. CMV shall report the results of all on-site monitoring in accordance with MRP R7-2020-0004 and revisions thereto.	X	
GW-QUAL-55	**Monitoring** Pursuant to 27 CCR Section 22500, the Discharger shall conduct a water quality monitoring and response program in accordance with MRP R7-2020-0004 and any future amendments thereto, including: a. Detection Monitoring. The Discharger shall institute a detection monitoring program pursuant to 27 CCR Title 27 Section 20420. b. Evaluation Monitoring. The Discharger shall institute an evaluation monitoring program under 27 CCR Title 27 Section 20425. c. Corrective Action Monitoring. The Discharger shall institute a corrective action program under 27 CCR Title 27 20430 when the RWQCB determines that the assessment of the nature and extent of the release and the design of a corrective action program have been satisfactorily completed.	X	
GW-QUAL-56	**Monitoring** *Sample Collection and Analysis Plan*. Within 90 days of the adoption of these WDRs, the Discharger shall submit to the RWQCB for review and approval a comprehensive Sample Collection and Analysis Plan that shall describe in detail the methods to be used to perform all monitoring activities for all on-site features.	X	

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GW-QUAL-57	**Monitoring** *Groundwater Monitoring Network Work Plan.* Within 90 days of the adoption of this Order, the Discharger shall submit to the RWQCB's Executive Officer for review and approval a work plan describing how many new wells are needed to properly monitor groundwater at CMM in compliance with 27 CCR Section 20415 and propose a time schedule, location(s), and methods of installation for the new monitoring well(s). Within 30 days of approval of the work plan by the Executive Officer, the Discharger shall begin implementation of the work plan in accordance with the time schedule. The time schedule for implementation shall not exceed 12 months. The Discharger shall not begin discharging the cyanide leach solution to any Group B mining units until an approved groundwater monitoring network is in place.	X	
GW-QUAL-58	**Monitoring** *Unsaturated Zone Monitoring Work Plan*. Within 90 days of the adoption of this Order, the Discharger shall submit to the RWQCB for review and approval a work plan for installing unsaturated/vadose zone monitoring systems under the Group B mining units that meet the requirements of 27 CCR Section 20415.	X	
GROUNDWATER QUANTITY: Covered under SBC CUP (1997), BLM ROD (1998), and pending MPO (Appendix J) and POD (Appendix K)			
GW-QUANT-1	Project water requirements shall be minimized by the following operational procedures: a. Crushing the ore to reduce leaching time so that less water will be circulated and evaporation will be reduced.	X	
GW-QUANT-2	b. Employing drip irrigation to distribute solution directly to the heap leach surfaces.	X	
GW-QUANT-3	Groundwater extraction shall be recorded at each well with flowmeters.	X	
GW-QUANT-4	If any existing wells in Lanfair Valley within 10 miles of the WWF go dry as a result of CMM operations, the Applicant shall pay the costs to have these wells deepened or shall provide replacement water to the Applicant of the affected wells.	X	
GW-QUANT-5	If any existing wells in the Ivanpah Valley within 1 mile of the Nipton wells go dry as a result of the CMM operations, the Applicant shall pay the costs to have these wells deepened or shall provide replacement water to the owner of the affected wells.	X	
GW-QUANT-6	The Applicant shall comply with an approved groundwater monitoring and contingency plan. It defines monitoring locations, frequency, and contingency thresholds and actions to be taken if modeled impacts exceed established thresholds due to groundwater pumping or pit dewatering at the CMM.	X	

Notes:

* San Bernardino County (SBC). 1997. Condition Use Permit. (SBC CUP [1997]).

† Bureau of Land Management (BLM). 1998. Record of Decision. (BLM ROD [1998]).

‡ Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements (WDRs).

¶ California Accidental Release Prevention Program (CalARP) Risk Management Plan.

California Department of Fish and Wildlife (CDFW). Incidental Take Permit for desert tortoise.

** U.S. Fish and Wildlife Service (USFWS). Biological Opinion. (USFWS BO).

†† Bureau of Land Management (BLM). 2020. DR. (BLM DR [2020]).

‡‡ Desert Tortoise Council (1996).

APPENDIX F

List of Preparers

LIST OF PREPARERS

The EIS/EIR and supporting documents were prepared under the supervision of a team from the Bureau of Land Management (BLM), led by a third-party contractor, SWCA Environmental Consultants (SWCA). Contact information for the National Environmental Policy Act (NEPA) lead agency, California Environmental Quality Act (CEQA) lead agency, and SWCA is listed below.

NEPA Lead Agency

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Needles Field Office
1303 South Highway 95
Needles, California 92363

CEQA Lead Agency

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Land Use Services Planning
385 North Arrowhead Avenue
San Bernardino, California 92415

SWCA Environmental Consultants

SWCA Environmental Consultants
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Las Vegas, Nevada 89123

List of Preparers by Agency

Individuals who contributed to the preparation of this document are listed in Table G.1.

Table F.1-1. Personnel Participating in the EIS/EIR

Name	Title	Organization	Office	EIS/EIR Area of Expertise
Ron Nuckles	Field Manager	BLM	Needles Field Office (NFO)	Field Manager
Rose Pettiette	Project Manager	BLM	NFO	Project Manager, Geologist
Sabrina Jolicoeur	Assistant Field Manager	BLM	NFO	NEPA Support
Arleen Garcia-Herbst	Archaeologist	BLM	California Desert District	Archeologist
Bruce Sillitoe	Field Manager	BLM	Las Vegas Field Office (LVFO)	Field Manager
Colleen Cepero Rios	Planner	BLM	LVFO	NEPA Support
Lisa Moody	Project Manager	BLM	LVFO	Reality Specialist
Eamon Brennan	Monument Manager	BLM	LVFO	Avi Kwa Ame Monument Manager
Tiffany Arend	Archaeologist	BLM	LVFO	Archeologist
Derek Newland	Planner	SBC	Land Use Services Planning	Project Manager
Dan Walsh	County Project Manager	San Bernardino County (SBC)	Land Use Services Planning	Geologist

APPENDIX G

Permits and Approvals Needed

Table G-1. Federal Permits and Authorizations for the Phase II Expansion Project

Authorization	Agency Authority	Statutory Reference	Permit or Authorization Trigger	Timeline
Endangered Species Act (ESA)	U.S. Fish and Wildlife Service (USFWS)	ESA (by Public Law [PL] 93-205, as amended by PL 100-478;16 United States Code [USC] 1531 et seq.)	Triggered by a prospective federal action where implementation of such action will likely affect a threatened or endangered species. (triggers Section 7(a)(3) (ESA))	12–18 months (concurrent with National Environmental Policy Act [NEPA] process)
Bald and Golden Eagle Protection Act	USFWS	16 USC 668−668(d)	Eagle use in Application Area	N/A
Clean Water Act Section 404 Dredge and Fill Permit	U.S. Army Corps of Engineers	33 USC 1344	Placement of dredge or fill in a water, wash, or wetlands connected to a navigable water	18 months
National Historic Preservation Act (NHPA)	Nevada State Historic Preservation Office	NHPA 106 (PL 89-665; 16 USC 470 et seq.)	Federal nexus or Utility Environmental Protection Act permit	18 months (concurrent with NEPA process)

Table G-2. State and Local Permits and Authorizations for the Phase II Expansion Project

Authorization	Agency Authority	Statutory Reference	Permit or Authorization Trigger
State (Nevada)			
National Historic Preservation Act Section 106 determination of effect concurrence	Nevada State Historic Preservation Office	16 United States Code (USC) 470 et seq., Nevada Revised Statutes (NRS) 383	Federal nexus, Utility Environmental Protection Act, or human remains are discovered.
Critically Endangered Species Permit	Nevada Division of Forestry	NRS 527.260–527.300	Removal of critically endangered plants.
License, permit, or authorization to take or possess protected wildlife	Nevada Department of Wildlife	Nevada Administrative Code (NAC) 503.093	Handling of protected wildlife
Clean Water Act (CWA) Section 401 Permit	Nevada Division of Environmental Protection (NDEP), Bureau of Water (BOW) Pollution Control	33 USC 1251 et seq.	Discharge into a jurisdictional water, wash, or wetland connected to a navigable water.
CWA Section 402 National Pollutant Discharge Elimination System Construction Stormwater General Permit	NDEP	33 USC 1251 et seq.	Construction activities covering more than 1 acre that will discharge stormwater runoff from the construction site into a municipal separate stormwater sewer system or into waters of the United States (WOTUS).
Surface Area Disturbance Permit	NDEP, Bureau of Air Pollution Control	NAC 445B	Construction which causes surface area disturbance totaling 5 acres or more.

Authorization	Agency Authority	Statutory Reference	Permit or Authorization Trigger
Right-of-Way (ROW) Occupancy Permit	Nevada Department of Transportation (NDOT)	NRS 408.423, 408.210, NAC 408	Construction within an NDOT ROW.
Over Legal Size/Load Permit	NDOT	NRS 484.437−775, NAC 484.300−580	Exceedance of 80,000 pounds gross weight; exceedance of 8 feet, 6 inches wide; exceedance of 14 feet tall; exceedance of 10 feet of front or rear overhang; or exceedance of 70 feet long.
State (California)			
CWA Section 401 Certification (Water Quality Certification)	Lahontan Regional/Colorado River Basin Regional Water Quality Control Board	23 California Code of Regulations (CCR) 3830-3869	Impacts to WOTUS (Potentially to be removed once USACE makes a determination)
California Environmental Species Act (CESA) Incidental Take Permit	California Department of Fish and Wildlife	14 CCR 783.2-783.8	Take of a CESA-listed species and CESA candidate species
Local (Clark County, Nevada)			
Drainage Plan Concurrence	Clark County Regional Flood Control District (CCRFCD)	CCRFCD Uniform Regulations for Control of Drainage	Requires an approved drainage study for sites associated with construction of a new facility on more than 2 acres within a ROW in Clark County, Nevada.
Building Permit	Clark County Building Department	Permit Application Submittal and Review Procedures	Construction of new buildings or septic systems
Conditional Use Permit	Clark County Planning Department	Permit Application Submittal and Review Procedures	Construction within County lands must be consistent with land uses
Dust Control Permit	Clark County Planning Department	County Master Plan, Dust Control Permit Application	General construction
Local (San Bernardino County, California)			
Building Permit	San Bernardino County Department of Building and Safety	Permit Application Submittal and Review Procedures	Construction approval
Conditional Use Permit	San Bernardino County Planning Division	Permit Application Submittal and Review Procedures	Land use approval
Grading Permit	San Bernardino County Department of Building and Safety	Permit Application Submittal and Review Procedures	Grading approval
Authority to Construct/Permit to Operate	Mojave Desert Air Quality Management District	Permit Application Submittal and Review Procedures	Construction approval

Table G-3. Historic Mining Permits Reference

Authorization	Permit ID	Agency Authority	Date Issued	Date Renewed	Date of Termination
Record of Decision (ROD)	CACA-31137	U.S. Bureau of Land Management (BLM)	March 1998	Not Applicable (N/A)	N/A
ROD	CACA-31137	BLM	July 1998	N/A	N/A
Decision Record	CACA-31137	BLM	February 2020	N/A	N/A
Conditional Use Permit	90M-013	San Bernardino County (SBC)	August 2019	N/A	December 2035
Approved Plan of Operation	N/A	National Park Service	May 2024	N/A	N/A
Waste Discharge Requirements	R7-2020-0004	Colorado River Basin Regional Water Quality Control Board	June 2020	2023	Renewed Annually
National Pollutant Discharge Elimination System General Permit Notice of NonApplicability	7 36NNA000736	State Water Resources Control Board	July 2020	N/A	N/A
Biological Opinion (BO)	1-6-90-F-24	U.S. Fish and Wildlife Service (USFWS)	August 1990	N/A	N/A
BO	1-8-97-F-37	USFWS	February 1998	N/A	N/A
Approved Jurisdictional Determination	SPL-2019-00042-blr	U.S. Army Corps of Engineers	June 2019	N/A	Valid for 5 Years
Authority to Construct Permits	Various	Mojave Desert Air Quality Management District	June 2019	June 2024	Renewed Annually
1602 Lake and Streambed Alteration Agreement (LSAA)	LSAA#11600-2018-021180	California Department of Fish & Wildlife (CDFW)	2019	N/A	N/A
2081 Incidental Take Permit	See 1993 Memorandum of Understanding	CDFW	1993	N/A	N/A
Risk Management Plan	PT0005497	SBC Certified Unified Program Agency (CUPA) (Fire Department Hazardous Materials (HazMat) Division)	June 2019	June 2024	Renewed Annually
Aboveground Petroleum Storage Act	PT0005498	SBC CUPA (Fire Department HazMat Division)	June 2019	June 2024	Renewed Annually
Hazardous Materials Storage	PT0005494	SBC CUPA (Fire Department HazMat Division)	June 2019	June 2024	Renewed Annually
Resource Conservation and Recovery Act Large Quantity Generator	PT0005495	SBC CUPA (Fire Department HazMat Division)	June 2019	June 2024	Renewed Annually
Waste Tire Disposal Permit	TPID 1951503	CalRecycle	2022	June 2024	Renewed Annually
Non-Transient Non-Community Water System	PT0007926	SBC – Environmental Health Services (EHS)	September 2020	Oct 2023	Renewed Annually
Domestic Water Supply	3601082	SBC – EHS	September 2020	N/A	N/A

APPENDIX H

Legal Land Description

Table H-1. Project Area Legal Description

Meridian	Township, Range	Section
Mine and Mine Expansions		
San Bernardino, California	T14N, R17E	13, Lots 1–2, N½ SW¼, S½ SW¼, and N½ SE¼
		14, N½ SE¼ and S½ SE¼
		22, SE¼ NW¼, NE¼ SW¼, SE¼ SW¼ N½ SE¼, S½ SE¼, and S½ NE¼
		23, N½ NE¼, S½ NE¼, N½ SE¼, S½ SE¼, S½ NW¼, N½ SW¼, and S½ SW¼
		24, Lots 3–25, NW¼ NW¼, SW¼ NW¼, NW¼ SW¼, SE¼ NE¼, NE¼ SE¼, S½ SW¼, and S½ SE¼
		25, N½ NW¼, S½ NW¼, N½ SW¼, S½ SW¼, N½ NE¼, S½ NE¼, N½ SE¼, and S½ SE¼
		26, N½ NW¼, S½ NW¼, N½ SW¼, S½ SW¼, N½ NE¼, S½ NE¼, N½ SE¼, and S½ SE¼
		27, NE¼ NW¼, SE¼ NW¼, NE¼ SW¼, SE¼ SW¼, N½ NE¼, S½ NE¼, N½ SE¼, and S½ SE¼
		34, NE¼ NW¼ and N½ NE¼
		35, N½ NW¼ and N½ NE¼
		36, N½ NW¼ and N½ NE¼
	T14N, R18E	18, Lots 18–23
		19, Lots 6–9, 12–15, and 18–21
		30, Lots 6–9, 12–15, 18–25, and 28–39
		31, Lots 6–7
Water Pipeline ROW		
San Bernardino, California	T16N, R16E	26, Lots 4–5
		32, SE¼ NE¼ and NE¼ SE¼
		33, S½ NE¼, SE¼ NW¼, and SW¼ NW¼
		34, Lots 2–3, N½ NE¼, and E½ NW¼
		35, N½ NW¼
	T14N, R17E	1, Lot 5, SE¼ NW¼, N½ SW¼, SW¼ SW¼,and NW¼ NE¼
		2, SE¼ SE¼
		11, NE¼ NE¼, W½ NE¼, NW¼ SE¼, and E½ SW¼
		14, NE¼ NW¼, W½ NW¼, N½ SW¼, and SE¼ SW¼
		23, NE¼ NW¼ and SE¼ NW¼
	T15N, R17E	24, Lots 4,6,12,and 13, SW¼ NE¼, and SE¼ SW¼
		25, E½ NW¼, SW¼ NW¼, and E½ SW¼
		36, W½ NW¼, SE¼ NW¼, and E½ SW¼

Meridian	Township, Range	Section
Mount Diablo, Nevada	T28S, R60E	25, N½ SW¼, N½ SE¼, and SE¼ NE¼
		26, Lots 8, 10, and 11
	T28S, R61E	13, N½ NW¼ and N½ NE¼
		14, N½ NW¼ and N½ NE¼
		15, E½ NE¼, SW¼ NE¼, W½ SE¼, and S½ SW¼
		20, S½ SE¼ and SE¼ SW¼
		21, E½ NE¼, SW¼ NE¼, SE¼ NW¼, NW¼ SE¼, N½ SW¼, and SW¼ SW¼
		22, NW¼ NW¼
		29, N½ NW¼
		30, Lot 2, SE¼ NE¼ NE¼, NW¼ SE¼ NE¼, N½ SW¼ NE¼, E½ SE¼ SW¼, and SW¼ SE¼ NW¼
	T28S, R62E	15, S½ SW¼
		16, S½ SE¼, NW¼ SE¼, and N½SW¼
		17, N½ NW¼, SE¼ NW¼, S½NE¼, and NE¼ SE¼
		18, Lots 5–6, S½ NE¼ NE¼, N½ NW¼ NE¼,and N½ NE¼ NW¼
		22, E½ NW¼, SW¼ NW¼, and W½ SW¼
		27, NW¼ NW¼
		28, E½ NE¼, E½ SE¼, and SW¼SE¼
		33, Lot 2, NE¼ NW¼ NE¼, S½ NW½ NE¼, W½ SW¼ NE¼, E½ NE¼ SW¼, NW¼ NW¼ SE¼, and SE¼ NE¼ SW¼
	T29S, R62E	4, Lots 2–3, NE¼ SE¼ NW¼, S½ SE¼ NW¼, W½ NE¼ SW¼, SE¼ SW¼ SW¼, and NW¼ SE¼ SW¼
		8, SE¼ NE¼, E½SE¼, and SW¼ SE¼
		9, E½ NW¼
		17, W½ NE¼, NW¼ SE¼, and E½ SW¼
		20, E½ NW¼, SW¼ NW¼, and W½ SW¼
		29, NW¼ NW¼ and E½ SW¼
		30, E½ NE¼ and NE¼ SE¼
		31, SE¼ NE¼, N½ SE¼, and SW¼ SE¼
		32, E½ NW¼
	T30S, R62E	6, Lot 9
Power Line ROW		
San Bernardino, California	T14N, R17E	1, Lot 5, SE¼ NW¼, N½ SW¼, SW¼ SW¼, and NW¼ NE¼
		2, SE¼ SE¼
		11, NE¼ NE¼, W½ NE¼, NW¼ SE¼, and E½ SW¼
		14, NE¼ NW¼, W½ NW¼, N½ SW¼, and SE¼ SW¼
		23, NE¼ NW¼ and SE¼ NW¼
	T15N, R17E	24, Lots 4, 6, 12, and 13, SW¼ NE¼ and SE¼ SW¼
		25, E½ NW¼, SW¼ NW¼, and E½ SW¼
		36, W½ NW¼, SE¼ NW¼, and E½ SW¼

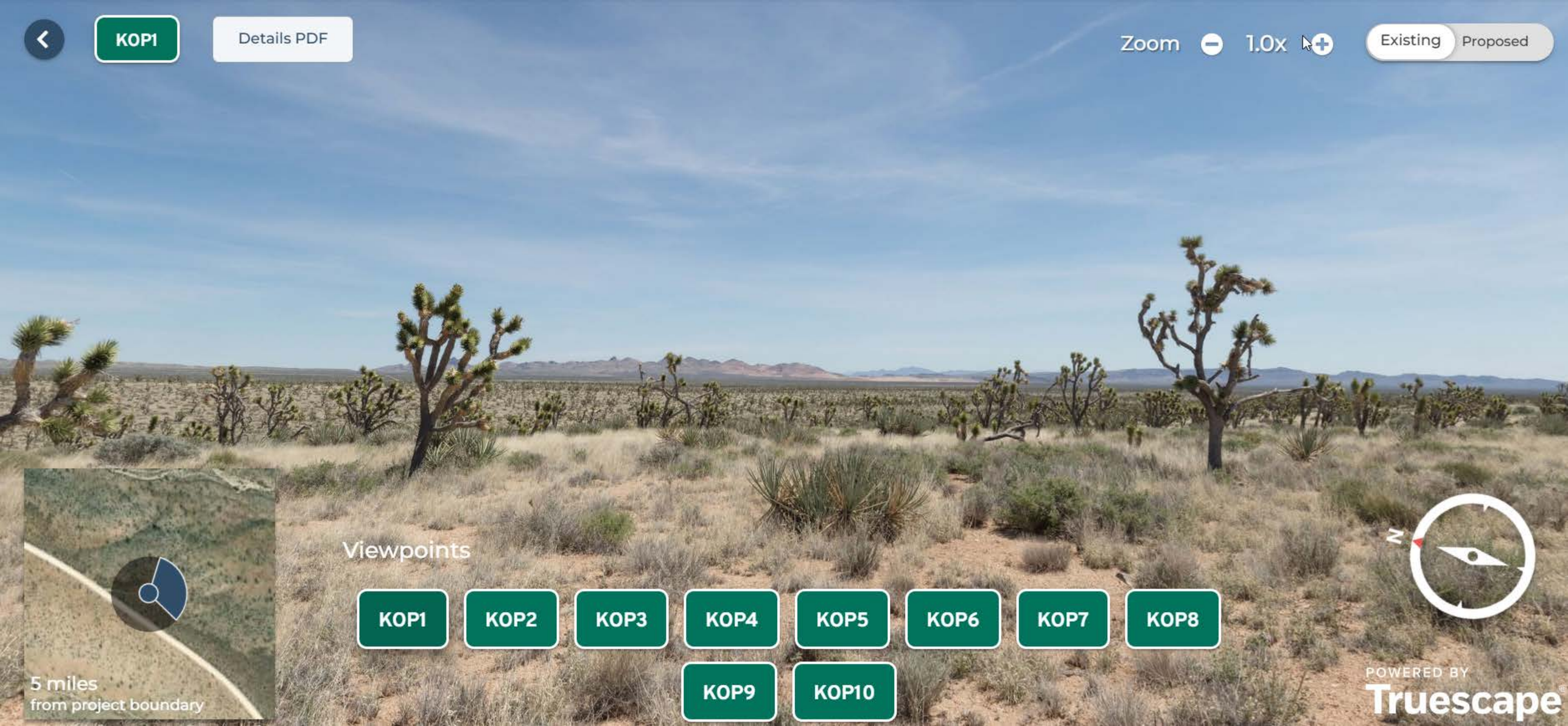
Meridian	Township, Range	Section
Mount Diablo, Nevada	T28S, R62E	27, N½ NW¼
		28, E½ NE¼, E½ SE¼, and SW¼ SE¼
		33, Lot 2, NE¼ NW¼ NE¼, S½ NW½ NE¼, W½ SW¼ NE¼, E½ NE¼ SW¼, NW¼ NW¼ SE¼, and SE¼ NE¼ SW¼
	T29S, R62E	4, Lots 2–3, NE¼ SE¼ NW¼, S½ SE¼ NW¼, W½ NE¼ SW¼, SE¼ SW¼ SW¼, and NW¼ SE¼ SW¼
		8, SE¼ NE¼, E½ SE¼, and SW¼ SE¼
		9, E½ NW¼
		17, W½ NE¼, NW¼ SE¼, and E½ SW¼
		20, E½ NW¼, SW¼ NW¼, and W½ SW¼
		29, NW¼ NW¼ and E½ SW¼
		30, E½ NE¼ and NE¼ SE¼
		31, SE¼ NE¼, N½ SE¼, and SW¼ SE¼
		32, E½ NW¼
	T30S, R62E	6, Lot 9

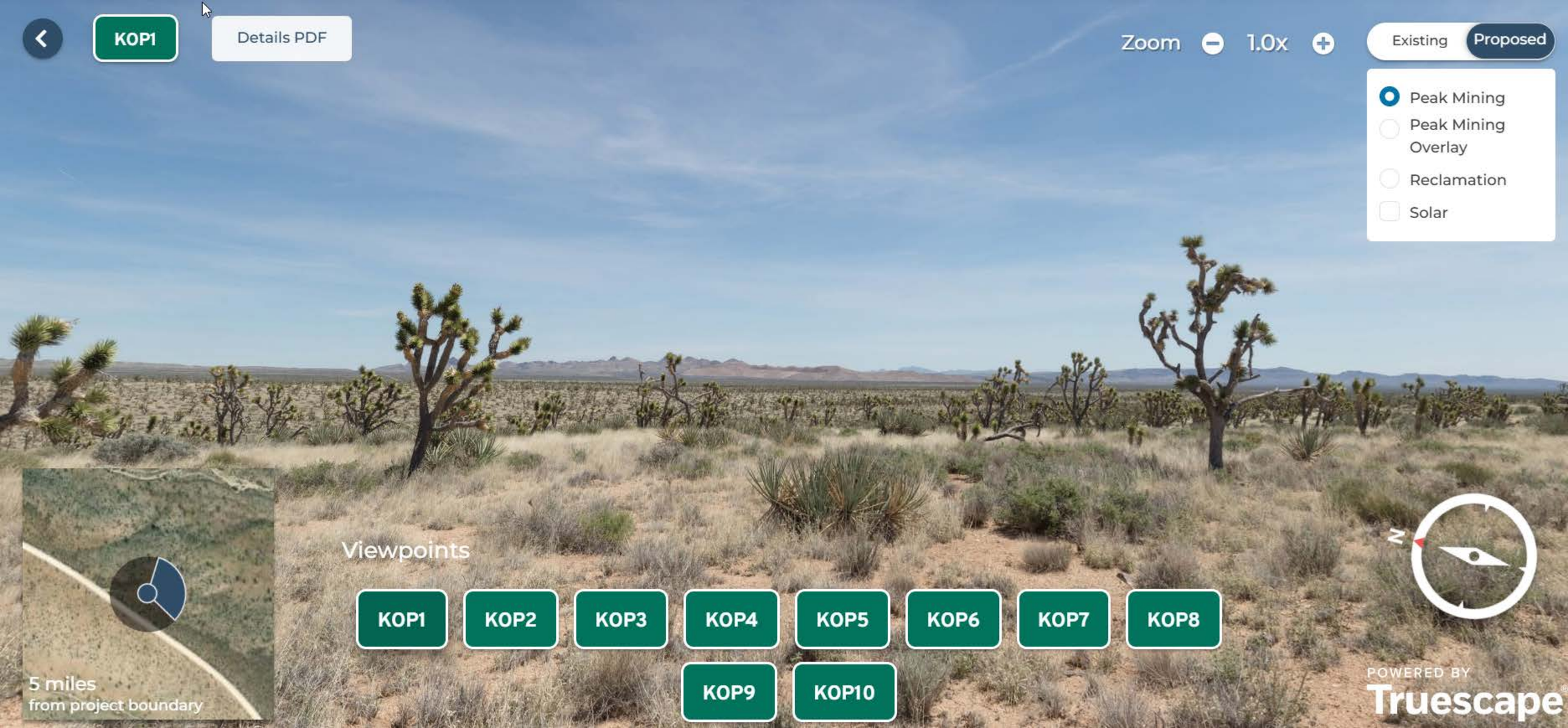
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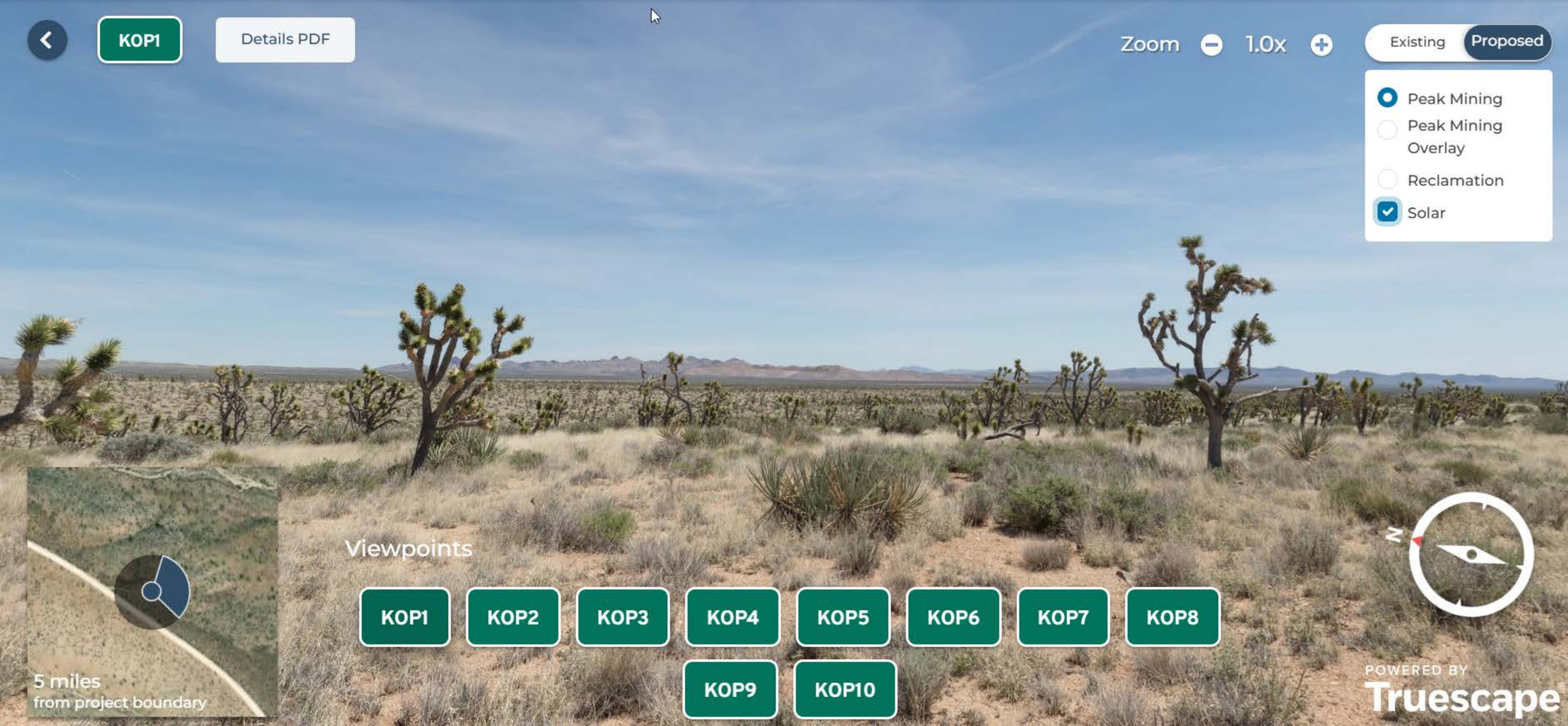
T = Township. R = Range. E= East. N = North. S = South. W = West.

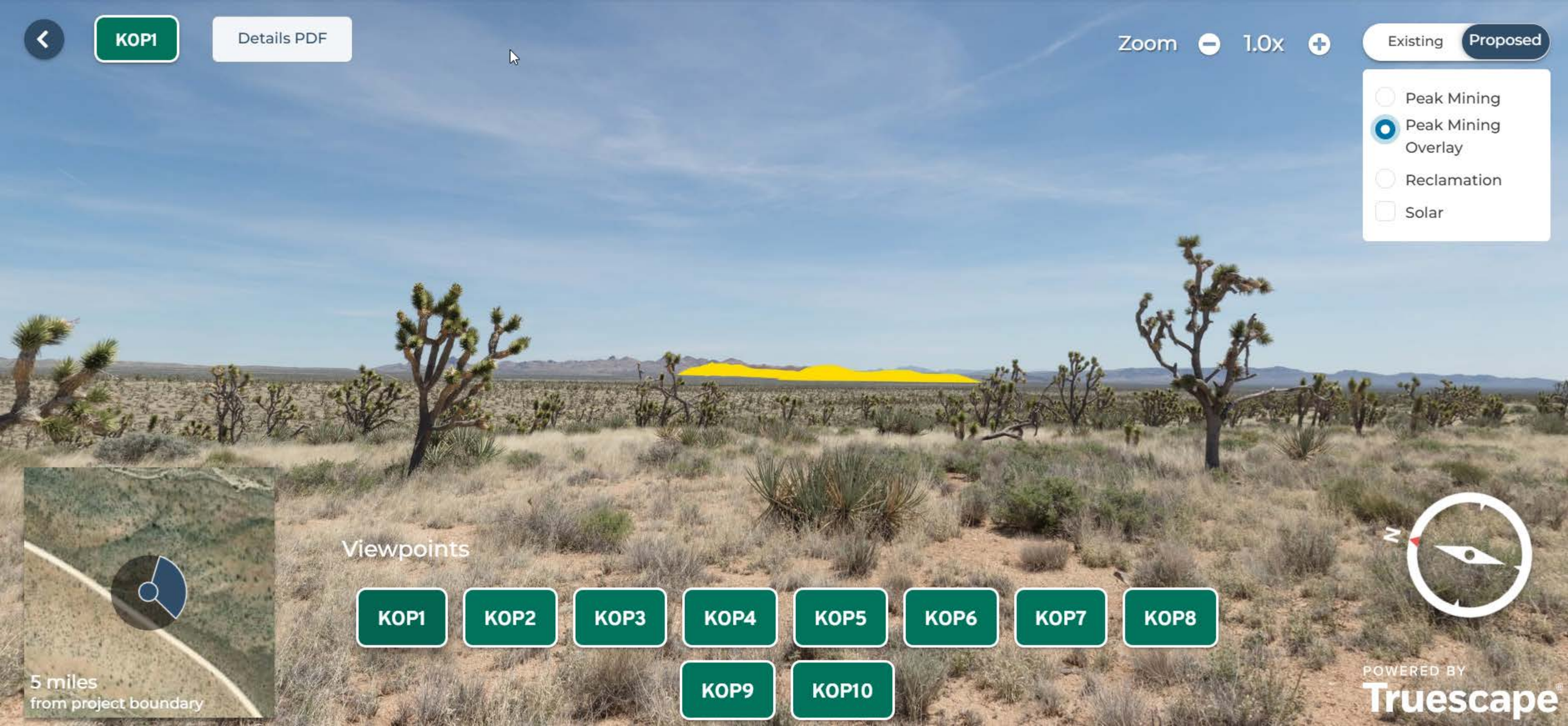
APPENDIX I

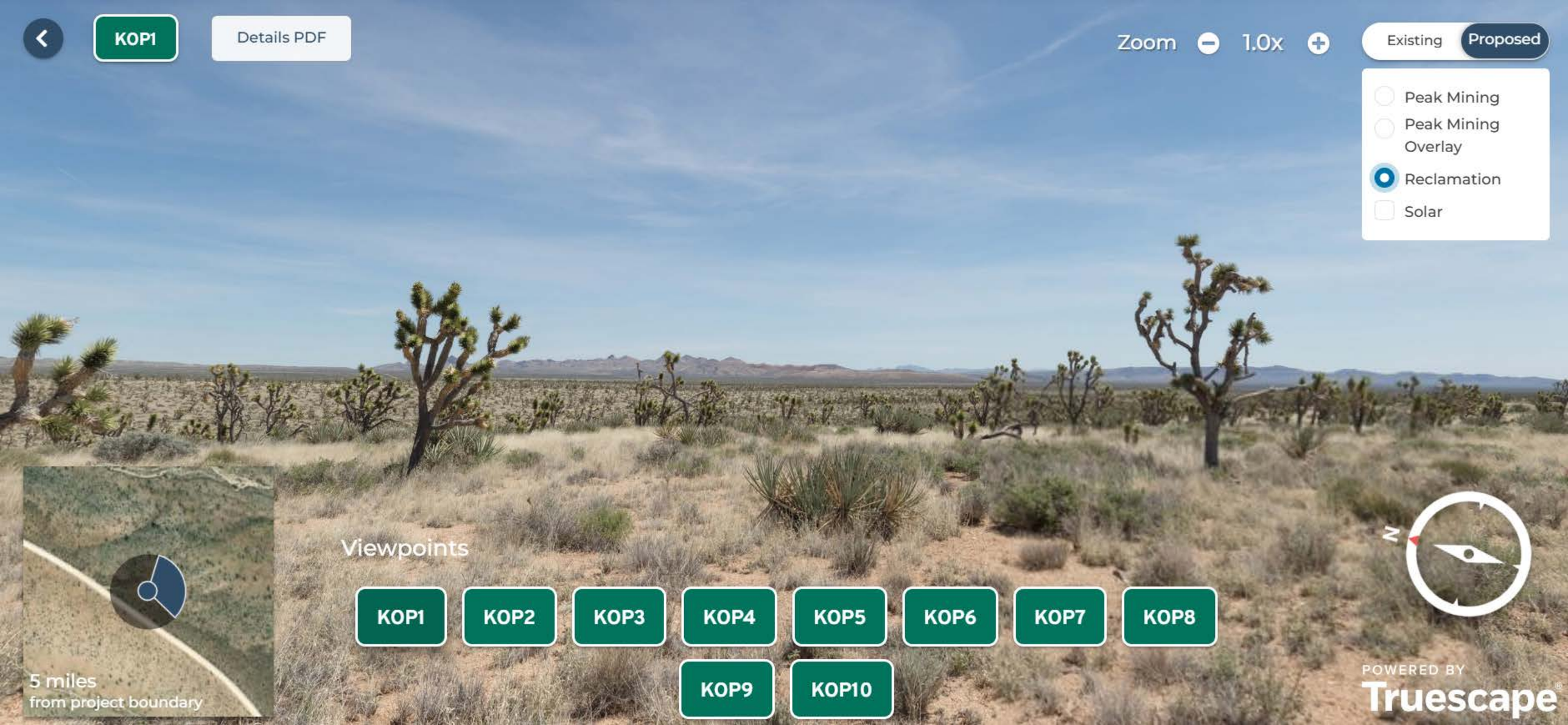
Visual Simulations


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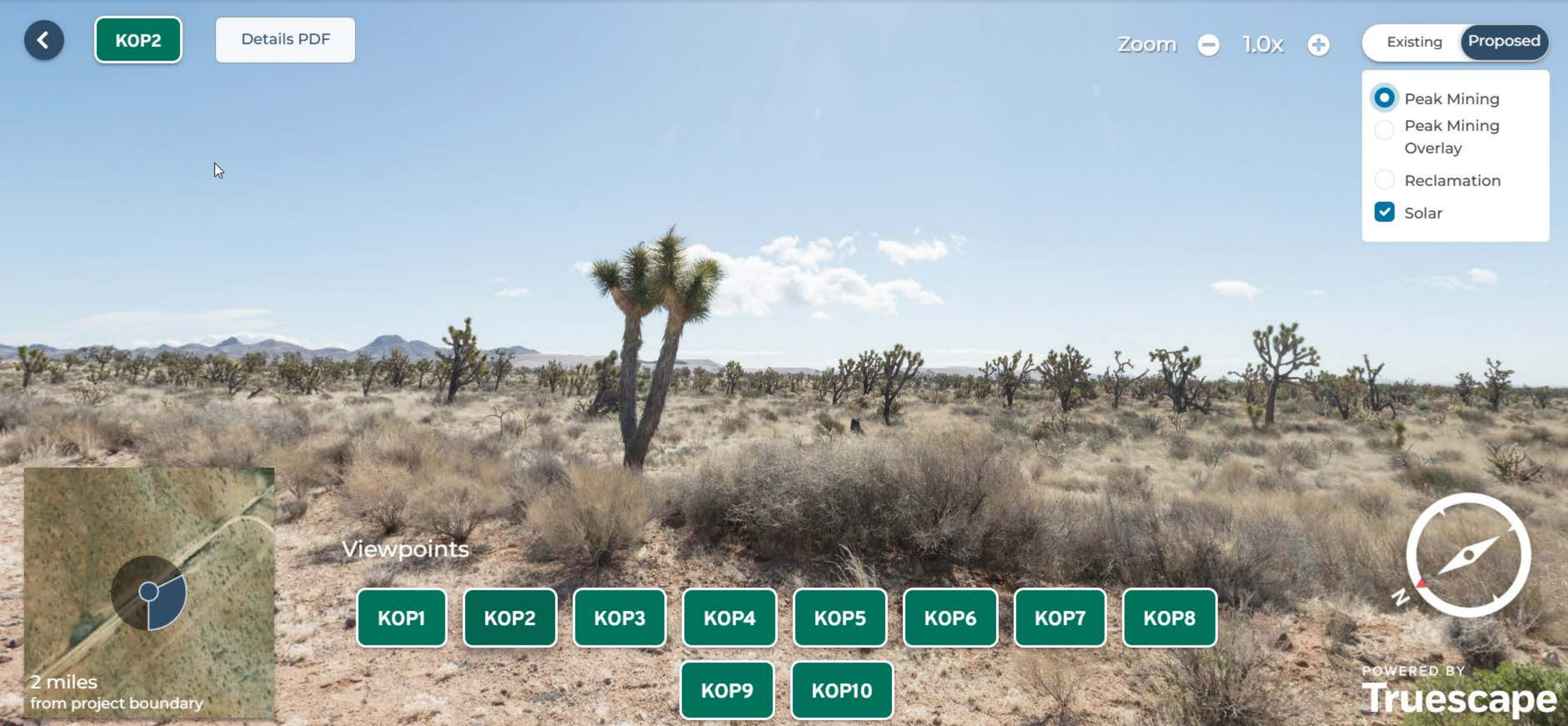
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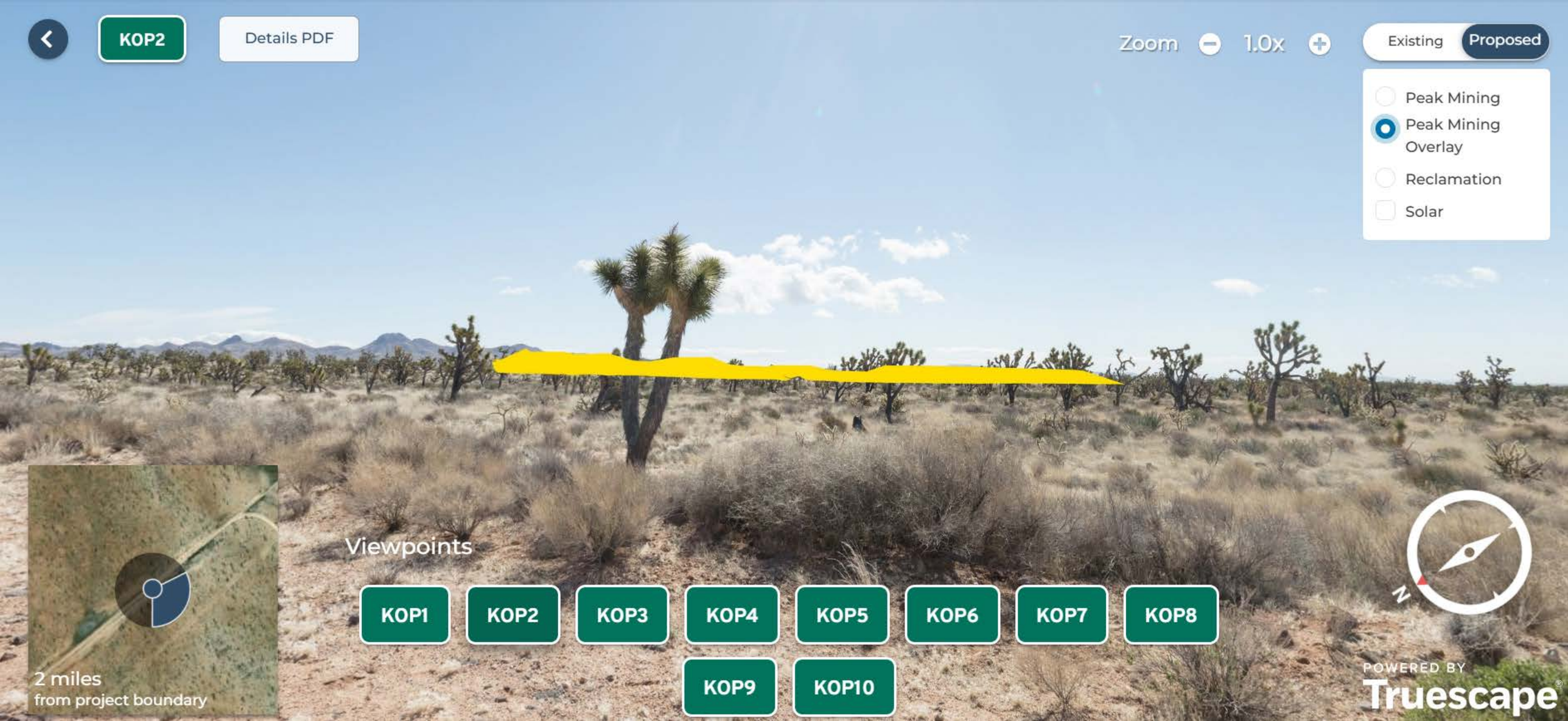
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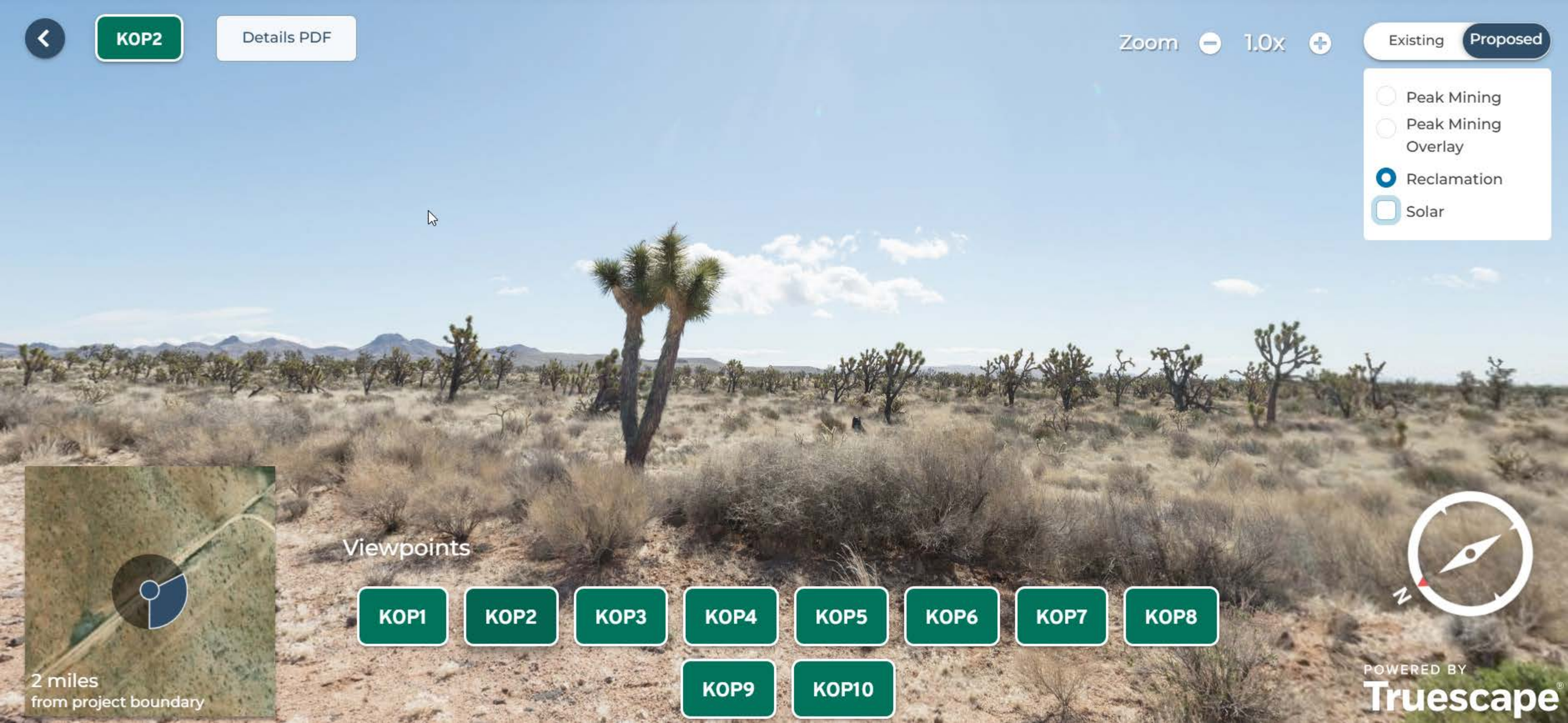
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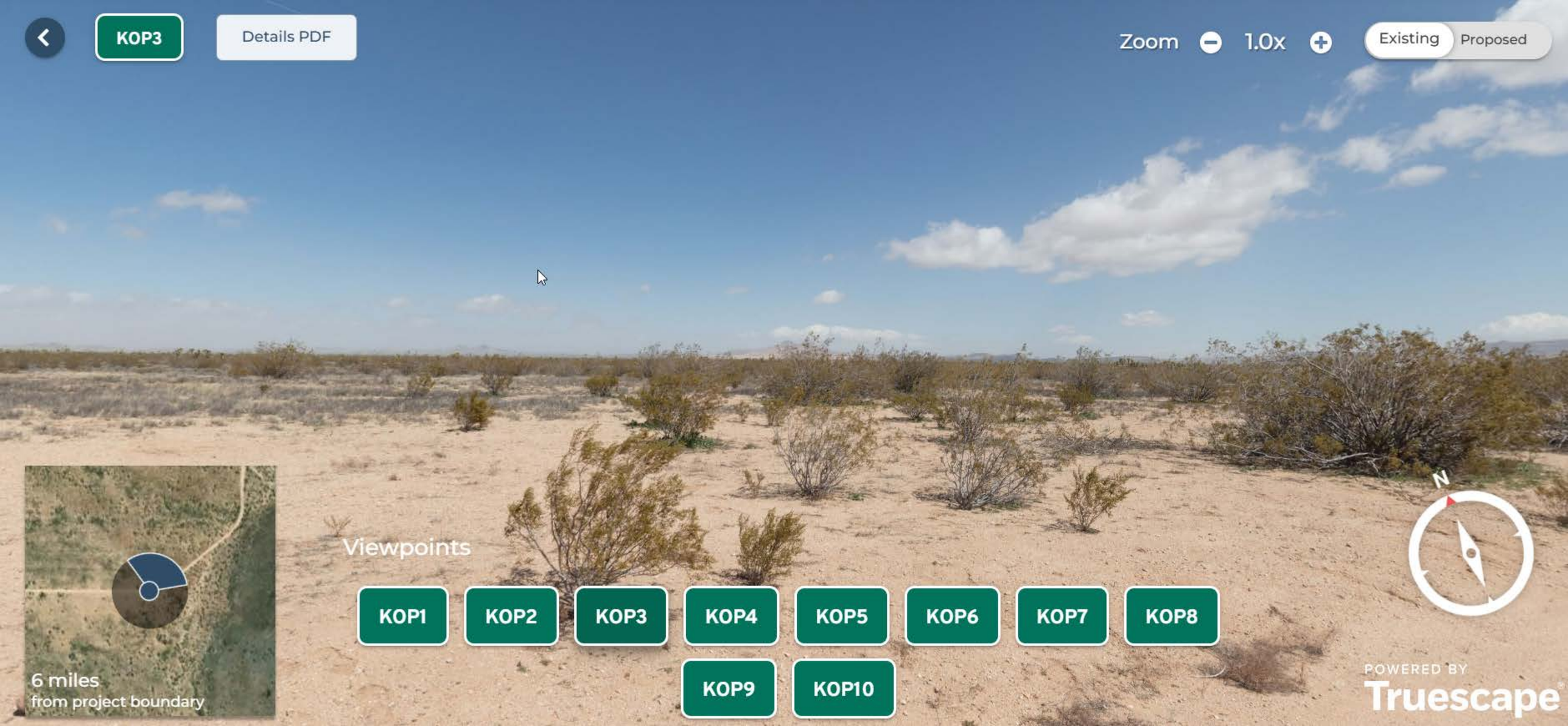
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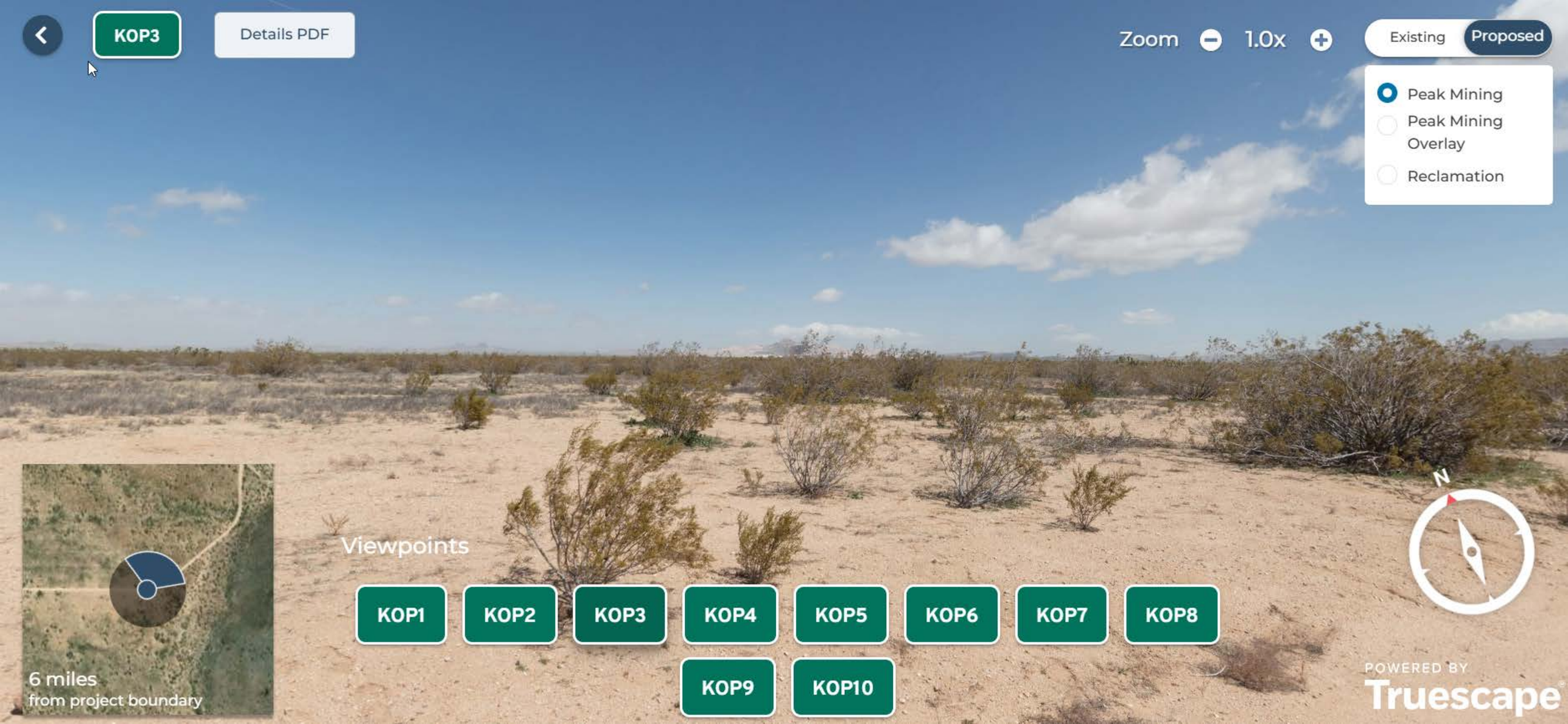
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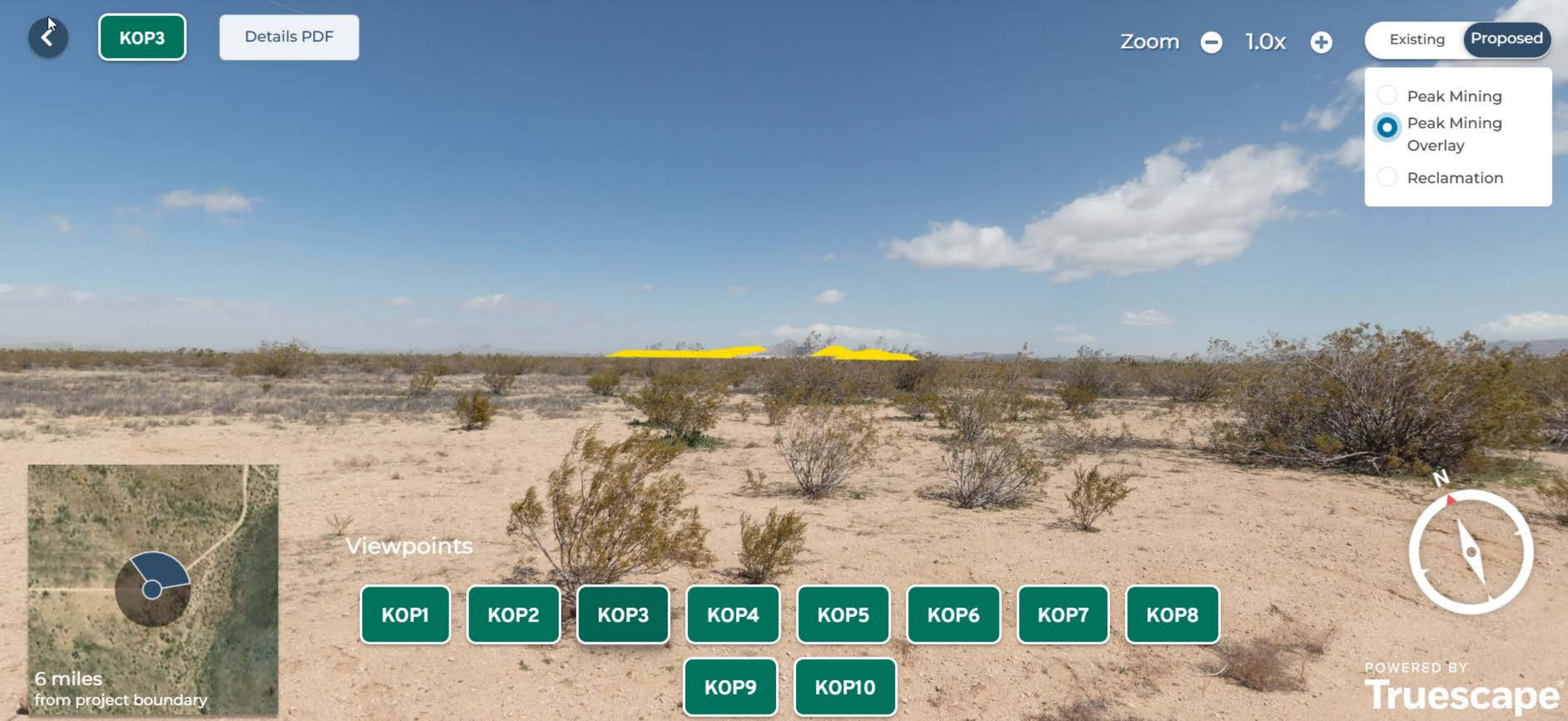

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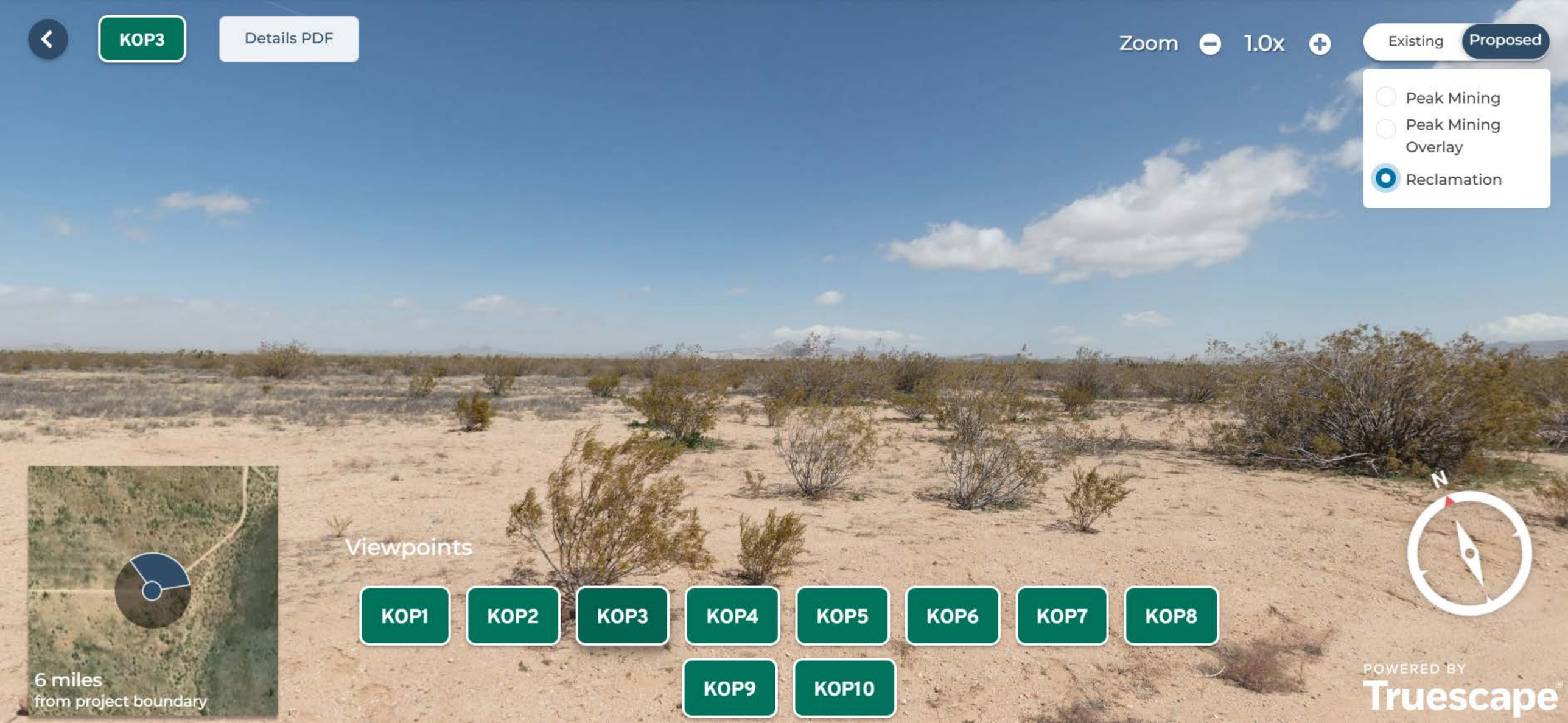

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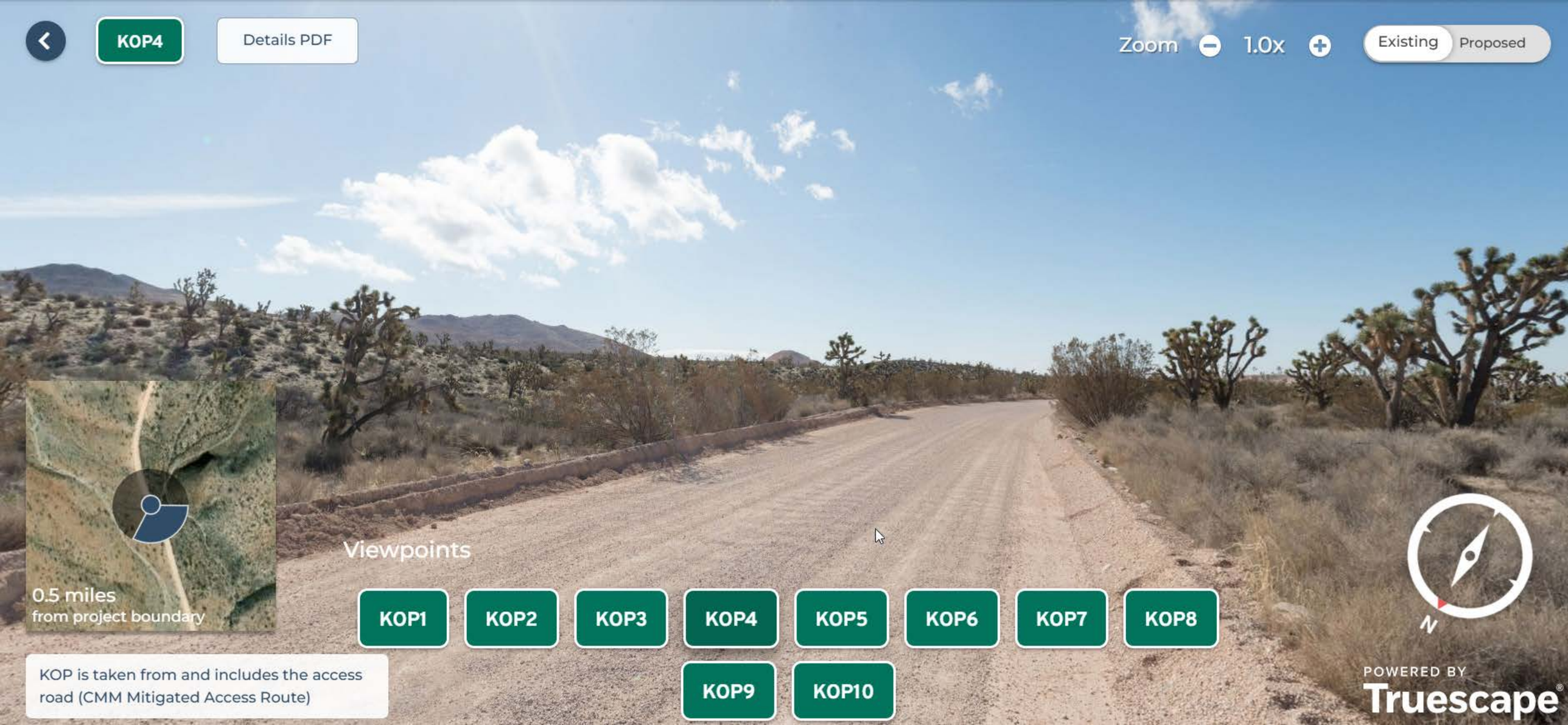

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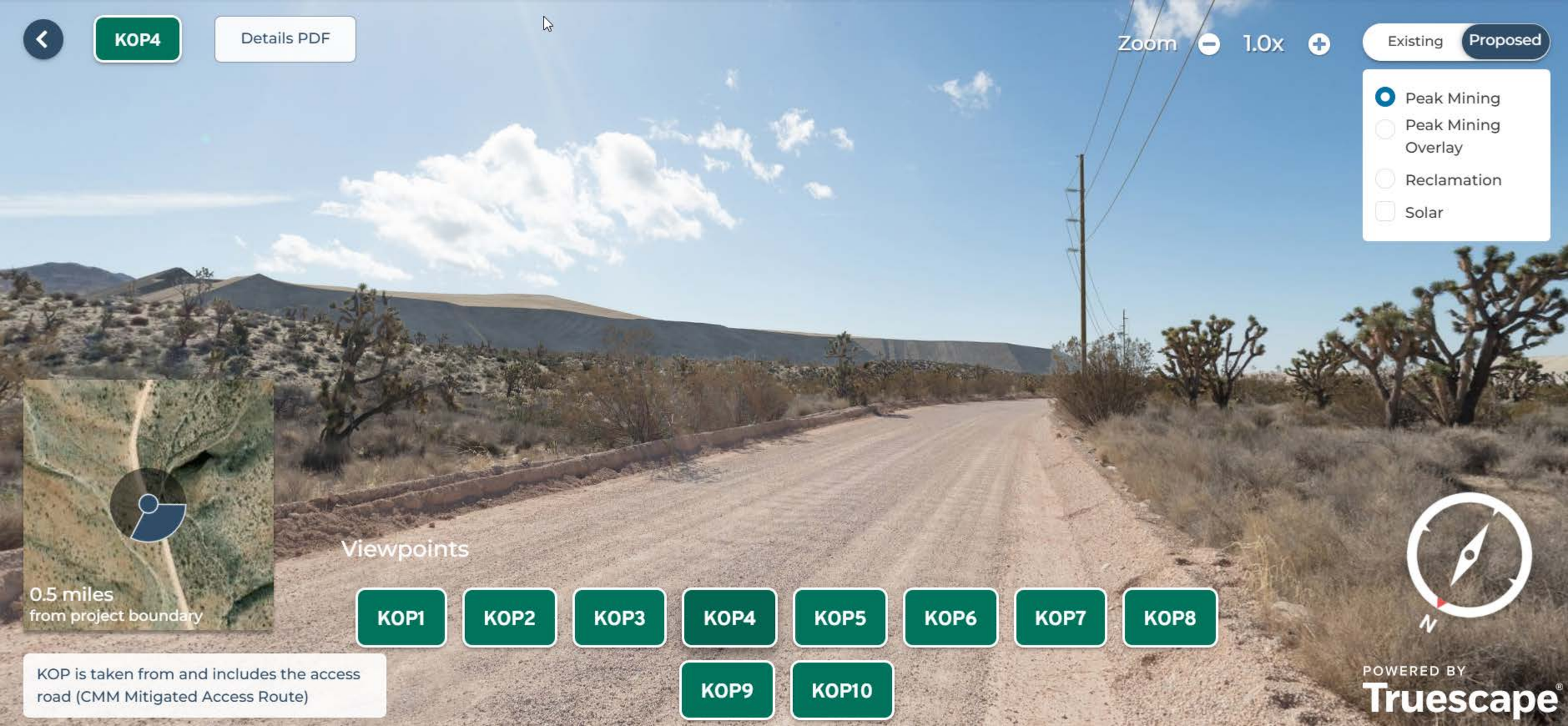

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Truescape

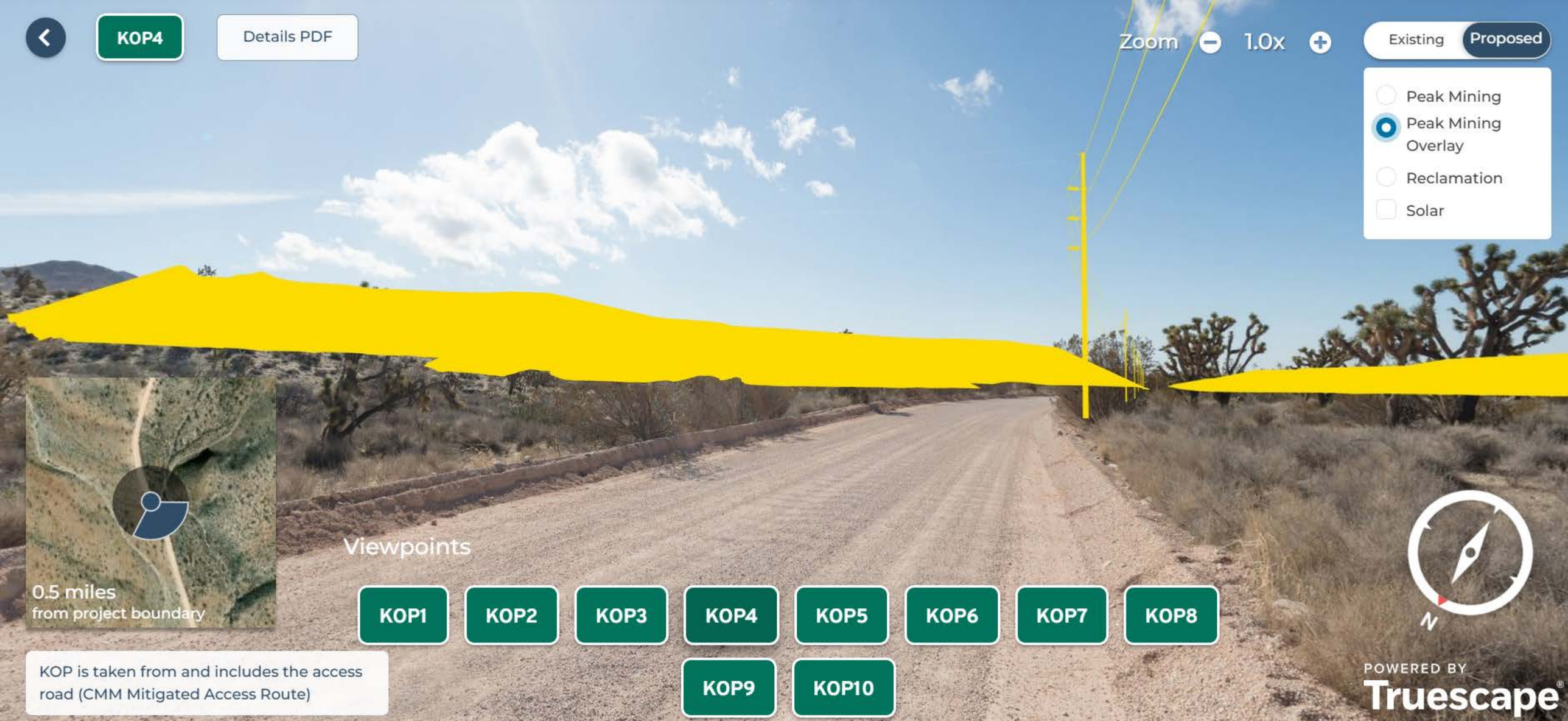

KOP3
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

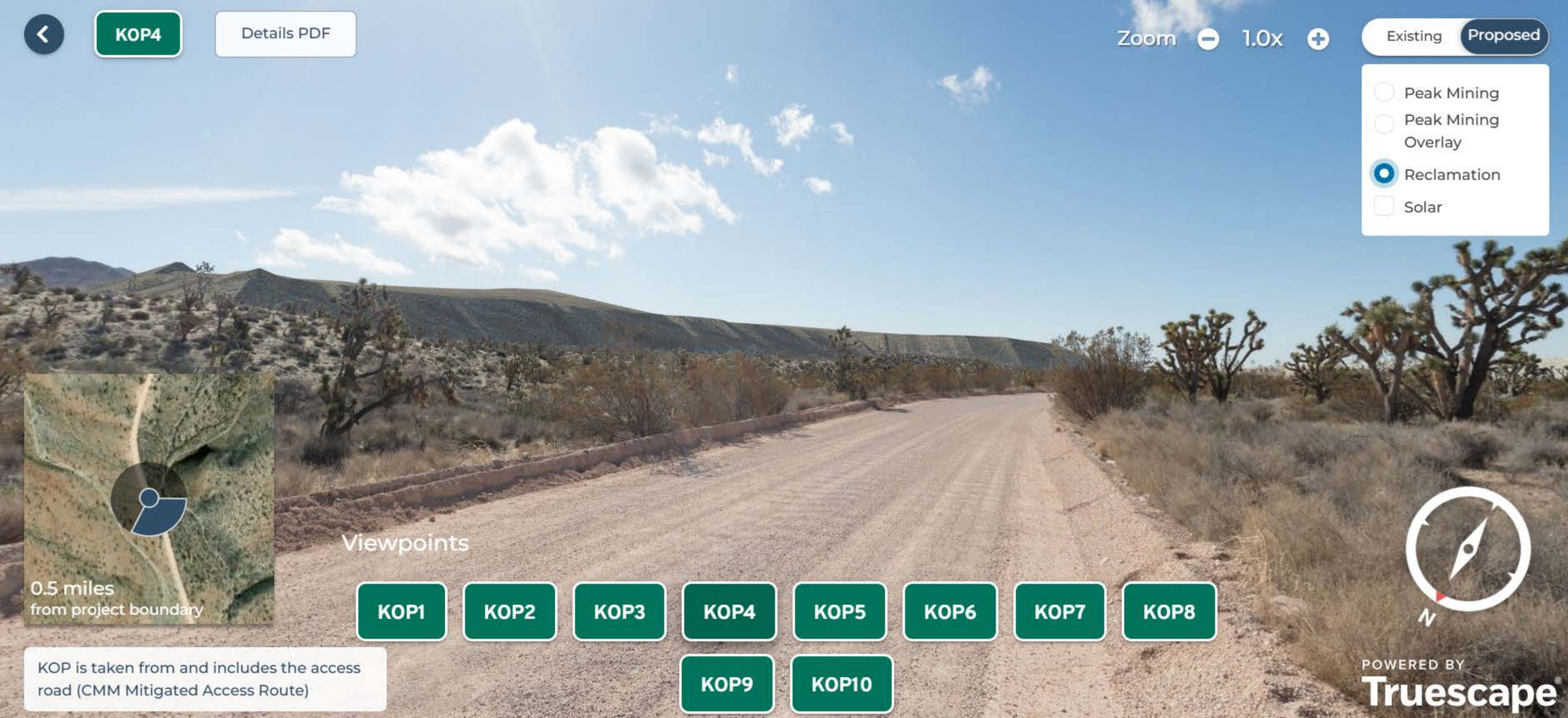

KOP3
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

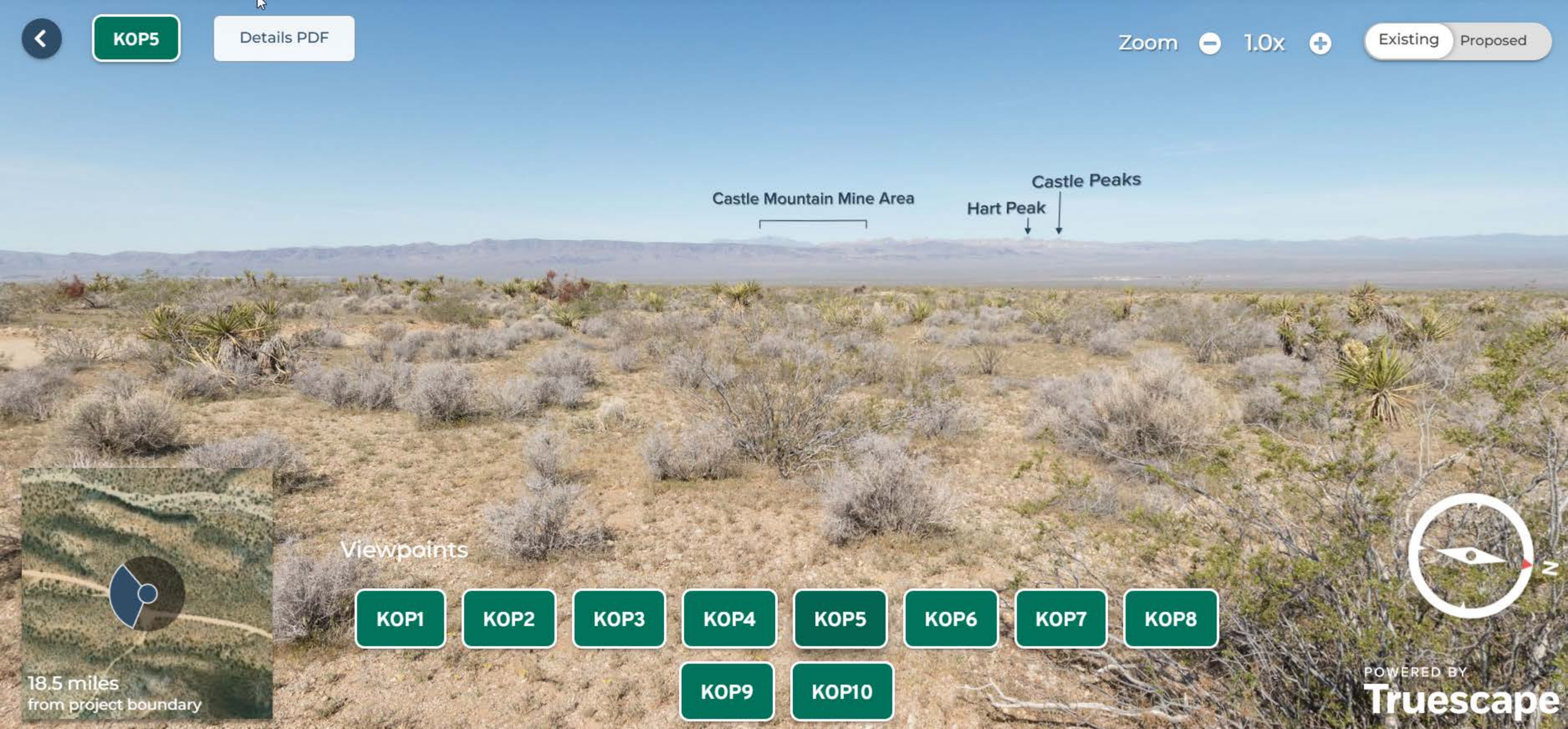

KOP3
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

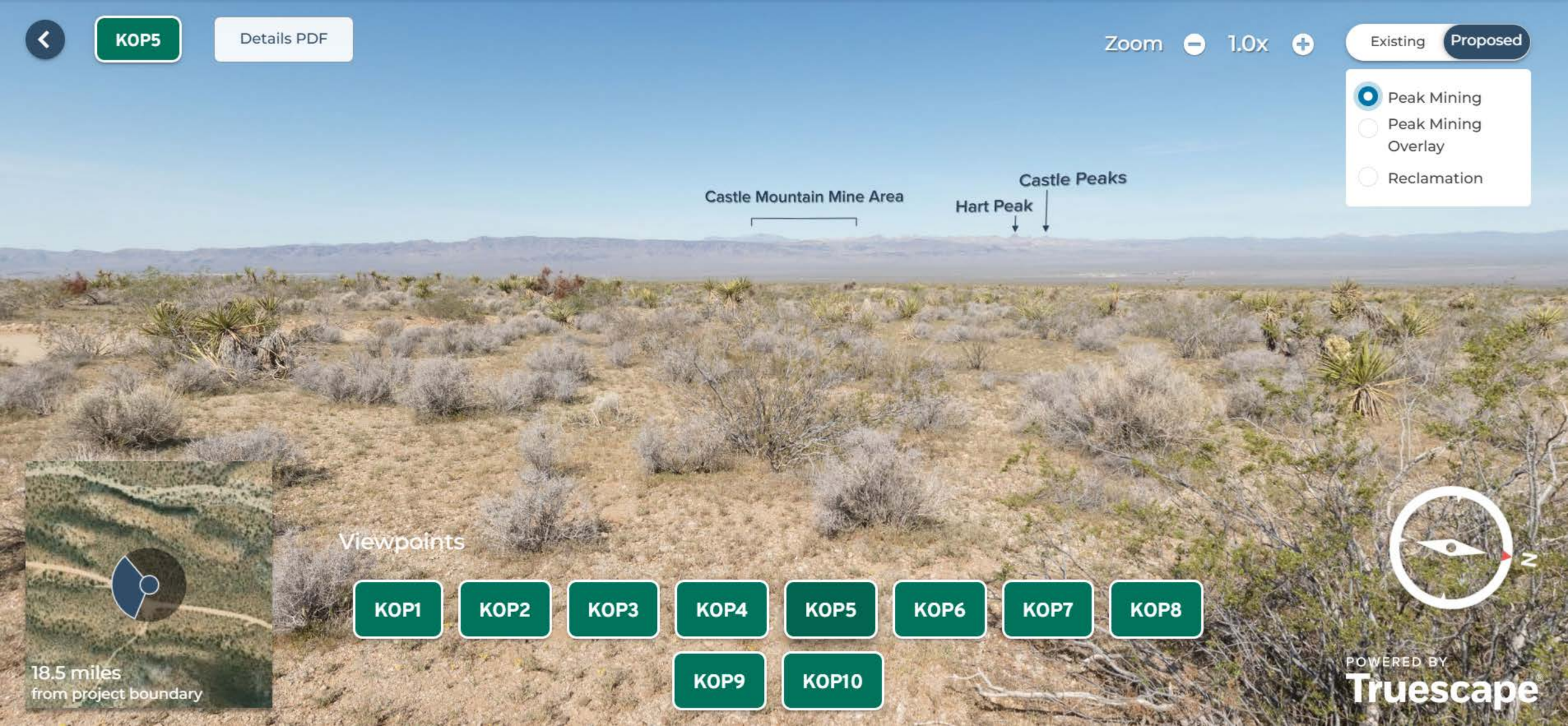

KOP4
Details PDF
Zoom
1.0x
Existing
Proposed
0.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
KOP is taken from and includes the access road (CMM Mitigated Access Route)
N
POWERED BY
Truescape

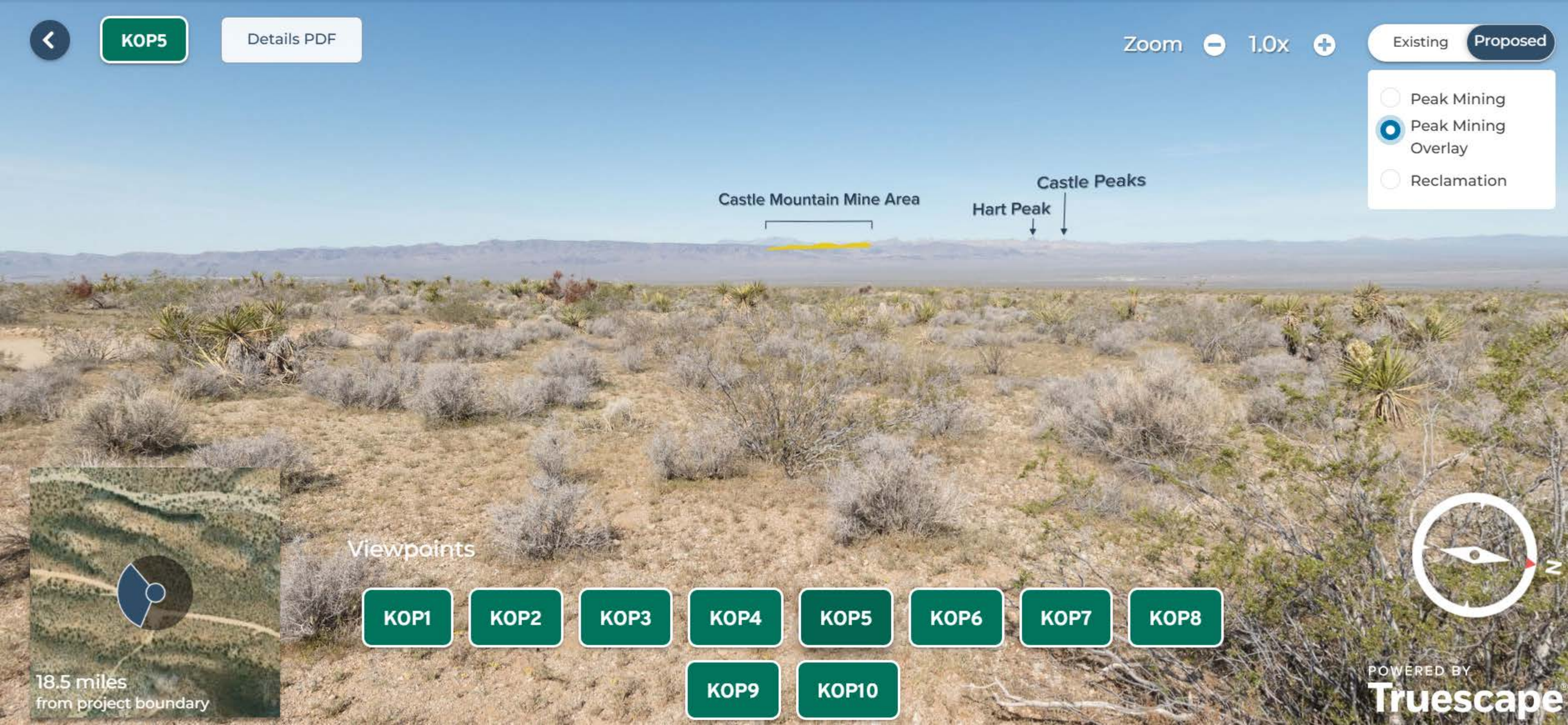

KOP4
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
Solar
0.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
KOP is taken from and includes the access road (CMM Mitigated Access Route)
N
POWERED BY
Truescape®

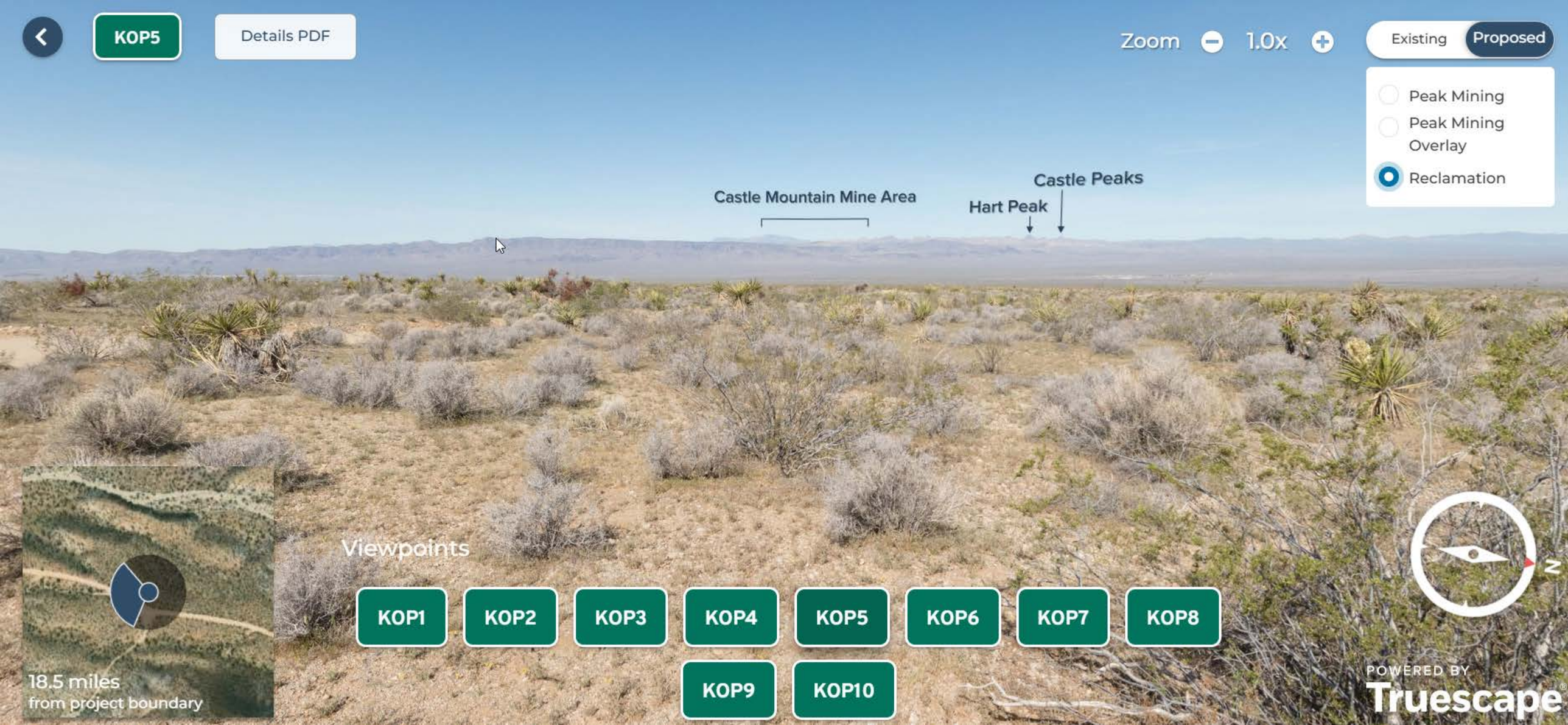

KOP4
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
Solar
0.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
KOP is taken from and includes the access road (CMM Mitigated Access Route)
N
POWERED BY
Truescape

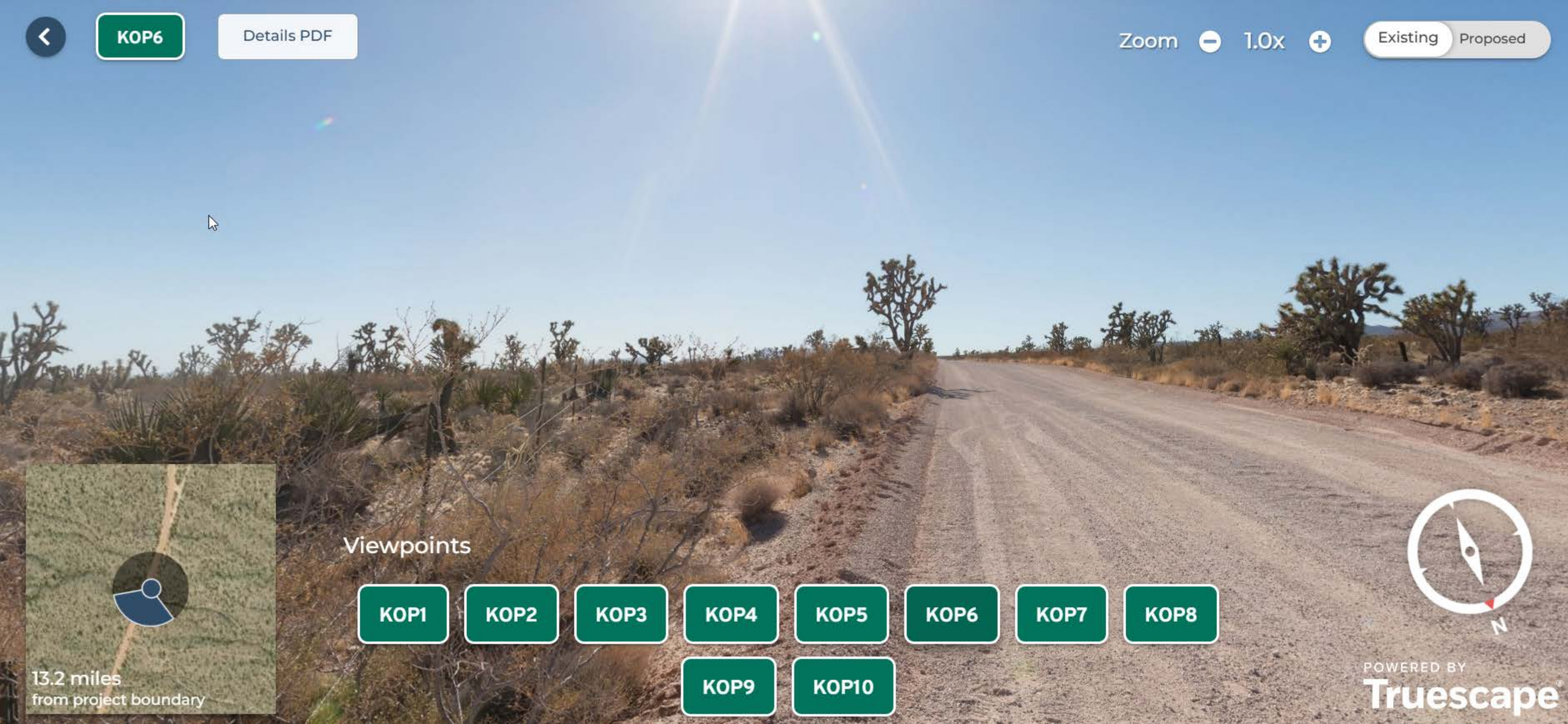

KOP4
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
Solar
0.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
KOP is taken from and includes the access road (CMM Mitigated Access Route)
POWERED BY
Truescape

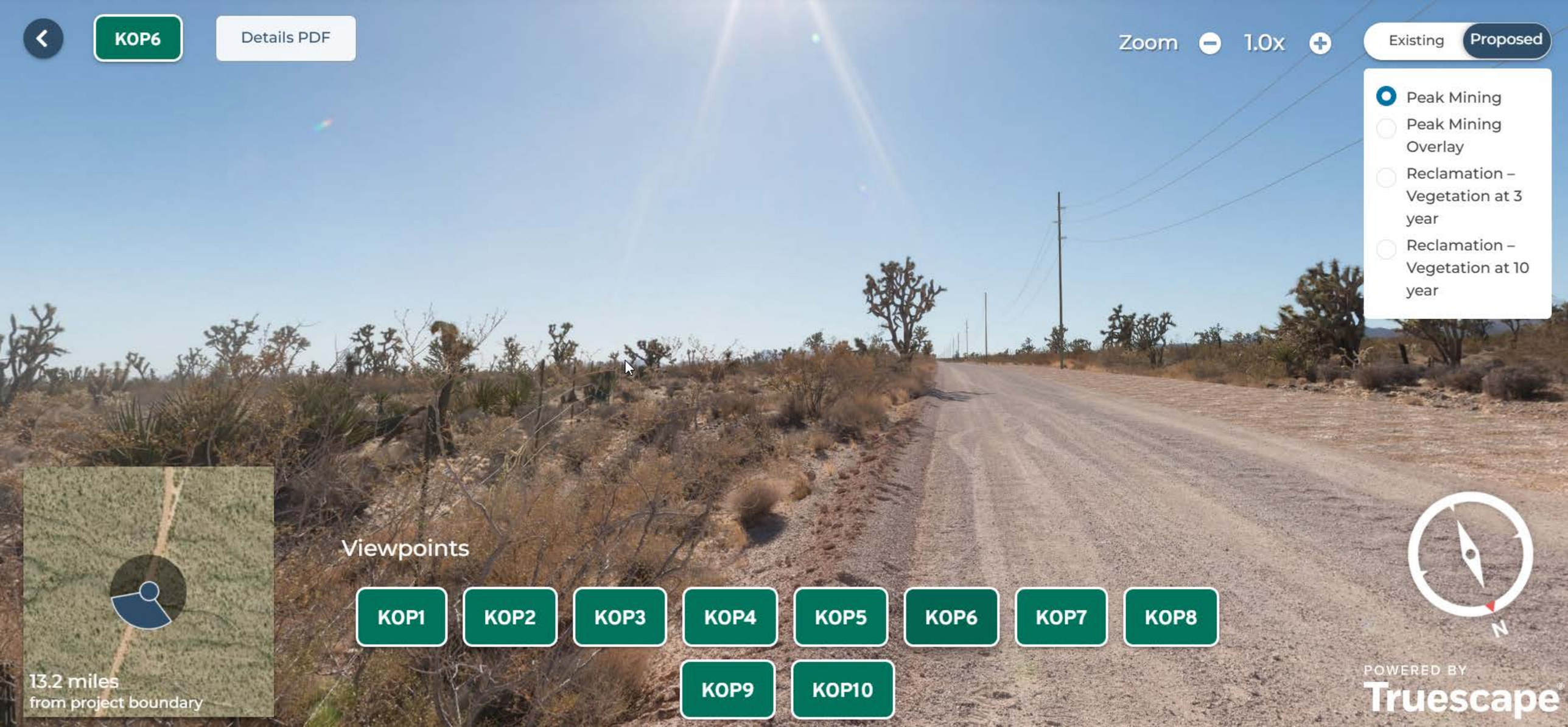

KOP5
Details PDF
Zoom
1.0x
Existing
Proposed
Castle Mountain Mine Area
Castle Peaks
Hart Peak
18.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

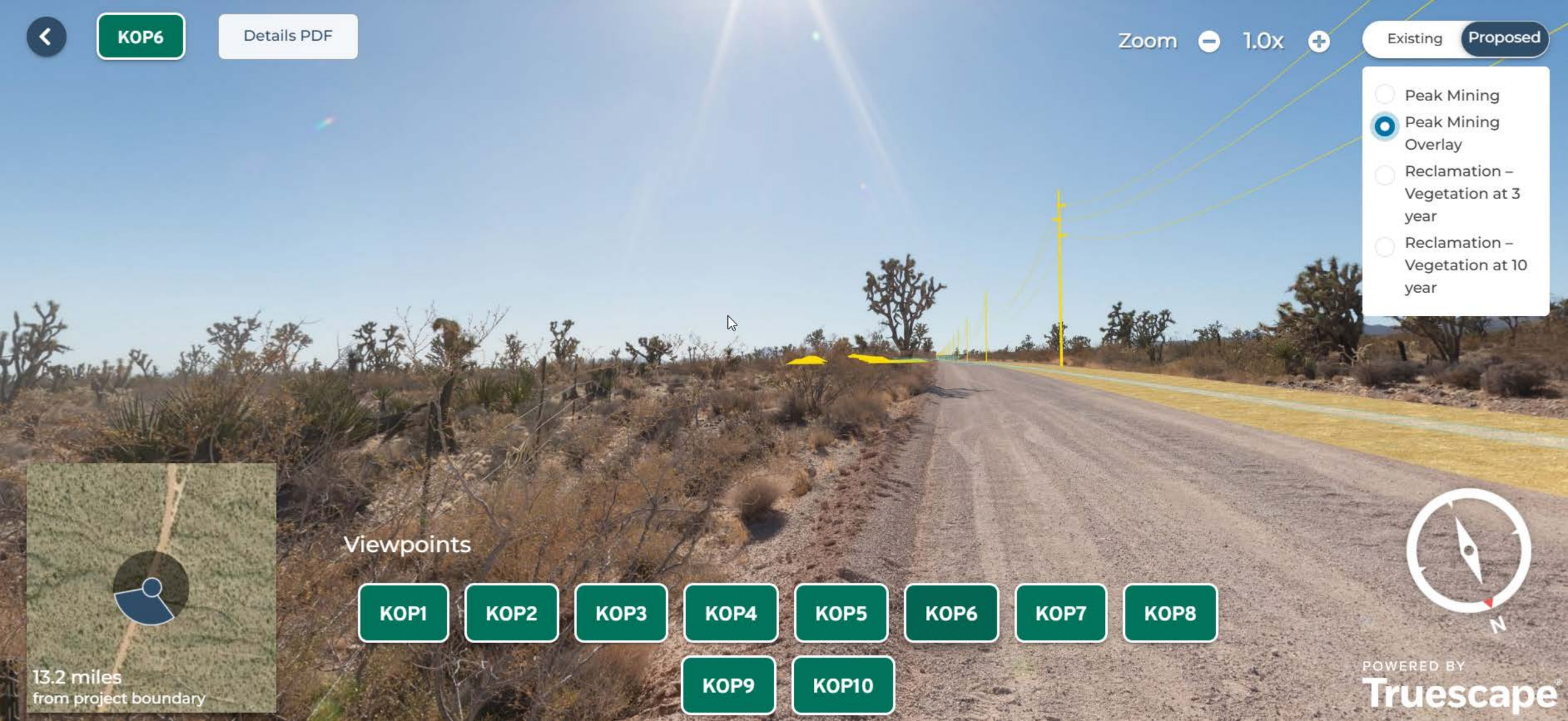

KOP5
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
Castle Mountain Mine Area
Hart Peak
Castle Peaks
18.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape®

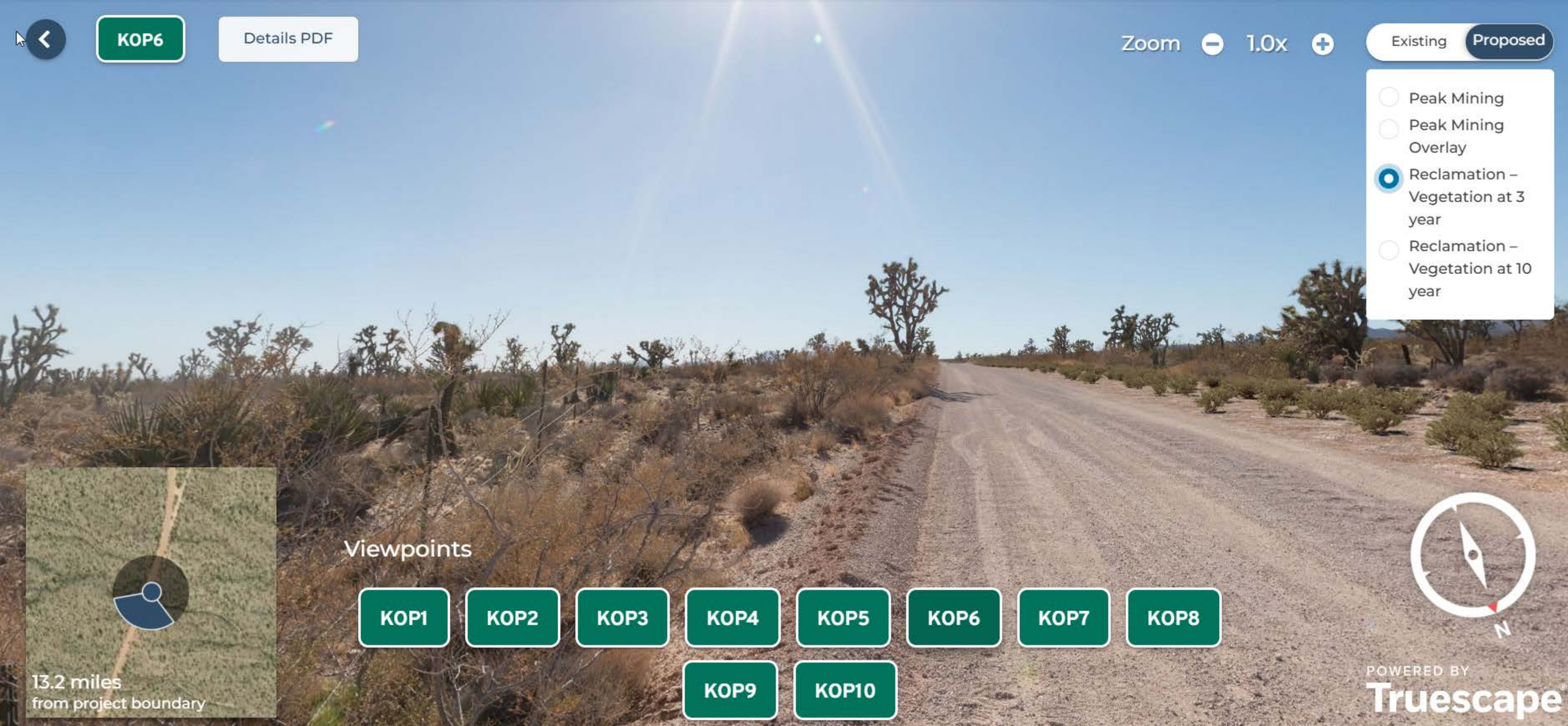

KOP5
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
Castle Mountain Mine Area
Hart Peak
Castle Peaks
18.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

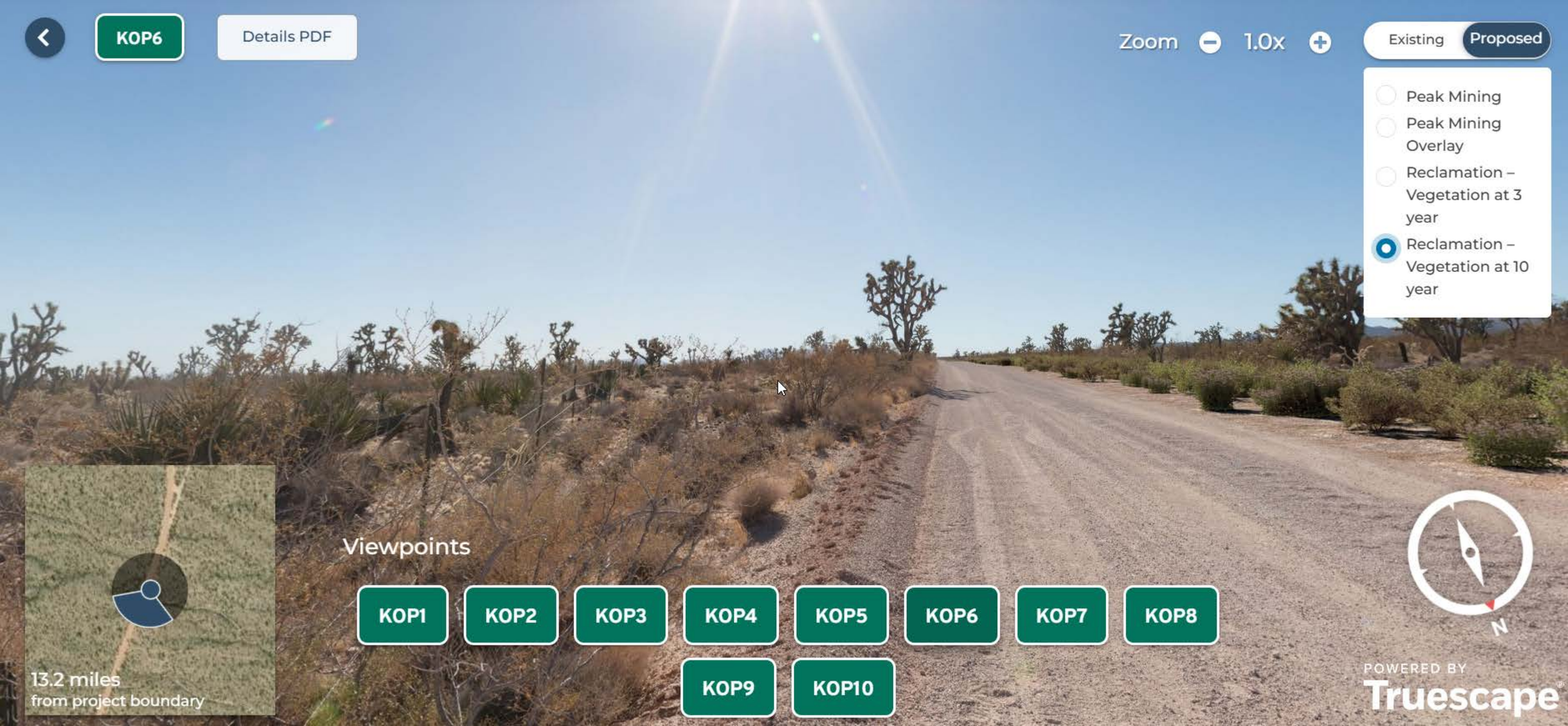

KOP5
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
Castle Mountain Mine Area
Hart Peak
Castle Peaks
18.5 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
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POWERED BY
Truescape®

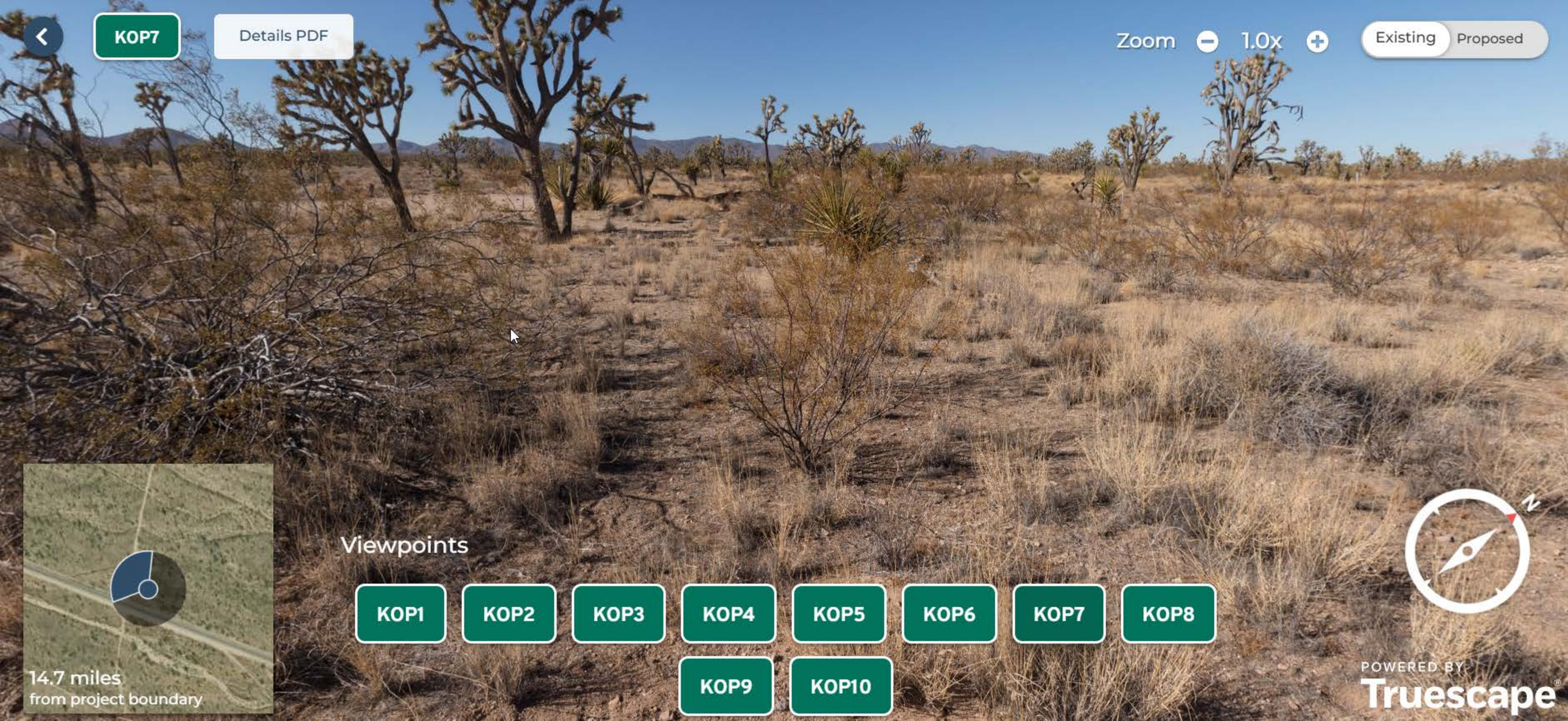

KOP6
Details PDF
Zoom
1.0x
Existing
Proposed
13.2 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

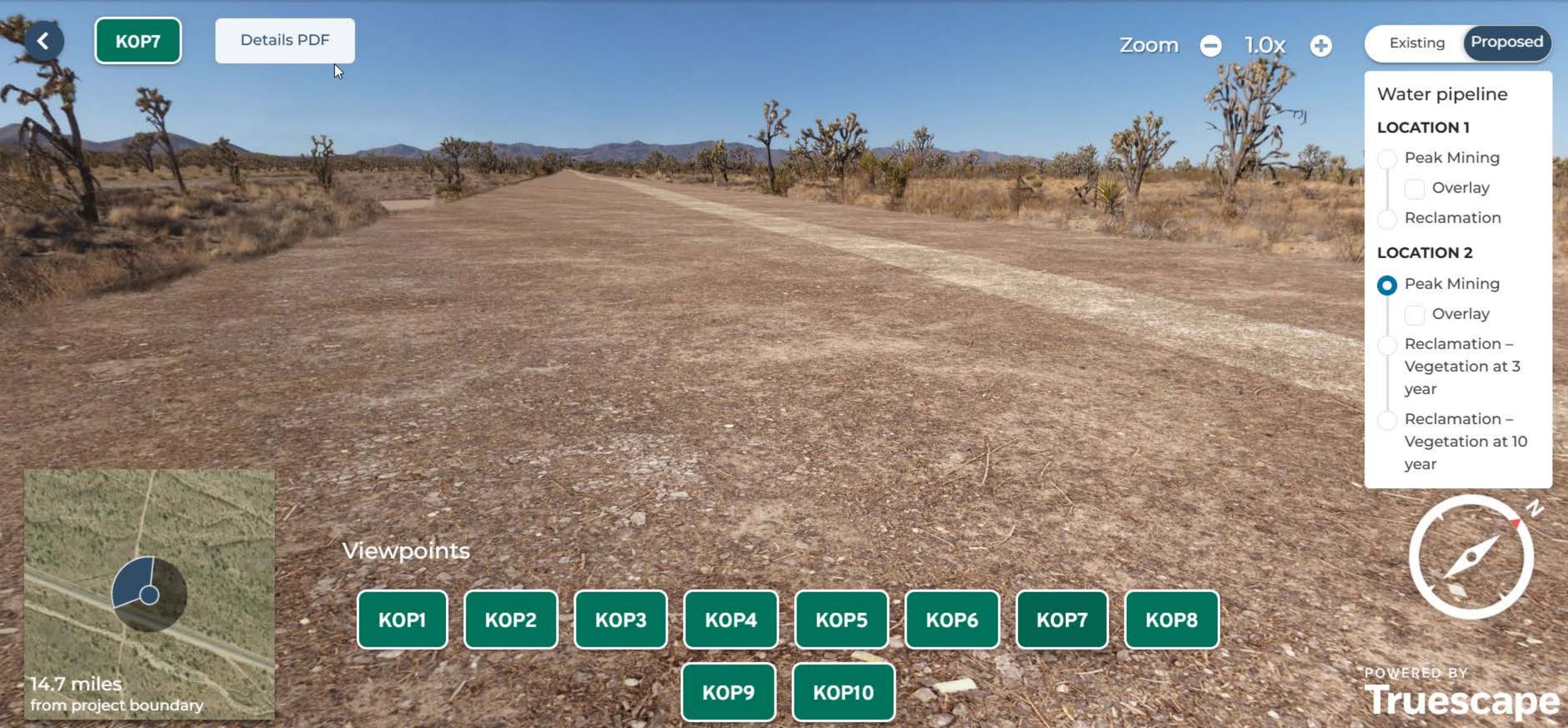

KOP6
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
13.2 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
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POWERED BY
Truescape

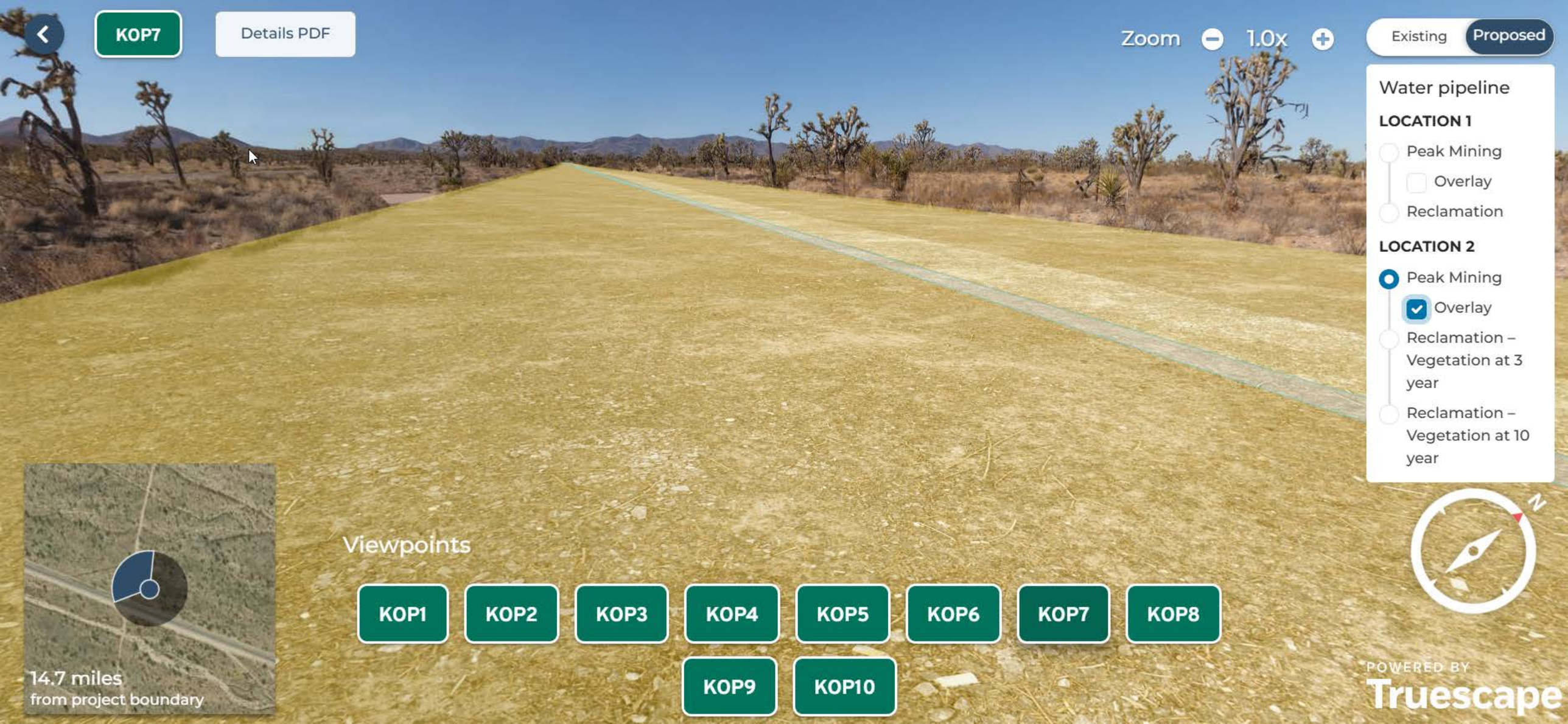

KOP6
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
13.2 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

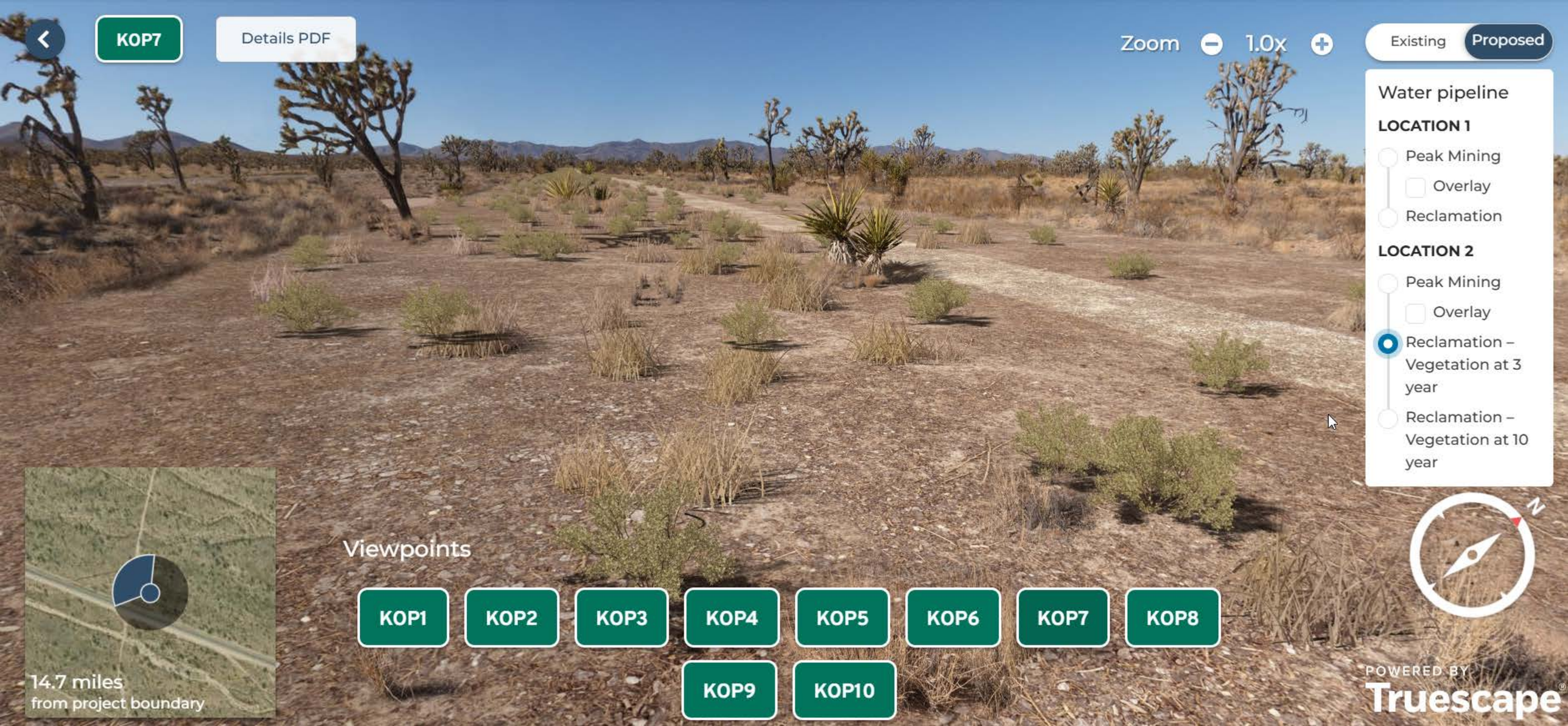

KOP6
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
13.2 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
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KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP6
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
13.2 miles
from project boundary
Viewpoints
KOP1
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KOP3
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KOP8
KOP9
KOP10
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POWERED BY
Truescape

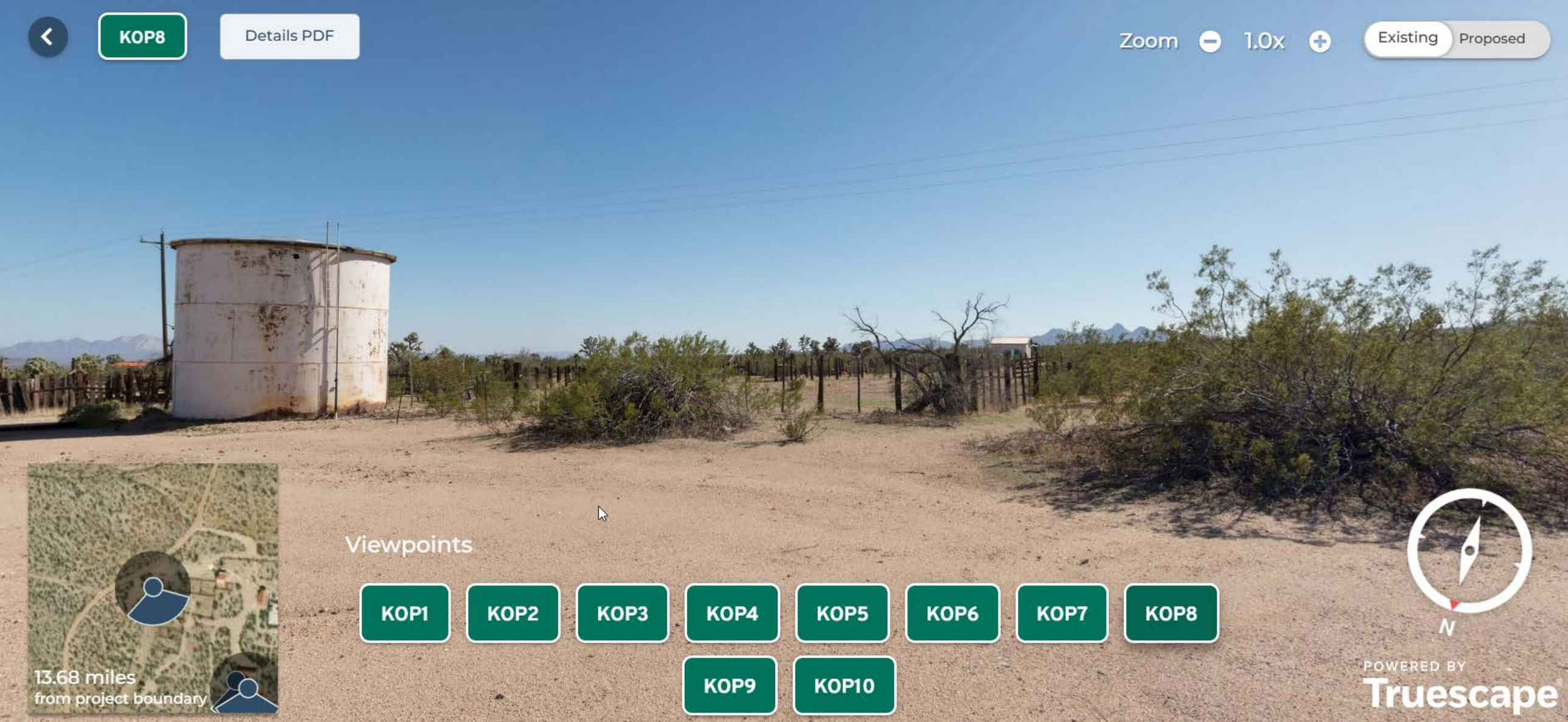

KOP7
Details PDF
Zoom
1.0x
Existing
Proposed
14.7 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

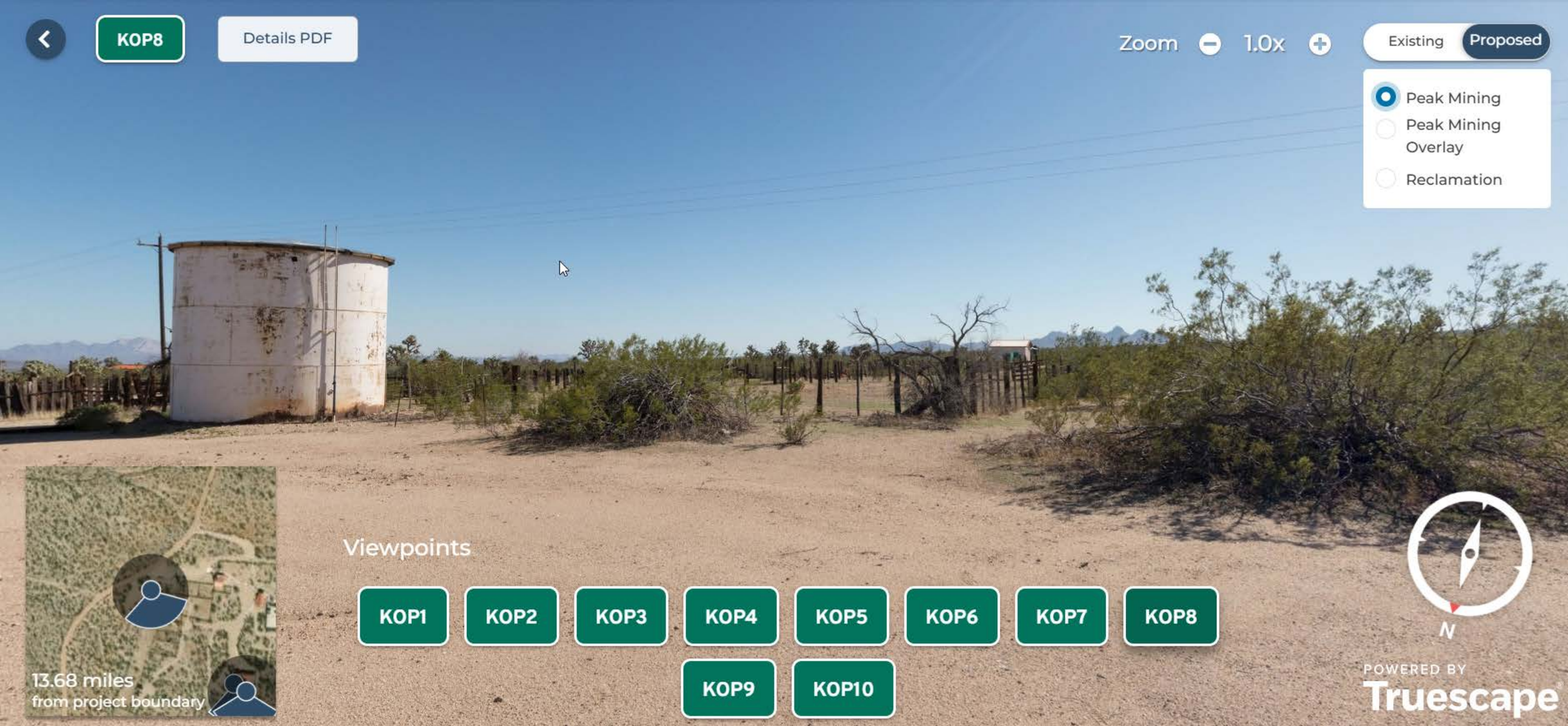

KOP7
Details PDF
Zoom
1.0x
Existing
Proposed
Water pipeline
LOCATION 1
Peak Mining
Overlay
Reclamation
LOCATION 2
Peak Mining
Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
14.7 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

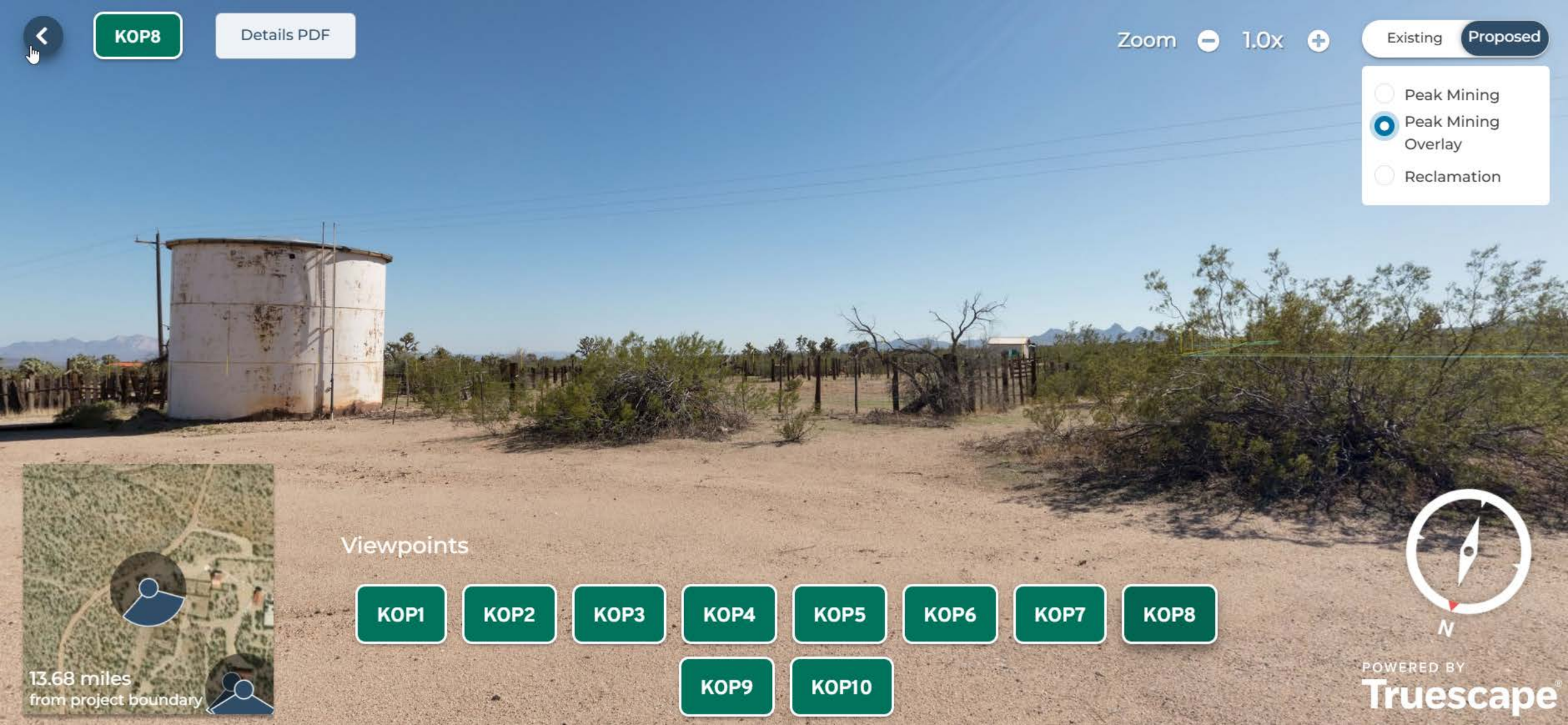

KOP7
Details PDF
Zoom
1.0x
Existing
Proposed
Water pipeline
LOCATION 1
Peak Mining
Overlay
Reclamation
LOCATION 2
Peak Mining
Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
14.7 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
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POWERED BY
Truescape

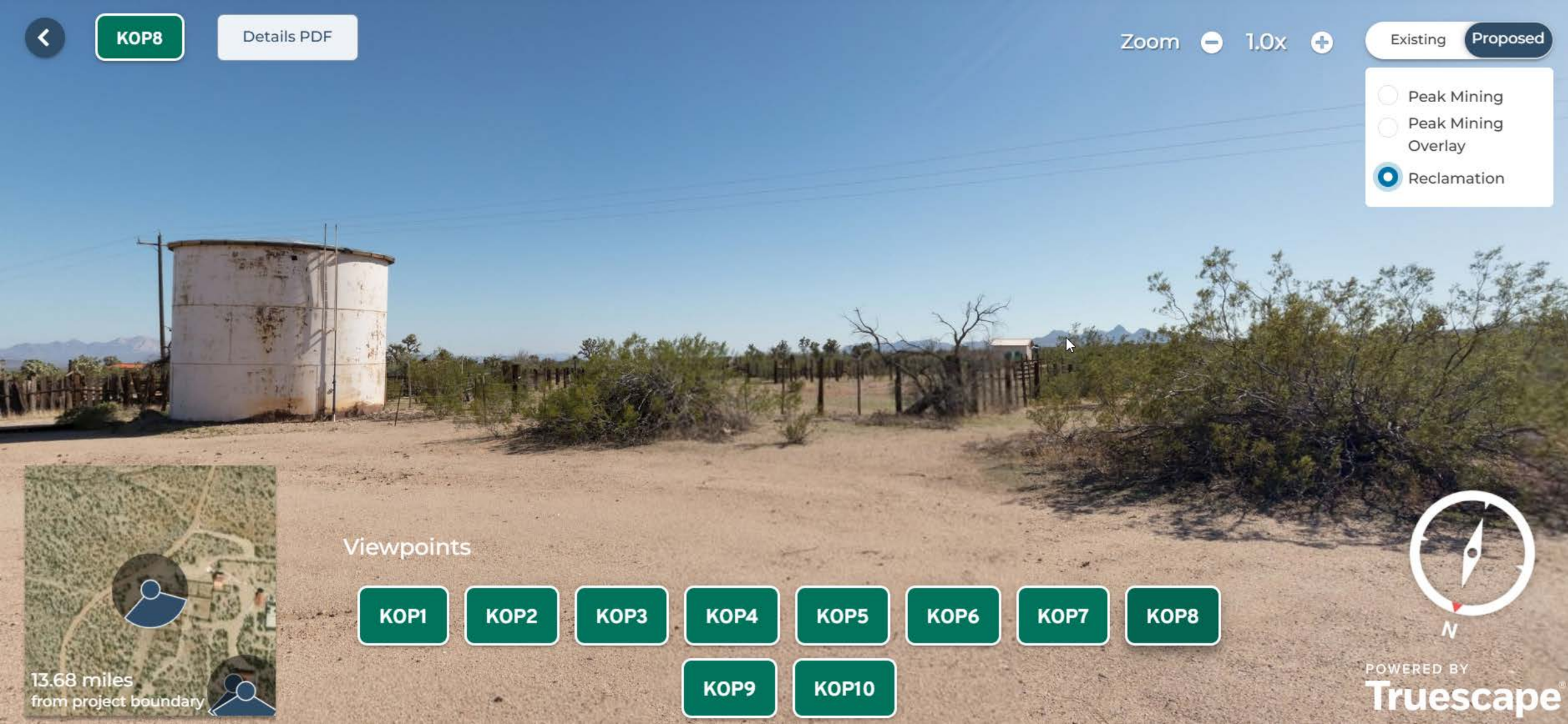

KOP7
Details PDF
Zoom
1.0x
Existing
Proposed
Water pipeline
LOCATION 1
Peak Mining
Overlay
Reclamation
LOCATION 2
Peak Mining
Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
14.7 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
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POWERED BY
Truescape

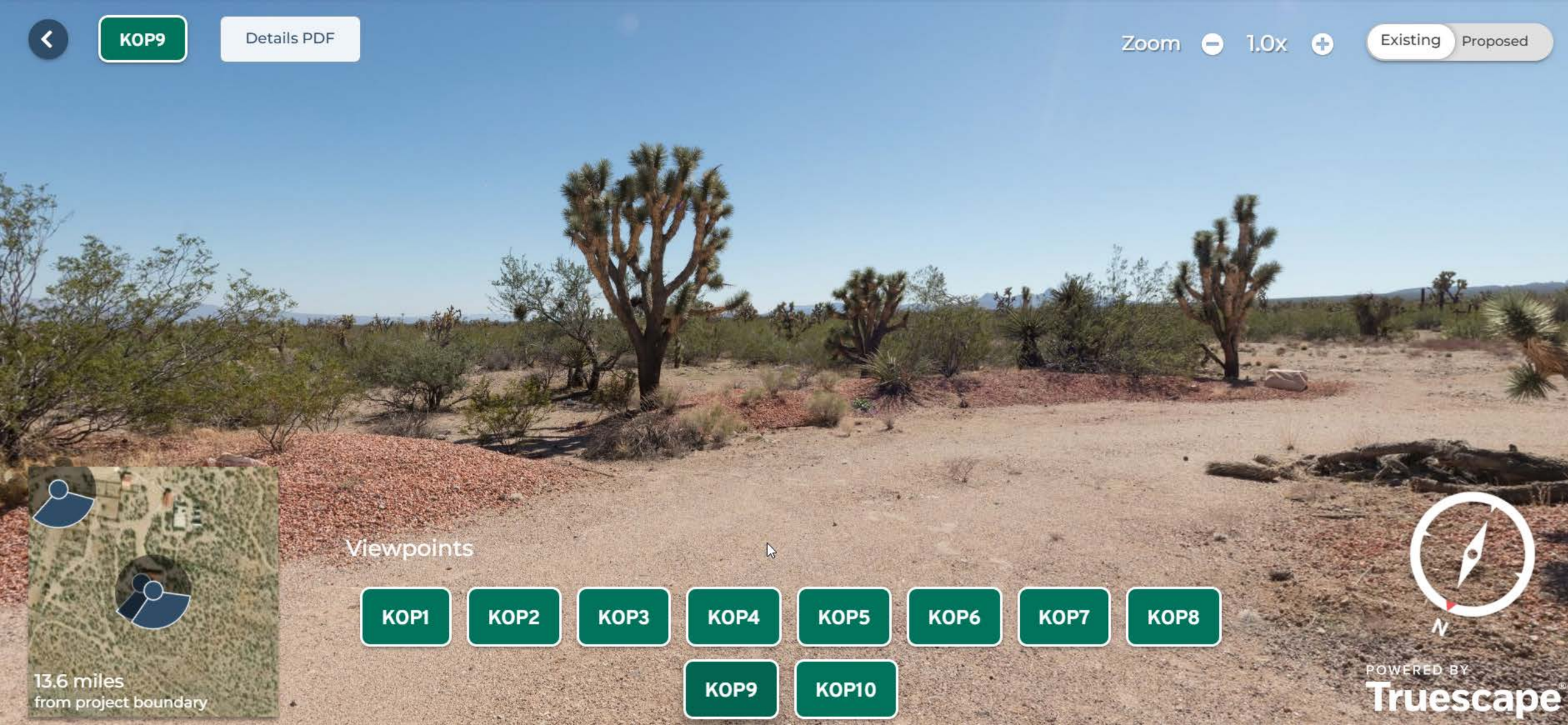

KOP7
Details PDF
Zoom
1.0x
Existing
Proposed
Water pipeline
LOCATION 1
Peak Mining
Overlay
Reclamation
LOCATION 2
Peak Mining
Overlay
Reclamation – Vegetation at 3 year
Reclamation – Vegetation at 10 year
14.7 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
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KOP10
POWERED BY
Truescape

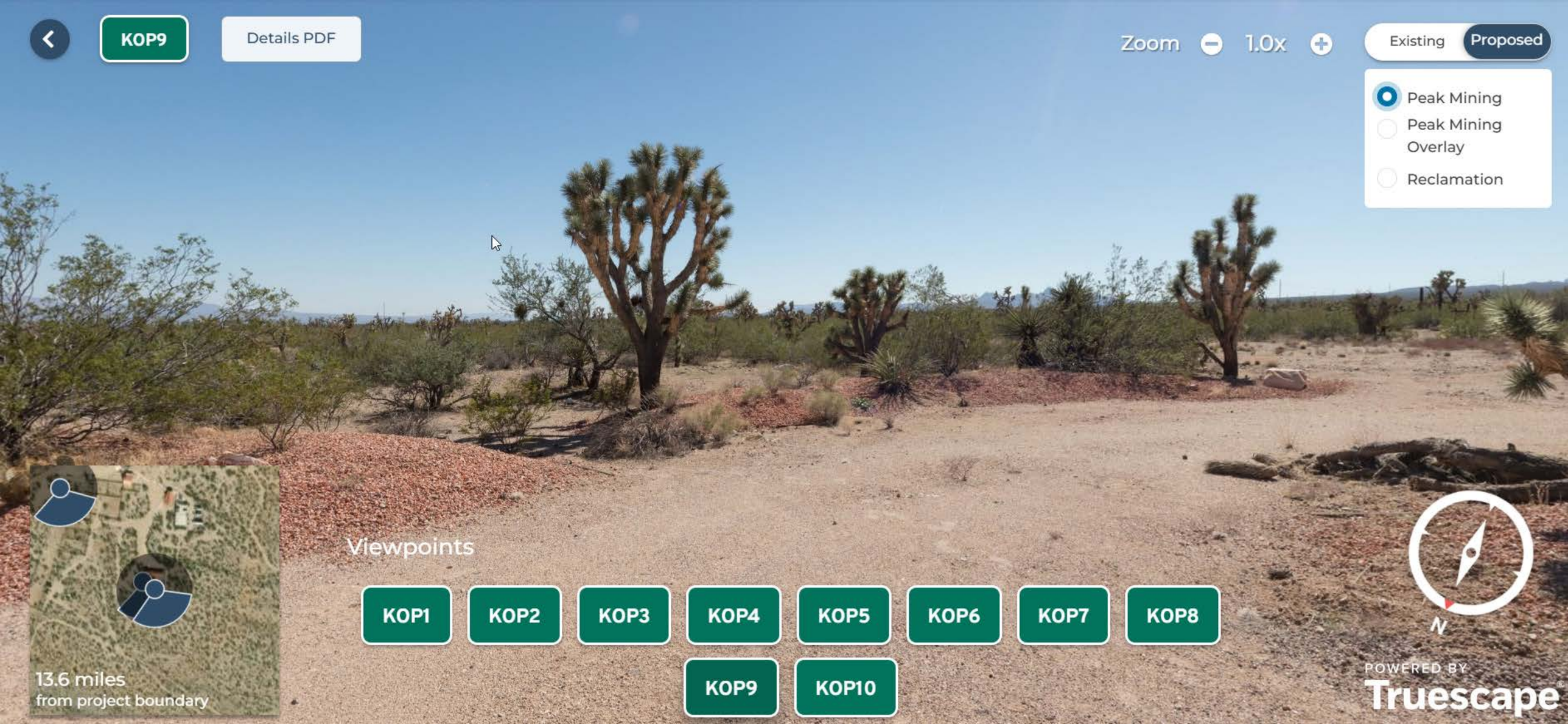

KOP8
Details PDF
Zoom
1.0x
Existing
Proposed
13.68 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

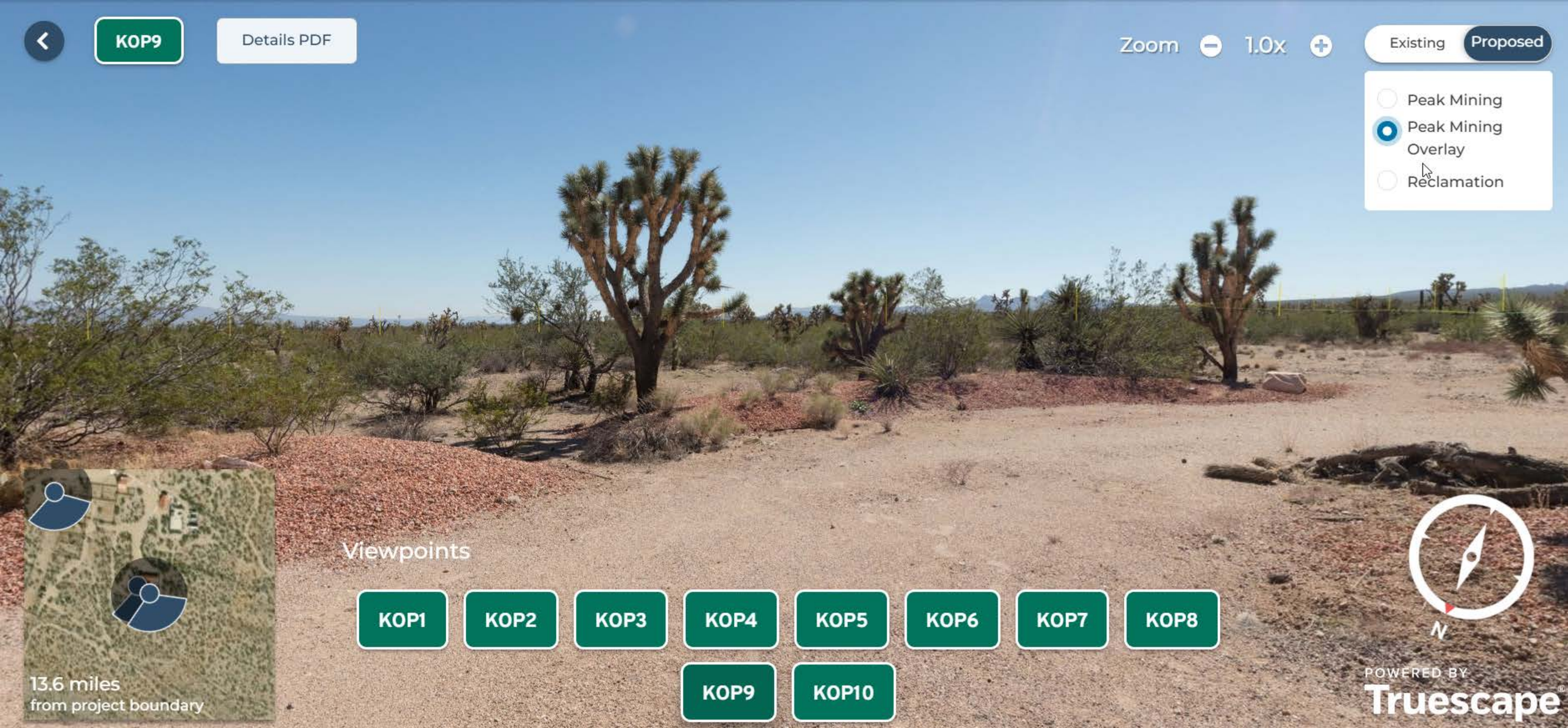

KOP8
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
13.68 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape

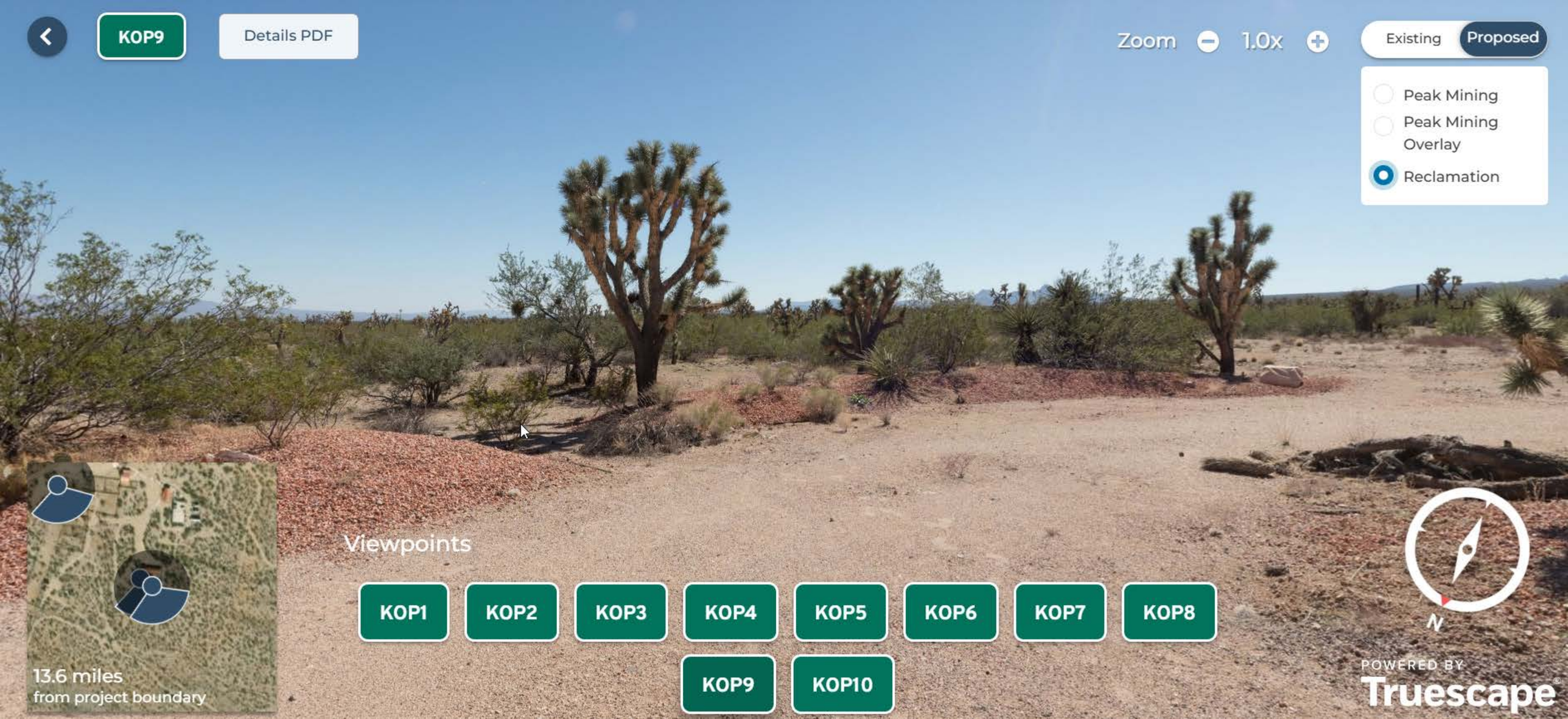

KOP8
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
13.68 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP8
Details PDF
Zoom 1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
13.68 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP9
Details PDF
Zoom
1.0x
Existing
Proposed
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP9
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP9
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP9
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP10
Details PDF
Zoom
1.0x
Existing
Proposed
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
KOP8
KOP9
KOP10
N
POWERED BY
Truescape


KOP10
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
N
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
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KOP9
KOP10
POWERED BY
Truescape


KOP10
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
N
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
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KOP7
KOP8
KOP9
KOP10
POWERED BY
Truescape


KOP10
Details PDF
Zoom
1.0x
Existing
Proposed
Peak Mining
Peak Mining Overlay
Reclamation
N
13.6 miles
from project boundary
Viewpoints
KOP1
KOP2
KOP3
KOP4
KOP5
KOP6
KOP7
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KOP10
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Castle Mountain Mine Phase II Expansion

Sun and Weather

Sunny

Date: **1-13-26**

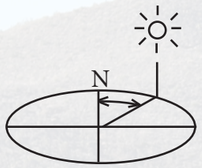
Photo Time: **9:04 am**

Visibility:

Good — Poor

Air Quality: Good

Sun Azimuth (degrees): **128.00**



Sun Angle (degrees): **11.78**

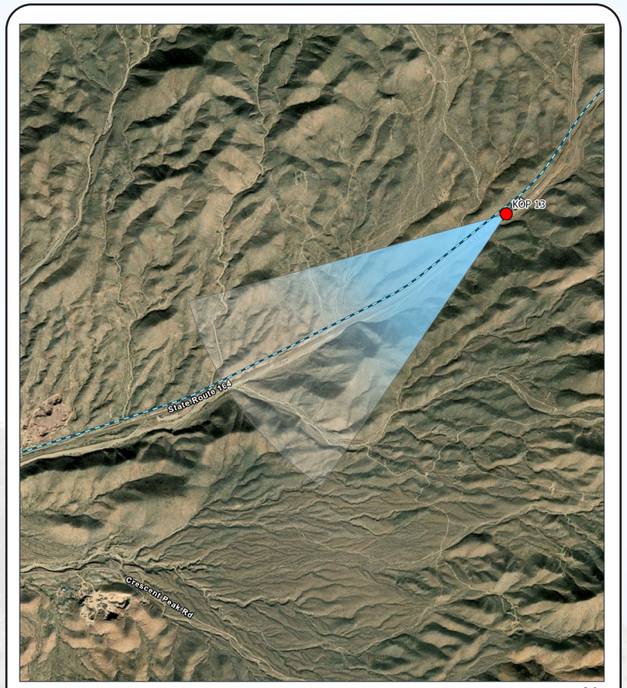
Lighting Angle on Project: **Side**

Wind: **6 mph**

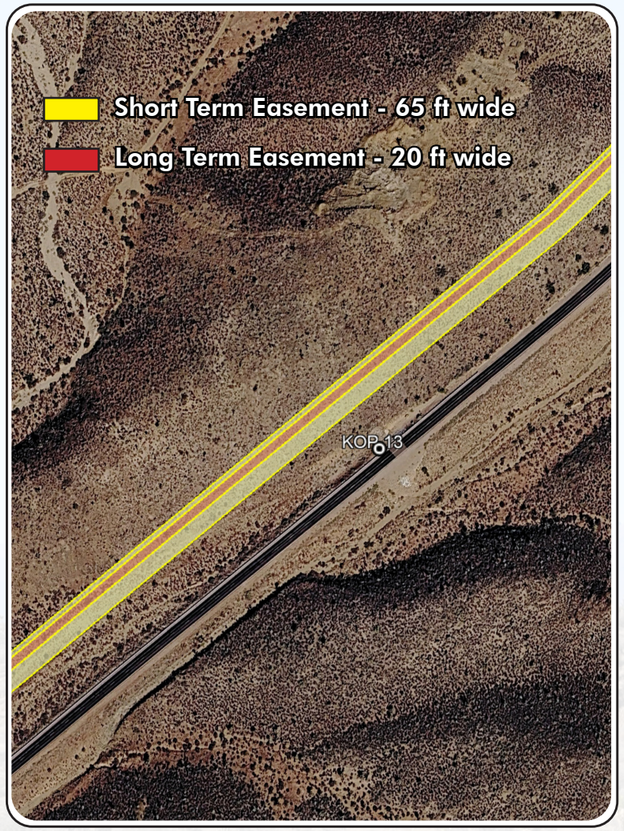
Cloud Cover: **0 %**

Temperature (°F): **54°F**

Simulation was prepared using information provided by client, "NPS Reroute 2026 01 12.dwg", "CMM ROW - PWL Pull Site_StrLocs. kmz", and "ROWs SHP Files_final.kmz" Locations, colors, and heights may vary based on final engineering and design.



KOP Location and Visible Elements



Structure Diagram



KOP 13 - SR 164 (McCullough Range)

Base Photographic Documentation

Latitude, Longitude (degrees):
35.50306, -115.14374

Viewpoint Elevation (feet):
4,830

Camera Height (meters):
1.8

Camera Heading (degrees):
230

Camera Make & Model:
Canon EOS 5D Mark IV

Camera Sensor Size (mm):
36 x 24 Full Frame

Lens Make & Model:
AF-P Nikkor

Lens Focal Length (mm):
50

Image Size (pixels):
6720 x 4480

Approximate Distance to Undergrounded Pipeline in Simulation:
300 feet

Viewing Instructions: Printed at 100% the resulting simulation is 16 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed at arms length (24 inches). If viewed on a computer monitor, scale should be 100%.

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KOP 13: View from SR 164 (McCullough Range) looking southwest - Existing Condition



KOP 13: View from SR 164 (McCullough Range) looking southwest - Simulated Condition

Castle Mountain Mine Phase II Expansion

Sun and Weather

Sunny

Date: **1-13-26**

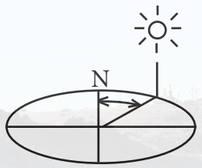
Photo Time: **8:12 am**

Visibility:

Good — Poor

Air Quality: Good

Sun Azimuth (degrees): **119.70**



Sun Angle (degrees): **3.24**

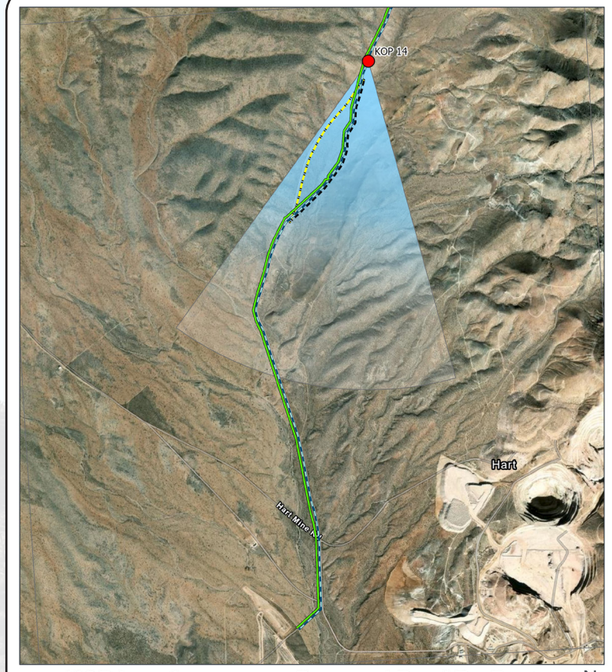
Lighting Angle on Project: **Side**

Wind: **6 mph**

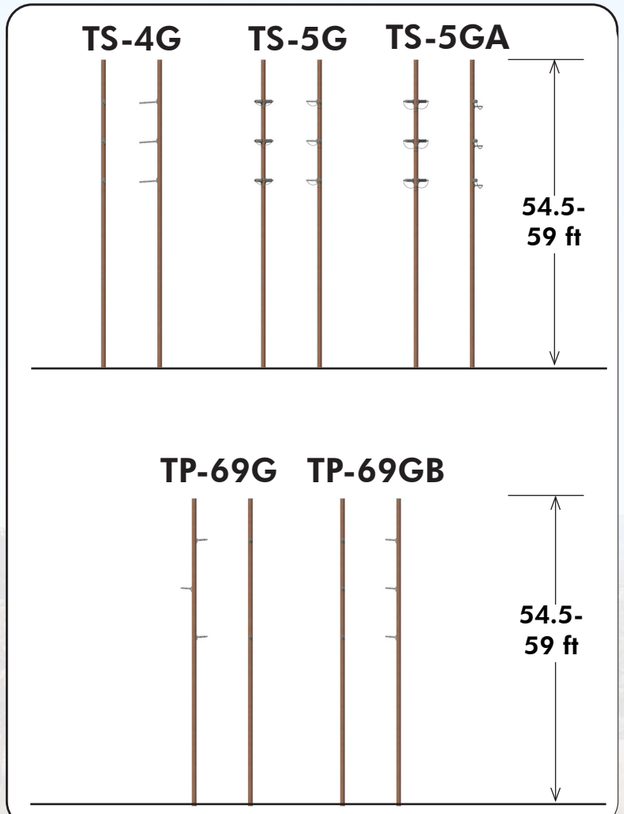
Cloud Cover: **0 %**

Temperature (°F): **48°F**

Simulation was prepared using information provided by client, "NPS Reroute 2026 01 12.dwg", "CMM ROW - PWL Pull Site_StrLocs. kmz", and "ROWs SHP Files_final.kmz" Locations, colors, and heights may vary based on final engineering and design.



KOP Location and Visible Elements



Structure Diagram



KOP 14 - Castle Mountain Mine Road (Re-Alignment Area)

Base Photographic Documentation

Latitude, Longitude (degrees):
35.31191, -115.11535

Viewpoint Elevation (feet):
4,545

Camera Height (meters):
1.8

Camera Heading (degrees):
190

Camera Make & Model:
Canon EOS 5D Mark IV

Camera Sensor Size (mm):
36 x 24 Full Frame

Lens Make & Model:
AF-P Nikkor

Lens Focal Length (mm):
50

Image Size (pixels):
6720 x 4480

Approximate Distance to Nearest Transmission Structure in Simulation:
300 feet

Viewing Instructions: Printed at 100% the resulting simulation is 16 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed at arms length (24 inches). If viewed on a computer monitor, scale should be 100%.

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KOP 14: View from Castle Mountain Mine Road looking southwest - Existing Condition



KOP 14: View from Castle Mountain Mine Road looking southwest - Simulated Condition

APPENDIX J

Mine Plan of Operations

APPENDIX K

Plan of Development

APPENDIX L

Alternatives Considered But Not Analyzed in Detail

ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Pursuant to the DOI's *Handbook of National Environmental Policy Act Implementing Procedures* (516 Department Manual [DM] 1) (DOI 2026), the EIS shall include a reasonable range of alternatives that are technically and economically feasible, meet the BLM's purpose and need, and are within the BLM's legal authority to implement (DOI 2026:Section 2.3 a(3)). The reasonable alternatives meeting the above criteria and warranting detailed discussion were outlined in Section 2.2 and include the *No Action Alternative* (Alternative A), *Proposed Action* (Alternative B), Alternatives C, and D, above. For those alternatives considered but eliminated from detailed analysis, the EIS briefly summarizes the reasons for their exclusion (DOI 2026:Appendix 1, Section 4(2)).

Table B-1.2.3-1 in Appendix B outlines the alternatives that did not meet the definition of "reasonable alternatives," as outlined in 516 DM Sections 2.3 a(3) and 6.1(v), which include the following criteria:

- Technically and economically feasible (i.e., are not viable in terms of cost or feasibility);
- Meet the purpose and need for the proposed action (as defined in Chapter 1of this EIS/EIR);
- Within the jurisdiction of the BLM's authority; and
- Where applicable, meet the goals of the applicant.

Technical Feasibility refers to the practicality of implementing a proposed alternative using current technology, methods, and resources. It involves evaluating whether the alternative can be successfully designed, constructed, and operated given existing engineering standards; availability of necessary technologies and expertise; and suitability of the Project site. Additionally, technical feasibility considers whether the alternative can comply with all relevant legal and regulatory requirements. In the context of an EIS, an alternative is considered technically feasible if it can be carried out effectively within these constraints.

Economic Feasibility assesses whether a proposed alternative is financially reasonable and sustainable throughout its expected lifetime. This evaluation includes consideration of initial capital costs, ongoing operating and maintenance expenses, and the availability of sufficient funding or financial resources. Economic feasibility also examines whether the alternative is cost-effective compared to other options and whether marker conditions support its implementation. Within an EIS, an alternative is deemed economically feasible if it can be funded, constructed, and operated without imposing undue financial burden and if it remains competitive with other alternatives.

100% Diesel-Generator Power

Under this alternative, the mine would be powered exclusively by diesel generators, eliminating the need to construct and operate the liquified natural gas (LNG) micro-turbines and a new power line. Although the initial capital cost of a diesel generation system is approximately 20 percent lower than that of an LNG system, these savings would be offset within the first year of operation due to substantially higher diesel fuel costs. On an ongoing basis, diesel fuel costs are estimated to be two and a half times or more than those associated with LNG. The resulting increase in operating costs is estimated to range from approximately $9 million to $14 million per year, which over the life of the project would likely exceed $200 million (CMV 2026d).

In addition to higher operating costs, diesel generation systems require more frequent major maintenance. Diesel generators typically require significant overhauls every 4.5 to 5 years, whereas LNG generators generally require major overhauls approximately every 10 years. This shorter maintenance cycle would increase long-term operational costs and reduce overall system efficiency.

Technical feasibility also presents challenges. Emissions from diesel generation would likely exceed applicable regulatory thresholds, which would require the use of Best Available Control Technology (BACT). For engines of the size needed to support the project's power demand, BACT would require Tier 4 Final-rated engines. Engines meeting these specifications are not always readily available at the required scale, creating uncertainty regarding procurement and implementation (CMV 2026d).

Additionally, based on an air emissions inventory conducted by Ramboll (2026), this alternative would result in increased annual emissions of NO_x, CO, PM, PM_{10}, $PM_{2.5}$, CO_2, CH_4, N_2O, and CO_2e compared to the 10 Megawatts (MW) of liquefied natural gas (LNG) micro-turbine power under the Proposed Action.

Based on these economic and technical constraints, the 100 percent diesel-generation alternative was determined to be infeasible and was not carried forward for further detailed evaluation.

Diesel for Supplemental Power Generation

Under this alternative, approximately 10 MW of diesel generators would be installed to supplement operational power needs in conjunction with construction of the proposed 69-kilovolt (kV) power line to the site. On-site power generation from LNG or solar would not be developed. The intent of this alternative would be to reduce reliance on LNG availability and decrease the required size of on-site LNG storage; however, this configuration presents economic and technical limitations. As discussed in the 100% Diesel-Generator Power alternative, diesel generation results in substantially higher operating costs than LNG-based generation due to significantly higher fuel costs, with diesel estimated to cost two and a half times or more than LNG on a per-energy basis and increasing annual operating costs by approximately $9 million to $14 million, which over the life of the project would likely exceed $200 million (CMV 2026d). In addition, diesel generators require major overhauls approximately every 4.5 to 5 years compared to approximately every 10 years for LNG generators, increasing long-term maintenance costs and operational downtime.

Additionally, based on an air emissions inventory conducted by Ramboll (2026), this alternative would result in increased annual emissions of NO_x, CO, PM, PM_{10}, $PM_{2.5}$, CO_2, CH_4, N_2O, and CO_2e compared to the 10 MW of LNG microturbine power under the Proposed Action.

Because this alternative would introduce higher operating costs and similar technical constraints associated with 100% diesel-powered generation, it was determined to be impractical and was not carried forward for further detailed evaluation.

100% Solar Power

Under this alternative, all mine power would be supplied by on-site solar generation with battery energy storage (BESS), eliminating the need for LNG micro-turbines and the proposed new overhead power line from the mine site to Walking Box Ranch. Although this alternative may reduce resource impacts (visual, biological, and air quality) that are generally associated with the construction and operation of linear transmission infrastructure, technical evaluations indicate it is not feasible given land availability and performance constraints. The maximum solar development achievable within already disturbed mine

lands would consist of approximately 53.5 MW_{AC} (alternating current) of photovoltaic generation paired with a 31.5-MW, 252-MWh lithium-ion BESS, which together could meet only approximately 77.6% of total energy demand and 73.5% of operating hours for the mine's constant 15-MW load under typical conditions (CMV 2021). As a result, the system would be unable to support continuous, year-round mining operations without additional backup generation.

Meeting the full mine load exclusively with solar power would require an estimated 500 to 1,000 acres of developable land, which exceeds the undeveloped land available within the Mine Plan of Operations (MPO) boundary that is not already proposed for development. Expansion into adjacent National Monument lands is not permitted under National Park Service (NPS) authority, and importing solar power from outside the Avi Kwa Ame National Monument (AKANM) would require new transmission infrastructure, resulting in impacts similar to those associated with the proposed 69-kV overhead power line.

Further constraining the viability of this alternative is the York Fire, a 93,078-acre wildfire that ignited on July 28, 2023, within the New York Mountains of the Mojave National Preserve (MNP) and Castle Mountains National Monument (CMNM) in eastern San Bernardino County, California, and extended 9,127 acres into Clark County, Nevada (CAL FIRE/USFS YORK Fire incident report and BLM 2023c). The Burned Area Emergency Response (BAER) Plan for the York Fire (BLM 2023c) established short- and long-term rehabilitation goals, including implementation of chemical treatments to control invasive species, closure of the area to public access (through signage, barricades, and law enforcement patrols) for resource protection, and continued post-fire monitoring to promote the successful recovery of native vegetation over time. The implementation of this plan would restrict new surface disturbance and infrastructure development within the burned area during the recovery period, thereby limiting the availability of suitable lands where additional solar arrays or associated facilities could be constructed to support this alternative (BLM 2023c).

In addition, this alternative would involve substantial capital, operations, and relocation costs associated with battery overbuild, augmentation, and the need to relocate solar facilities as mining activities expand, while introducing new ground disturbance and increasing annual air emissions (CMV 2021). Given these land constraints, performance limitations, high costs, and inability to reliably meet operational requirements, the 100% Solar Power alternative was dismissed from further consideration (CMV 2021).

Solar for Intermittent Power Generation

Under this alternative, solar generation would be used as an intermittent energy source, eliminating the need for the currently proposed overhead transmission line from the mine site to Walking Box Ranch, while retaining on-site LNG micro-turbines to meet the mine's constant 15-MW load. The alternative was evaluated to reduce visual and biological impacts associated with linear transmission infrastructure while maintaining operational reliability. The solar component would be comparable in scale to the 100% Solar Power Alternative; however, this option would also include power supplied by a natural gas generating facility consisting of five Jenbacher J624 reciprocating engines configured with N+1 redundancy and supported by a new natural gas pipeline connection to the site (CMV 2021).Although technically capable of meeting load requirements, this configuration introduces substantial additional infrastructure, including solar facilities, a gas-fired power plant, and a new fuel supply pipeline.

This alternative is constrained by the limited availability of developable land within the MPO boundary to support large-scale solar generation and would require substantial ground disturbance in previously undisturbed areas or areas not currently proposed for development (CMV 2021). Furthermore, the combination of intermittent solar and gas generation also increases capital, operations, and maintenance costs relative to a single-technology approach, including costs associated with solar module relocation as

mining expands, dedicated staffing for engine maintenance, emissions control equipment, and fuel supply infrastructure. Although the alternative would reduce reliance on a transmission line, emissions could increase relative to a 100% solar option due to continuous operation of natural gas engines while providing limited environmental benefit compared to a strictly LNG-only alternative. Given its impractical land requirements, increased disturbance footprint, jurisdictional restrictions within and adjacent to the York Fire burn perimeter (as referenced in the 100% Solar Power Alternative), higher costs, and considerable increased surface disturbance when compared to the Proposed Action, this alternative does not pass the reasonable person test and was dismissed from further consideration (CMV 2021).

100% LNG Micro-Turbines

Under this alternative, all mine power would be generated by LNG micro-turbines, eliminating the need for a power line and thereby minimizing visual and biological impacts along the ROW; however, LNG capacity is not sufficient to support this level of demand, making the alternative technologically unfeasible. Additionally, based on an air emissions inventory conducted by Ramboll (2026), this alternative would result in nearly double the annual emissions of NO_x,, SO_x, CO, PM, PM_{10}, $PM_{2.5}$, CO_2, CH_4, N_2O, and CO_2e compared to the 10 MW of LNG microturbine power under the Proposed Action.

Nuclear Micro-Reactor

Under this alternative, a nuclear micro-reactor would supply all mine power, eliminating the need for the proposed LNG micro-turbines. This option was considered but determined to be infeasible due to technological readiness, regulatory requirements, and economic constraints. Small modular reactors (SMRs) and micro-reactors are not yet commercially available for near-term deployment and remain in various stages of design, testing, licensing, and demonstration. Many systems are considered first-of-a-kind technologies, and widespread commercial operation is not anticipated until approximately 2027 to 2030 or later (CMV 2021).

In addition, deployment of a nuclear power system would require a complex and lengthy licensing and permitting process through the U.S. Nuclear Regulatory Commission, which can take many years before construction and operation could occur. Nuclear generation would also require long-term management and on-site storage of spent nuclear fuel, further increasing operational complexity. Capital costs for SMRs and micro-reactors are highly uncertain and are expected to be substantially higher than conventional power generation technologies. First-of-a-kind SMR projects have been estimated in the multi-billion-dollar range, and micro-reactors, although smaller, are typically more expensive on a per-megawatt basis. Given the lack of commercial availability, extended regulatory timelines, significant capital costs, and operational complexities associated with nuclear fuel handling and waste management, this alternative was determined to be neither technically nor economically feasible and was dismissed from further consideration (CMV 2021).

Reduce Mining Throughput Rates by 5% to 10%

Under this alternative, mining throughput rates would be reduced by 5% to 10%, decreasing annual water and utility needs and potentially extending the operational life of the mine and reclamation periods. The underground water pipeline and 69kV overhead power line would still be constructed for the Project. This alternative would result in lower annual resource demands, such as reduced water consumption, fewer transportation trips, and lower workforce requirements per year; however, it would extend the total

number of years during which these services are needed. This alternative was found to be unreasonable due to economic feasibility and reasonableness, specifically reducing the internal rate of return and net present value below industry standards (CMV 2025b). This alternative would also extend operational years, which could increase costs and prolong impacts before reclamation can begin, without providing sufficient improvements to resource protection.

Reduce Mining Throughput Rates Enough to Avoid New Offsite- Utilities

Under this alternative, mining throughput would be reduced to a level intended to eliminate the need for new offsite utilities, including the underground water pipeline and 69kV overhead power line, thereby avoiding associated ROW disturbance and related visual and biological impacts. To evaluate feasibility, a representative reduced mining rate was analyzed based on a 30% reduction from the proposed 2022 Plan mining rate of approximately 52,000 tons per day to approximately 35,000 tons per day. Even at this substantially reduced rate, the project would still require extended operations to mine the same total ore volume, resulting in an estimated mine life increase of approximately 7 years. Financial analysis indicates that this reduced throughput would lower the project Internal Rate of Return (IRR) to approximately 13.8%, below the minimum industry financing threshold of 17%, and reduce Net Present Value (NPV) by more than 4%, materially affecting the viability of the project as an investable operation (CMV 2025b).

Further reductions in mining rate sufficient to fully eliminate offsite utilities, requiring near exclusive reliance on onsite power generation and pit dewatering for water supply, were not advanced for detailed analysis because such reductions would further degrade project economics beyond levels already demonstrated to be infeasible. Although lower annual production could reduce short-term demands for power, water, and emissions, and eliminate the need for the utilities, extending the mine life would likely increase long-term water losses through evaporation and dust control, as well as cumulative energy use and emissions over the life of the project. In addition, designing a mine plan around persistently low throughput would reduce operational flexibility and increase the likelihood of future plan amendments as economic conditions change. Given the demonstrated economic infeasibility at reduced mining rates, the extended mine life and associated long-term environmental tradeoffs, and the uncertainty that further reductions would reasonably sustain a viable mining operation, this alternative does not meet the standard of a reasonable or feasible alternative and was dismissed from further consideration

Change the Order in Which the Pits Are Mined

Under this alternative, the order in which the pits are mined would be changed to avoid the surface expression of a pit lake in the south pit, which would be backfilled to address water resource concerns; however, it was determined that this alternative is not within BLM's authority to direct the mining order, and the concern for a pit lake is addressed in the alternatives that are analyzed in detail. As such, this alternative is not considered further due to lack of agency authority.

Underground Mining

Under this alternative, mining would be conducted using underground methods rather than the proposed open-pit mining approach, with the intent of reducing surface disturbance. Although underground mining can reduce land surface impacts in some settings, it is only economically feasible where ore grades are sufficiently high to offset the substantially greater development and operational costs. The 2022 Plan ore resource and reserve grades for the project range from approximately 0.52 to 0.62 grams per tonne of

gold, whereas underground mining typically requires average gold grades of approximately 4 to 10 grams per tonne (CMV 2025d). Given the substantial disparity between known project grades and those required for economically viable underground mining, this alternative is not economically feasible and was dismissed from further consideration.

Joint Trench for Underground Water Pipeline and Power Line

Under this alternative, the 69-kilovolt (kV) electrical transmission line would be installed underground within the same trench as the Ivanpah water pipeline to reduce overall surface disturbance and visual impacts associated with the overhead power line. Underground transmission lines generate significant heat and require heavily insulated, sealed cables and specialized accessories, which substantially increases construction costs and presents technical challenges related to heat dissipation and potential voltage loss over the approximately 16.5-mile alignment (CMV 2025d). Additionally, co-locating the overhead line and pipeline within a shared trench would require a substantially wider trench to maintain adequate separation between the utilities for safety and thermal management, resulting in greater ground disturbance than the alternatives analyzed in detail.

These engineering requirements, combined with the need for specialized materials and installation methods, would make the joint trench configuration substantially more expensive than the proposed overhead transmission line. Given the substantial economic cost and technical constraints associated with underground installation of the transmission line within the pipeline trench, this alternative was considered infeasible and was dismissed from further consideration.

Burying the Electric Line or the Pipeline within the Existing Road Footprint

Under this alternative, the overhead electric line or pipeline would be buried underground within the footprint of an existing road. Although this approach could reduce aboveground infrastructure and potential impacts to visual resources, trenching within an active roadway would pose substantial public safety risks during construction, including open trenches, lane closures, and an increased potential for vehicle and pedestrian accidents.

Trenching within the roadway would require substantially greater ground disturbance than the Proposed Action and alternatives analyzed in detail and could destabilize the roadway, potentially necessitating reconstruction following installation. Construction would likely require partial or full roadway closures to maintain safe working conditions, which could disrupt access and circulation for both mine operations and members of the public who use the roadway. In addition, future maintenance or repair activities would require repeated excavation within the roadway, resulting in recurring disturbance, traffic disruptions, and associated safety concerns. Maintaining safe and reliable access during construction could also require development or designation of an alternate access route, introducing additional disturbance, cost, and environmental impacts that would not occur under the Proposed Action.

Because installation of utilities within an active roadway would introduce substantial technical challenges, increased construction and long-term operational costs, and additional safety and access concerns, this alternative was determined to be technically and economically infeasible and would not meet the criteria for a reasonable alternative. Therefore, it was dismissed from further consideration.

Buried 69-kV Electrical Transmission Power Line

Under this alternative, the proposed 69-kilovolt (kV) electrical transmission line would be buried underground instead of constructed as a wood pole-supported overhead line to reduce visual impacts. A buried transmission line was previously evaluated and dismissed as technically and economically infeasible in the 1991 Bureau of Land Management Environmental Assessment (BLM 1991). A 2025 cost and technical assessment estimated construction and material costs of approximately 127 million for a buried line compared to approximately $9 million for the proposed overhead line, representing an approximately 14-fold increase in cost (CMV 2025b).

In addition, an underground transmission power line presents several technical challenges. Buried high-voltage lines generate significant heat and require heavily insulated and sealed cables, specialized conduit systems, and additional infrastructure to manage heat dissipation and maintain system reliability. Over the approximately 16.5-mile alignment, underground installation could also result in increased electrical resistance and potential voltage loss, requiring additional engineering controls and equipment.

Given the substantial increase in construction costs and the technical constraints associated with underground transmission over this distance, this alternative was determined to be economically and technically infeasible and was dismissed from further consideration.

Bury Power Line Underground at Walking Box Ranch

Under this alternative, the overhead power line would be eliminated to reduce visual and biological impacts within the Walking Box Ranch; however, the alternative was dismissed from further analysis because underground installation would introduce substantial technical and economic constraints compared to the Proposed Action and alternatives analyzed in detail. Similar to the three previously dismissed alternatives, installing a 69-kV transmission line underground would require specialized cable systems and more complex installation methods than an overhead configuration. These requirements would substantially increase construction costs and engineering complexity over the length of the alignment. Underground installation would also require trenching and additional infrastructure to dissipate heat and maintain safe operating conditions, further increasing construction effort and long-term operational costs. In addition, accessing underground transmission infrastructure for inspection, maintenance, or repairs would require excavation and could extend outage durations compared to an overhead line, reducing operational flexibility and reliability. Although this alternative would reduce the visibility of a new overhead line within the ranch, visual effects would still occur due to the presence of existing power lines on the property and the visibility of new transmission infrastructure outside the Walking Box Ranch. Given the substantial increase in construction cost, engineering complexity, and long-term operational constraints, this alternative was determined to be technically and economically infeasible and was dismissed from further consideration.

Co-Location of Overhead Electric Line South of Walking Box Ranch from Substation

This alternative would co-locate the proposed overhead electrical line on existing power-line structures south of the Walking Box Ranch substation to reduce new infrastructure and potential visual disturbance. Engineering evaluations indicate, however, that the existing facilities were not designed to accommodate the project's required 69-kV transmission system or the approximately 15-MW continuous load. To meet electrical performance and reliability requirements over the approximately 16.5 mile distance from the

substation, a double-circuit configuration would be required. Co-location would therefore necessitate substantial modifications to the existing line, including structural upgrades, additional conductors and hardware, and widespread pole replacements to meet loading, clearance, and safety standards, resulting in increased construction complexity and cost. In addition, the project's location near the California–Nevada state line would require coordination between NV Energy and Southern California Edison, further increasing technical and regulatory complexity and uncertainty in utility upgrade scopes and cost estimates.

Construction and long-term maintenance on an active, energized power-line structures would elevate worker safety risks, reduce operational flexibility, and increase the potential for service disruptions. Given the project's remote location and distance from the nearest substation, outage response times are expected to be longer than system averages, making system reliability a critical concern. Given the technical challenges, increased safety and reliability risks, and the higher and uncertain costs, this alternative was dismissed from further consideration.