DOE/EA-2121

ENVIRONMENTAL ASSESSMENT

FOR RECLAMATION OF THE BURRO MINES COMPLEX IN SAN MIGUEL COUNTY, COLORADO

Final

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U.S. DEPARTMENT OF ENERGY | Legacy Management

FINAL

ENVIRONMENTAL ASSESSMENT FOR RECLAMATION OF THE BURRO MINES COMPLEX IN SAN MIGUEL COUNTY, COLORADO

U.S. Department of Energy
Office of Legacy Management

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Prepared by
Environmental Science Division
Argonne National Laboratory

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NOTATION

GENERAL ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
AEA	Atomic Energy Act of 1954
APE	area of potential effect
AQRV	air quality related value
BLM	U.S. Bureau of Land Management
BMP	best management practice
BO	Biological Opinion
BOR	U.S. Bureau of Reclamation
CAA	Clean Air Act
CDPHE	Colorado Department of Public Health and Environment
CDWR	Colorado Division of Water Resources
CEQ	Council on Environmental Quality
CPW	Colorado Parks and Wildlife
CR	County Road
DOE	U.S. Department of Energy
DOI	U.S. Department of Interior
DOJ	U.S. Department of Justice
DRMS	Colorado Division of Reclamation, Mining and Safety
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
FTE	full-time equivalent
GEMI	Gold Eagle Mining, Inc.
GHG	greenhouse gas
GIS	geographic information system
ICRP	International Commission on Radiation Protection
IPaC	Information for Planning and Consultation
KOP	Key Observation Point
L_{dn}	day-night average sound level
L_{eq}	equivalent-continuous sound level
LM	Office of Legacy Management

MCL	maximum concentration limit
MSHA	Mine Safety and Health Administration
NAAQS	National Ambient Air Quality Standards
NCDC	National Climate Data Center
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966, as amended
NIOSH	National Institute for Occupational Safety and Health
NLCS	National Land Conservation System
NRHP	National Register of Historic Places
PEIS	Programmatic Environmental Impact Statement
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns (μm) or less
PM_{10}	particulate matter with an aerodynamic diameter of 10 μm or less
PWS	public water supply
RMP	Resource Management Plan
ROI	region of influence
ROW	right-of-way
SH	State Highway
SHPO	State Historic Preservation Office
SRMA	Special Recreation Management Area
SVRA	Sensitive Visual Resource Area
ULP	Uranium Leasing Program
Umetco	Umetco Minerals Corporation
UMTRCA	Uranium Mill Tailings Radiation Control Act
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management
VOC	volatile organic compound
WSA	Wilderness Study Area

CHEMICALS

CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
O_3	ozone
Pb	lead
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
SO_x	sulfur oxides

UNITS OF MEASURE

ac-ft	acre-foot (feet)
cm	centimeters
dB	decibel dB
dBA	A-weighted decibel(s)
ft	foot (feet)
ft^2	square foot (feet)
ft^3	cubic foot (feet)
g	gram(s)
gal	gallon(s)
ha	hectare(s)
hr	hour(s)
Hz	Hertz
in.	inch(es)
kg	kilogram(s)
km	kilometer(s)
L	liter(s)
m	meter(s)
m^3	cubic meter(s)
mg	milligram(s)
mi	mile(s)
mi^2	square mile(s)
min	minute(s)
mph	mile(s) per hour
mrem	millirem(s)
mSv	millisievert(s)
%	percent
pCi	picoCurie(s)
s	second
yd^3	cubic yard(s)
yr	year(s)

ENGLISH METRIC AND METRIC/ENGLISH EQUIVALENTS

The following table lists the appropriate equivalents for English and metric units.

Multiply	By	to Obtain
English/Metric Equivalents		
Acres (ac)	0.4047	hectares (ha)
cubic feet (ft^3)	0.02832	cubic meters (m^3)
cubic yards (yd^3)	0.7646	cubic meters (m^3)
feet (ft)	0.3048	meters
gallons (gal)	3.785	liters (L)
gallons (gal)	0.003785	cubic meters (m^3)
inches (in.)	2.540	centimeters (cm)
miles (mi)	1.609	kilometers (km)
miles per hour (mph)	1.609	kilometers per hour (kph)
pounds (lb)	0.4536	kilograms (kg)
square feet (ft^2)	0.09290	square meters (m^2)
square miles (mi^2)	2.590	square kilometers (km^2)
Metric/English Equivalents		
centimeters (cm)	0.3937	inches (in.)
cubic meters (m^3)	35.31	cubic feet (ft^3)
cubic meters (m^3)	1.308	cubic yards (yd^3)
cubic meters (m^3)	264.2	gallons (gal)
hectares (ha)	2.471	acres
kilograms (kg)	2.205	pounds (lb)
kilometers (km)	0.6214	miles (mi)
kilometers per hour (kph)	0.6214	miles per hour (mph)
liters (L)	0.2642	gallons (gal)
meters (m)	3.281	feet (ft)
square kilometers (km^2)	0.3861	square miles (mi^2)

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EXECUTIVE SUMMARY

The U.S. Department of Energy's (DOE) Office of Legacy Management (LM) has prepared this Environmental Assessment (EA) to evaluate the potential environmental impacts from reclamation of the Burro Mines Complex. DOE prepared this EA in accordance with the National Environmental Policy Act (NEPA) of 1969 (Title 42 *United States Code* Section 4321 et seq. [42 USC 4321 et seq.]); the Council on Environmental Quality "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" (Title 40 *Code of Federal Regulations* Sections 1500–1508 [40 CFR 1500–1508]); and the requirements of DOE Policy 451.1, *National Environmental Policy Act Compliance Program* (dated December 21, 2017) and "National Environmental Policy Act Implementing Procedures" (10 CFR 1021).

PROJECT LOCATION: The Burro Mines Complex is located on and adjacent to the northern end of DOE's Uranium Leasing Program Lease Tract C-SR-13 and is immediately adjacent to County Road S8 in close proximity to the Dolores River. Colorado State Highway (SH) 141 traverses Lease Tract C-SR-13 for approximately 2.1 miles (mi) (3.4 kilometers [km]) and the Dolores River traverses the lease tract for approximately 3.3 mi (5.3 km). In addition, a good portion of the surface estate (approximately 390 acres [157 hectares]) located along the highway and the river is privately owned by multiple entities. Most of the lease tract comprises lands withdrawn from the U.S. Bureau of Land Management (BLM), as allowed under the Atomic Energy Act of 1954 (AEA), as revised.

PURPOSE AND NEED: As its mission, LM fulfills DOE's post-closure responsibilities for sites it oversees by ensuring that site conditions are protective of human health and the environment. LM implements improvements to provide additional protection, as needed. Storm related erosion has increased the sediment load within the Dolores River several times, as observed with storm events in September 2007 and again in August 2014. With the Proposed Action, DOE intends to protect the Dolores River from further sediment load originating from legacy waste rock at the Burro Mines Complex. The proposed reclamation activities would prevent further runoff (flash floods) associated with future major storm events from eroding waste rock into the river.

PROPOSED ACTION: The Proposed Action involves the reclamation of three "legacy" mine sites associated with the Burro Mines Complex near Slick Rock, Colorado including erosion control and relocation of waste rock to a nearby former gravel pit. The BLM and the Colorado Division of Reclamation, Mining and Safety (DRMS) consider these three mine sites as legacy or pre-law (pre-permitting by the Colorado DRMS). As such, there were no requirements for reclamation and these mines could remain in their current condition. However, DOE is undertaking the Proposed Action to protect the nearby Dolores River, to the extent feasible, from further sediment load originating from legacy waste rock at the Burro Mines Complex. The three mine sites are the Burro Tunnel Mine, a portion of which is currently permitted and controlled by Gold Eagle Mining, Inc. (GEMI); and two shaft sites located on Burro No. 3 and Burro No. 5 claims that were developed and operated by Union Carbide Corporation, now known as Umetco Minerals Corporation (Umetco). These shafts were developed during the early uranium boom (circa 1948–1965) to access ores within the series of claims. DOE's project scope does not include the two additional mine sites that are in the area and thus, are not part of the Proposed Action. These two mines are the Burro No. 7 shaft and the

associated waste rock pile that were previously reclaimed by Umetco; and the New Ellison mine which is currently permitted and controlled by GEMI.

ALTERNATIVES EVALUATED: DOE evaluated two alternatives. The No Action Alternative was evaluated as Alternative 1 to provide a baseline for comparison with Alternative 2 (reclamation of the Burro Mines Complex), which DOE identified as its Preferred Alternative that would meet the purpose and need for the Proposed Action and would also be protective of human health and the environment.

Alternative 2 involves the removal of the upper levels of the waste rock pile at the Burro Tunnel Mine site, improving existing sediment basins below the waste rock piles at Burro No. 3 and No. 5., and installing two new sediment basins, one below Burro No. 3 and the other below the Burro Tunnel Mine site. The waste rock removed would be relocated to a former gravel pit located approximately 2,500 feet (ft) (762 meters [m]) south and slightly east of the existing Burro Tunnel Mine site. The waste rock remaining at the Burro Tunnel Mine site would mimic the 1970s era waste rock pile identified by historical information and would include armoring to protect against a 100-year flood event in the Burro Canyon drainage. The 1970s era waste rock that remains would support the historical integrity of this mining district. The gravel pit is located on Lease Tract C-SR-13 and is an existing topographic depression located primarily on public lands in an area that is more than 1,100 ft (335 m) away from and 200 ft (61m) higher than the Dolores River and does not affect the visual aesthetics or views from the river or County Road S8.

DOE's consultation with the Colorado State Historic Preservation Office (SHPO) resulted in DOE's modification of Alternative 2 that was presented in the Draft EA. Alternative 2 as described above reflects the modification made; and does not involve removal and relocation of waste rock from Burro No. 3 and Burro No. 5. Instead, mitigation measures by improving existing sediment basins below these two mine sites would be conducted. A new sediment basin would also be installed below Burro No. 3. The amount of waste rock to be relocated from the Burro Tunnel Mine site would also be less than that proposed in Alternative 2 of the Draft EA. A new sediment basin below the Burro Tunnel Mine site would also be installed to mitigate future erosion of sediment from this mine site. The modified Alternative 2 also no longer requires a right-of-way approval from the BLM as reclamation activities would not occur on BLM-managed lands.

The modification allows reclamation to be conducted in such a manner that still provides the protection to the Dolores River consistent with DOE's purpose and need for the Proposed Action and also avoids potential adverse impacts to architectural and archaeological resources that are contributing elements to a historic district where the Burro Mines Complex is located. The potential impacts from Alternative 2 of the Final EA are generally lower than those for Alternative 2 of the Draft EA (as indicated by the comparison discussed in Section 2.5).

In addition to the two alternatives evaluated in the Final EA, DOE also considered other alternatives that were eliminated from further analysis: (1) reclamation in-place; and (2) reclamation with relocation of the waste rock to two alternate sites. DOE determined that the "reclamation in-place" option would not meet the purpose and need as further erosion from the waste rock piles at the Burro Mines Complex and subsequent sediment loading to the Dolores River would not be minimized or prevented. Relocation of the waste rock to the two alternate

sites would result in greater potential environmental impacts, increased engineering difficulties, and a substantially higher cost than relocation to the gravel pit site evaluated in Alternative 2.

ENVIRONMENTAL CONSEQUENCES: The affected environment for the following resources at the Burro Mines Complex were evaluated for potential impacts from Alternatives 1 and 2: (1) air quality, (2) noise, (3) geologic setting and soil resources, (4) water resources, (5) human health, (6) ecological resources, (7) land use, (8) socioeconomics, (9) environmental justice, (10) transportation, (11) cultural resources, (12) visual resources, and (13) waste management.

Overall, Alternative 1, the No Action Alternative, would result in no additional environmental impacts, however, the potential for the waste rock at the Burro Mines Complex to erode into the Dolores River would remain. Alternative 2 would result in negligible to minor short-term impacts that could be minimized further or prevented by implementing mitigation measures discussed in the EA. Long-term benefits would be anticipated under Alternative 2. In particular, the potential erosion and runoff from the Burro Mines Complex into the Dolores River would be reduced as waste rock would be relocated and would be farther from the river. Cumulative impacts from reclamation of the Burro Mines Complex are expected to be negligible.

COORDINATION AND CONSULTATION: The BLM and the Colorado DRMS are cooperating agencies in the preparation of the EA, and have reviewed the modified Preferred Alternative. DOE consulted with the U.S. Fish and Wildlife Service which agreed with DOE's determination that formal consultation for this project is not necessary. Impacts from mine reclamation activities to threatened or endangered species or their designated critical habitat, including downstream effects on endangered fish from construction water depletions, were evaluated and addressed in a previously issued Biological Opinion. DOE also consulted with the Colorado SHPO per Section 106 requirements of the National Historic Preservation Act. As stated, this consultation resulted in DOE's modification of the Preferred Alternative (Alternative 2). The Colorado SHPO concurred with DOE's findings that the modified Preferred Alternative would not adversely impact historic onsite features present at the Burro Mines Complex.

PUBLIC INVOLVEMENT: During the preparation of the Draft EA, DOE and BLM sent notification letters and/or emails to applicable federal, state, and local agencies, local residents, affected organizations, and interested tribes regarding DOE's Proposed Action and BLM's then connected action, and intent to prepare an EA. Scoping comments received were carefully considered in the preparation of the Draft EA.

The Draft EA was made available for public review and comment for a 30-day comment period from August 7, 2020 to September 8, 2020. DOE has considered all comments received in making the decision to move forward with the Proposed Action and prepared a draft Finding of No Significant Impact (FONSI) and this Final EA.

DOE announced the availability of the Draft FONSI and Final EA for a 30-day period beginning February 17, 2021, and ending March 18, 2021. DOE published notices in the following local newspapers: Montrose Daily Press, San Miguel Basin Forum (paper of record), Cortez Journal, Durango Herald, and the Telluride Daily Planet. The Draft FONSI would become final after the 30-day public availability period. The draft FONSI and Final EA are available at the following links: https://www.energy.gov/nepa/doeea-2121-reclamation-burro-

mines-complex-san-miguel-county-colorado, and https://www.energy.gov/lm/burro-mines-reclamation-environmental-assessment.

REVISIONS TO THE DRAFT EA: The primary changes made from the Draft EA to prepare the Final EA are as follows:

- Alternative 2 was modified to reflect consultation and agreements with the Colorado SHPO in order to avoid potential adverse impacts to historic onsite features present at the Burro Mines Complex. Accordingly, the discussion in Chapter 4 for Alternative 2 has been revised to evaluate the modified Alternative 2 described in Section 2.2;
- Discussion regarding BLM's connected action has been deleted as the modified Alternative 2 does not require a ROW on BLM managed lands. Because the Proposed Action no longer involves a BLM action, further BLM NEPA analysis and decision documents (i.e., FONSI and Decision Record) will not be issued;
- An Appendix has been added to provide DOE's responses to public comments received on the Draft EA. Revisions were made as indicated in the responses to provide clarifications on topics, as requested by the commenters (see Appendix E); and
- Section 106 consultation correspondence between DOE and the Colorado SHPO has been compiled as Appendix F.

1 INTRODUCTION

The U.S. Department of Energy's (DOE) Office of Legacy Management (LM) evaluated the potential environmental impacts of the two alternatives considered for reclamation of the Burro Mines Complex. DOE has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (Title 42 *United States Code* Section 4321 et seq. [42 USC 4321 et seq.]); the Council on Environmental Quality (CEQ) "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" (Title 40 *Code of Federal Regulations* Sections 1500–1508 [40 CFR 1500–1508]); and the requirements of DOE Policy 451.1, *National Environmental Policy Act Compliance Program* (dated December 21, 2017) and "National Environmental Policy Act Implementing Procedures" (10 CFR 1021).

1.1 PROJECT LOCATION

The Burro Mines Complex is located on and adjacent to the northern end of DOE's Uranium Leasing Program (ULP) Lease Tract C-SR-13 and is immediately adjacent to County Road (CR) S8 in close proximity to the Dolores River (Figure 1-1). The Colorado State Highway (SH) 141 traverses Lease Tract C-SR-13 for approximately 2.1 miles (mi) (3.4 kilometers [km]) and the Dolores River traverses the tract for approximately 3.3 mi (5.3 km). A good portion of the surface estate approximately 390 acres (ac) [157 hectares (ha)] located along the highway and the river is privately owned by multiple entities.

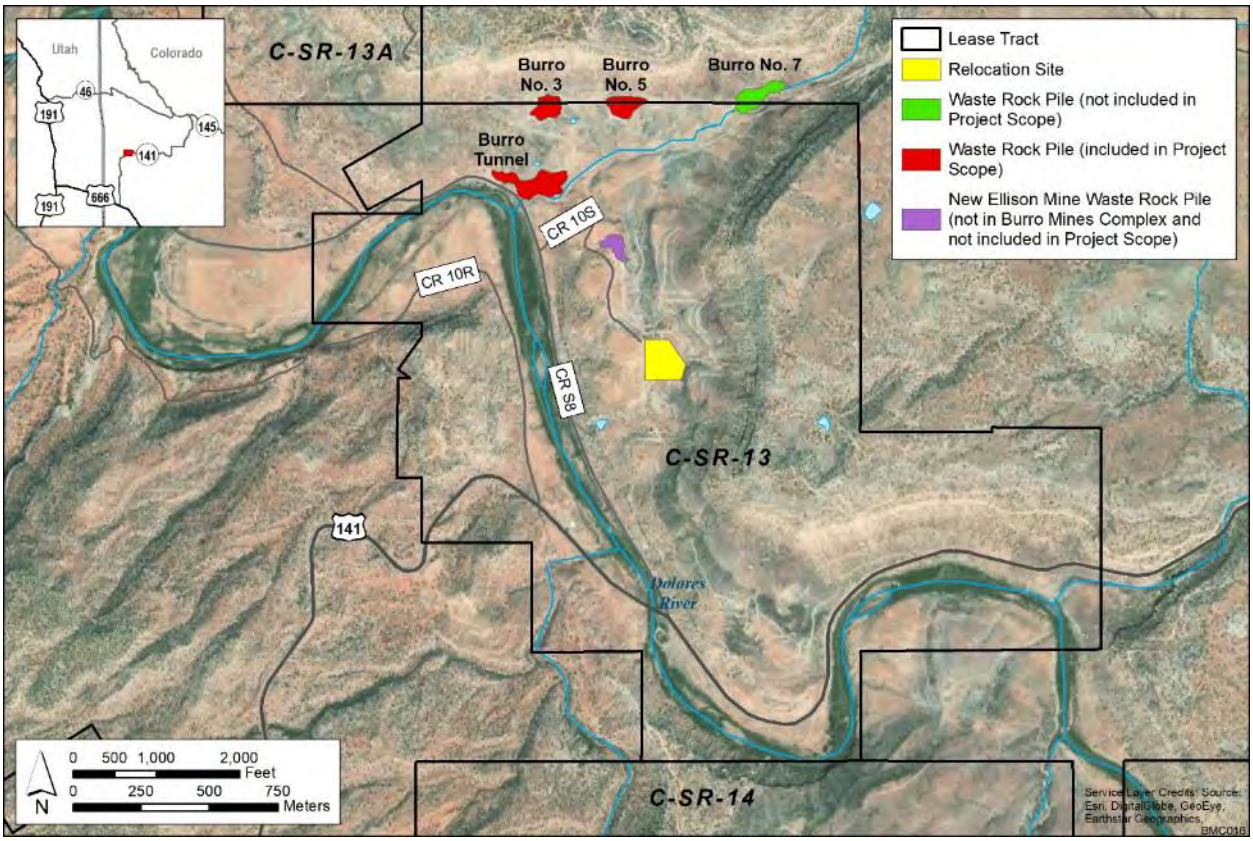

FIGURE 1-1 DOE Lease Tract C-SR-13 and Location of the Burro Mines Complex

Most of the lands that comprise the lease tract were withdrawn from the U.S. Bureau of Land Management (BLM)[1], as allowed under the Atomic Energy Act of 1954 (AEA), as revised.

1.2 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

The Proposed Action involves the reclamation of three "legacy" mine sites within the Burro Mines Complex located near Slick Rock, Colorado (Figure 1-1), including erosion control and relocation of waste rock from the Burro Tunnel Mine to a nearby former gravel pit. The BLM and the Colorado Division of Reclamation, Mining and Safety (DRMS) consider these three mine sites as legacy or pre-law (pre-permitting by the Colorado DRMS). As such, there were no requirements for reclamation and these mines could remain in their current condition. However, DOE is undertaking the Proposed Action to protect the nearby Dolores River, to the extent feasible, from further sediment load originating from legacy waste rock at the Burro Mines Complex.

The three "legacy" mine sites are the Burro Tunnel Mine, a portion of which is currently permitted and controlled by Gold Eagle Mining, Inc. (GEMI); and two shaft sites, developed and operated by Umetco Minerals Corporation (Umetco). The two shafts are located on their namesake unpatented mining claims, Burro No. 3 and Burro No. 5. These shafts were developed during the early uranium boom (circa 1948–1965) to access ores within the series of claims. The proposed project area is shown in Figure 1-2. Aside from the three mine sites and the gravel pit, the project area includes site roads, potential access routes, setbacks for erosion control, and staging areas.

Alternative 2 which is the Preferred Alternative for the Proposed Action has been modified from that described in the Draft EA in that waste rock from Burro No. 3 and Burro No. 5 would not be removed and relocated. Instead, mitigation measures including improving six existing sediment basins around these two mine sites and installing two new sediment basins (one below Burro No.3 and one below the Burro Tunnel Mine site), would be conducted. The amount of waste rock to be relocated from the Burro Tunnel Mine site would also be less than proposed in the Draft EA. A detailed description of the Alternative 2 is presented in Section 2.2. DOE made the modification to avoid potential adverse impacts to historic onsite features present at the Burro Mines Complex, thereby complying with the consultation and agreements with the Colorado State Historic Preservation Office (SHPO) per Section 106 consultation requirements of the National Historic Preservation Act (NHPA) [see Appendix F for details of the consultation conducted by DOE and the Colorado SHPO]. The modified Alternative 2 would provide the improvements and additional protection to the Dolores River which meets the purpose and need for DOE's action as stated in Section 1.3.

Not included in DOE's project scope and therefore, not part of the Proposed Action, are the two other mine sites that are present in the Burro Mines Complex area. These two mine sites are the Burro No. 7 shaft and the associated waste rock pile, and the New Ellison mine (shown in Figure 1-1). The Burro No. 7 shaft and associated waste rock pile were private unpatented

[1] Withdrawn lands associated with Lease Tract C-SR-13 are covered by portions of Public Land Orders 494 and 1495. Additionally, that portion of Lease Tract C-SR-13 that lies within the Dolores River corridor was acquired through a Quit Claim Deed from the Union Mines Development Corporation which was contracted by the Atomic Energy Commission to acquire uranium properties for the Government.

mining claims that have been previously reclaimed by the claimant (Umetco) and have never been associated with any DOE projects (including the ULP). The New Ellison mine is outside of the Burro Mines Complex and is currently permitted and controlled by GEMI. The Burro Mines Complex combines legacy pre-law (or pre-permitting by the Colorado DRMS) mine sites with multiple permitted mine sites, which are located on both private and public lands.

In addition, the Proposed Action is not associated with the ULP or the ULP Programmatic Environmental Impact Statement (PEIS) (2014) as the waste rock piles being proposed for reclamation are legacy (pre-law) materials that resulted from private, non-lease related mining activities. Hence, this proposed reclamation project is a DOE federally funded action rather than one proposed by the lessee under their lease agreement and in accordance with the ULP PEIS.

Finally, the Proposed Action in this Final EA does not require a right-of-way (ROW) from BLM, and therefore, BLM's connected action as described in the Draft EA is no longer needed. BLM has withdrawn the BLM Environmental Assessment and will not issue any decision documents (i.e., Finding of No Significant Impact [FONSI] and Decision Record) (BLM 2021).

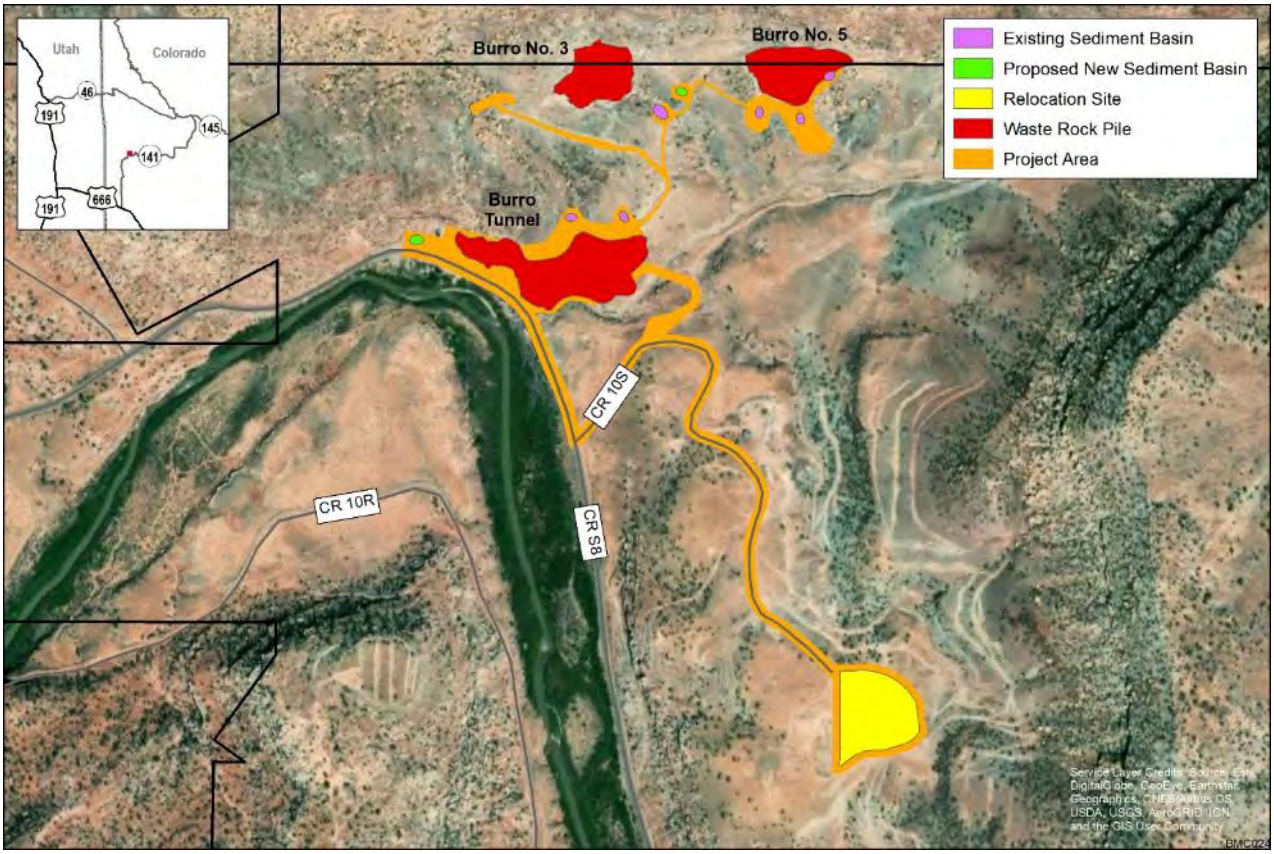

FIGURE 1-2 Project Area Associated with the Proposed Reclamation

1.3 PURPOSE AND NEED

As its mission, LM fulfills DOE's post-closure responsibilities for sites it oversees by ensuring that site conditions are protective of human health and the environment. LM implements improvements to provide additional protection, as needed. Storm related erosion has increased the sediment load within the Dolores River several times, as observed with storm events in September 2007 and again in August 2014. Under the Proposed Action, DOE would protect the Dolores River from further sediment load originating from legacy waste rock at the Burro Mines Complex. The proposed reclamation activities would prevent further runoff (flash floods) associated with future major storm events from eroding waste rock into the river.

DOE evaluated two alternatives regarding reclamation of the Burro Mines Complex and has identified Alternative 2 as the Preferred Alternative as described in Chapter 2. The Preferred Alternative would best provide the improvements and additional protection needed and would result in minimal impacts on human health and the environment.

1.4 NEPA PROCESS AND PUBLIC INVOLVEMENT

During the preparation of this EA, DOE sent letters to notify applicable federal, state, and local agencies, residents, affected organizations, and interested tribes regarding this EA. The distribution list used for the notification is included in Appendix B, Table B-1. DOE developed the distribution list based on its ULP stakeholders list because the location (the Burro Mines Complex is located in one of the ULP lease tracts) and the nature of the Proposed Action (a reclamation project) would be expected to be of interest to the same stakeholders that have participated in past similar ULP projects. DOE received several letters and e-mails that contained scoping comments regarding its notification and Proposed Action. Table B-2 (in Appendix B) lists the correspondence that were received and DOE's responses to the scoping comments are presented in Table C-1 (in Appendix C). DOE carefully considered the scoping comments in preparing the Draft EA.

In June 2020, during development of the Draft EA, BLM initiated scoping with interested members of the public for Alternative 2, which included a connected action to respond to DOE's application for a ROW to perform reclamation activities on public lands. Appendix B, Table B-3 contains the notification distribution list. The BLM received scoping comments from three commenters as listed in Appendix B, Table B-4. All comments submitted were outside of the scope of BLM's connected action; and with the exception of one comment requesting reclamation of Burro No. 7, the comments submitted to BLM were the same comments submitted in response to DOE's notification (see comments 1–10, 11, 13–16, and 18 in Appendix C, Table C-1). Reclamation of Burro No. 7 is outside of the scope of DOE's Proposed Action as described in Section 1.2.

The Draft EA was made available for public review and comment for a 30-day period from August 7, 2020 to September 8, 2020. Appendix D, Tables D-1 and D-2 present the distribution lists for DOE and BLM, respectively. In addition, DOE announced the availability of the Draft EA for public review and comment via notices published on August 5, 2020 to August 7, 2020 in the following local newspapers: *Montrose Daily Press*, *San Miguel Basin Forum* (paper of record), *Cortez Journal*, *Durango Herald*, and the *Telluride Daily Planet*. The Draft EA was made available through the following links: www.energy.gov/nepa/public-

comment-opportunities and www.energy.gov/lm/burro-mines-reclamation-environmental-assessment.

DOE received comments on the Draft EA from five commenters. The comments received and DOE's responses are presented in Appendix E. DOE has considered all comments received in making its decision to move forward with the Proposed Action and has prepared a Draft FONSI. BLM has notified its stakeholders that a ROW approval for DOE's Proposed Action is no longer needed.

DOE announced the availability of the Draft FONSI and Final EA for a 30-day period beginning February 17, 2021, and ending March 18, 2021. DOE published notices in the following local newspapers: *Montrose Daily Press*, *San Miguel Basin Forum* (paper of record), *Cortez Journal*, *Durango Herald*, and the *Telluride Daily Planet*. The Draft FONSI would become final after the 30-day public availability period. The draft FONSI and Final EA are available at the following links: https://www.energy.gov/nepa/doeea-2121-reclamation-burro-mines-complex-san-miguel-county-colorado, and https://www.energy.gov/lm/burro-mines-reclamation-environmental-assessment.

1.4.1 Cooperating Agencies

For the preparation of this EA, DOE invited the BLM and the Colorado DRMS as cooperating agencies; and both agencies agreed (Barr, D.L. 2019, 2020; Clementson, C. 2020; Means, R. 2020). The Colorado DRMS is a cooperating agency because it has been an ongoing partner and regulator in evaluating ULP activities and served as a cooperating agency for the 2014 ULP PEIS (DOE 2014). The participation of the Colorado DRMS will provide continuity to ensure that mining operators conduct uranium and vanadium exploration, mining, and reclamation activities consistent with agreements and regulatory requirements. The BLM and the Colorado DRMS have reviewed the modified Preferred Alternative (West 2021; Clementson, C. 2021).

1.4.2 Consultations

DOE consulted with the U.S. Fish and Wildlife Service (USFWS) and it agreed with DOE's determination that formal consultation for this project is not necessary (Vendramel 2019). Impacts to threatened or endangered species or their designated critical habitat, including downstream effects on endangered fish from construction water depletions, were evaluated in the Biological Opinion (BO) issued for the ULP (DOE 2014, Appendix E).

DOE has likewise been in consultation with the Colorado SHPO to evaluate potential architectural and archaeological resources at the Burro Mines Complex in accordance with Section 106 requirements of the NHPA (See Appendix F for the consultation correspondence between DOE and the Colorado SHPO). As previously stated in Section 1.2, DOE modified Alternative 2 (which is the Preferred Alternative) from that presented in the Draft EA, to be consistent with the consultation and agreements with the Colorado SHPO. Alternative 2 as described in Section 2.2 in this Final EA reflects the modification made. The Colorado SHPO concurred with DOE's finding of no adverse effects to historic onsite features present at the Burro Mines Complex based on reclamation activities described for the modified Alternative 2 (see Appendix F, Table F-1, Correspondence item #10).

1.5 REVISIONS TO THE DRAFT EA

To summarize, the primary changes made from the Draft EA to prepare this Final EA are as follows:

- Alternative 2 was modified to reflect consultation and agreements with the Colorado SHPO in order to avoid potential adverse impacts to historic onsite features present at the Burro Mines Complex. Accordingly, the discussion in Chapter 4 for Alternative 2 has been revised to evaluate the modified Alternative 2 described in Section 2.2;
- Discussion regarding BLM's connected action has been deleted as the modified Alternative 2 does not require a ROW on BLM managed lands. Because the Proposed Action no longer involves a BLM action, further BLM NEPA analysis and decision documents (i.e., FONSI and Decision Record) will not be issued;
- An Appendix has been added to provide DOE's responses to public comments received on the Draft EA. Revisions were made as indicated in the responses to provide clarifications on topics, as requested by the commenters (see Appendix E); and
- Section 106 consultation correspondence between DOE and the Colorado SHPO has been compiled as Appendix F.

1.6 ORGANIZATION OF THIS FINAL EA

The two alternatives (Alternative 1, No Action; and Alternative 2, Reclamation of the Burro Mines Complex, which is the Preferred Alternative) are described in Chapter 2. The affected environment for each environmental resource evaluated is presented in Chapter 3. The environmental impacts of each of the two alternatives are detailed in Chapter 4. Mitigation measures to minimize the potential impacts are identified in Chapter 5. Finally, Chapter 6 discusses the cumulative impacts from the Proposed Action. Six appendices are also included with this Final EA:

- Appendix A lists the references cited in the Draft EA;
- Appendix B provides the lists of notification recipients and the scoping comment letters and emails received;
- Appendix C provides DOE's responses to the scoping comments it received;
- Appendix D provides the distribution lists for the Draft EA;
- Appendix E presents DOE responses to the public comments received on the Draft EA during the public comment period;
- Appendix F provides the Section 106 consultation correspondence between DOE and the Colorado SHPO; and
- Appendix G lists the preparers of the EA.

2 PROPOSED ACTION AND ALTERNATIVES

Two alternatives are evaluated as discussed in Sections 2.1 and 2.2.

- Alternative 1, No Action. A No Action Alternative is required under NEPA to provide a baseline for the evaluations performed in this EA. Under this alternative, no reclamation activity would occur.
- Alternative 2, reclamation of the Burro Mines Complex to include erosion control and relocation of the Burro Tunnel Mine waste rock to a nearby former gravel pit, improvement of six sediment basins, and installation of two new sediments basins, one below Burro No. 3 and the other below the Burro Tunnel Mine site. This is the Preferred Alternative.

Alternatives 1 and 2 are described in detail in Sections 2.1 and 2.2, respectively. It should be noted that Section 2.2 describes an Alternative 2 that was modified from that presented in the Draft EA (DOE 2020). The remainder of this Chapter includes a discussion of other alternatives considered but eliminated from further analysis (Section 2.3), a summary comparison of the potential impacts from Alternatives 1 and 2 (Section 2.4), and finally, potential impacts associated with Alternative 2 of the Draft EA is compared with that of the Alternative 2 of this Final EA (Section 2.5).

2.1 ALTERNATIVE 1: NO ACTION

Under this alternative, no action would be taken to reclaim any of the mine sites. The portion of the Burro Tunnel Mine covered by the lessee's permit would be fully reclaimed in-place by the lessee after termination of mining operations at some point in the future. Burro No. 3 and No. 5 shaft sites would not be reclaimed. The potential for the waste rock at the Burro Mines Complex to erode into the Dolores River would remain.

2.2 ALTERNATIVE 2: RECLAMATION OF THE BURRO MINES COMPLEX

This Preferred Alternative would prevent runoff associated with major storm events from eroding additional waste rock into, and increasing the sediment load within the Dolores River. This alternative involves removing the upper levels of the waste rock pile at the Burro Tunnel Mine site, improvement of six sediment basins, and installation of two new sediment basins, one below Burro No. 3 and the other below the Burro Tunnel Mine site. The waste rock removed would be relocated to a former gravel pit located approximately 2,500 ft (762 m) south and slightly east of the existing Burro Tunnel Mine site (Figure 2-1). The waste rock remaining at the Burro Tunnel Mine would mimic the 1970s era waste rock pile identified by historical information and would include armoring to protect against a 100-year flood event in the burro canyon. The 1970s era waste rock that remains would support the historical integrity of this historic mining district consistent with consultation and agreements with the Colorado SHPO (see Appendix F).

The reclamation is expected to involve 10 workers and take approximately 16 weeks to complete. Reclamation activities would also include obtaining access and a ROW (from Umetco and GEMI), grading the reclamation area to create landforms conforming to the surrounding area, and seeding.

Once the post-1970s era waste rock has been relocated, the Burro Tunnel Mine site would remain a permitted mine site, complete with a functional infrastructure in accordance with the lessee's plan of operation. Historically significant features associated with the mine complex would not be disturbed.

The former gravel pit is located on Lease Tract C-SR-13. This gravel pit, henceforth referred to as the "relocation site" is the preferred relocation site because it is an existing topographic depression located in an area that is more than 1,100 ft (335 m) away from and 200 ft (61 m) higher than the Dolores River and does not affect the visual aesthetics or views from the river or CR S8 (Figure 2-1). The relocation site would be excavated to enlarge the capacity of the pit. The approximately 12,000 cubic yards (yd^3) [9,175 cubic meters (m^3)] of surface soil materials excavated would be stockpiled to use as cover for the relocated waste rock. The relocation site would be reclaimed consisting of a soil cover, surface roughening, and revegetation.

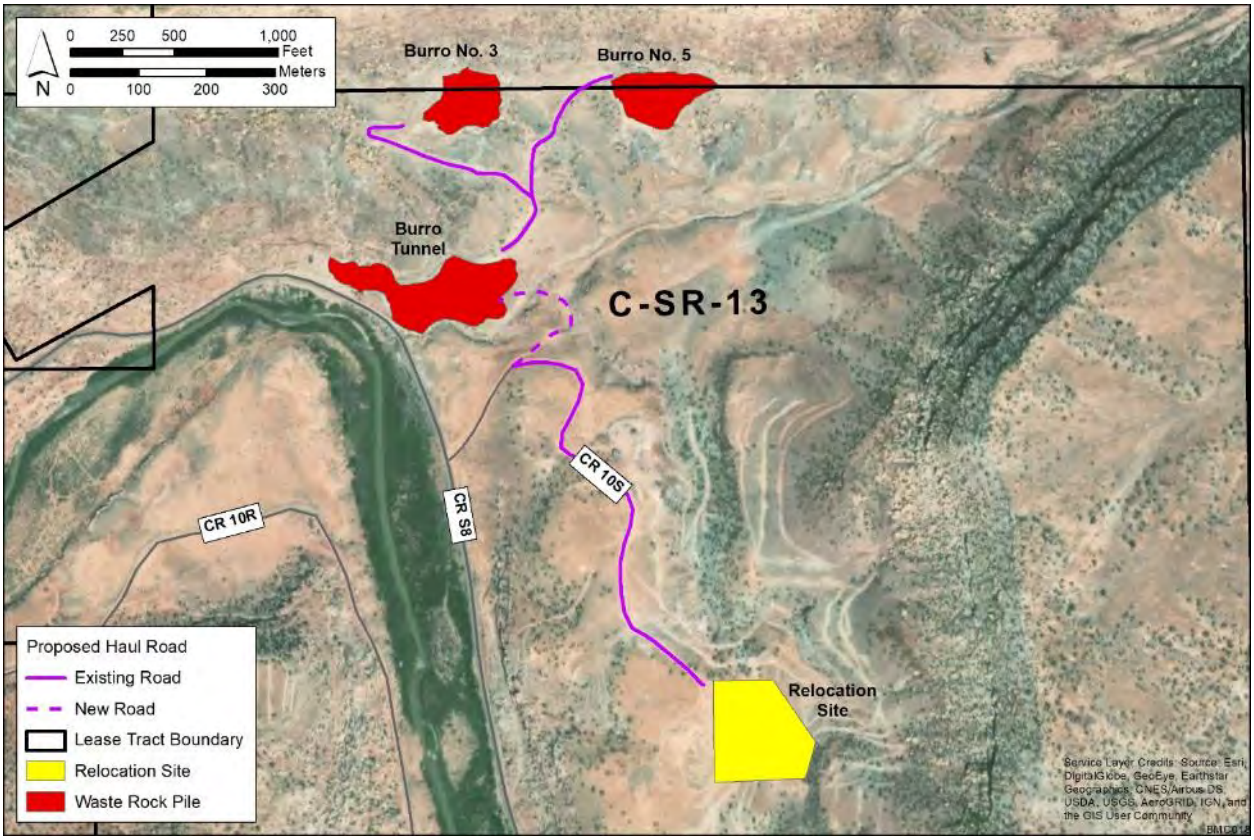

FIGURE 2-1 Proposed Waste Rock Relocation Site

Relocation activities would follow designated haul routes. Haul routes would originate at the Burro Tunnel waste rock pile and proceed along CR S8 or across a new proposed low water crossing at the Burro Canyon drainage that would connect with CR 10S and lead to the relocation site. Upon completion of the Proposed Action, all haul roads would remain in place. Some sediment basins would remain in place and final reclamation would be the responsibility of the lessee and would occur when their mining operations are complete. Table 2.2-1 summarizes the activities of the Preferred Alternative that are on DOE-managed land surfaces as follows: (1) approximate waste rock volume removed from the Burro Tunnel Mine, (2) the linear feet of haul roads to be improved and/or constructed, and (3) the acreage of land disturbed.

TABLE 2.2-1 Waste Rock Volume, Road Improvements, and Acreage Disturbed

Activity	On DOE Land Surface
Approximate Waste Rock Volume Removed (yd^3) Total = 55,000 yd^3	55,000 (Burro Tunnel Mine) 0 (Burro No. 3) 0 (Burro No.5)
Roads Improved and/or Constructed (linear feet) Total =3,850[a]	3,850
Acreage of Land Disturbed (ac) Total = 19.0 ac	3.9 (Burro Tunnel Mine) 0.0 (Burro No.3) 0.0 (Burro No.5) 3.0 (relocation site) 2.6 (roads) 9.5 (staging areas, erosion control, alternative access)

[a] A total of 3,850 linear feet based on the following activities: (1) widening of approximately 650 linear feet of existing unpaved roadways lead to Burro Tunnel Mine site; (2) widening of approximately 2,200 linear feet of the existing unpaved CR 10S to the relocation site; and (3) construction of approximately 1,000 linear feet of new 20-ft wide unpaved haul road including a low-water crossing across a drainage. The new road would connect the Burro Tunnel Mine site to the existing unpaved CR 10S haul road to the relocation site.

Surface roughening (i.e., pocking or scarification) and seeding would be conducted for an approximately 12.5 ac (5.0 ha) of the total area of 19 ac (7.7.ha) disturbed by project activities (includes areas at the Burro Mines Complex and at the relocation site). A native seed mix identified through coordination with cooperating and state agencies would be utilized. Satisfactory reclamation would involve stabilization of soil erosion and the successful establishment of perennial and desirable native species. The reclaimed areas would be monitored until vegetation establishment was determined to be successful. Follow-up activities might be required to correct deficiencies in community composition or cover. Table 2.2-2 presents a proposed seed mixture for use in reclamation. The list includes a proven seed mixture originally developed for the ULP lease tracts plus several pollinator species. Weed-free seed mixes, obtained from local sources would be used, where available.

TABLE 2.2-2 Proposed Seed Mixture for Use in Reclamation

Species		Suggested Broadcast Application Rate (lb PLS/acre)[a]
Scientific Name	Common Name	
Achillea millefolium var. *occidentalis*	Western yarrow	TBD[b]
Achnatherum hymenoides	Paloma Indian ricegrass	4.0
Atriplex canescens	Rincon fourwing saltbush	3.0
Bouteloua gracilis	Hachita blue grama grass	2.0
Cleome serrulate	Rocky Mountain beeplant	TBD
Elymus trachycaulus	Slender wheatgrass	2.0
Helianthus annuus	Common sunflower	TBD
Hesperostipa comate	Needle-and-thread grass	1.0
Krascheninnikovia lanata	Winter sage	1.0
Linum lewisii	Maple Grove Lewis flax	1.0
Machaeranthera canescens	Hoary tansyaster	TBD
Nassella viridula	Lodorm green needlegrass	2.0
Oenothera pallida	Pale evening primrose	TBD
Pascopyrum smithii	Arriba western wheatgrass	4.0
Penstemon cyanocaulis	Bluestem beardtongue[c]	0.5
Pleuraphis jamesii	Galleta grass	2.0
Sphaeralcea coccinea or *Sphaeralcea parvifolia*	Scarlet or small-leaf globemallow	0.3

[a] PLS = pure live seed.

[b] TBD = to be determined, a suggested pollinator species not included in the originally developed seed mixture.

[c] Rocky Mountain penstemon (*Penstemon strictus*) should be used if bluestem beardtongue is not available.

Source: DOE (2014); USDA and DOI (2015).

2.3 OTHER ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

In addition to the two alternatives evaluated in this EA, DOE considered other alternatives, including (1) reclamation in-place and (2) reclamation with relocation of the waste rock to two other sites (other than the preferred site which is the relocation site discussed in Alternative 2). These two alternate relocation sites are shown in Figure 2-2. Sections 2.3.1 and 2.3.2 below provide the reasons why these options were not analyzed further in this EA.

2.3.1 Reclamation In-Place

The existing waste rock piles at the Burro Mines Complex would remain in their current condition. They are considered legacy or pre-law (pre-permitting by Colorado DRMS) sites by the BLM and DRMS. The waste rock piles were also largely constructed prior to the enactment of Federal Land Policy and Management Act (FLPMA) and BLM's 43 CFR 3809 surface management regulations. A Plan of Operations (consistent with BLM's 43 CFR 3809 surface management regulations) was subsequently approved for the Burro Mines, but it allowed the waste rock piles to be left in their current state.

The potential impacts from the reclamation in-place option would be expected to be lower than those discussed for Alternative 2 for all the environmental resources evaluated (discussed in Chapter 4 of this Final EA). This is primarily because the reclamation in-place option would not involve removal of waste rock and would therefore affect a smaller footprint, involve a fewer number of workers and equipment (including trucks), and require fewer construction days to complete the action.

Overall, although reclamation in-place would result in lower potential impacts than Alternative 2 and is also widely used as a reclamation approach in the uranium mining industry (including those conducted under DOE's ULP), this alternative was not considered to meet the purpose and need for the Proposed Action. That is, further erosion from the waste rock piles at the Burro Mines Complex and subsequent sediment loading to the Dolores River would not be optimally minimized or prevented.

2.3.2 Alternate Relocation Sites

For the option of moving the waste rock piles to locations other than the preferred relocation site, DOE considered two alternate sites identified as Site A and Site B in Figure 2-2.

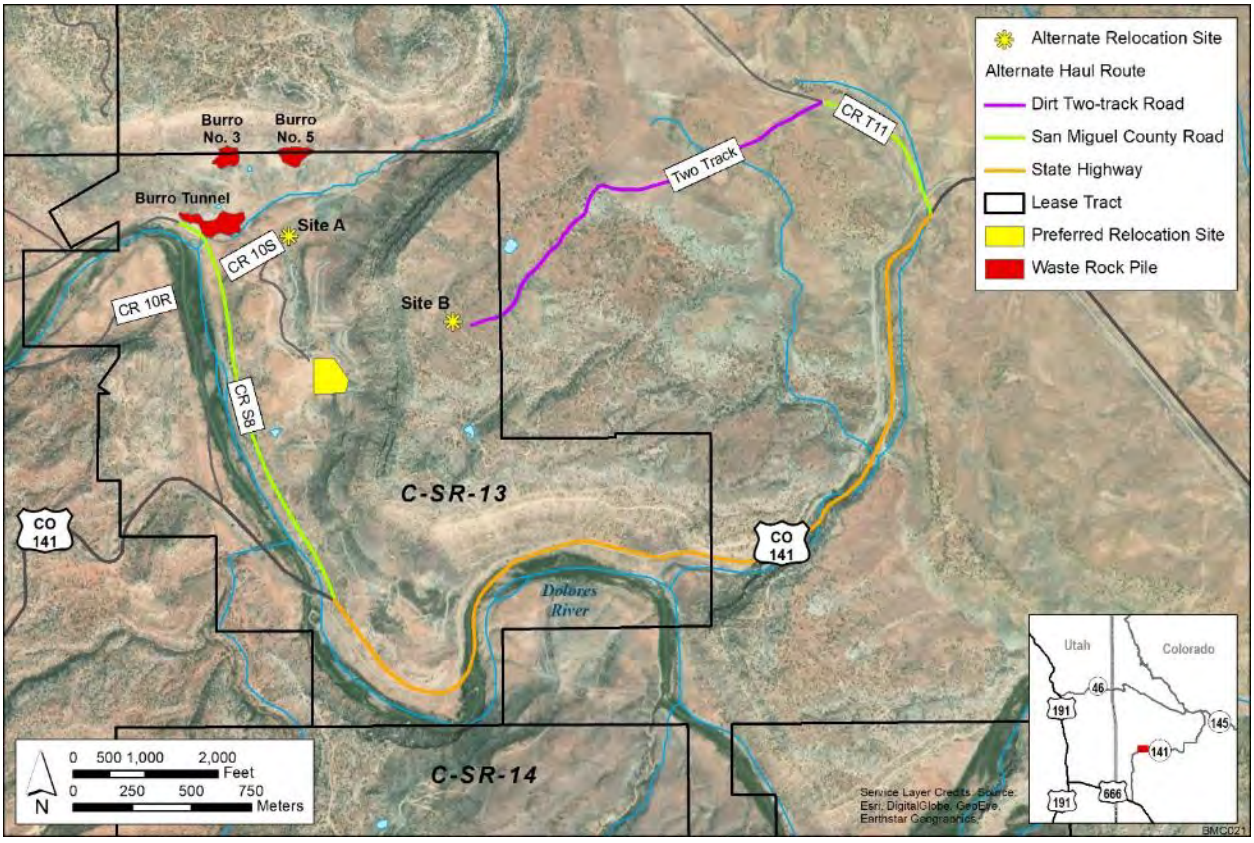

FIGURE 2-2 Relocation Site Options

2.3.2.1 Evaluation of Site A

Site A is located on Lease Tract C-SR-13 a relatively flat area located approximately 1,000 ft (300 m) east and slightly south of the existing Burro Tunnel Mine site, across the drainage and eastward up the Burro Canyon. While Site A is large enough to accommodate the volume of waste rock to be relocated, it was not considered further because of the presence of potential safety hazards associated with an overhead electric power line and an underground high-pressure natural gas pipeline that traverse the site.

2.3.2.2 Evaluation of Site B

Site B is also located on Lease Tract C-SR-13 and would require traversing about 1.09 mi (1.8 km) on CR S8, about 2.6 mi (4.2 km) on SH 141, 0.43 mi (0.7 km) on CR T11, and finally about a 1.1-mi (1.8-km) stretch of a two-track dirt road. This location has no natural depression and the waste rock end-state would be mounded to accommodate the volume to be relocated. Haul route roadways would have to be upgraded, and this may require addressing applicable federal, state, and local transportation regulations. A comparison between relocation to Site B and Alternative 2 is discussed below:

- The affected environment for the Site B option would generally be the same as that described for Alternative 2 as it is also located on Lease Tract C-SR-13 and therefore, the region of influence (ROI) would be the same.
- Relocation to Site B would involve about 36 weeks of construction, 15 workers, and disturbing about 34.9 ac (14.1 ha) as compared to 16 weeks of construction, 10 workers, and 19.0 ac (7.7 ha) disturbed for Alternative 2. Accordingly, potential impacts for land use, soil resources, and waste management (management of non-hazardous solid waste such as miscellaneous trash), would be greater proportionally if relocating to Site B.
- For air quality, particulate matter with an aerodynamic diameter of 10 micron (μm) or less (PM_{10}) emissions from relocating to Site B could be about 50 percent (%) higher, i.e., PM_{10} emissions account for about 1.6% of San Miguel County annual total compared to 1.1 % estimated for Alternative 2. These additional emissions are primarily because of the longer distances of unpaved roads that would need to be traversed.
- For noise impacts, the residences along the haul route could experience noise levels similar to those estimated for Alternative 2 which are below the Colorado daytime and U.S. Environmental Protection Agency (EPA) limit of 55 decibels (dBA). In fact, Site B is farther away from the nearest residence than the Burro Mines Complex including the preferred relocation site so noise impacts could be lower at Site B.
- As for water resources, the relocation to Site B could impact more tributaries that discharge to the Dolores River than Alternative 2 which potentially impacts one tributary only. Water consumption would be about 50% higher for Site B relocation due to the longer construction period, longer haul route distances, and more workers.

- For human health, as the ROI evaluated for Alternative 2 includes the area where Site B is located, potential human health impacts from the Site B option can be inferred from the estimates for the hypothetical resident and recreationist receptor for Alternative 2 and would be the same. The estimates for physical injuries would be about 50% greater for the Site B option because more workers are involved.
- For ecological resources, the potential impacts from the Site B option could be somewhat greater than for Alternative 2. An additional 15.9 ac (6.4 ha) of habitat would be disturbed for Site B to account for the increased acreage of the waste pile footprint and two track haul road needed compared to the habitat disturbed for the haul road and gravel pit for Alternative 2. In addition, the habitat associated with Site B and the two-track haul road currently provide better habitat (currently less disturbed) than the haul road and preferred relocation site associated with Alternative 2. The additional 20 weeks required to complete relocation to Site B would also prolong visual and noise disturbance to wildlife due to increased presence of workers, vehicles, and construction equipment.
- For socioeconomics, the potential impacts for Site B would be slightly greater than those evaluated in Alternative 2. The increased workforce and project duration for relocating to Site B would result in an increase in labor income, a positive economic impact within the ROI. Overall, socioeconomic impacts would be minor. The potential impacts to recreation would also be minor, however, increased traffic on the state highway and county road from hauling waste rock could be perceived as a negative impact to recreationalists traveling along those routes.
- For environmental justice, the potential impacts for relocating to Site B would be the same as that for Alternative 2. There are no disproportionate low-income or minority populations within the ROI, therefore, actions from relocation to Site B would have no disproportionate socioeconomic or human health and safety impacts on low-income and minority populations. Similarly, there would be no environmental justice impacts associated with water use, subsistence use, or visual resources.
- As for transportation, the estimate for potential number of injuries and fatalities from haulage of the waste rock to Site B would increase from that for Alternative 2. Estimates would increase from 0.004 to 0.04 and from 0.0001 to 0.004 for number of potential injuries and fatalities, respectively. Although relocation to Site B is associated with higher estimates, no worker injuries or fatalities are expected (similar to Alternative 2).
- Additional cultural resources surveys would be required because the Site B area has not been surveyed. Visual impacts would be similar to that of the Preferred Alternative.

Based on the discussion above, relocation to Site B would result in somewhat greater potential impacts than Alternative 2 for some of the environmental resources. There are also other factors not explicitly considered in NEPA evaluations (as done in this Final EA) that would be worthwhile considering including engineering logistics and cost. Alternative 2 would pose fewer engineering difficulties, would result in a more stable reclaimed state (at the preferred relocation site), and would also be lower in cost (less than half the cost).

For the reasons discussed in this section and the comparisons made between relocation to Site B versus the preferred relocation site for Alternative 2, DOE made the determination that the two alternatives (Alternatives 1 and 2) that are evaluated in detail in this EA, provides the range of reasonable alternatives for reclamation of the Burro Mines Complex.

2.4 SUMMARY OF ENVIRONMENTAL IMPACTS AND COMPARISON OF THE TWO ALTERNATIVES

Under Alternative 1, the No Action Alternative, no additional environmental impacts are expected other than what has already occurred at the Burro Mines Complex because no activity would be conducted. However, in their current configuration, the waste rock piles have the potential to erode, which could result in increased sedimentation into the nearby Dolores River in the long term.

Alternative 2 (the Preferred Alternative) would result in negligible to minor, short-term impacts on environmental resources, such as air quality, noise, water resources, ecological resources, human health, visual resources, and transportation, but would also be expected to provide improvements or positive impacts in the long-term. For the long-term, the potential erosion and runoff from the Burro Mines Complex would be decreased, thereby reducing the likelihood for sediments to be eroded and transported into the Dolores River. Table 2.4-1 provides a summary of the potential impacts discussed in detail in Chapter 4 for Alternatives 1 and 2. These potential impacts could be further minimized and/or prevented with the implementation of mitigation measures and best management practices (BMPs) described in Table 5-1.

TABLE 2.4-1 Summary Comparison of Potential Impacts of Various Environmental Resources from Alternatives 1 and 2

Resource	Alternative 1, No Action	Alternative 2, Reclamation of the Burro Mines Complex (Preferred Alternative)
Air quality	No measurable ambient air quality changes.	National Ambient Air Quality Standards (NAAQS) exceedances for particulate matter (PM) could occur as a result of dust-generating activities at the project boundary and publicly accessible roads within the project area on occasion but are not likely to occur at nearby residences. Potential impacts on ambient air quality would be minor but temporary (only for a 16-week duration), and potential impacts on climate change would be negligible.
Noise	No measurable impacts; noise levels would continue at background levels.	Noise levels from reclamation activities are anticipated to be lower than Colorado or EPA limits at nearby residences. Noise impacts on nearby residences would be minor and temporary (occasional exceedances over a 16-week period).
Paleontological and soil resources	No measurable impacts.	Negligible to minor impacts on paleontological resources that could be avoided with proper mitigation. Beneficial soil impacts (due to a reduced potential for mass movement) in the long term. For the short term, potential increase in erosion until disturbed areas are vegetated. Area of potential impacts is 19.0 ac (7.7 ha).

TABLE 2.4-1 (Cont.)

Resource	Alternative 1, No Action	Alternative 2, Reclamation of the Burro Mines Complex (Preferred Alternative)
Water resources	Surface water conditions at the Dolores River and the intermittent stream near the Burro Mines Complex will continue to be adversely affected by potential runoff from the waste rock present at the Burro Mines Complex especially during major storm events which have occurred before.	Potential temporary increases in erosion and runoff during the reclamation construction period because unconsolidated materials could be exposed especially if a flash-flooding event(s) occur during this period. The reclaimed state at the Burro Mines Complex would be expected to reduce waste rock materials from further eroding to the Dolores River. Any temporary water quality issues (e.g., sediment and pollutant loading) in runoff from the site during the reclamation period would have negligible effect on the water quality in the Dolores River. The amount of water needed (15,000 gal/month or 0.05 ac-ft/month) is about 0.7% of the current water use for mining and 0.14% of the current public water supply in San Miguel County. No effect on local drinking water supplied from groundwater.
Human health	The potential for radiation exposure from the waste rock piles for a nearby resident or recreationist is expected to be a small fraction of that due to natural background radiation and the 100 mrem/yr standard for members of the general public. Chemical exposure from the waste rock piles is unlikely (i.e., waste rock piles have settled over the years and released of dust would be minimal).	The potential additional radiation dose for a hypothetical resident or recreationist from the reclaimed waste rock pile at the relocation site would be a small fraction of that due to natural background radiation or the100 mrem/yr standard for the protection of members of the general public (i.e., about 0.74 mrem/yr at a distance of 500 m [1650 ft] from the toe of the reclaimed pile). Chemical exposure would not occur as the reclaimed areas at the Burro Mines Complex and at the relocation site would eventually have vegetative cover which prevents particulate emissions. The estimated total dose that the reclamation worker would receive would be less than 28 mrem. This is less than 2% of the dose limit recommended by the International Commission on Radiation Protection (ICRP) for occupational workers which is given as an effective dose of 20 mSv or 2,000 mrem/yr averaged over 5 years. No injury or fatality is expected to occur among the reclamation workers handling the waste rock.
Ecological resources	Future waste rock erosion into the Dolores River could lead to potential adverse impact to aquatic species; no measurable change to other ecological resources.	Short-term loss of vegetation on the 19.0 ac (7.7 ha) being reclaimed. Localized disturbance to 240 ft^2 of an intermittent streambed from haul road crossing. Short-term localized disturbance of wildlife. Negligible to minor potential for sediments that could affect aquatic biota to reach the Dolores River. The reclaimed area would be contoured to make it less prone to erosion, especially after vegetation becomes established. Minor, short-term impacts on wildlife that occur within or close to the Burro Tunnel Mine and the relocation site. Long-term localized improved habitat conditions for wildlife and terrestrial special status species. Small-scale, downstream effects on endangered fish from construction water depletions have been addressed as discussed in the BO issued for the ULP (DOE 2014, Appendix E). No significant impacts on big game, including desert bighorn sheep, because project will avoid lambing season.
Land use	No measurable land use impacts.	No measurable land use impacts.
Socioeconomics and environmental justice	No socioeconomic or environmental justice impacts.	Minor, short-term positive socioeconomic impacts associated with the 10 direct jobs over the 16-week project period. No environmental justice impacts.

TABLE 2.4-1 (Cont.)

Resource	Alternative 1, No Action	Alternative 2, Reclamation of the Burro Mines Complex (Preferred Alternative)
Transportation	No impacts on transportation.	No changes in traffic trends near the Burro Mines Complex. Additional traffic associated with reclamation workers would not cause any issues with traffic flow in the area. The estimated number of injuries and fatalities due to relocation of the waste rock is 0.004 and 0.0001 (i.e., less than one person for each of the estimates), respectively. Thus, no transportation-related injuries or fatalities are expected.
Cultural resources	No ground-disturbing activities would be conducted under this alternative and no impacts to historic features at the Burro Mines Complex are expected. However, cultural resources are at risk from erosion from natural weather events.	No potential adverse impacts to historic features present at the Burro Mines Complex as the reclamation design involves removal of waste rock from the upper levels of the Burro Tunnel Mine waste rock pile only. No waste rock at Burro No. 3 and No. 5 waste rock piles would be removed. Six existing sediment basins at the Burro Mines Complex (including those below the Burro No.3 and No.5 mine sites) would be improved to mitigate the potential for sediment erosion. Two new sediment basins would be constructed (one below Burro No. 3 and one below the Burro Tunnel Mine site). Other historic onsite features including an ore bin, a tunnel sized for trackless vehicles, multiple vertical shafts, support structures, support building foundations, an air and water line, major portions of a large ventilation system, and one steel headframe with associated ore and waste rock bins would also be retained.
Visual resources	No change to current levels of visual contrast.	Long-term positive visual impacts could result from reclamation activities under Alternative 2; alternative contrasts in form, line, color, and texture associated with the erosion control and seeding and revegetation efforts would begin to decrease as vegetation became established in reclaimed areas. Short-term temporary negative impacts could result from activities such as the construction of the new road and at the relocation site which might introduce minor visual contrasts to the landscape contained in the local area rather than spread throughout the site.
Waste management	No waste management impacts.	Negligible to minor waste management impacts associated with 19.0 ac (7.7 ha) being reclaimed.

2.5 COMPARISON OF ALTERNATIVE 2 OF THIS FINAL EA AND ALTERNATIVE 2 OF THE DRAFT EA

As described in Section 2.2, Alternative 2 of this Final EA involves the removal and relocation of approximately 55,000 yd^3 (42,000 m^3) of waste rock from the Burro Tunnel Mine site only with improvements to six existing sediment basins below the Burro No. 3 and Burro No.5 mine sites; and installing two new sediment basins, one below Burro No. 3 and the other below the Burro Tunnel Mine site. Waste rock would not be removed and relocated from the Burro No.3 and Burro No.5 mine sites. Alternative 2 of the Draft EA (DOE 2020) included removal of 68,346 yd^3 (52,257 m^3) of waste rock from the Burro Tunnel Mine site; 19,720 yd^3 (15,078 m^3) and 27,362 yd^3 (20,921 m^3) of waste rock from Burro No.3 and Burro No.5 mine sites, respectively. Further, Alternative 2 of this Final EA would disturb a smaller area (19 ac [7.7 ha] versus 31.1 ac [12.6 ha]) and would take fewer weeks to complete (i.e., 16 weeks versus 22 weeks). The potential impacts from Alternative 2 of this Final EA would be lower than those for Alternative 2 of the Draft EA as indicated by the comparison shown in Table 2.5-1 below.

The potential adverse impact identified in the Draft EA (DOE 2020) to historic onsite features present at the Burro Mines Complex would be avoided with Alternative 2 of this Final EA.

TABLE 2.5-1 Comparison of Potential Impacts of Various Environmental Resources from Alternative 2 of This Final EA and Alternative 2 of the Draft EA

Resource	Alternative 2, Final EA	Alternative 2, Draft EA
Air quality	Particulate matter (PM) could be generated as a result of dust-generating activities at the project boundary and publicly accessible roads within the project area on occasion but are not likely to occur at nearby residences.	The estimates for PM generated would be greater due to the larger amount of waste rock that would have been transported to the relocation site.
Noise	Minor and temporary potential impact with occasional exceedances over a 16-week period.	Minor and temporary potential impact with occasional exceedances over a longer period (i.e., 22-week period).
Paleontological and soil resources	Area of potential impacts is 19.0 ac (7.7 ha).	Area of potential impact is larger (31.1 ac [12.6 ha]).
Water resources	The amount of water that would be needed is estimated to be about 15,000 gal/month or 0.05 ac-ft/month) which is about 0.7% of the current water use for mining and 0.14% of the current public water supply in San Miguel County.	The same amount of water would be used as the number of workers remain the same at 10 workers. Longer duration of temporary erosion and sediment load on the sediment basins due to longer period of construction needed (22 weeks versus 16 weeks); slightly greater potential for downward infiltration to groundwater at the relocation site due to larger amount of waste rock that would have been relocated.
Human health	The potential additional radiation dose for a hypothetical resident from the reclaimed waste rock pile at the relocation site would be about 0.74 mrem/yr. The estimated total dose that the reclamation worker would receive would be less than 28 mrem. No injury or fatality is expected to occur among the reclamation workers handling the waste rock.	The potential additional radiation dose for a hypothetical resident from the reclaimed waste rock pile at the relocation site would be about 1.06 mrem/yr. The estimated total dose that the reclamation worker would receive would be less than 38 mrem. No injury or fatality is expected to occur among the reclamation workers handling the waste rock.
Ecological resources	Short-term loss of vegetation on the 19.0 ac (7.7 ha) being reclaimed.	Short-term loss of vegetation on a larger area (31.1 ac [12.6 ha]) being reclaimed.
Land use	No measurable land use impacts.	Same as Alternative 2 of this Final EA.
Socioeconomics and environmental justice	Minor, short-term positive socioeconomic impacts associated with the 10 direct jobs over the 16-week project period. No environmental justice impacts.	Minor, short-term positive socioeconomic impacts associated with the 10 direct jobs over a longer project construction period (22 weeks). No environmental justice impacts.
Transportation	The estimated number of injuries and fatalities due to relocation of the waste rock from the Burro Tunnel Mine site is 0.004 and 0.0001 (i.e., less than one person for each of the estimates), respectively. Thus, no transportation-related injuries or fatalities are expected.	The estimated number of injuries and fatalities due to relocation of the waste rock is 0.006 and 0.0001 (i.e., less than one person for each of the estimates), respectively.

TABLE 2.5-1 (Cont.)

Resource	Alternative 2, Final EA	Alternative 2, Draft EA
Cultural resources	Alternative 2 in this Final EA provides a reclamation design that incorporates mitigation measures at the Burro Mines Complex, i.e., improving existing sediment basins at the Burro Mines Complex, rather than removal of waste rock at Burro No. 3 and Burro No.5. Additional sediment basins would be constructed, as necessary. This approach retains historic onsite features that would have been adversely impacted by the proposed Alternative 2 of the Draft EA.	Potential adverse effects to historic onsite features present at the Burro Mines Complex. Mitigation measures needed to retain historic onsite features provided by the waste rock piles and other historic features (i.e., an ore bin, a tunnel sized for trackless vehicles, multiple vertical shafts, support structures, support building foundations, an air and water line, major portions of a large ventilation system, and one steel headframe with associated ore and waste rock bins).
Visual resources	Long-term positive visual impacts could result from reclamation activities under Alternative 2; Short-term temporary negative impacts could result from activities such as the construction of the new road and placement of waste rock at the relocation site which might introduce minor visual contrasts to the landscape contained in the local area rather than spread throughout the site.	Same as Alternative 2, Final EA.
Waste management	Negligible to minor waste management impacts associated with 19 ac (7.7 ha) being reclaimed.	Negligible to minor waste management impacts associated with a larger (31.1 ac [12.6 ha]) being reclaimed.

3 AFFECTED ENVIRONMENT

The affected environment evaluated for the following environmental resource areas are presented in this chapter: (1) air quality, (2) noise, (3) geologic setting and soil resources, (4) water resources, (5) human health and safety, (6) ecological resources, (7) land use, (8) socioeconomics, (9) environmental justice, (10) transportation, (11) cultural resources, (12) visual resources, and (13) waste management. The ROI evaluated varied for each environmental resource in order to provide an adequate evaluation for a given resource (see Text Box). Figure 3-1 shows the ROI at the 10-mi (16-km) and the 25-mi (40-km) radius from the Burro Mines Complex.

Region of Influence (ROI) of the Various Environmental Resources Evaluated

Air Quality: Within 25 mi (40 km) from the Burro Mines Complex (based on air model capability which is typically up to (30 mi [50 km]).

Noise: Within 2–3 mi (3–5 km), from noise source(s) at best (noise levels typically attenuate to background levels at this distance).

Geologic Setting and Soil Resources: The Burro Mines Complex and any other areas on adjacent lands (e.g., unpaved access roads) that could be affected by the reclamation activities.

Water Resources: Primarily on the Burro Mines Complex area, Lease Tract C-SR-13, and the Dolores River and its tributaries.

Human Health: 10-mi (16-km) radius of the Burro Mines Complex (air dispersion model utilized for the evaluation provides estimates up to a 50-mile (80 km) radius, however, model results approached zero at approximately 10-mi [16 km] radius).

Ecological Resources: Species within a 0.5-mi (0.8 km) radius of the Burro Mines Complex and portions of the Dolores River downstream of the complex potentially affected by sediment load; and threatened and endangered species at the Dolores, San Miguel, and Colorado Rivers.

Land Use: The land within a 10-mi (16-km) radius of the Burro Mines Complex, with an emphasis on specially designated public land areas.

Socioeconomics: Dolores, Montrose, and San Miguel Counties (considering where reclamations workers could be from).

Environmental Justice: 10-mi (16-km) radius of the Burro Mines Complex (based on the largest ROI from the environmental resources analyzed).

Transportation: The haul roads including county and state roads associated with the reclamation of the Burro Mines Complex.

Cultural Resources: The Burro Mines Complex and any other areas on adjacent lands that could be affected by the reclamation activities.

Visual Resources: 25 mi (40 km) from the Burro Mines Complex which is the approximate limit at which non-negligible visual contrasts occurs.

Waste Management: The Burro Mines Complex and nearby permitted waste disposal facilities.

3.1 AIR QUALITY

3.1.1 Existing Air Emissions

San Miguel County has many small-scale industrial emission sources including oil and gas extractions, mining, airport operations, and concrete manufacturing. The absolute amount of emissions is relatively low. In western San Miguel County, where the Burro Mines Complex is located, SH 141 runs in a northeast–southwest direction, along which oil and gas extraction and mining activities occur.

Data on annual emissions of criteria pollutants and volatile organic compounds (VOCs) in San Miguel County are presented in Table 3.1-1 (CDPHE 2019a). Biogenic sources (i.e., vegetation—including trees, plants, and crops—and soils) that release naturally occurring emissions accounted for a significant portion of the VOC emissions (about 95%) and were a primary contributor to carbon monoxide (CO) emissions (38%), followed by on-road vehicles (about 28%) and nonroad mobile sources (about 27%). Oil and gas extraction were the primary contributor (about 29%) to total nitrogen oxides (NO_x) emissions, followed by biogenic sources (about 28%) and on-road vehicles (25%). Construction and road dust were the primary contributor to PM emissions (PM_{10} emissions [about 82%] and $PM_{2.5}$emissions [57%]). Residential heating accounted for about 56% of sulfur oxides (SO_x) emissions.

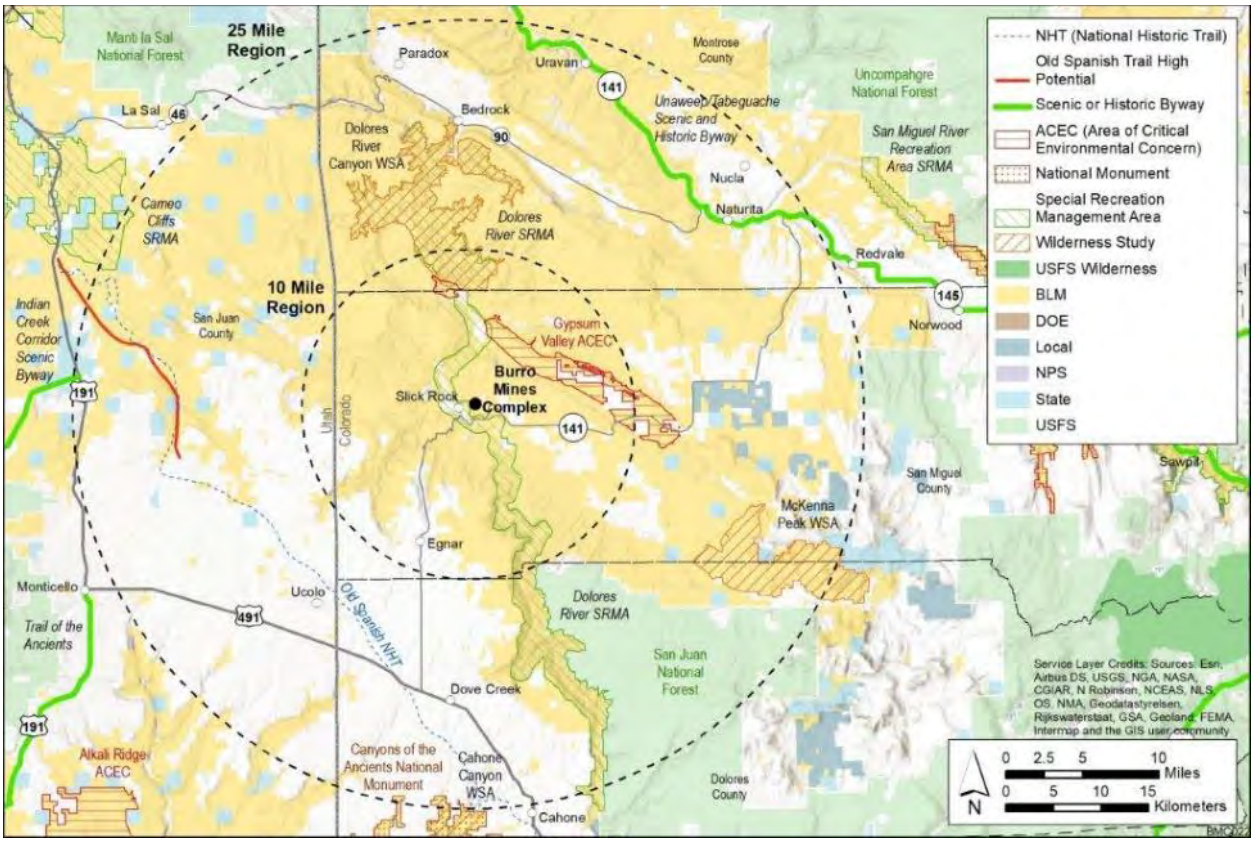

FIGURE 3-1 Region of Influence (ROI) for the Various Environmental Resources Evaluated

3.1.2 Existing Air Quality

Under the Clean Air Act (CAA), as amended, the EPA set NAAQS for pollutants considered harmful to public health and the environment (EPA 2019b). NAAQS have been established for six criteria pollutants: CO, lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), PM (both $PM_{2.5}$ and PM_{10}), and sulfur dioxide (SO_2). The CAA established two types of NAAQS: primary standards to protect public health including sensitive populations (e.g., asthmatics, children, and the elderly) and secondary standards to protect public welfare, including protection against degraded visibility and damage to animals, crops, vegetation, and buildings. Colorado has a more stringent standard than the NAAQS for 3-hr SO_2 (CDPHE 2019b).

Because of the relatively low population density, low level of industrial activities, and relatively low traffic volume in the western counties of Colorado, the quantity of anthropogenic emissions is small, and ambient air quality is relatively good. San Miguel County is located administratively within the Grand Mesa Intrastate Air

TABLE 3.1-1 Annual Emissions of Criteria Pollutants and VOCs in San Miguel County, Colorado, Encompassing the Burro Mines Complex[a]

Criteria Pollutant	Annual Emissions (tons/yr)
CO	4,197
NO_x	806
VOCs	12,508
$PM_{2.5}$[a]	205
PM_{10}	733
SO_x	3.2

[a] $PM_{2.5}$ emissions were not included in the CDPHE's 2013 air pollutant emissions inventory database, so they were estimated by using available $PM_{2.5}/PM_{10}$ ratios (California Air Resources Board 2018).

Source: CDPHE (2019a).

Quality Control Region 10 (see 40 CFR 81.173). San Miguel County is designated as being in unclassifiable/attainment for all criteria pollutants (EPA 2019c). Attainment means that a geographic area meets or is cleaner than the national standard.

There are no measurement data for criteria air pollutants near the Burro Mines Complex. Currently, O_3 data and PM_{10} data are collected at Norwood and Telluride, respectively, in San Miguel County (EPA 2019d). Based on 2016–2018 data collected at Norwood and Telluride, O_3 and PM_{10} levels are 0.065 ppm and 70 µg/m^3, which correspond to about 93% and 47%, respectively, of their respective NAAQS.

3.2 NOISE

3.2.1 Background Noise Levels

Background noise is defined as the noise from all sources other than the source of interest. Background noise level can vary considerably, depending on the location, season, and time of day. Background noise levels in a busy urban setting can be as high as 80 A-weighted decibels (dBA) during the day. In isolated outdoor locations with no wind, vegetation, animals, or running water, background noise may be less than 10 dBA. Typical noise levels in rural settings are about 40 dBA during the day and 30 dBA during the night, which correspond to a day-night average sound level (L_{dn}) of 40 dBA; in Wilderness Areas, typical noise levels are on the order of 20 dBA (Harris 1991).

The Burro Mines Complex is immediately adjacent to CR S8, and several unpaved roads are scattered over the area. SH 141 is as close as 0.6 mi (1 km) to the south-southwest of the Burro Mines Complex. No railroads occur within 50 mi (80 km) of the Burro Mines Complex. The nearest airport is Dove Creek Airport in Dolores County, about 19 mi (30 km) to the south. In addition to natural sound sources (e.g., wind, rain, wildlife, river or streams), noise sources around the Burro Mines Complex include road traffic, aircraft flyovers, domestic animal noise, and industrial activities. Other potential noise sources are recreational (all-terrain vehicles, rafters, and hunters) and ventilation shafts from underground mines. In summary, the area around the Burro Mines Complex is remote, sparsely populated, and undeveloped; the overall character is considered mostly rural or undisturbed wilderness.

No sensitive receptors (e.g., hospitals, schools, or nursing homes) exist within a range of 3 mi (5 km) from the Burro Mines Complex. Only four residences exist within 2 mi (3.2 km) of the Burro Mines Complex, two of which are located within 1 mi (1.6 km). The closest residence is located about 2,200 ft (670 m) to the west–southwest. To date, no environmental noise surveys have been conducted around the Burro Mines Complex. It is likely that noise levels along the state highways and near agricultural/industrial activities would be relatively higher (about 50–60 dBA), while levels in areas far removed from manmade noise sources would be similar to wilderness background noise levels (below 30 dBA). Based on county population density data, L_{dn} noise level estimates would be about 30 dBA for San Miguel County (Miller 2002). For comparison, rural and undeveloped areas typically have L_{dn} levels in a range of 33–47 dBA (Eldred 1982).

3.2.2 Noise Regulations

Reclamation activities would have to follow applicable federal, state, or local guidelines and regulations on noise. Colorado has a noise statute with quantitative noise limits by zone and time of day. Table 3.2-1 presents the Colorado Revised Statutes on maximum permissible noise levels (Colorado Revised Statutes 2019). San Miguel County does not have quantitative noise guidelines and regulations applicable to the reclamation activities.

At the federal level, the Noise Control Act of 1972 and subsequent amendments (Quiet Communities Act of 1978, 42 USC 4901–4918) delegate the authority to regulate noise to the states and direct government agencies to comply with local noise regulations. EPA guidelines recommend an L_{dn} of 55 dBA as sufficient to protect the public from the effect of broadband environmental noise in typically quiet outdoor and residential areas and farms (EPA 1974). For protection against hearing loss in the general population from non-impulsive noise, the EPA recommends an equivalent-continuous sound level (L_{eq}) of 70 dBA or less over a 40-yr period.

TABLE 3.2-1 Colorado Limits on Maximum Permissible Noise Levels

Zone	Maximum Permissible Noise Level (dBA)[a]	
	7 a.m. to next 7 p.m.[b]	7 p.m. to next 7 a.m.
Residential	55	50
Commercial	60	55
Light industrial	70	65
Industrial	80	75

[a] At a distance of 25 ft (7.6 m) or more from the property line. Periodic, impulsive, or shrill noises are considered a public nuisance at a level of 5 dBA less than the levels tabulated. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for (1) the period within which construction is to be completed pursuant to any applicable construction permit issued by the proper authority or (2) if no time limitation is imposed, for a reasonable period of time for completion of the project.

[b] The tabulated noise levels may be exceeded by 10 dBA for a period not to exceed 15 minutes in any 1-hr period.

Source: Colorado Revised Statutes, Title 25, "Health," Article 12, "Noise Abatement," Section 103, "Maximum Permissible Noise Levels."

3.3 GEOLOGIC SETTING, PALEONTOLOGICAL, AND SOIL RESOURCES

3.3.1 Geologic Setting

The Burro Mines Complex area is located at the southern end of the Uravan Mineral Belt. Major faults in the region have a northwest trend and run parallel to the collapsed Gypsum Valley salt anticline that lies to the northeast. The Disappointment syncline is just to the southwest of the Gypsum Valley anticline (Shawe 1970, 2011).

Sedimentary rocks cropping out in the region range in age from Permian to Cretaceous and are at least 4,700 ft (1,400 m) thick. These rocks and the older Paleozoic sedimentary rocks that underlie them together are about 13,000 ft (4,000 m) thick. Uranium and vanadium deposits occur in the Moss Back Member of the Chinle Formation (Upper Triassic) and several levels of the Morrison Formation (Upper Jurassic); however, most of the important ore production has been from the Salt Wash Member of the Morrison Formation (Shawe et al. 1968; Shawe 2011).

The Burro Mines Complex is located near the Dolores River, which flows northward through the narrow and steep-walled Dolores River Canyon. The canyon bottom and lower slopes consist of unconsolidated fluvial deposits and alluvial/colluvial deposits, respectively. In this region, the canyon floor is underlain by the Entrada Sandstone. Bedrock formations exposed along the canyon walls and adjoining mesas include, in ascending order, the Salt Wash and Brushy Basin Members of the Morrison Formation (Upper Jurassic), and the Burro Canyon Formation and the Dakota Sandstone (Lower Cretaceous). The Burro Mines Complex covers part of the Dolores River Canyon and adjacent ridges. Elevations range from about 5,400 ft (1,650 m) above sea level along the Dolores River to a little over 6,000 ft (1,830 m) above sea level on the mesa top (Figure 3.3-1).

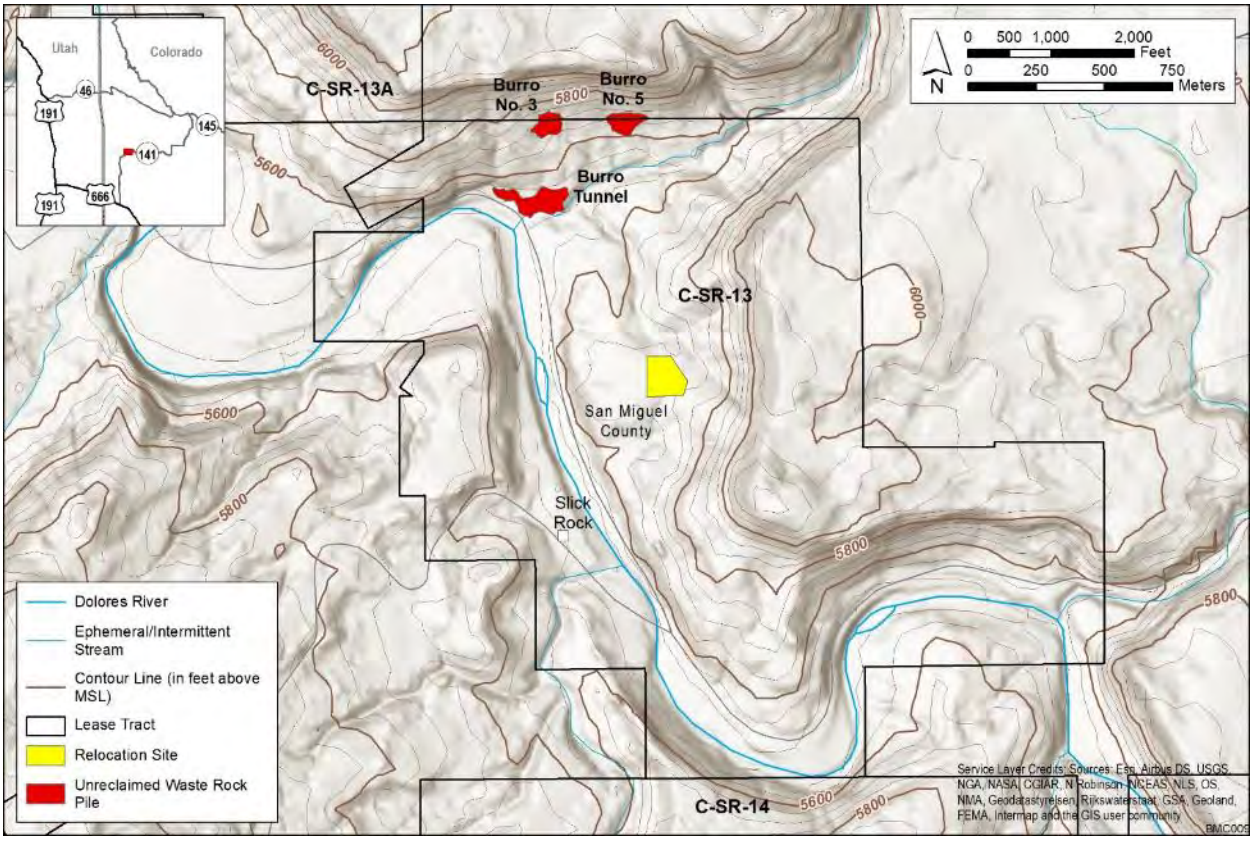

FIGURE 3.3-1 Topography of Lease Tract C-SR-13

3.3.2 Paleontological and Soil Resources

Soils within the Burro Mines Complex and adjacent areas are predominantly the sandy and stony loams of the Farb-Rock outcrop (1% to 30% slopes) and Rock outcrop-Orthents (40% to 90% slopes) complexes along the Dolores River Canyon, which together make up about 62% of the soil coverage within the lease tract as shown on Figure 3.3-2 (this figure also provides the Map Unit equivalence for various soil types in Colorado). Soils of the Farb-Rock outcrop complex formed in residuum weathered from sandstone; soils of the Rock outcrop-Orthents complex formed from colluvium and slope alluvium weathered from sandstone and shale. These shallow soils predominate in the northern part of the lease tract where the Burro Mines Complex is located. They are well to excessively drained with very slow infiltration rates

(i.e., very high surface runoff) when wet. These soils, when combined with the steep topography located in Burro Canyon, lead to massive runoff events with very little precipitation. Available water-holding capacity is very low for most soils within the Burro Mines Complex and adjacent areas. Water erosion potential is moderate (Kw[1] factors range from 0.20 to 0.49; the Farb-Rock outcrop complex is not rated), with the highest potential occurring for the Killpack-Deaver loams (Map Unit 52) on the high elevation slopes along the Dolores River. The susceptibility to wind erosion is low to moderate (wind erodibility groups 3 to 8). Soils in the canyon bottom (Fluvaquents, Map Unit 43) are poorly drained and prone to flooding. These soils cover only a small portion of the site (about 3%) and have a moderate water erosion potential (Kw factor 0.37)[2] (National Resources Conservation Service 2019).

Lease Tract C-SR-13 is in a region where significant paleontological resources have been known to occur (DOE 2014). Paleontological resources on public lands are managed and protected under the FLPMA (Public Law 94-579, codified at 43 USC 1701-1782) and Theft and Destruction of Government Property (18 USC 641), which penalizes the theft or degradation of property of the U.S. Government.

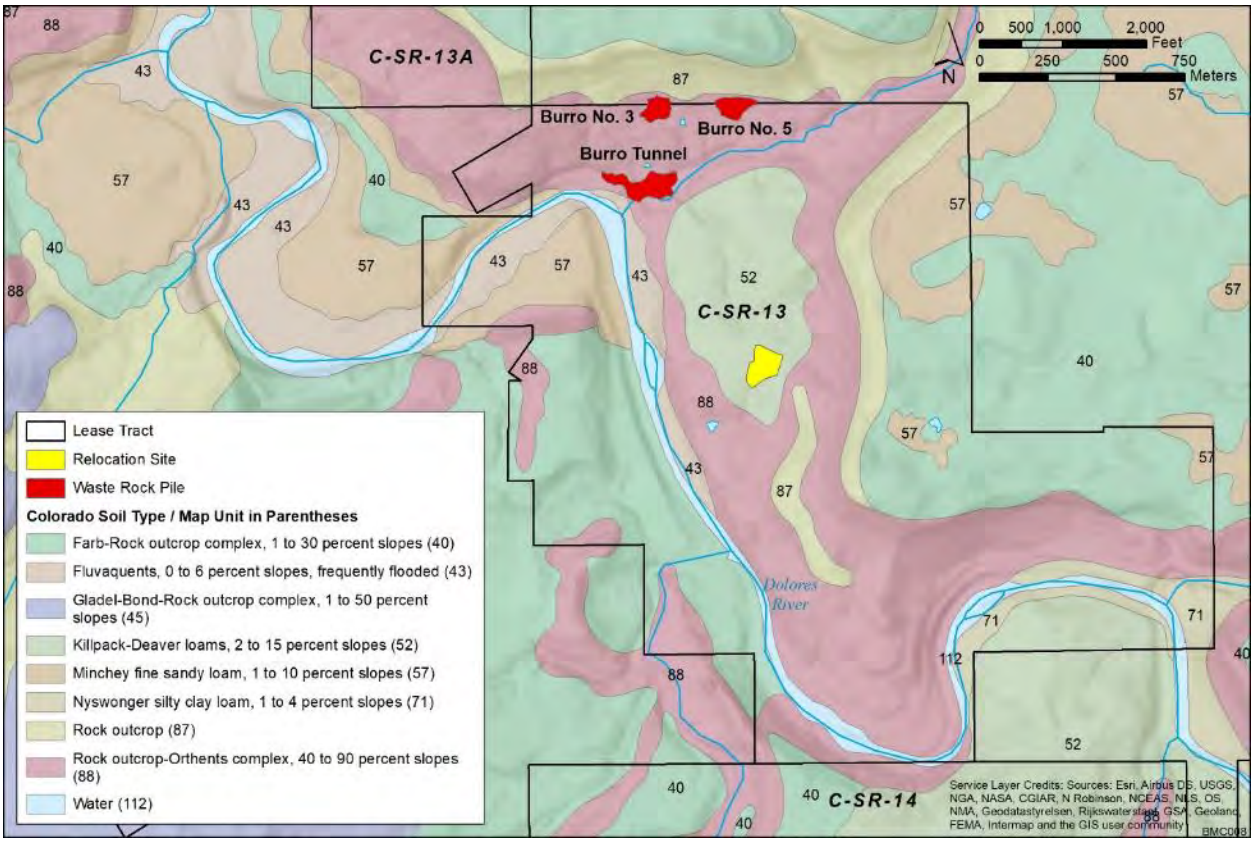

FIGURE 3.3-2 Soils within and around Lease Tract C-SR-13

[2] Kw, or erodibility factor, quantifies soil detachment by runoff or raindrop impact based on a number of soil properties. It is an index used to predict the long-term average soil loss from sheet and rill erosion. The Kw factor assigned to soil ranges from 0.02 to 0.69; the higher the value, the higher the soil erodibility.

3.4 WATER RESOURCES

3.4.1 Surface Waters and Floodplains

The Dolores River is the only perennial river located near the project area. Its flow is affected by regulated releases from McPhee Reservoir, approximately 50 mi (80 km) upstream. The nearest U.S. Geological Survey stream gage (USGS gage 09168730) is 5 mi (8 km) downstream from the project area. The monthly mean flow rate recorded at this gage ranges from 3 to 3,062 ft^3/s with a mean flow rate of 177 ft^3/s over the time period of 1997–2018. There are no perennial tributaries to the Dolores River in the project area. However, Burro Canyon Creek, an intermittent stream, drains the project area with a length of 2 mi (3.2 km). An unnamed tributary to Burro Canyon Creek is also within the project area. Burro Canyon Creek and its unnamed tributary have not formally been determined to be Waters of the U.S. However, DOE will apply appropriate Nationwide 404 permits to the proposed work because the channels are potentially jurisdictional. The National Wetlands Inventory classifies Burro Canyon Creek where the haul road would cross as "intermittent," a classification that includes both intermittent and ephemeral streams. The reaches of Burro Canyon Creek within the project area carries water only from precipitation events with no contribution from groundwater sources and are therefore ephemeral.

Within the project area, DOE delineated the ordinary high-water mark in these channels to help determine the extent of potentially jurisdictional areas. The estimated drainage area contributing to Burro Canyon Creek is about 1.2 square miles ($mi^{2)}$ [3.2 square kilometers (km^2)]. It extends from the headwater area north of Burro No. 3, No. 5, and No. 7 mines to the east and then back to the southwest through Burro Canyon, immediately south of the Burro Tunnel Mine (Figure 3.4-1). The peak discharge of Burro Canyon Creek is unknown. In a similar intermittent stream located near Slick Rock, Colorado, the peak discharge is in a range of 36 to 260 cubic feet per second (ft^3/s) (USGS gage 9168700). Several small sediment basins are associated with the Burro Mines Complex and the relocation site; these are temporarily flooded, have no wetland hydrology indicators, and are dominated by upland vegetation.

The local monthly precipitation and snowfall amounts have been recorded at Slick Rock, Colorado, since 2010 (National Centers for Environmental Information 2019). Average monthly precipitation totals range from 0.2 to 1.5 inches (in.) [0.5 to 3.8 centimeters (cm)], with a maximum monthly precipitation of 1.9 in. (4.8 cm), and snowfall occurs between November and April, with monthly totals averaging 0.2 to 2.3 in. (0.5 to 5.8 cm). The average annual precipitation is 7.2 in. (18.3 cm). The potential annual evaporation rate is estimated to be 38 in. (97 cm) by Golder Associates (2009). The soil water content is usually deficient, and direct groundwater recharge is thus minimal under the condition of low annual precipitation and the high potential for evaporation in the area.

No regulated floodplains are present within the project boundary. A narrow floodplain with an average width of 250 ft (76 m) is at the east side of Dolores River between CR S8 and the main river channel. Larger floodplain areas are associated with the segment of Dolores River 1 mi (1.6 km) or more downstream from the project area.

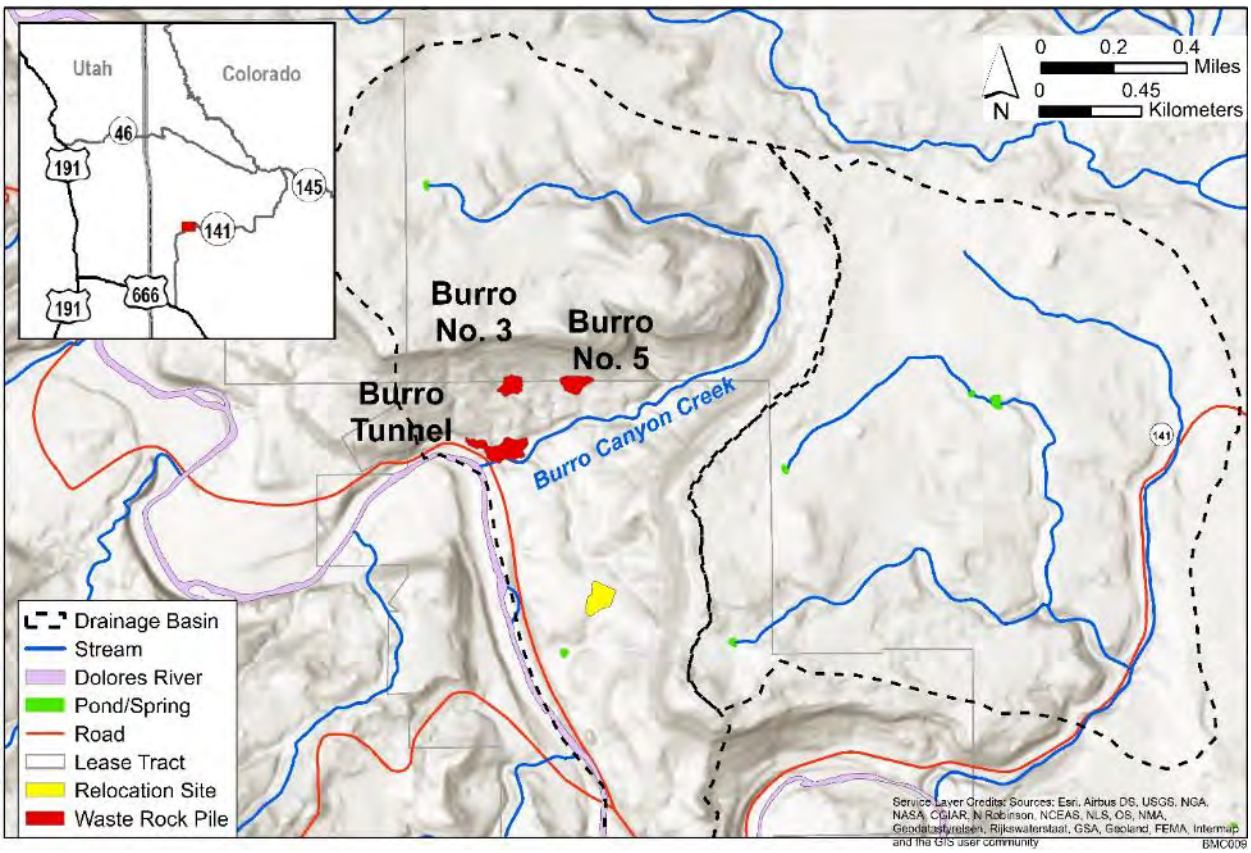

FIGURE 3.4-1 Surface Waters in the Burro Mines Complex Area

The latest Clean Water Act update from the State of Colorado (CDPHE 2018a) summarized water quality conditions from July 1, 2015, through June 30, 2017. The assessment of water quality includes physical (e.g., sediment, dissolved oxygen, temperature), biological (e.g., E coli, aquatic life), inorganics (e.g., nitrate, sulfate), and metals (e.g., iron, lead, manganese, uranium) and other elements.

Nonattainment due to total iron concentrations was recently identified for a segment of the Dolores River that runs adjacent to the Burro Mines Complex identified as COGULD02 D in Figure 3.4-2 (CDPHE 2018a). Nonattainment does not appear to be associated with historical activities at the Burro Mines Complex. Other potentially impaired river segments, currently placed by CDPHE in the Monitoring and Evaluation List for further validation, are located three miles upstream and are therefore not affected by the Burro Mines Complex. The concentrations of chemical constituents in the sediments in water in the river segments near the area do not exceed standards.

In addition to the state surface water quality assessment, the 2017–2018 annual monitoring results at two sites (the Slick Rock East and the Slick Rock West), in the floodplain of the Dolores River about 1 mi (1.6 km) downstream of the Burro Mines Complex, indicate that all analytes are currently below the EPA drinking water standards and Uranium Mill Tailings Radiation Control Act (UMTRCA) maximum concentration limits (MCLs) (DOE 2019a). Surface water monitoring data were collected for uranium at Slick Rock East and for manganese, molybdenum, nitrate, selenium, and uranium at Slick Rock West (DOE 2019a). Monitoring data collected from these two sites have been stable, indicating that the Burro Mines Complex has not affected surface water conditions at the Dolores River.

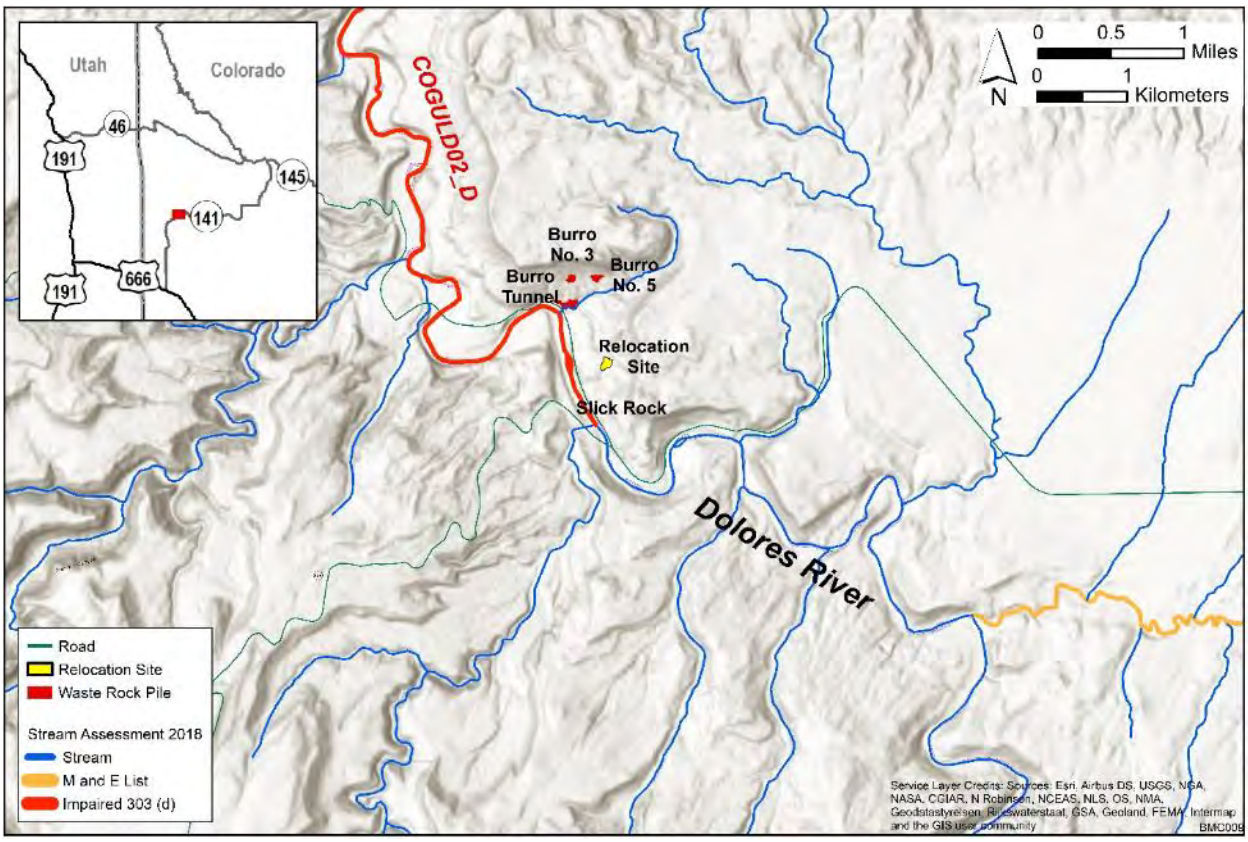

FIGURE 3.4-2 Surface Water Impaired or Placed on the Monitoring and Evaluation List Based on 2018 Stream Assessment (CDPHE 2018b)

3.4.2 Groundwater

Groundwater in the region is primarily located in bedrock aquifers and small, isolated alluvial aquifers. The alluvial aquifers within the study region are primarily composed of gravel, silts, and clays of Quaternary age and located in isolated canyon margins of the Dolores River (Topper et al. 2003). Near Slick Rock, limited, shallow alluvial aquifers were reported along the Dolores River bounded by the canyon wall (DOE 2019a). The water yield in the alluvial aquifer varies in a range of 1–200 gallons per minute (gal/min) [4.5–910 liters per minute (L/min)] (CDWR 2011).

The bedrock aquifer consists of upper and lower groundwater systems. The lower groundwater system is hosted by fractured limestone overlain by confining salt bed and is typically saline (Weir et al. 1983). The upper groundwater system consists of layered sedimentary rock beds overlain by a confining shale layer in mesas and unconsolidated alluvial material mainly along the Dolores River. Groundwater in the sandstone units is typically low in salinity, and these units vary with respect to the amount of fracturing, which controls their groundwater yields (Weir et al. 1983). Reported groundwater yields in the sandstone units are typically less than 20 gal/min (91 L/min), except for isolated regions of high fracturing, which have groundwater yields up to 230 gal/min (1,000 L/min) (CDWR 2011).

On the basis of the registered water well records in the project area, as well as the lease tract areas in the Upper Dolores River Basin, the main water-bearing formations include (a) alluvium along the Dolores River, (b) Dakota Sandstone and Burro Canyon Formation near the top of mesa, (c) sandstone within the Salt Wash Member of the Morrison Member and Entrada Sandstone near the floor of the valley or river canyon, and (d) the underlying Navajo Sandstone and Wingate Sandstone (Figure 3.4-3). Within the Burro Mines Complex area, the primary source of groundwater recharge is from infiltration of precipitation. The low annual precipitation (12.5 in. [31.8 cm]) and high annual evaporation rate (38 in. [97 cm]; Golder Associates 2009) result in an extremely low quantity of groundwater in the water-bearing formations in and near the mesa areas. The highest water well yields are 0.05–1.5 gal/min (0.2–5.7 L/min) (Weir et al. 1983).

The underground mines that penetrate through Dakota or Burro Canyon water-bearing formations into the sandstone of the Salt Wash Member were often dry or encountered minimal seepage in the lease tract area. The uppermost aquifer varies across locations within the region from Entrada Sandstone, Navajo Sandstone, to Wingate Sandstone, which underlies the confining layers, Summerville Formation, Carmel Formation, and Kayenta Formation, respectively (Figure 3.4-3). In the floodplains of the Dolores River, alluvial aquifer may directly overlie the Entrada aquifer. A local upward vertical hydraulic gradient from Navajo to Entrada and further to alluvial aquifers may occur in the floodplain as identified along Dolores River near the Slick Rock area (DOE 2019a). This upward hydraulic condition inhibits water from potential flowing downward from the shallow groundwater or surface ponding water the Slick Rock area.

Depths to groundwater are highly dependent on their locations between mesas and valley regions. Depths to groundwater in alluvial aquifers along the river valleys range from 2 to 90 ft (0.6 to 27 m) below the ground surface, with shallow depths quite commonly found (Topper et al. 2003). Within the segment of the Dolores River immediately downstream of the Burro Mines Complex, alluvial aquifers are underlying the floodplains with depths to groundwater ranging from 10 to 18 ft (3.0 to 5.5 m) at the Slick Rock East site, across the Dolores River from the project area, and from 6 to 16 ft (1.8 to 4.9 m) at the Slick Rock West site (DOE 2019a), which is 0.5 mi (0.8 km) downstream from the Slick Rock East site. For the upper groundwater system in the area, depths to groundwater are greater than 100 ft (30 m). Table 3.4-2 lists values for the depth to groundwater for USGS monitoring wells within the Upper Dolores River Basin.

Eight domestic groundwater wells were identified within 5 mi (8 km) of the Burro Mines Complex on the Colorado well permit database maintained by the Colorado Division of Water Resources (CDWR). These wells are all shallow, less than 100 ft (30 m), and withdrawing groundwater from alluvial aquifer located along the Dolores River. Among them, three wells are located in alluvial aquifer near the upstream segment of the Dolores River and five wells along the downstream segment of the Dolores River. No domestic wells are located directly along the groundwater flow pathway in the alluvial aquifer between the Burro Mines Complex and the Dolores River.

The database for the public water supply (PWS) system maintained by the Source Water Assessment and Protection Program at the Colorado Department of Public Health and Environment (CDPHE) indicates that none of the PWS wells are located within 5 mi (8 km) of the Burro Mines Complex (CDPHE 2019c). The source water protection areas for all PWS wells are not intercepted within 5 mi (8 km) from the project area.

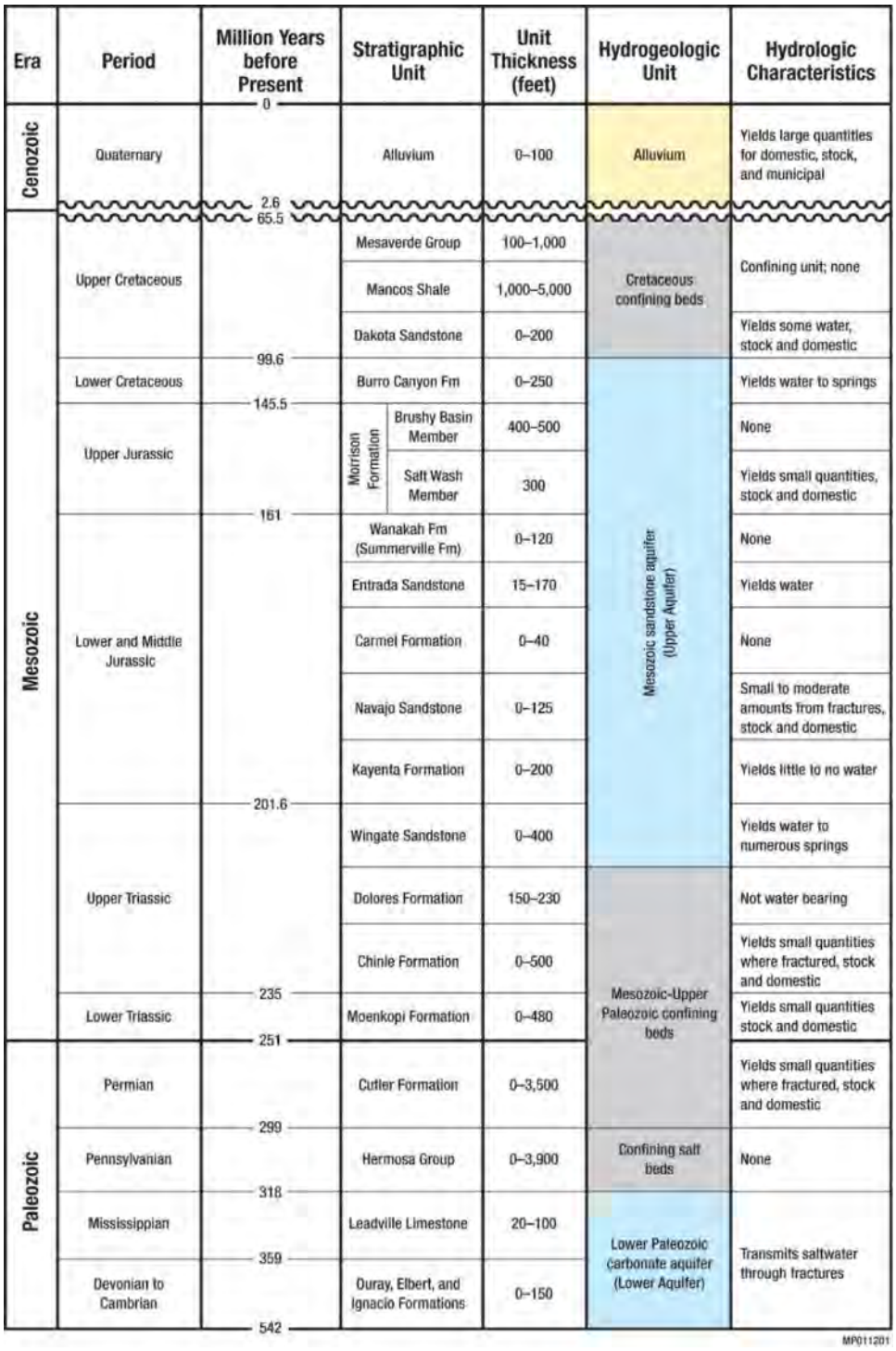

FIGURE 3.4-3 Water-Bearing Formations in the Upper Dolores River Basin (Sources: Topper et al. 2003; Walker and Geissman 2009)

Information on groundwater quality in the Upper Dolores River basin is limited. In the immediate area of the Burro Mines Complex, elevated concentrations of constituents associated with uranium mines in groundwater have been identified at the Slick Rock East and Slick Rock West sites. Both sites are located at the floodplain of the Upper Dolores River downstream of the

Burro Mines Complex. At the locations upgradient from Slick Rock East site, concentrations of constituents are below the MCL. None of the constituents monitored exceed the MCL or background level at offsite locations downgradient from Slick Rock West, suggesting those constituents are currently contained with the sites (DOE 2019a).

TABLE 3.4-2 Depths to Groundwater Observed in USGS Monitoring Wells Located within the Upper Dolores Basins (HUC8)

USGS Well No.	Elevation[a] (ft)	Well Depth (ft)	Number of Observations	Depth to Groundwater (ft)
Upper Dolores				
382025108530401	5,010	91	10	32.78–39.24
381932108542801	5,130	205	10	107.09–132.03
380258108544400	5,450	125	7	12.88–19.96
375733108370501	6,190	65	1	7.25
375504108353201	6,370	115	1	42.5
372742108300901	6,930	240	11	6–12.99
372930108244800	7,110	132	11	7.25–12.51
375115108242601	7,400	80	4	12.97–41
382043109110201	7,535	160	1	50
373515108094901	8,060	63	4	25–37.27
374242108020501	8,955	49	5	36.68–38.33

[a] Surface elevation of the wells below 5,500 ft (1,676 m) are typically located in canyons and along alluvial areas, and wells located above 5,500 ft (1,676 m) are typically located on mesas.

Source: USGS (2011b).

3.4.3 Water Management

TABLE 3.4-3 Water Use by Category for San Miguel County in 2015

Category of Water Use	Daily Water Withdrawals (10^6 gal)
Irrigation	47.09
Aquaculture	0.2
Public supply	0.35
Domestic	0.27
Industrial	0
Livestock	0.03
Mining	0.07
Thermo-electric	0
Total surface water withdrawals	47.33
Total groundwater withdrawals	0.68

Source: Dieter et al. (2018).

Water resources and water rights are primarily the responsibility of the CDWR, but several other agencies also address water management issues, including the CDPHE, which oversees stormwater management and water quality issues. Water rights in Colorado are governed by using the Doctrine of Prior Appropriation as the cornerstone; water rights are granted by a water court system and administered by the CDWR (CDWR 2012). The project area is located within the boundaries of Division 7 of the CDWR, where both surface water and groundwater are considered over-appropriated (CDWR 2007). In addition, instream flow water rights (nonconsumptive water rights for ecological benefits, which are administered by the Colorado Water Conservation Board (2012) have been established on segments of the Dolores River in the vicinity of Lease Tract C-SR-13. Surface water is the dominant water supply source used in southwestern Colorado, primarily for irrigation (Table 3.4-3).

Water use data for 2015 (Dieter et al. 2018) indicate that water withdrawals in San Miguel County increased by 70%. The total surface water withdrawal is reported to be 47 million gallons per day primarily for irrigation use. The total groundwater withdrawal was reported to be about daily 680,000 gallons.

3.5 HUMAN HEALTH

The evaluation of human health impacts considered an ROI within a 10-mi (16-km) radius of the Burro Mines Complex and the relocation site. The potential sources of exposure and receptors are discussed below in Sections 3.5.1 and 3.5.2, respectively. The radionuclide and chemical exposure concentrations are discussed in Section 3.5.3.

3.5.1 Sources of Exposure

The potential sources of exposure include the following: (1) the waste rock piles at the Burro Mines Complex and the reclaimed waste rock pile at the relocation site; (2) groundwater; (3) surface water; and (4) natural background radiation sources.

Potential exposure to the waste rock piles could include direct external radiation exposure (if in close proximity to the piles), potential inhalation of radon and airborne dust particles containing radioactivity, and potential inhalation of chemicals in dust particles generated from the surface of the waste rock piles. Other exposure pathways such as incidental ingestion of dust particles (from the surface of the waste rock piles) are possible, but the exposures would be much less than those from the direct external and inhalation pathways.

Potential radiation and chemical exposure from groundwater and surface water at the complex was not evaluated as currently, these environmental resources are not affected by any constituents (e.g., uranium and vanadium) associated with the waste rock (see also Section 3.4).

Natural background radiation sources that people are exposed to every day include terrestrial radioactive materials in rocks and soils, cosmic rays, and cosmogenic radioactivity. The total dose from natural background radiation that a resident receptor living near the Burro Mines Complex and the relocation site could be higher than the national average (430 millirem per year [mrem/yr] versus 310 mrem/yr) (DOE 2014). This higher radiation background is attributed to higher cosmic and cosmogenic radioactivity due to the elevation of the area, higher terrestrial radioactivity because the area is enriched with uranium ores which also results in higher radon. In general, the radiation dose from radon constitutes about 70% of the background radiation in the US.

3.5.2 Potential Receptors

Potential exposure to the following three receptors were considered: (1) a resident; (2) a recreationist; and (3) a reclamation worker.

For the resident receptor, the primary pathway of exposure would be the inhalation of radon and other chemicals from airborne dust released from the waste rock piles. This pathway is only possible if the resident is in the prevailing wind direction (the direction from which winds originate) which is southwest to northwest for this region. Known current residents are not located in the prevailing wind direction as they are located west and south of the Burro Mines Complex and the relocation site. However, to provide perspective, estimates for a resident (a hypothetical one) located in the prevailing winds of the complex and the relocation site is presented in Section 4.5.2.

The recreationist evaluated in this EA is defined as a person camping on top of the reclaimed waste rock pile for two weeks. The reclamation worker is a worker who is within 3 ft (1m) of the waste rock materials while conducting reclamation activities. For both the recreationist and reclamation worker, the primary exposure pathways include the external radiation pathway (for radiation exposure) and the inhalation pathway (for chemical exposure).

3.5.3 Waste Rock Radionuclide and Chemical Concentrations

As radionuclide and chemical concentration data are not available for the Burro Mines Complex, it is assumed for the analysis in this EA that uranium and vanadium concentrations for waste rocks at the Burro Mines Complex would be the same as those from the ULP lease tracts because the complex is mostly located on ULP Lease Tract C-SR-13. An exposure concentration of 70 picocurie per gram (pCi/g) for Ra-226 was assumed as this was the highest concentration measured in samples of waste rock from ULP lease tracts mines JD-6 and JD-8 (Whetstone Associates 2011, 2012). This same concentration was also assumed for U-234 and U-238 and other long-lived radionuclides (Th-230 and Pb-210) in the uranium decay chains that involve Ra-226. It was also assumed that the U-235 concentration is 4.6% of the concentration of U-234 and U-238 (as in natural uranium).

Uranium (from the waste rock) could also affect human health because of its chemical toxicity. Another waste rock constituent to consider for potential chemical effects is vanadium as it is present at five to six times as much as the uranium in the ores mined in ULP lease tracts. For this EA, the vanadium concentration in the waste rock piles was assumed to be six times the total uranium concentration of 212 milligram per kilogram (mg/kg). No other radionuclide or chemical constituents aside from uranium and vanadium were reported at a concentration of concern based on the waste rock samples analyzed from ULP lease tracts (Whetstone Associates 2011, 2012).

Aside from radiation and chemical exposures, the potential for physical injuries was also evaluated for workers involved in reclamation activities.

3.6 ECOLOGICAL RESOURCES

3.6.1 Vegetation

The Burro Mines Complex is located within the Level IV Ecoregion 20c, Semiarid Benchlands and Canyonlands, which contain primarily sandy soils that support a sagebrush steppe with cool- and warm-season grasses and shrubs, and stony soils that support piñon-juniper woodlands (Chapman et al. 2006).

Land cover types encompass a range of similar plant communities or other land cover (e.g., quarries, mines, gravel pits, and oil wells) (USGS 2011a). The Burro Mines Complex mainly supports the Inter-Mountain Basins Shale Badland cover type, consisting of barren and sparsely vegetated areas (<10% plant cover) with a high rate of erosion and deposition. Vegetation consists of sparse dwarf shrubs and herbaceous plants. Other land cover types that occur in the project area, including the planned access road between the mine site and the relocation site, include the Inter-Mountain Basins Mat Saltbush Shrubland, Inter-Mountain Basins Greasewood Flat, Colorado Plateau Piñon-Juniper Woodland, and Colorado Plateau Piñon-Juniper Shrubland. Plants present in these land cover types include two-needle piñon (*Pinus edulis*), Utah juniper (*Juniperus osteosperma*), and mat saltbush (*Atriplex corrugata*). Herbaceous species are generally sparse (USGS 2011a; NatureServe 2019).

Depending on the time of disturbance and historical reclamation efforts, areas that have been previously disturbed by mining activities generally support a mixture of commonly occurring native and non-native species, which include noxious weeds and other weedy early successional species. The Colorado Department of Agriculture maintains an official state list of noxious weed species (CDA 2017). Noxious weed species that have been identified within the project area include Canada thistle (*Cirsium arvense*), cheatgrass (*Bromus tectorum*), saltlover (*Halogeton glomeratus*), hardheads or Russian knapweed (*Acroptilon repens*), and salt-cedar (*Tamarix* spp.) (S.M. Stoller Corp. 2012). Russian olive (*Elaeagnus angustifilia*) also occurs along the Dolores River (CDA 2019).

3.6.2 Wetlands

There are no jurisdictional wetlands within the Burro Mines Complex. Wetlands proximal to the Burro Mines Complex are primarily associated with the Dolores River and its floodplain (Figure 3.6-1). Drainage basins associated with the Burro Mines Complex are not jurisdictional wetlands, as they are temporarily flooded, contain no wetland hydrology indicators, and they are dominated by upland vegetation. Similarly, Burro Canyon Creek and its unnamed tributary, while potentially jurisdictional waters, are not wetlands (Figure 3.6-1).

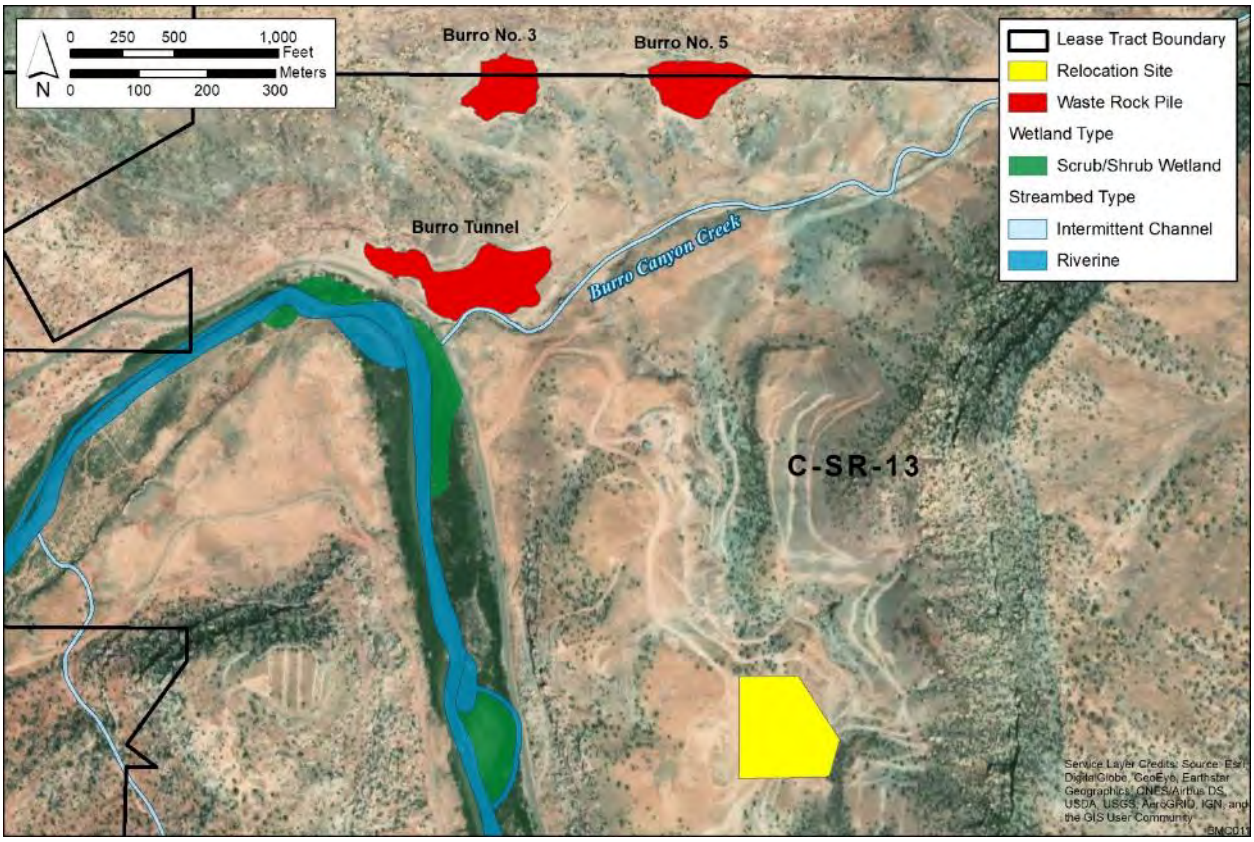

FIGURE 3.6-1 Wetlands and Streambeds Located near the Burro Mines Complex (modified from USFWS 2020a)

3.6.3 Wildlife

In San Miguel County, 28 species of reptiles and amphibians, 227 species of birds, and 81 species of mammals have been reported (DOE 2014; Colorado Field Ornithologists 2019). Some of these species are expected to occur in the Burro Mines Complex area at least seasonally or occasionally. Threatened, endangered, and other special status wildlife species (e.g., BLM sensitive species) are addressed in Section 3.6.5.

Reptiles would be limited within the Burro Mines Complex because most of the area is disturbed and provides little habitat. Waterfowl (ducks, geese, and swans), wading birds (herons and cranes), and shorebirds (plovers, sandpipers, and similar birds) live on and near the larger permanent waterbodies such as the Dolores River. These birds would not be expected to occur within the project area because suitable habitat is not present. For similar reasons, amphibians would also not be abundant within the project area.

More than 50 species of songbirds and 13 birds of prey (raptors, owls, and vultures) are found in the region (DOE 2014; Tables 3.6-8 and 3.6-9). Many of these species have the potential to occur within the Burro Mines Complex. Upland game birds that could inhabit the area include Gambel's Quail (*Callipepla gambelii*), Mourning Dove (*Zenaida macroura*), and Chukar (*Alectoris chukar*). These species are year-round residents. All these birds would be more abundant in the less disturbed areas surrounding the Burro Mines Complex.

The Burro Mines Complex occurs within the range of the following big game species: American black bear (*Ursus americanus*), mountain lion (*Puma concolor*), desert bighorn sheep (*Ovis canadensis nelsoni*), elk (*Cervis canadensis*), and mule deer (*Odocoileus hemionus*).[3] Big game species may occur within the immediate area of the Burro Mines Complex, but high-quality habitat for any of these species is not present. The American black bear occurs mostly within forested or brushy mountain environments and woody riparian corridors. Its habitat is characterized by relatively inaccessible terrain, thick understory vegetation, and abundant sources of food in the form of shrub- or tree-borne fruit (Dewey and Kronk 2007).

The mountain lion is generally associated with mountainous or remote undisturbed areas. It may occupy a wide variety of habitats such as swamps, riparian woodlands, and broken country with good cover of brush or woodlands (NatureServe 2019). Elk generally inhabit open woodlands such as coniferous swamps, clear cuts, aspen-hardwood forest, and coniferous-hardwood forests (Senseman 2002). The Burro Mines Complex is not within identified migration corridors for elk, but it occurs just within its winter range where elk forage in sagebrush/mixed grass, big sagebrush/rabbitbrush, and mountain shrub habitats.

The desert bighorn sheep is a year-long resident and does not make seasonal migrations like elk and mule deer. The desert bighorn sheep prefers open vegetation, such as low shrub, grassland, and other treeless areas with steep talus and rubble slopes. It inhabits areas along the Dolores River and could be present within the project area. The Burro Mines Complex area is within the winter and summer ranges of the desert bighorn sheep (CPW 2019); including, more specifically, winter concentration area, severe winter range, and production area.[4] The project is located within an area that provides a critical linkage point between the upper Dolores and middle Dolores desert bighorn sheep populations (DOE 2014). Global Positioning System collars on individual desert bighorn sheep in the Dolores River area have demonstrated that the area around Slick Rock is a significant movement corridor between two desert bighorn sheep populations and may be where many of the sheep lamb and winter (DOE 2014). This species is considered sensitive by BLM (Section 3.6.5.2).

Mule deer occur within most ecosystems but attain their highest densities in shrublands characterized by rough, broken terrain with abundant browse and cover. The Burro Mines Complex is not within identified migration corridors for mule deer, but it occurs within its winter range (CPW 2019). Mule deer have a high fidelity to specific winter ranges, where they congregate within a small area at a high density. Their winter range is at lower elevations within sagebrush and piñon-juniper vegetation.

[3] Elk and the American black bear are considered secure in Colorado (very low or no risk of extirpation due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats), while the bighorn sheep, mule deer, and mountain lion are apparently secure in Colorado (at a fairly low risk of extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors) (NatureServe 2019).

[4] Winter concentration area is that part of the winter range where densities are at least 200% greater than the surrounding winter range density during the same period used to define winter range in the average five winters out of ten; severe winter range is that part of the winter range where 90% of the individual animals are located when the annual snowpack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten; and production area is that part of the overall range of bighorn sheep occupied by pregnant females during a specific period of spring (February 28 to May 1 for desert bighorn sheep).

Other mammals that could occur in the Burro Mines Complex area include small game, furbearers, and nongame species. Small game species include black-tailed jackrabbit (*Lepus californicus*), white-tailed jackrabbit (*Lepus townsendii*), and desert cottontail (*Sylvilagus audubonii*). Furbearers include American badger (*Taxidea taxus*), American beaver (*Castor canadensis*), bobcat (*Lynx rufus*), common muskrat (*Ondatra zibethicus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), and striped skunk (*Mephitis mephitis*). Nongame species include bats, shrews, mice, voles, chipmunks, and many other rodent species. Habitat for bats may be present at the Burro Tunnel Mine, which has a bat gate closure.

3.6.4 Aquatic Biota

The Dolores River is the only significant waterbody near the Burro Mines Complex. Several native fish species inhabit the Dolores River, including the roundtail chub (*Gila robusta*), bluehead sucker (*Catostomus discobolus*), flannelmouth sucker (*Catostomus latipinnis*), and speckled dace (*Rhinichthys osculus*). Some of these are special status species and are discussed in Section 3.6.5. Non-native fish species are also present in the Dolores River (Muth et al. 2000; McAda 2003; Anderson and Stewart 2003), including channel catfish (*Ictalurus punctatus*), black bullhead (*Ameiurus melas*), common carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellus*), pumpkinseed (*Lepomis gibbosus*), red shiner (*Cyprinella lutrensis*), sand shiner (*Notropis stramineus*), fathead minnow (*Pimephales promelas*), and brown trout (*Salmo trutta*).

3.6.5 Special Status Species

This section discusses federal and state special status species described below that may occur in the vicinity of the Burro Mines Complex.

3.6.5.1 Species Listed under the ESA

There are seven species (three bird and four fish species) listed under the Endangered Species Act (ESA) identified by the Information for Planning and Consultation (IPaC) tool reported for the Burro Mines Complex area (USFWS 2020b). No proposed or candidate species or designated critical habitat for any species are present in the area. The threatened bird species are the Gunnison sage-grouse (*Centrocercus minimus*), Mexican Spotted Owl (*Strix occidentalis lucida*), and Yellow-billed cuckoo (*Coccyzus americanus*). The Gunnison sage-grouse was listed as threatened on December 22, 2014. This species occurs in and near sagebrush-dominated habitats in southwestern Colorado and other areas. No habitat for this species is present on or near the project area. The closest unoccupied designated critical habitat occurs more than 3 mi (4.8 km) west of the Burro Mines Complex.

The Mexican spotted owl was listed as threatened on March 16, 1993. It is considered a rare transient in San Miguel County; recent surveys by the BLM and USFWS have not detected this species. The Mexican Spotted Owl inhabits steep canyons with dense old-growth coniferous forests. Suitable habitat does not occur in or near the project area. The Yellow-billed cuckoo was listed as threatened on November 3, 2014. It inhabits deciduous riparian woodlands, particularly cottonwood and willow. This species is not known to occur near the Burro Mines Complex, and no habitat is present in the project area.

The four endangered fish species are the bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). These species do not inhabit waterbodies near the Burro Mines Complex (such as the Dolores River). The fish are listed in IPaC because of concerns related to water depletions within the Colorado River Basin (downstream effects on these fish species and their habitat must be considered for federal projects). All four species could inhabit the Colorado River, which joins the Dolores River approximately 70 mi (112 km) downstream.

3.6.5.2 Sensitive and State-Listed Species

There are 16 special status species not listed under the ESA that could occur in the vicinity of the Burro Mines Complex (Table 3.6-1). These include species designated as sensitive by the BLM[5], species listed as threatened by the State of Colorado, and species protected under the Bald and Golden Eagle Protection Act. Most of these species are terrestrial species that inhabit desert shrublands or piñon-juniper forests which occur near the Burro Mines Complex.

There are four aquatic or semiaquatic sensitive species that could be associated with the Dolores River near the Burro Mines Complex, including three fish species and one amphibian species (Table 3.6-1). The three BLM-sensitive fish species (bluehead sucker, flannelmouth sucker, and roundtail chub) are experiencing variable or declining population trends in the Dolores River (see Section 3.6.4).

[5] Most of the species in the project area listed as sensitive by the BLM are also listed as sensitive by the USFS. No USFS-administered lands occur within 10 mi (16 km) of the Burro Mines Complex.

TABLE 3.6-1 Special Status Species That Could Occur in the Immediate Vicinity of the Burro Mines Complex

Common Name	Scientific Name	Status[a]	Habitat and Occurrence in the Vicinity of the Burro Mines Complex[b,c]
Plants			
Naturita Milkvetch	*Astragalus naturitensis*	BLM-S	Inhabits sandstone mesas, ledges, crevices, and slopes in piñon-juniper woodlands. Elevation range is 5,000–7,000 ft. Known occurrences and habitat for this species are on Lease Tract C-SR-13. Suitable habitat could occur on or near the Burro Mines Complex.
Fish			
Bluehead Sucker	*Catostomus discobolus*	BLM-S	Found in a variety of aquatic habitats from headwater streams to large rivers. The bluehead sucker requires water moving at a moderate to fast velocity, preferably over rock substrates. This species could occur in the Dolores River, which transects Lease Tract C-SR-13 and is a few hundred feet from the Burro Tunnel Mine.
Flannelmouth Sucker	*Catostomus latipinnis*	BLM-S	Inhabits moderate to large rivers, is seldom in small creeks, and is absent from impoundments. Prefers pools and deep runs. Spawns in riffles, usually over a substrate of coarse gravel. This species could occur in the Dolores River, which transects Lease Tract C-SR-13 and is a few hundred feet from the Burro Tunnel Mine.
Roundtail Chub	*Gila robusta*	BLM-S	Found in the Colorado River mainstream and its larger tributaries. Prefers slow-moving waters adjacent to areas of faster water. This species could occur in the Dolores River, which transects Lease Tract C-SR-13 and is a few hundred feet from the Burro Tunnel Mine.
Amphibians			
Northern Leopard Frog	*Lithobates pipiens*	BLM-S	Inhabits wet meadows, marshes, ponds, lakes, and reservoirs, as well as streams and irrigation ditches. Elevation range is 3,000–11,000 ft. Potentially suitable habitat could occur along the Dolores River several hundred feet from the Burro Mines Complex.
Birds			
Bald Eagle	*Haliaeetus leucocephalus*	BLM-S; BGEPA	Preferred habitat includes reservoirs and large rivers. In winter, bald eagles may occur locally in semidesert and grassland habitats, especially near prairie dog towns. Winter in riparian habitat along the Dolores River and in Dry Creek Basin. A winter nocturnal roost area occurs in the Slick Rock area. Probably forage for carrion within the Burro Mines Complex.
Golden Eagle	*Aquila chrysaetos*	BGEPA	Utilize a wide range of habitats. Most frequently use cliffs for nesting but will also nest in trees. Tundra, high- and mid-elevation pine forest, piñon-juniper woodlands, sagebrush and other shrub habitats, grassland, and agricultural habitats are all used for foraging. Primarily breed in montane habitats (in western Colorado). In winter, they range widely and occur commonly throughout Colorado. Potentially suitable foraging habitat could occur on or near the Burro Mines Complex.
Northern Goshawk	*Accipiter gentilis*	BLM-S	A rare migrant and winter resident in western Colorado, it inhabits various forest types including coniferous, piñon-juniper, and riparian habitats. May also forage in shrubland areas. Potentially suitable foraging habitat may occur on or near the Burro Mines Complex.
White-faced Ibis	*Plegadis chihi*	BLM-S	A rare fall migrant in western Colorado, this species inhabits wet meadows, marshlands, and reservoir shorelines. This species is not known to occur on any of the lease tracts; however, potentially suitable migratory habitat could occur along the Dolores River several hundred feet from the Burro Mines Complex.

TABLE 3.6-1 (Cont.)

Common Name	Scientific Name	Status[a]	Habitat and Occurrence in the Vicinity of the Burro Mines Complex[b,c]
Mammals			
Big Free-tailed Bat	*Nyctinomops macrotis*	BLM-S	Forages primarily on moths in a variety of habitats, including montane forests and shrublands. Roosts in crevices on cliff faces or in buildings. Potentially suitable year-round habitat may occur on or near the Burro Mines Complex.
Fringed Myotis	*Myotis thysanodes*	BLM-S	A snag-dependent bat species that occurs in a wide variety of forest types including ponderosa pine, oak, and piñon-juniper. Also forages in grasslands and shrublands. Roosts in snags and rock crevices. Potentially suitable year-round habitat may occur on or near the Burro Mines Complex.
Gunnison's Prairie Dog	*Cynomys gunnisoni*	BLM-S	In Colorado, this species is restricted to the southwestern and south-central portion of the state. Inhabits grasslands and semiarid shrublands. Suitable habitat for this species may occur on or near the Burro Mines Complex.
Desert Bighorn Sheep	*Ovis canadensis nelson*	BLM-S	Inhabits visually open, steep, rocky terrain in mountainous habitats of the southwestern United States. Rarely uses valleys and lowlands, except as travel corridors between mountain ranges. Known to occur in in the Burro Mines Complex. Winter concentration areas and production areas occur on or near the Burro Mines Complex.
Northern River Otter	*Lontra canadensis*	CO-T	Occupies riparian and riverine habitats where permanent water is available. Feeds primarily on fish and crustaceans. Known to occur in the Dolores River, which is a few hundred feet from the Burro Tunnel Mine.
Spotted Bat	*Euderma maculatum*	BLM-S	Occurs near forests and shrubland habitats. Uses caves and rock crevices for day roosting and winter hibernation. Potentially suitable year-round habitat may occur on or near the Burro Mines Complex.
Townsend's Big-eared Bat	*Corynorhinus townsendii pallescens*	BLM-S	Inhabits semiarid shrublands, piñon-juniper woodlands, and montane forests below elevations of 10,000 ft (3,048 m). Roosts in caves, mines, rock crevices, under bridges, or within buildings. Known to occur in the Burro Mines Complex. Potentially suitable year-round habitat may occur on or near the Burro Mines Complex.

[a] BGEPA = protected under the Bald and Golden Eagle Protection Act; BLM-S = listed as sensitive by the BLM; CO-T = listed as threatened by the State of Colorado.

[b] The potential to occur on or near the Burro Mines Complex is based on the known or potential distribution and availability of suitable habitat in the vicinity of the complex. Sources that were considered included USFWS (2020b,c), CNHP (2019), and USGS (2007). If potential for occurrence exists, a site-specific survey will be conducted prior to any ground-disturbing activity.

[c] The availability of potentially suitable habitat was determined by using the Southwest Regional Gap Analysis Project habitat suitability models (USGS 2007). Quad-level occurrences were obtained from CNHP (2011b). Habitat and natural history information was obtained from NatureServe (2011, 2019), CNHP (2011a), and CPW (2011).

3.7 LAND USE

The Burro Mines Complex is located primarily on Lease Tract C-SR-13 (DOE 2014). A portion is also on BLM-administered lands, and privately-owned split-estate lands. Most of the lands surrounding the Burro Mines Complex are administered by the BLM. Figure 3.7-1 shows BLM land designations on public lands near Lease Tract C-SR-13. There are three areas within 10 mi (16 km) of the Burro Mines Complex that are components of the BLM's National Landscape Conservation System (NLCS) which includes specially designated areas. Specially designated areas are those areas designated by an Executive Order, an Act of Congress, or the BLM (through its land use planning process) as being deemed to possess unique or important resource values. These areas are the Gypsum Valley Area of Critical Environmental Concern (ACEC) consisting of 6,170 ac (2,497 ha), the Dolores River Canyon Wilderness Study Area (WSA) consisting of 30,134 ac (12,195 ha), and the Dolores River Special Recreation Management Area (SRMA) consisting of 64,588 ac (26,139 ha) (Figure 3.7-1).

Various other land use activities occur within 10 mi (16 km) of the Burro Mines Complex. Domestic livestock grazing is a major and widespread use of public lands managed by the BLM. Lease Tract C-SR-13 provides some forage for livestock grazing but does not support concentrated grazing (DOE 2014). Mineral resources in southwestern Colorado include uranium, vanadium, oil, natural gas, coal, and other metallic and nonmetallic minerals and mineral materials. Beginning in 1948, lands within the Uravan Mineral Belt in southwestern Colorado (including the subject Burro Mines Complex) were withdrawn from mineral entry under Public Land Order 459 (and others) to reserve them for the exploration and development of uranium and vanadium resources (DOE 2014). There are no coal leases within Lease Tract C-SR-13. Oil and gas leases are located along the Dolores River Canyon in the Slick Rock area. Mined metallic minerals include gold, silver, and platinum; while non-metallic minerals include gypsum and potash. Mineral materials of commercial value mined in the region include sand and gravel, crushed stone, dimension stone, granite, limestone, sandstone (silica, stone, and quartz), shale, clay, and aggregate. (DOE 2014). The proposed relocation site is a former gravel pit that was permitted by BLM to San Miguel County, between 1985 and 2003.

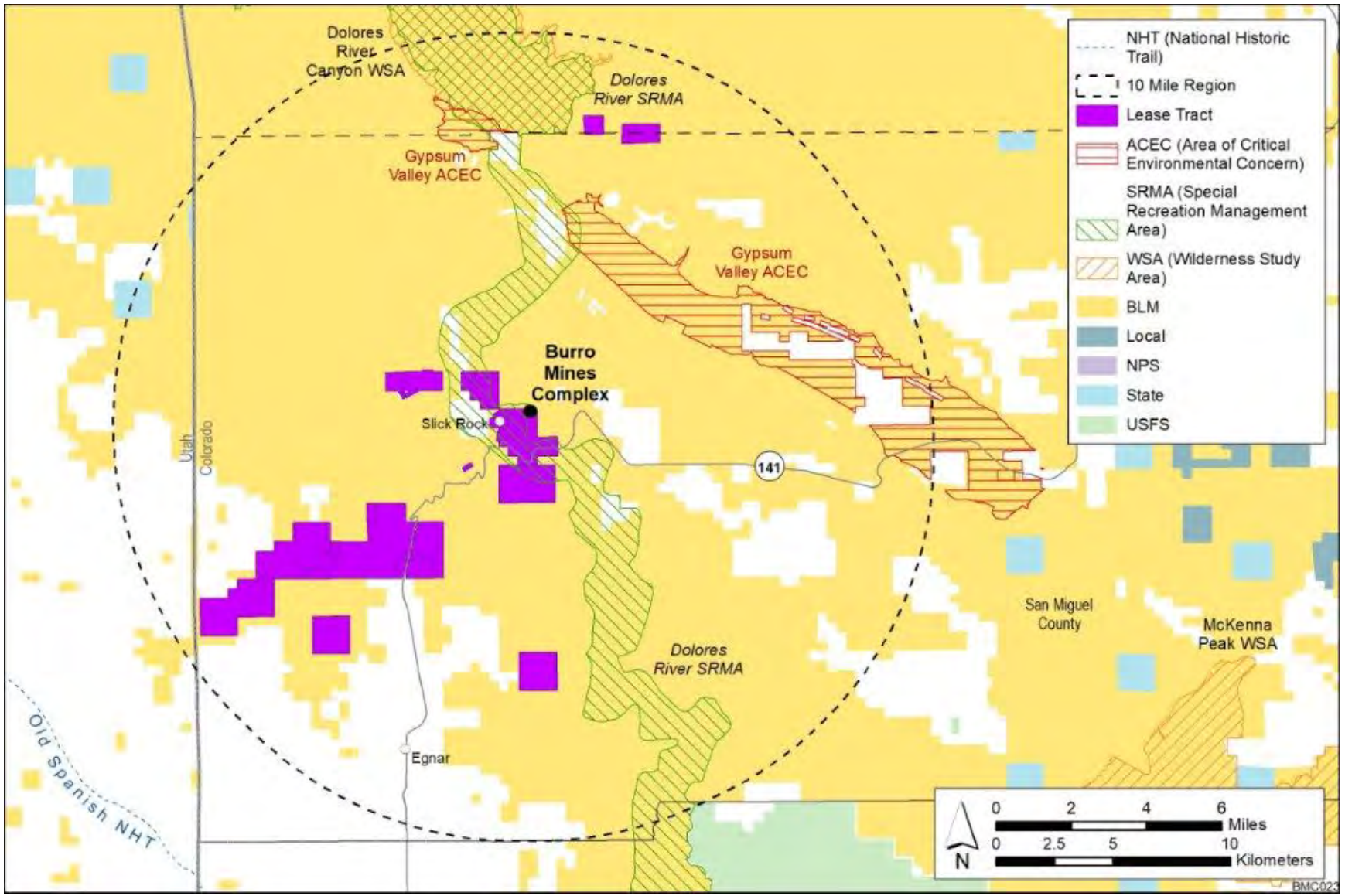

FIGURE 3.7-1 Specially Designated Areas on Public Lands near Lease Tract C-SR-13

3.8 SOCIOECONOMICS

The Burro Mines Complex is located near Slick Rock, Colorado, in San Miguel County, Colorado. The ROI includes the area that could be affected by the reclamation of the Burro Mines Complex and where workers are expected to reside and spend their wages. For this analysis, the ROI includes Dolores, Montrose, and San Miguel counties in western Colorado. This section describes three economic indicators for the ROI: employment, unemployment, and personal income. Measures of social activity considered include population, housing, public service employment, and levels of service for education (schools), health care, and public safety. The socioeconomics analysis is based on current information within the ROI.

3.8.1 Economic Environment

The ROI population is concentrated in Montrose County, specifically the town of Montrose. In San Miguel County, where the Burro Mines Complex is located, the population is much smaller and is concentrated in the eastern portion of the county; Slick Rock, the closest town to the Burro Mines Complex, is an unincorporated community located near SH 141 and the Dolores River. All the incorporated towns within the ROI are located at least 35 mi (56 km) from the Burro Mines Complex.

While Colorado and the ROI experienced an increase in employment between 2000 and 2010, employment in San Miguel and Dolores counties fell slightly, as shown in Table 3.8-1. However, between 2010 and 2018, the overall growth in employment rose in all counties within the ROI (1.55%) and the state of Colorado as a whole (2.04%). Unemployment in the ROI and Colorado fell significantly between 2010 and 2018 (Table 3.8-2).

TABLE 3.8-1 Employment for ROI and the State of Colorado, 2001–2018

Location	2000	2010	Average Annual Growth Rate, 2001–2010	2018	Average Annual Growth Rate, 2010–2018
Dolores County	853	823	-0.36	1,163	3.5
Montrose County	15,615	18,360	1.63	21,136	1.42
San Miguel County	4,580	4,508	-0.16	5,326	1.68
ROI	21,048	23,691	1.19	27,625	1.55
Colorado	2,303,494	2,447,712	0.61%	2,994,756	2.04

Sources: U.S. Bureau of Labor Statistics (2020a-d).

The services industry represents more than 50% of all employment in the ROI because of the high level of recreation and tourism in the area (see Section 3.8.3). Telluride, Colorado, which represents 30% of the entire population of San Miguel County, provides numerous seasonal jobs; the ski resort is likely responsible for the lower rates of unemployment and high percentage of services industry employment

TABLE 3.8-2 Unemployment Data for ROI and the State of Colorado, 2000–2018

Location	2000 Average	2010 Average	2018 Average
Dolores County	5.6	17.0	2.8
Montrose County	3.7	11.0	3.7
San Miguel County	3.0	7.8	3.5
Colorado	2.76	8.7	3.16

Sources: U.S. Bureau of Labor Statistics (2020a-d).

in the county. Wholesale and retail trade provide the second-highest number of jobs, accounting for 17% (Table 3.8-3). Construction jobs make up 9.2% of employment in the ROI.

TABLE 3.8-3 Employment within ROI by Sector

Sector	Dolores County		Montrose County		San Miguel County		ROI	
	Employ-ment	% of Total	Employ-ment	% of Total	Employ-ment	% of Total	Employ-ment	% of Total
Agriculture	0	0.0%	20	0.2%	0	0.0%	20	0.1%
Mining	2	0.7%	55	0.4%	0	0.0%	57	0.3%
Construction	23	8.4%	1,197	9.5%	410	8.3%	1,630	9.2%
Manufacturing	28	10.2%	1,365	10.9%	99	2.0%	1,492	8.4%
Transportation and public utilities	20–99[a]	7.3–36.1%	826	6.6%	63	1.3%	909–988	5.1–5.6%
Wholesale and retail trade	84	30.7%	2,426	19.3%	563	11.4%	3,073	17.3%
Finance, information, insurance, and real estate	3	1.1%	618	4.9%	359	7.3%	980	5.5%
Services	57–136[a]	20.8–49.6%	6,046	48.2%	3,401	68.9%	9,504–9,583	53.5–53.9%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	274		12,553		4,937		17,764	

[a] For Dolores County, the employment sectors were estimated as a range.

Source: U.S. Census Bureau (2018a-c).

Between 2014 and 2018, per capita income in the ROI ranged from $24,505 (Dolores County) to $45,396 (San Miguel County). The per capita income for the State of Colorado was $36,415 (U.S. Census Bureau 2020a).

3.8.2 Population and Housing

Population in the ROI experienced an average annual growth rate of 0.4% from 2010 to 2018, which is less than the growth rate in the state of Colorado over the same period. San Miguel County had the largest growth rate for 2010–2018 in the ROI and is mostly unchanged from the growth rate between 2000 and 2010. The annual average growth rate in the ROI is expected to increase to 1.5% between 2018 and 2023, although population is expected to decrease in Dolores County during that time period (see Table 3.8-4).

TABLE 3.8-4 Population for the ROI and the State of Colorado, 2000–2023

Location	2000	2010	Average Annual Growth Rate (2000–2010)	2018 (estimated)	Average Annual Growth Rate (2010–2018)	2021	2023
Dolores County	1,844	2,064	1.1%	2,074	0.1%	2,024	2,011
Montrose County	33,432	41,276	2.1%	42,214	0.3%	48,873	45,327
San Miguel County	6,594	7,359	1.1%	8,191	1.3%	8,729	9,116
ROI	41,870	50,699	1.9%	52,479	0.4%	54,626	56,454
Colorado	4,301,261	5,160,189	1.8%	5,695,564	1.2%	5,916,483	6,491,972

Sources: U.S. Census Bureau (2019, 2020b); Colorado State Demography Office (2020).

Table 3.8-5 indicates that vacant housing units within the ROI increased slightly between 2009–2013 and 2013–2017, but overall vacancy rates stayed the same. The vacancy rate was highest in Dolores and San Miguel counties. In San Miguel County, the population growth since 2010 has increased pressure on the housing market. Many residential units in San Miguel County are used as vacation accommodations or second homes rather than for primary housing, and therefore, available units are generally priced too high. The average sale price in San Miguel County in 2018 was just under $1.5 million, and the rental rates for market rate units range from $1,600 per month to $2,500 per unit (Economic & Planning Systems, Inc. 2018). The current vacancy rate for deed-restricted housing is only 2.5%, and information based on an employer survey suggests that there are unfilled jobs attributed to lack of available housing (Economic & Planning Systems, Inc. 2018). This suggests that most of the vacancy stems from high sale prices, because even though there is a demand for affordable housing, the vacancy rate remains high.

TABLE 3.8-5 ROI Housing Characteristics, 2009–2013 and 2013–2017

	Dolores County		Montrose County		San Miguel County		ROI	
	2009–2013 Estimates	2013–2017 Estimates	2009–2013 Estimates	2013–2017 Estimates	2009–2013 Estimates	2013–2017 Estimates	2009–2013 Estimates	2013–2017 Estimates
Total housing units	1,473	1,422	18,204	18,716	6,663	6,763	26,340	26,901
Total occupied units	780	707	16,586	16,951	3,234	3,301	20,600	20,959
Total vacancy units	693	715	1,618	1,765	3,429	3,462	5,740	5,942
Vacancy rate	47%	50%	9%	9%	51%	51%	22%	22%

Source: U.S. Census Bureau (2020c, d)

3.8.3 Community and Social Services

The following sections discuss community and social services for the ROI, including education, healthcare, and public safety. City jurisdictions within the ROI are listed in Table 3.8-6.

TABLE 3.8-6 ROI Jurisdiction

Type of Jurisdiction	Governments
Counties	Dolores, Montrose, San Miguel
Cities	Dove Creek, Rico, Montrose, Naturita, Nucla, Olathe, Redvale, Mountain Village, Norwood, Ophir, Sawpit, Telluride
School districts	Dolores County School District RE-2J, Montrose County School District Re-1J, West End School District No. Re-2, Norwood School District No. R-2J, Telluride School District No. R-1

Source: National Center for Education Statistics 2019, DOI 2011

There were 25 schools located in the ROI during the 2018–2019 school year with a total of 7,968 students and 473 teachers, resulting in a student-teacher ratio of 17.2 (Table 3.8-7). Most students in the ROI attend school in Montrose County.

TABLE 3.8-7 ROI School District Data, 2018–2019

Location	Number of Students	Number of Teachers	Student-Teacher Ratio	Level of Service[a]
Dolores County	250	19	12.85	9.16
Montrose County	6,577	360	18.3	8.53
San Miguel County	1,141	94	12.1	11.47
ROI	7,968	473	17.2	9.01

[a] Number of teachers per 1,000 population.

Source: National Center for Education statistics 2019

There are two hospitals in the ROI; the largest is in Montrose County with 75 beds and the smallest is in San Miguel County with seven beds. There are no hospitals in Dolores County. In 2017, the ROI had 127 police officers with a level of service of 2.4 and 53 professional firefighters (not including volunteers), with a lower level of service of 1.0 (Table 3.8-8). The crime rates for the ROI are provided in Table 3.8-9.

TABLE 3.8-8 ROI Public Safety Employment, 2017, 2014

Location	Number of Police Officers, 2017	Level of Service[a]	Number of Firefighters[b], 2014	Level of Service
Dolores County	4	1.9	0	0.0
Montrose County	96	2.3	41	0.97
San Miguel County	27	3.3	12	1.47
ROI	127	2.4	53	1.0

Footnotes on next page.

TABLE 3.8-8 (Cont.)

[a] Number per 1,000 population

[b] Number does not include volunteers

Sources: DOJ (2017), Fire Departments Network (2020a-e)

TABLE 3.8-9 County Crime Rates, 2016[a]

	Violent Crime[b]		Property Crime[c]		All Crime	
Location	Number. of Offenses	Rate[a]	Number of Offenses	Rate	Number of Offenses	Rate
Dolores County	5	2.4	17	8.2	44	21.2
Montrose County	12	0.3	229	5.4	484	11.5
San Miguel County	7	0.9	3	0.37	20	2.44
ROI	24	0.46	249	4.74	548	10.4

[a] Rates are the number of crimes per 1,000 population.

[b] Violent crime includes murder and non-negligent manslaughter, rape, robbery, and aggravated assault.

[c] Property crime includes burglary, larceny, theft, motor vehicle theft, and arson.

Source: DOJ (2016).

3.8.4 Recreation and Tourism Economy

Western Colorado is a major year-round tourist destination for outdoor sports, including hiking, biking, whitewater rafting, horseback riding, skiing, off-highway vehicle trail riding, hunting, fishing, and snowshoeing. Most of the land in the ROI is managed by the U.S. Forest Service (USFS) and BLM. Among the many recreation areas that the BLM manages are numerous SRMAs and NLCS units (BLM undated). SRMAs are areas where recreation is the principal management focus and where the objective is to provide specific "structured" recreational opportunities (BLM 2011). These can include campgrounds, trails, and boat ramps for river access. The project area is within the Dolores River SRMA, which is managed to provide for a broad range of recreational benefits, primarily to river users. Developed recreation sites are located near the Burro Mines Complex along the Dolores River SRMA. The Unaweep-Tabeguache Scenic and Historic Byway follows the Dolores and San Miguel Rivers and offers recreational opportunities such as hiking and bicycling on backroads, trails on BLM and USFS land, and river rafting (Advanced Resource Management, Inc. 2013).

As discussed in Section 3.8.1, employment in the ROI is concentrated in the service industry, and much of that stems from the recreation provided by the publicly managed areas discussed above. The tourism industry is difficult to quantify; it covers multiple job sectors and has direct and indirect impacts on the local economy resulting from increased sales from visitor spending, changes to local employment and income, and induced effects reflected in local goods and services purchased by residents who experience changes in income from new economic

activity. Activities on public lands include skiing and touring, visits to parks and monuments, and outdoor recreation. In San Miguel County, where the Burro Mine Complex is located, the ski resort in Telluride provided the largest number of jobs in the tourism sector.

3.9 ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," formally requires federal agencies to incorporate environmental justice as part of their missions (U.S. President 1994). Specifically, it directs them to address, as appropriate, any disproportionately high and adverse human health or environmental effects of their actions, programs, or policies on minority and low-income populations.

The analysis of how mining projects, including reclamation, affect environmental justice concerns follows guidelines described in the CEQ's Environmental Justice Guidance under NEPA (CEQ 1997). The analysis method has three parts. First, a description of the geographic distribution of low-income and minority populations in the affected area is undertaken. Then an assessment is conducted to determine whether reclamation and relocation of waste rock would produce human health or environmental impacts that are high and adverse. Finally, if impacts are high and adverse, a determination is made as to whether these impacts disproportionately affect minority and low-income populations.

Reclamation of the Burro Mines Complex could affect environmental justice if any adverse human health and environmental impacts would be significantly high and if these impacts would disproportionately affect minority and low-income populations. If the analysis determined that human health and environmental impacts would not be significant, there would not be disproportionately high and adverse impacts on minority and low-income populations. In the event a potential for human health or environmental impacts is significant, disproportionality would be determined by comparing the proximity of any high and adverse impacts with the location of low-income and minority populations. For example, the analysis would consider whether potentially significant human health risks would appreciably exceed the risk to the general population.

There were no disproportionately high minority or low-income population groups identified within a 10-mi (16-km) radius of the Burro Mines Complex (DOE 2014).

3.10 TRANSPORTATION

The road network in southwestern Colorado in the vicinity of the Burro Mines Complex consists of SH 141 as the primary access road to the area with San Miguel CR S8 and CR 10S (Slick Rock gravel pit road, unpaved) providing the nearest access to the site, as shown in Figure 1-1. CR S8 runs north from SH 141 on the east side of the Dolores River up to the Burro Tunnel Mine site. South of the Burro Tunnel Mine site, CR 10S branches off CR S8 to the northeast, eventually curving to follow a south–southeasterly direction down to the relocation site where the waste rock piles are proposed to be relocated under Alternative 2 (Preferred Alternative).

Less than 0.1 mi (1 km) to the northwest of the intersection of SH 141 with CR S8, near its intersection with CR 10R, the average annual daily traffic along SH 141 is approximately 220 for all vehicles, including 20 single unit trucks and 30 combination trucks (Colorado Department of Transportation 2019).

3.11 CULTURAL RESOURCES

Cultural resources are important to maintaining the heritage of the people of the United States. They provide a physical connection to the past and contemporary traditional culture. They include archaeological sites; historic buildings and structures; landscapes; culturally important natural features; and traditional cultural properties important to specific social or cultural groups, such as Native American Indian tribes. Cultural resources that meet the eligibility criteria for listing on the National Register of Historic Places (NRHP) are termed "historic properties" under the NHPA of 1966, as amended. NHPA requires federal agencies to take into account the potential effects of their undertakings, such as mine reclamation, on cultural resources that are listed on or eligible for listing on the NRHP.

3.11.1 Cultural History

The discovery of carnotite ore in the 1890s led to the development of the Uravan Mineral Belt, including the construction of uranium and vanadium ore processing plants and the prosperity of the nearby towns of Bedrock, Nucla, and Naturita. As is a common occurrence with mining and mineral extraction, the Uravan Mineral Belt experienced a repeated boom-and-bust cycle tied to the supply of and demand for radioactive metals and vanadium which continued until the 1970s (Twitty 2008). The remains of the prospects, mines, roads, mining camps, drill pads, and other modifications of the landscape remain in the Uravan Mineral Belt. Those remains that still retain their historic integrity and association are typically eligible for listing on the NRHP as historic properties or as historic districts.

3.11.2 Cultural Resources within Burro Mines Complex

DOE and the BLM have collaborated on the analysis of archaeological, architectural, and landscape resources at Burro Canyon to define the historic properties within the area of potential effect (APE) at this location, and the context in which they were established. The Burro Mines Complex (5SM.2725) consists of the remnants of a historic hard-rock uranium mine located on BLM-owned, DOE-managed land. The Burro Mines Complex includes four separate and distinct mine sites; the Burro Tunnel mine, the Burro No. 3 shaft mine, the Burro No. 5 shaft mine and the Burro No. 7 shaft mine (Burro No. 7 is not included in the project scope for this EA). The file and literature search indicated three previous inventories within the project location; two previously recorded sites (5SM.2725 and 2726) and one previously recorded isolated find (5SM.1501). Remaining onsite features include an ore bin, a tunnel sized for trackless vehicles, multiple vertical shafts, support structures, support building foundations, an air and water line, major portions of a large ventilation system, and one steel headframe with associated ore and waste rock bins.

The BLM participation on this project included the analysis of the APE for archaeological resources; the archaeological work included a field inventory covering 93 ac (38 ha) of new survey. This resulted in the documentation of the Burro Mines Complex in its

entirety and one new prehistoric site (5SM.8290). The various Burro Mines features have been combined into one continuous site under the site number 5SM.2725 for the entire complex. Site number 5SM.2726 will be retired following this recording. The BLM also identified a prehistoric component within the Burro Mines complex and identified no other cultural resources during their survey. The prehistoric component of the site does not contribute to the eligibility of this site.

The Burro Mines Complex retains features not normally found on small-scale uranium mining operations in this region. This makes the Burro Mines complex historically important because the remaining features retain a rare degree of integrity not typically found at uranium and vanadium mine sites in the region. Remaining architectural and archaeological assemblages include: Burro Tunnel mine (mine features include an ore bin, ore bin trestle, waste rock, and road and loadout area), Burro No. 5 mine (support buildings, shaft, steam engine, boiler, engine cooler, and waste rock) and Burro No. 7 mine (headframe, hoist house with hoist, waste rock, access road, air and water line, and vehicles). Previous reclamation activity at the Burro No. 3 mine included removal of the majority of buildings and structures that once existed; however, it retains sufficient features to contribute to the overall design, setting, and feeling of the mine complex.

DOE has determined, in consultation with the BLM, that the Burro Mines Complex is eligible for listing under Criterion A for its association with broad patterns in U.S. history. Specifically, the mine produced vanadium and uranium ore used by U.S. defense and consumer industries during the Cold War; the Colorado SHPO agreed with this determination during consultation. The Burro Mines Complex, which operated from circa 1952 until circa 1984, maintains integrity of location, design, workmanship, and materials. The surrounding area, a desert canyon adjacent to a perennial river, contributes to the site's integrity of setting, feeling, and association. The Burro Mines Complex is an excellent example of a hard-rock uranium mine that operated within the larger time period of the Cold War as a district (i.e., a collection of related buildings and structures that share a common theme).

The Burro Mines Complex contains sufficient structural remnants and archaeological assemblages that strongly retain the aspect of design, making the mine complex also eligible for listing under Criterion C. The surrounding landscape retains substantial features associated with mining during the 1950–1980s, such as the myriad of access roads blazed through the landscape. The mine's overall footprint speaks of its development during a time that predates the majority of the current environmentally driven limitations on the surface activity of a modern mine. The archaeological assemblages discussed above, combined with structural features across the complex such as roads, water line, powerlines, an explosive magazine, vent holes, and other features and artifacts, convey that the individual mine sites were part of a larger industrial landscape.

The period of significance for the Burro Mines Complex extends to the end of operations circa 1984 because the mine's operations during the 1970s and 1980s contributed to the continuation of the nuclear industry during the Cold War. The period of mining activity that is less than 50 years in age is eligible under Criteria Consideration G for its exceptional importance. During this time, the uranium mining industry responded to the nation's energy-related nuclear capabilities. During the 1970s and 1980s, the federal government no longer purchased uranium for military uses. Instead, it promoted nuclear power, which became a

significant energy source. Given the large-scale operation at the Burro Mine, which yielded high volumes of ore, this mine complex can be considered to have rendered significant contributions of uranium ore to the nuclear power programs of the time period.

3.12 VISUAL RESOURCES

The Burro Mines Complex is in San Miguel County's "West End," as it is known locally, just north of Slick Rock, Colorado. The area is noted for its wildlife, historical and archaeological sites, natural resources, and landmarks, including the Dolores River. Elevation within this region varies between approximately 5,400 and 6,000 ft (1,646 and 1,830 m). Natural vegetation consists of grasses and shrubland. The landforms are characterized by a range of features, including, basins, valleys, and rock outcrops (Chapman et al. 2006), creating a highly variable landscape with numerous colors, textures, forms, and lines. This surrounding region has historically been utilized for mining activities, including the exploration and development of coal, oil, and gas; sand and gravel; and radium, uranium, and vanadium.

The ROI for visual resource analysis was set at 25 mi (40 km) because it is the approximate limit at which non-negligible visual contrasts from the structures and activities in the Proposed Action could reasonably be expected to be visible in this region, assuming favorable viewing conditions and strong contrast between an object and its background. A geographic information system (GIS)-based impact analysis was used to identify locations within 25 mi (40 km) of the Burro Mines Complex from which some portions of the lands containing the complex would be visible. Assuming an unobstructed view of the Burro Mines Complex, viewers in these areas would be likely to perceive some level of visual contrast from the reclamation activities.

The "spatial analyst extension" of the ESRI ArcGIS 10.6 software was used to calculate viewsheds. A viewshed is an area of landscape visible to the human eye from a fixed vantage point. The viewshed analyses determined the potential visibility of the Burro Mines Complex from lands within 25 mi (40 km). Viewshed calculations were performed by using National Elevation Dataset 10-meter Digital Elevation Model with the earth curvature set to a refractivity coefficient of 0.13. Viewsheds were calculated based on an assumed height of 30 ft (9 m) to represent the mining sites and 5 ft (1.5 m) to represent the observer height.

Special consideration was given to Sensitive Visual Resource Areas (SVRAs). SVRAs are defined as surrounding lands with a Federal, state, or BLM designation that have scenic and visual values and are thereby visually sensitive, which include, but are not limited to, National Parks; Wilderness Areas; National Scenic Trails; and Scenic highways, byways and All-American Roads; and often have the protection of scenic resources incorporated into their management plans. The Dolores River SRMA is the only SVRA with visibility of the Burro Mines Complex (See Figure 3.12-1). The total acreage of the Dolores SRMA is 702,558 ac (284,325 ha), of which 1,381 ac (559 ha) has visibility of the Burro Mines Complex. Further, only 1,361 ac (551 ha) and 20 ac (8 ha) has visibility within 5mi (8 km) and 15 mi (24 km) of the Burro Mines Complex, respectively.

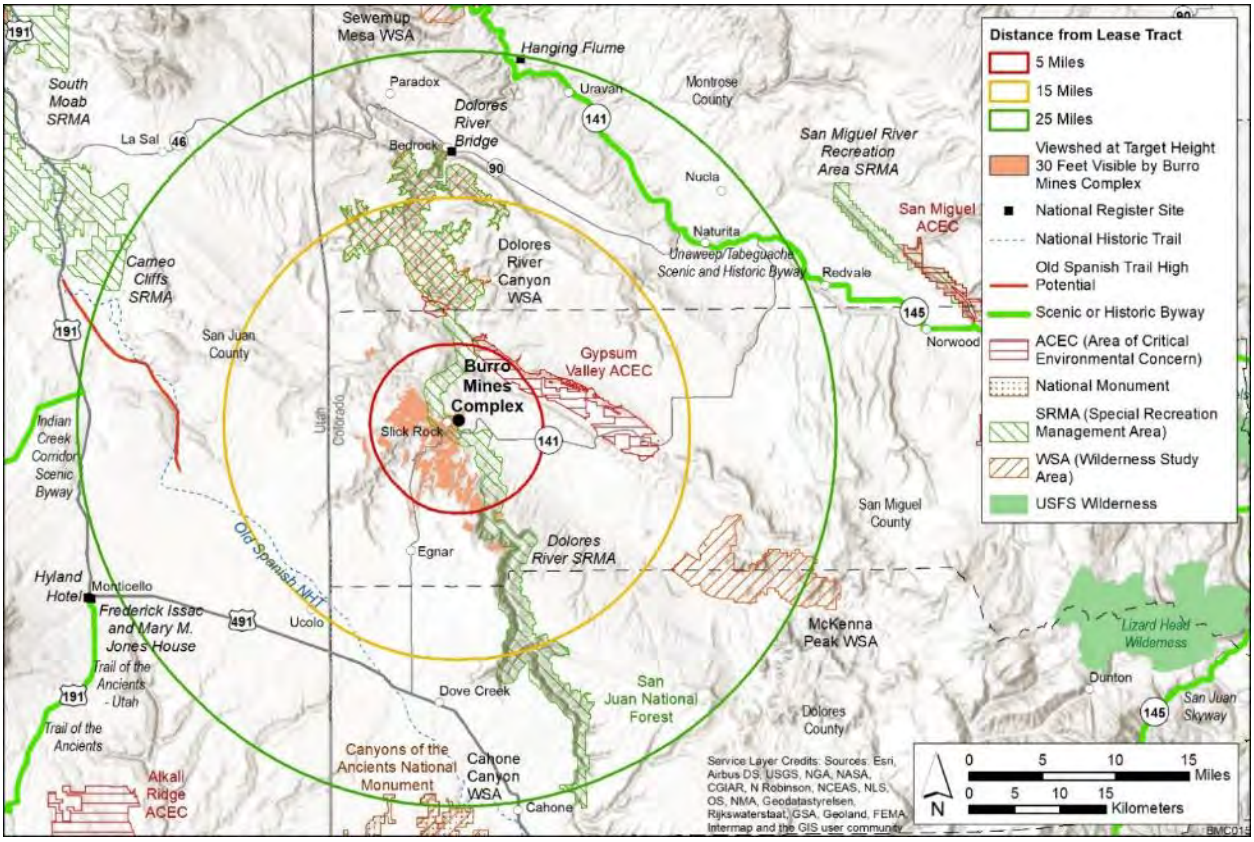

FIGURE 3.12-1 Viewshed Analysis for the Burro Mines Complex

The BLMs Visual Resource Management (VRM) system (BLM 1986a, b) was used to determine visual impacts from reclamation activities. The VRM system assigns lands a VRM class I-IV. The VRM classes set VRM objectives for lands in each class, as well as the level of visual change in the landscape character that is allowed as a result of proposed management activities. The Burro Mines Complex is located on BLM lands with a Class II VRM value, which aims to "retain the existing character of the landscape" (BLM 2015). Visual impacts can depend on the type and degree of visual contrasts introduced into an existing landscape. Where modifications repeat the general form, line, color, and texture of the existing landscape, the degree of visual contrast is generally lower, and the perceived impacts are lower. Where modifications introduce pronounced changes in form, line, color, and texture, the degree of contrast is often greater, and perceived impacts are greater too.

Key Observation Points (KOPs) are typically used as viewpoints for assessing potential visual impacts resulting from proposed projects in an area. A KOP is a point on/in a travel route, use area, site, or place of cultural importance where most of the activity takes place, or the view would be most revealing. To address visual impacts within the Dolores River SRMA, a viewshed analysis was conducted on a more frequently used place where recreationists may spend a significant amount of time looking at the surrounding scenery and may potentially notice changes to the landscape. The KOP selected for analysis is the Slick Rock Boat Ramp, which is on private land, just on the north side of the SH 141 bridge. No portion of the Burro Mines Complex is visible from this point (see Figure 3.12-2).

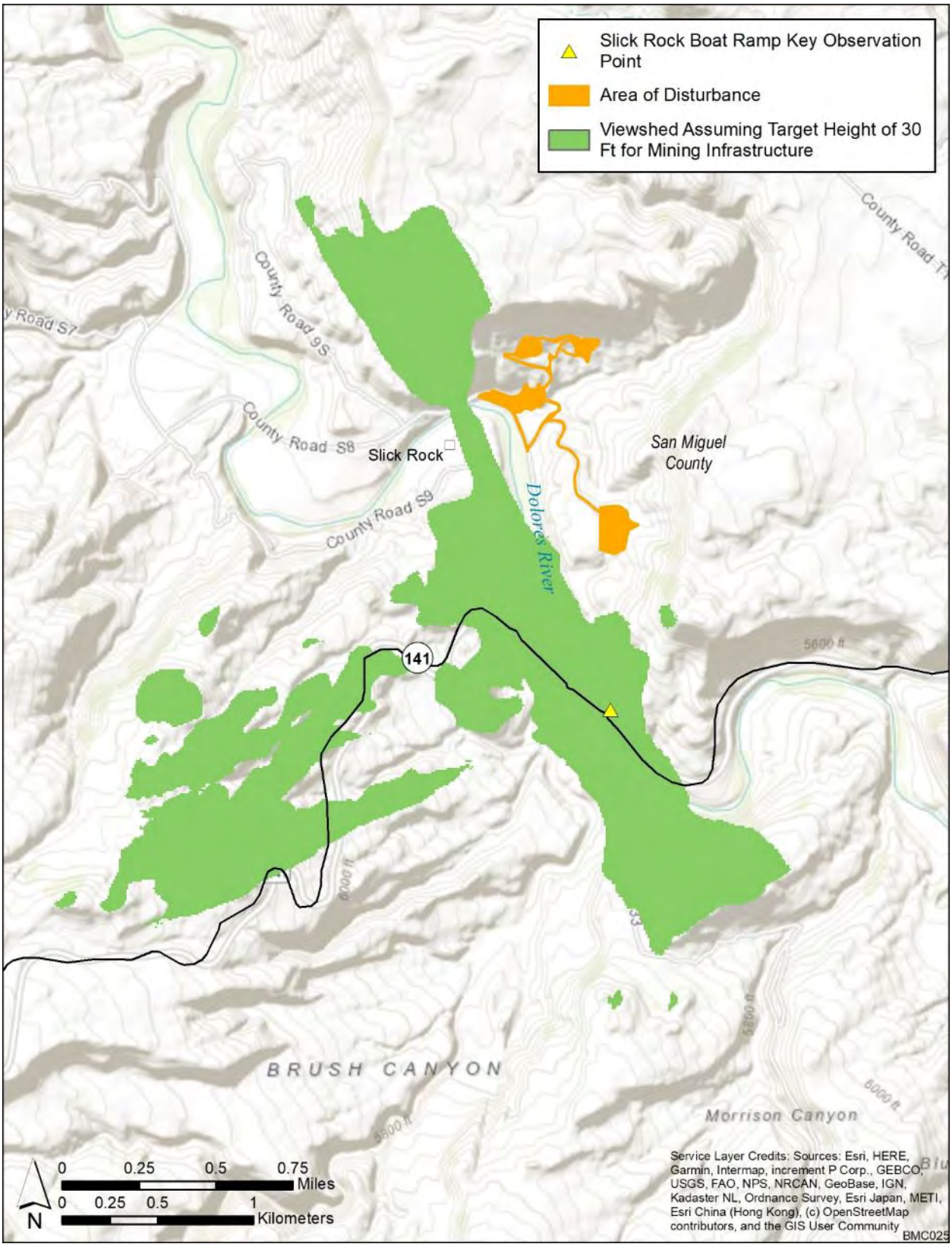

FIGURE 3.12-2 Viewshed from Slick Rock Boat Ramp on SH 141 KOP

3.13 WASTE MANAGEMENT

During reclamation (Alternative 2), waste other than the waste rock piles that are the subject of reclamation activities could be generated. Such waste would generally be in the category of non-hazardous solid waste (e.g., debris, miscellaneous trash, and sanitary waste from portable facilities). These wastes would be properly managed and transported to permitted solid waste disposal facilities. A fuel storage, spill prevention and response plan would be followed for onsite management of fuel needed for the various equipment utilized for the reclamation activities.

4 ENVIRONMENTAL IMPACTS

The potential impacts for each of the environmental resource areas evaluated for the two alternatives are presented in the following sections. As described in Section 2.1, the two alternatives are Alternative 1, No Action; and Alternative 2, Reclamation of the Burro Mines Complex (Preferred Alternative). The potential impacts discussed here as Alternative 2 reflects the revised Proposed Action presented in Section 1.2 and as described in Section 2.2.

4.1 AIR QUALITY

The ROI evaluated for potential impacts is within the 25-mi (40-km) radius of the Burro Mines Complex. In general, reclamation activities would be similar to conventional construction activities in terms of procedures and equipment. During reclamation, primary emission sources would include fugitive dust from earth-moving activities on the waste rock and vehicle traffic on unpaved roads, engine exhaust from diesel-powered heavy equipment and dump trucks, and exposed ground or stockpiles being eroded by the wind. Engine exhaust emissions from heavy equipment and vehicles would include criteria pollutants, such as CO, NO_x, PM ($PM_{2.5}$ and PM_{10}), and SO_x; VOCs; and greenhouse gases (GHGs) (e.g., the primary GHG, carbon dioxide [CO_2]). Soil disturbances and wind erosion would generate mostly PM emissions. Typically, the amount of fugitive dust emissions is larger than the amount of engine exhaust emissions during reclamation.

To evaluate potential impacts on ambient air quality under the two alternatives, air emissions from reclamation activities were estimated using the standard emission factor references and activity level data, such as heavy equipment type and usage. Fugitive dust emissions are estimated based on emission factors presented in *AP-42* (EPA 2019e): Section 11.9 Western Surface Coal Mining for dozing and wind erosion; Section 13.2.2 Unpaved Roads for vehicle traffic on unpaved roads and loader operations on disturbed surfaces; and Section 13.2.4 Aggregate Handling and Storage Piles for material handling. A mean vehicle weight for dump trucks is assumed based on the 12-yd^3 truckload. Silt content and moisture content are taken from the industries similar to reclamation activities at the site (EPA 2019e), and average wind speed of 6.6 mph (2.9 m/s) is taken from Hopkins Field in Nucla, Colorado (NCDC 2019).

It is assumed that a conventional dust control measure of water spraying with an emission control efficiency of 50% would be applied over the disturbed area, such as waste material piles and unpaved roads (Countess Environmental 2006). Engine exhaust emissions from vehicles traveling to and from the Burro Mines Complex are estimated based on published emission factors generated using emission factor motor vehicle model MOBILE6.2 (EPA 2003). Emission factors for nonroad equipment were estimated using the EPA's NONROAD emission factor model (EPA 2004a). Estimated air emissions are compared with total annual emissions for criteria pollutants and VOCs in San Miguel County and for GHGs in Colorado and the United States to assess emissions from reclamation activities for the Burro Mines Complex relative to emissions for the state and the country.

4.1.1 Alternative 1: No Action

Under Alternative 1, no action would be taken to reclaim any of the mine sites; thus, there would be no fugitive dust or engine exhaust emissions from heavy equipment and dump trucks around the Burro Mines Complex. Therefore, ambient air quality and effects of climate change would remain the same and no potential impacts would be anticipated under this alternative.

4.1.2 Alternative 2: Reclamation of the Burro Mines Complex

For Alternative 2, air emission estimates for criteria pollutants and GHGs are provided in Table 4.1-1. Total PM_{10} emission estimates of about 7.76 tons are highest among criteria pollutants and VOCs, accounting for about 1.1% of annual emission totals in San Miguel County. Reclamation activities would be limited to daytime hours, when air emissions are more easily dispersed because of strong turbulence. However, on occasion, 24-hr PM_{10} NAAQS exceedances at the project boundary or publicly accessible roads within the project area are anticipated when heavy activities would occur. During the day, westerly winds are predominant in the area, so reclamation activities would not cause high PM concentrations at nearby residences, which are located west or south of the Burro Mines Complex.

TABLE 4.1-1 Criteria Pollutants, VOCs, and CO_2 Emissions under Alternative 2 Compared with San Miguel County and National Ambient Air Quality Standards (NAAQS)

	Air Emissions (tons)						
Emission Source	CO	NO_x	VOCs	$PM_{2.5}$	PM_{10}	SO_x	CO_2
San Miguel County Total[a]	4,197	806	12,508	205	733	3.2	1.48×10^{8} [b] 7.12×10^{9} [c]
Reclamation Activities							
Fugitive Dust	–[d]	–	–	1.29	7.7	–	–
Engine Exhaust	0.33	0.64	0.05	0.09	0.09	0.001	133
Total[e]	0.33 (0.01%)	0.64 (0.08%)	0.05 (0.0004%)	1.38 (0.67%)	7.76 (1.1%)	0.001 (0.04%)	133 (0.0001%) (0.000002%)
Averaging Time	National Ambient Air Quality Standards (NAAQS)						
1-hr	35 ppm[f]	100 ppb[f]	–	–	–	75 ppb[f]	–
3-hr	–	–	–	–	–	0.5 ppm[g]	–
8-hr	9 ppm[f]	–	0.070 ppm[h,i]	–	–	–	–
24-hr	–	–	–	35 µg/m^3 [h]	150 µg/m^3 [h]	–	–
Annual	–	53 ppb[h]	–	12.0 µg/m^3 [f] 15.0 µg/m^3 [g]	–	–	–

Footnotes on next page.

TABLE 4.1-1 (Cont.)

[a] Total annual emissions in 2013, except for CO_2.

[b] Annual emissions in 2020 for Colorado on a CO_2e basis.

[c] Annual emissions in 2017 for the U.S. on a CO_2e basis.

[d] A hyphen denotes "not applicable."

[e] Values in parentheses are percentages of San Miguel County total emissions except for CO_2, which are percentages of total Colorado emissions (top line) and total U.S. emissions (bottom line).

[f] Primary standards, which provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.

[g] Secondary standards, which provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

[h] Both Primary and Secondary Standards.

[i] Ozone (O_3) standards. VOCs are precursors of O_3 along with NO_x.

Sources: Arnold et al. (2014); CDPHE (2019a); EPA (2019a); EPA (2020).

Among non-PM emissions, NO_x emissions from diesel combustion of heavy equipment and dump trucks are highest, about 0.08% of the annual emission total in San Miguel County. These low-level emissions are not anticipated to cause measurable impacts on regional O_3 or air quality related values (AQRVs), such as visibility or acid deposition, at nearby Class I areas. In addition, CO_2 emissions of 133 tons during reclamation are estimated to be about 0.0001% of Colorado GHG emissions in 2020 at 148 million tons (134 million metric tons) of CO_2e and 0.000002% of U.S. GHG emissions in 2017 at 7,117 million tons (6,457 million metric tons) of CO_2e (EPA 2019a; Arnold et al. 2014).

In summary, NAAQS exceedances for PM emissions could occur as a result of dust-generating activities and publicly accessible roads within the project area on occasion but are not likely to occur at nearby residences. The equipment that would be utilized include a bulldozer, a motor grader, a water truck, a sheepsfoot compactor, an excavator, a front-end loader, and several 12 yd^3 (9.2 m^3) capacity dump trucks. These air emissions are not likely to cause any measurable impacts on AQRVs at nearby Class I areas, considering the magnitude of emissions and the distance. Therefore, under Alternative 2, potential impacts on ambient air quality would be minor and temporary (only about 16 weeks), and potential impacts on climate change would be negligible. Air emission control measures (i.e., compliance measures) would be implemented to ensure compliance with environmental regulations. Other mitigation measures and best management practices [BMPs]) could be implemented to further reduce potential impacts (see Table 5-1).

4.2 NOISE

For noise, the ROI evaluated for potential impacts is within 2- to 3-mi (3- to 5-km) radius of the Burro Mines Complex. During reclamation activities at the Burro Mines Complex, the primary source of noise would be heavy equipment, such as dozers, excavators, and front-end loaders, and dump trucks. In general, the dominant noise source from most heavy equipment is a

diesel engine without adequate muffling. To estimate noise levels associated with reclamation activities, a composite noise level at a distance of 50 ft (15 m) from the reclamation site was estimated based on engine rated powers and load factors (Wood 1992; EPA 2004b), assuming that a number of heavy equipment and dump trucks are operating in close proximity to each other. Among several sound attenuation algorithms, only geometric spreading and ground effects are considered for simplicity (Hanson et al. 2006). The distances from the reclamation site are calculated to determine where noise levels would attenuate to the Colorado daytime maximum permissible limit of 55 dBA in a residential zone (C.R.S. 25-12-103, "Maximum Permissible Noise Levels") and the EPA guideline level of 55 dBA L_{dn} for residential areas (EPA 1974). Potential impacts are evaluated by comparing these distances with distances from the reclamation site to nearby human receptors (or residences) and are presented in Sections 4.2.1 and 4.2.2 below.

4.2.1 Alternative 1: No Action

Under Alternative 1, no action would be taken to reclaim any of the mine sites; thus, there would be no operations of heavy equipment and dump trucks around the Burro Mines Complex. Under this alternative, noise levels would continue at background levels, and consequently, it is anticipated that there would be no potential noise impacts on nearby residences.

4.2.2 Alternative 2: Reclamation of the Burro Mines Complex

To estimate noise levels associated with reclamation activities for Alternative 2, a composite noise level of 94 dBA at a distance of 50 ft (15 m) from the reclamation site is conservatively assumed, if one dozer, one excavator, one front end loader, and three dump trucks (half of six dump trucks in operation) are operating in close proximity to each other. When only geometric spreading and ground effects are considered (Hanson et al. 2006), noise levels would attenuate to about 55 dBA at 1,600 ft (490 m) from the reclamation site. If an 8-hr daytime work schedule is considered, the EPA guideline level of 55 dBA L_{dn} for residential areas (EPA 1974) would occur at about 1,100 ft (330 m) from the reclamation site (or at the relocation site). Therefore potential noise impacts above the EPA guideline could occur at distances shorter than 1,100 ft (330 m); however, other attenuation mechanisms, such as air absorption, screening effects (e.g., natural barriers by terrain features), and skyward reflection due to temperature lapse conditions typical of daytime hours, would reduce noise levels further. The closest residence from the Burro Mines Complex is about 2,200 ft (670 m) and one seasonal residence is located about 2,150 ft (650 m) from the relocation site. Both residences are a distance away from the locations where Colorado or EPA noise limits could be exceeded.

On occasion, noise levels could briefly exceed the Colorado limit at the nearby residences because of downward refraction of sound induced by vertical temperature inversion (typically lasting up to 1 hour after sunrise) if the reclamation activities would occur during early morning hours following a calm and clear night. Mitigation measures would be undertaken such that reclamation activities would not be started or would not be conducted at such time periods when there is a probability of exceeding the Colorado limits for nearby residences. Worthy of note is that noise from reclamation activities would be audible due to lower background noise level around the area, although noise levels at nearby residences would be less than Colorado or EPA limits.

Reclamation activities would typically occur during the day, when noise is better tolerated because of the masking effects of background noise during daytime. Most of the time, noise levels from reclamation activities are anticipated to be lower than the Colorado or EPA limits at nearby residences. Therefore, potential noise impacts on nearby residences would be minor and temporary (only about 16 weeks). Implementation of mitigation measures and BMPs (see Table 5-1) and adherence to noise management plans could further minimize potential impacts.

4.3 PALEONTOLOGICAL AND SOIL RESOURCES

The ROI evaluated is the Burro Mines Complex and any other areas on adjacent lands (e.g., unpaved access roads) that could be affected by the reclamation activities.

4.3.1 Alternative 1: No Action

There would be no impacts on paleontological resources and soil from Alternative 1 as no reclamation activities would be conducted.

4.3.2 Alternative 2: Reclamation of the Burro Mines Complex

Reclamation activities under Alternative 2 could result in adverse impacts on paleontological resources at the Burro Tunnel Mine, Burro No. 3 and No. 5 mine sites, and the relocation site, if present, because they would involve ground disturbances that could expose fossils, making them vulnerable to damage or destruction and looting/vandalism. Field surveys, conducted by a qualified paleontologist early in the reclamation process, would identify areas of moderate to high fossil-yield potential or known significant localities so that these areas could be avoided. In addition, DOE would notify the BLM of any fossil discoveries so appropriate measures could be taken to protect discoveries from adverse impacts (see Table 5-1). For this reason, it is anticipated that impacts on paleontological resources would be negligible to minor.

Reclamation activities under Alternative 2 would initially result in minor adverse impacts on soil resources because of ground disturbance. Ground disturbance could increase the potential for soil erosion and deposition by wind and water, potentially negatively affecting water quality in nearby ephemeral basins and drainages. Ground-disturbing activities would involve construction of an unpaved haul route, removing and/or recontouring the waste rock from the Burro Tunnel Mine site, spreading surface soil material over disturbed areas (using salvaged surface soil material from the mining site, if available); and seeding the disturbed areas.

Excavation and grading of surface soil materials (to enlarge the waste rock relocation site) would also occur at the relocation site. Direct adverse impacts would be minor because they would occur over a short duration and because existing access roads would be used, leading to minimal compaction and erosion of currently undisturbed areas. However, if subjected to high winds or intense rainfall, soils would likely remain susceptible to erosion throughout the (4 to 5 yr time frame (following completion of reclamation field activities) needed to reestablish vegetation at disturbed areas.

Soil contamination during reclamation activities could occur from fuel and oil releases related to the use of trucks and mechanical equipment. This impact, however, would be negligible given DOE's requirements for fuel spill prevention and cleanup.

In total, an estimated 19.0 ac (7.7 ha) would be disturbed temporarily under Alternative 2. In addition, it is estimated that 10,000 yd^3 (7,646 m^3) of surface soil material would be disturbed at the relocation site, and a limited amount of surface soil material would be disturbed at the Burro Tunnel Mine and Burro No. 3 and No. 5 mine sites. In the long-term, reclamation activities under Alternative 2 would result in greater benefits (e.g., slope stabilization, resistance to erosion, limited sheet flow and runoff), compared to Alternative 1, the No Action Alternative, because of the larger area that would be revegetated due to reclamation. Implementing compliance measures, mitigation measures, and BMPs (see Table 5-1) would reduce the potential for adverse impacts associated with these activities.

4.4 WATER RESOURCES

As described in Section 3.4, the ROI evaluated is primarily the Burro Mines Complex area, Lease Tract C-SR-13, the Dolores River, and its tributaries.

4.4.1 Alternative 1: No Action

4.4.1.1 Surface Waters and Floodplains

As discussed in Section 3.4.1, the Dolores River adjacent to and downstream from the Burro Mines Complex is currently not affected by any constituents (e.g., uranium and vanadium) associated with the waste rock based on 2018 state surface water quality assessment (CDPHE 2018a). The Burro Mines Complex is near Burro Canyon Creek, an intermittent stream that is contributing to the Dolores River. Potential soil erosion and degradation of the condition of the waste rock piles at the Burro Mines Complex due to the cumulative effects of rainfall events could contribute to increased sedimentation loading and lead to deterioration of the water quality of the Dolores River. Storm or flash flood related erosion has increased the sediment load within the river several times, as observed in September 2007 and again in August 2014. No floodplain impacts are expected as the Burro Mines Complex is not located within the floodplain of the Dolores River.

4.4.1.2 Groundwater

Under Alternative 1, the groundwater condition near the Burro Mines Complex would remain the same. There is limited information on groundwater quality in areas surrounding the Burro Mines Complex. Annual monitoring data for wells for the Slick Rock East and Slick Rock West sites, downgradient from the Burro Mines Complex indicate that the constituents related to uranium mining activities (e.g., uranium and vanadium) are below the MCL (DOE 2019a). This suggests that current conditions at the Burro Mines Complex have no impacts on groundwater.

4.4.1.3 Water Management

Under Alternative 1, the water resource would not be affected.

4.4.2 Alternative 2: Reclamation of the Burro Mines Complex

4.4.2.1 Surface Water and Floodplains

Under Alternative 2, the assumed total land area that would be disturbed is about 19.0 ac (7.7 ha). Reclamation activities could temporarily increase erosion and runoff by exposing unconsolidated materials and by compacting soils, especially under flash-flooding events (Nash 2002; BLM 2008). Soil erosion due to rainfall or flash flooding events could potentially lead to increased loading of sediments to the Dolores River. Pollutants could include sediment-associated compounds, chemical dust control compounds (e.g., magnesium chloride), fuels, and other chemicals used in reclamation (National Research Council 2012). However, the potential increase in soil erosion and runoff would be moderate and temporary given the relatively short reclamation period (i.e., 16 weeks) for Alternative 2 and the limited rainfall in the area. Further, the actual impact of soil erosion and runoff could be minimized through the implementation of compliance measures, mitigation measures, and BMPs (see Table 5-1).

Stormwater infrastructure would accommodate the permitting requirements for stormwater discharge according to state and federal regulations administered by the CDPHE. A stormwater management plan for the project would be prepared as part of the state's general construction permit requirements. While stormwater regulations are typically adequate to accommodate large flooding events, western Colorado has the potential for infrequent and localized flash flooding that could overwhelm even properly designed stormwater infrastructure (Nash 2002). An appropriate stormwater drainage system would need to be considered to route water away from the project areas to reduce the potential of soil erosion and runoff throughout the area of unconsolidated waste rock. The stormwater BMPs would be followed to minimize impacts related to stormwater (see Table 5-1).

Alternative 2 would affect Burro Canyon Creek at the proposed haul road crossing. A Nationwide Permit #14 (Linear Transportation Projects) from the U.S. Army Corps of Engineers would be applied to this crossing (Adams, T.R. 2020), therefore, appropriate permit protections would be applied. The stream crossing and other areas would also be subject to protections in the Stormwater Management Plan (described above). Additional stormwater BMPs would be implemented to minimize impacts related to stormwater and to ensure that environmental resources in and downstream of the channel are protected (see Table 5-1). The haul road would remain after completion of the project; it would be revegetated and stabilized to minimize erosion potential. Some erosion control structures would be installed on the slopes above Burro Canyon Creek, and the proposed haul road would be constructed near its unnamed tributary.

The potential decrease of surface water quantity in the Dolores River by constructing and improvement of sediment basins are considered temporary and negligible. The maximum runoff generated from the sediment basins taking into account the project area that includes the three mine sites, the relocation site, and other areas associated with the proposed project area, was estimated for this EA. Assuming an extreme scenario with a maximum monthly precipitation of 1.9 in (4.8 cm), the maximum runoff could be 0.1 ft^3/s, which would contribute 0.06% of the mean flow (177 ft^3/s) in the Dolores River near the site. The actual impact of water quality issues (e.g., sediment and pollutant loading) in runoff from the Burro Mines Complex would have a negligible effect on the water quality in the Dolores River.

During the relocation activities, the waste rock would be transported via the proposed new haul road across Burro Canyon Creek, which flows to the Dolores River, to the relocation site. To avoid any accidents that might release waste rock to the stream, compliance measures and BMPs would be implemented (see Table 5-1). Many of these are based on the guidelines proposed by the Colorado Division of Minerals and Geology (CDMG 2002) and by DOE's standard reclamation procedures outlined in the *Uranium Program Mineral Leasing Procedures Manual* (DOE 2011b).

No floodplain impacts are expected as the reclamation activities conducted under Alternative 2 would not occur within or affect the floodplain of the Dolores River.

In summary, the potential impacts from the reclamation activities would be minimal and temporary and could be further reduced or eliminated with implementation of mitigation measures and BMPs. Reclamation would be expected to reduce or minimize future potential runoff, erosion and sediment loading from the Burro Mines Complex, thereby protecting currently unaffected and acceptable surface water quantity and quality at the Dolores River.

4.4.2.2 Groundwater

Under Alternative 2, reclamation activities would include excavation to provide more space to accommodate the waste rock moved to the relocation site. However, the excavation would be limited and shallow in nature so that potential impacts to shallow aquifers are not expected. Based on information presented in Section 3.4, the scarcity of groundwater in shallow aquifers results from extremely low groundwater recharge because of low precipitation (12.5 in. [31.8 cm]) and from the high potential for evaporation (38 in. [97 cm]) in the area. Groundwater availability in the shallow aquifer is localized and varies from season to season. An intermittent spring was identified about 650 ft (198 m) southwest of the relocation site (see Figure 3.4-1) based on the USGS National Hydrography Dataset. Implementation of mitigation measures and BMPs (see Table 5-1) would further reduce or minimize potential groundwater impacts.

During the reclamation, although precipitation and surface overland flow are limited and temporal, it may increase a potential of infiltration downward to groundwater in the area of the relocation site. An appropriate stormwater drainage system or diversion ditches could be considered to route water away from the relocation site to reduce the potential groundwater recharge through permeable layers. Subsequent engineering designs would identify stormwater controls that would need to be implemented in accordance with CDPHE construction and stormwater permitting requirements.

Upon completion of the waste rock relocation, a surface cover consisting of surface soil materials of adequate thickness (typically 6 in [15 cm]) to support vegetation would be provided on the relocation site to divert precipitation water away from the area and reduce water from infiltration to groundwater underneath the waste rock. In accordance with state regulations and standards set by the CDWR, the measures could minimize the surface erosion and potential infiltration to groundwater.

4.4.2.3 Water Management

Water use under Alternative 2 would include that required for dust suppression over the area affected by reclamation activities. The portable water supply for workers, which is typically provided by project contractors from an off-site source, is estimated to be a total of 15,000 gal/month (0.05 ac-ft/month). For perspective, the amount of water use is about 0.7% of the current water use for mining and 0.14% of the current PWS in San Miguel County (Table 3.4-3, Section 3.4). The impact of water use on local water supplies would be minor. As far was water depletion impacts under Alternative 2, DOE's consultation with the USFWS regarding its Proposed Action during the preparation of this EA determined that consultation is not necessary as downstream impacts on endangered fish and their designated critical habitat from water depletion were evaluated in the August 13, 2013 BO issued by the USFWS (DOE 2014, Appendix E). In this BO, the USFWS provided DOE with the determination that water depletions less than 100 ac-ft in the upper Colorado River Basin is covered in its June 4, 2010 intra-Service BO. Additionally, it is not anticipated that the reclamation activities would affect existing water rights in the county.

4.5 HUMAN HEALTH

The ROI evaluated for potential human health impacts is within the 10-mi (16-km) radius of the Burro Mines Complex and the relocation site. As discussed in Section 3.5, three receptors (i.e., a resident, a recreationist, and a reclamation worker) were considered to have the potential to incur radiation and chemical exposure to the waste rock piles at the Burro Mines Complex and the relocation site. The analysis for a resident is hypothetical in the sense that such a receptor is not currently present as discussed in Section 3.5.

For the estimates of dose for the hypothetical resident and recreationist presented in this EA, a layer of 6 inches of soil was assumed to cover the surface of the reclaimed waste rock pile to facilitate the growth of vegetation on the surface. A thicker layer of cover would further reduce the dose estimates. Air dispersion modeling that evaluated a 10-mi radius of the Burro Mines Complex and the relocation site was performed to estimate the dispersion of radon, and airborne dust particles (assumed to contain radionuclides and chemical constituents from the waste rock piles) to the surrounding areas. The methodology used to estimate radon flux, particulate emissions, and doses from the waste rock piles is the same as that described in the ULP PEIS (DOE 2014). The methodology involves calculation of the radon flux using the RESRAD code as input to the CAP88-PC air dispersion model (DOE 2014).

Based on the assumption that there is secular equilibrium between long-lived parent radionuclides and their short-lived decay products, the base activity concentration of 70 pCi/g for U-238 was applied to Th-234, Pa-234m, and Pa-234, and the base activity concentration of 3.22 pCi/g assumed for U-235 was applied to Pa-231 and Ac-227. The vanadium concentration in the waste rock piles was assumed to be six times the total uranium concentration of 212 mg/kg.

4.5.1 Alternative 1: No Action

Under Alternative 1, the current conditions and locations of the waste rock piles would remain the same since no reclamation activities would be conducted. For a nearby resident or recreationist, the potential additional radiation exposure due to the waste rock piles would be a small fraction of that due to natural background radiation. Chemical exposure from the waste rock piles is unlikely as the waste rock piles have settled over the years and released of dust should be minimal.

The evaluation of potential exposure to radiation and chemicals, and estimates for physical injury for reclamation workers are not needed for Alternative 1, the No Action Alternative, as no activity would be conducted and thereby, no reclamation workers would be involved.

4.5.2 Alternative 2: Reclamation of the Burro Mines Complex

For Alternative 2, the potential radiation exposure associated with the waste rock materials for a hypothetical resident, recreationist, and reclamation worker was estimated. For the hypothetical resident and recreationist, chemical exposure is not expected to occur because cover material used to encourage vegetation as part of the reclamation designs would prevent emission of particulates. For reclamation workers, in addition to radiation exposure, chemical exposure and physical injuries were estimated.

4.5.2.1 Exposure to Radiation

To estimate the radiation dose, the waste rock removed from the Burro Tunnel Mine site was assumed to form a pile encompassing an area of 127,000 ft^2 (11,800 m^2) with an average height of about 13 ft (4 m) at the relocation site. Air dispersion modeling was then conducted to calculate the air concentration and ground surface deposition of radioactivity at various distances from the toe of the reclaimed waste rock pile based on the estimated emission rate of particulate and radon from its surface. The resulting air concentration and ground surface deposition were then used to estimate the radiation dose to the hypothetical resident at the downwind locations.

Hypothetical Resident. Table 4.5-1 presents the calculated radiation dose due to the inhalation of radon (the primary exposure pathway) for the hypothetical resident receptor located in the prevailing wind direction from the reclaimed waste rock pile. As indicated in the table, the dose decreases farther away from the reclaimed waste rock pile.

The estimates indicate that the potential dose for a hypothetical resident would be about 0.74 mrem/yr at 500 m (1,650 ft) from the toe of the reclaimed waste rock pile. This dose is small compared with the100 mrem/yr standard for the protection of members of the general public (DOE 2011a); and is essentially not distinguishable from that due to natural background radiation.

Recreationist. The potential radiation dose that could be incurred by a recreationist camping on top of the reclaimed waste rock pile for two weeks was estimated to be 4.3 mrem. Direct external radiation is the primary exposure pathway contributing about 90% of the dose, followed by the radon inhalation pathway. The potential radiation dose for the recreationist is also small compared to that due to natural background radiation and the100 mrem/yr standard for the protection of members of the general public (DOE 2011a).

TABLE 4.5-1 Potential Radiation Doses to a Hypothetical Resident from the Reclaimed Waste Rock Pile

Distance (m)	Dose[a] (mrem/yr)
500	0.74
1,000	0.28
1,500	0.16
2,000	0.11
2,500	0.08
3,000	0.06
4,000	0.05
5,000	0.03

[a] The dose estimates correspond to a Ra-226 concentration of 70 pCi/g for waste rocks. Doses are primarily from the radon pathway.

Reclamation Worker. For reclamation workers, the pathways of exposure due to the waste rock pile would include external radiation, inhalation of particulates, inhalation of radon, and incidental ingestion of particulates. The radiation dose rate associated with the reclamation activities was estimated assuming that the reclamation worker was on top of the waste rock pile without a soil cover and only at 3 ft (1 m) from the radiation source (the waste rock). This calculation indicates that the dose would be about 0.086 mrem/hr based on 70 pCi/g of Ra-226.

The construction period for Alternative 2 is about 16 weeks or 80 workdays. For this analysis, it was assumed that the reclamation worker is near or on top of the reclaimed waste rock pile for half of the construction period (i.e., 40 days for 8 hours per day). For the other half of the construction period, it was assumed that the reclamation worker would be performing other reclamation activities that would not involve being in close proximity to the waste rock. The total dose incurred by the reclamation worker was estimated to be 28 mrem. This estimate is less than 2% of the dose limit recommended by the ICRP for occupational workers which is given as an effective dose of 20 millisievert per year (mSv/yr) or 2,000 mrem/yr averaged over 5 years (ICRP 2007). Additionally, the actual dose incurred by the reclamation worker would be expected to be less than the estimated total dose of 28 mrem as the analysis does not take credit for worker safety practices that would be implemented.

Table 4.5-2 provides a summary of the dose estimates for the potential receptors evaluated for Alternative 2.

TABLE 4.5-2 Estimated Doses for Receptors Evaluated for Alternative 2

Receptor	Primary Exposure Pathway	Exposure Assumption(s)	Dose[a]
Hypothetical resident (500 m from the toe of the waste rock pile)	Inhalation of radon	350 days per year at residence	0.7 mrem/yr
Recreationist	External radiation	14 days camping on top of the waste rock pile	4.3 mrem
Worker	External radiation	40 workdays 8 hours per day	28 mrem

[a] The estimated doses are based on a Ra-226 concentration of 70 pCi/g assumed for the waste rock.

4.5.2.2 Chemical Exposure and Physical Injuries

Hypothetical Resident and Recreationist. Chemical exposure is not expected to occur because cover material used as part of the reclamation designs (i.e., for seeding) would minimize release of dust.

Reclamation Worker. The potential chemical hazard index to a worker was estimated to be 0.33 and 0.02 from vanadium and uranium, respectively. These estimates are based on 212 mg/kg for total uranium and 1,272 mg/kg for vanadium in the waste rock, assuming 40 days, 8 hours per day, working near a waste rock pile. The pathways of exposure analyzed included inhalation of particulates and incidental ingestion. Because the hazard indices are less than 1, no adverse health effect is expected for the worker.

The potential number of physical injuries and fatalities for conducting reclamation activities was also estimated for the reclamation workers. The estimate was based on statistics from the surface mining industry. That is, using the 10-yr averages from annual estimates compiled by the National Institute for Occupational Safety and Health (NIOSH) from Mine Safety and Health Administration (MSHA) data. For the period from 2008 through 2017, the injury and fatality rates for the entire surface mining industry in the United States were 1.53 per 100 full-time equivalent (FTE) and 10.2 per 100,000 FTE, respectively, where 1 FTE represents 2,000 hr (NIOSH 2019a, b).

For Alternative 2, based on the assumptions that 10 workers (excluding truck drivers) would be needed to conduct all the activities and that each worked for 80 days for a total of 640 hours, the number of injuries and fatalities among the workers was estimated to be 0.049 and 0.00033, respectively. Therefore, no injury or fatality is expected to occur among the workers performing reclamation activities.

4.6 ECOLOGICAL RESOURCES

The ROI evaluated addressed species within a 0.5-mi (0.8-km) radius of the Burro Mines Complex and portions of the Dolores River downstream of the complex potentially affected by water depletion and sediment load. The Dolores River and Colorado River were also evaluated for presence of threatened and endangered species and designated habitat. Potential environmental impacts on vegetation, wetlands, wildlife, aquatic biota, and special status species for the two alternatives are discussed in the following sections.

4.6.1 Alternative 1: No Action

4.6.1.1 Vegetation

No reclamation activities would occur under Alternative 1. The existing vegetation at the Burro Mines Complex area creates conditions conducive to long-term erosion and the establishment or spread of invasive or noxious weeds. Therefore, ongoing localized minor adverse impacts on vegetation would be expected to continue. These would include indirect impacts on areas surrounding the Burro Mines Complex from deposition of fugitive dust, erosion, sedimentation, and the introduction of non-native species, including noxious weeds.

Impacts on vegetation under Alternative 1 (e.g., establishment and spread of noxious weeds and limited vegetation establishment) are expected to be minor but long-term.

4.6.1.2 Wetlands

Jurisdictional wetlands are not present within the Burro Mines Complex. No direct impacts to nearby wetlands associated with the Dolores River would occur under Alternative 1. However, there is the potential for long-term indirect impacts associated with erosion of sediment from the waste rock piles to impact the nearby wetlands associated with the Dolores River.

4.6.1.3 Wildlife

Existing habitat characteristics and the species supported by the habitats would be left unchanged under Alternative 1; these generally consist of previously disturbed wildlife habitat areas. It could take years for more productive habitat conditions to become established in areas not improved by reclamation activities. Effects to wildlife under this alternative would be negligible.

4.6.1.4 Aquatic Biota

Although no direct impacts on aquatic biota would occur under Alternative 1, there is the potential for long-term indirect impacts associated with erosion of sediment from the waste rock piles into the Dolores River and associated aquatic habitats.

4.6.1.5 Special Status Species

Currently disturbed habitat at the Burro Mines Complex provides minimal habitat conditions suitable for special status species. No direct impacts on special status species would occur under Alternative 1. If special status species are present, indirect effects would be similar to those described above for vegetation, wildlife, and aquatic biota.

4.6.2 Alternative 2: Reclamation of the Burro Mines Complex

4.6.2.1 Vegetation

Potential impacts on vegetation from Alternative 2 include clearing and trampling of vegetation during initial reclamation activities. Impacts would be minor and short-term. Habitats affected by reclamation are generally previously disturbed areas with lower ecological value, although some less disturbed habitats could be affected near the outer margins of the areas being reclaimed.

Overall, the surface would be roughened (i.e., pocked or scarified) over 19.0 ac (7.7 ha), and seeded with a native seed mix identified through coordination with cooperating agencies. Successful reclamation would establish more diverse, native plant communities on the disturbed areas; however, the successful re-establishment of some plant communities such as sagebrush shrubland or piñon-juniper woodland could require decades.

Reclamation activities could result in indirect, short-term impacts on vegetation in adjacent areas because of deposition of fugitive dust, erosion, sedimentation, and the introduction of non-native species, including noxious weeds. However, because of the small areas involved and short duration of reclamation activities, these would be short-term and minor. Local, long-term impacts could result from the establishment of invasive species. Mitigation measures, such as applying dust suppressants, creating gentle slopes, controlling runoff and sediment, and controlling invasive species, would mitigate these potential impacts. The potential degree of indirect effects would decrease with increasing distance from areas of the Burro Mines Complex where direct effects from reclamation would occur.

Deposition of fugitive dust is linked to reduced photosynthesis and productivity in nearby plant communities. Prolonged exposure to fugitive dust can alter plant community composition, reducing the occurrence of species less tolerant of disturbance and resulting in habitat degradation. However, because of the short duration of reclamation activities (16 weeks), the deposition of fugitive dust under Alternative 2 would constitute a short-term, localized negligible to minor impact.

Soils disturbed by equipment during reclamation could be subject to erosion and sedimentation. Soil erosion might also occur in areas where vegetation or biological soil crusts are disturbed by equipment or foot traffic. Soil compaction from the operation of heavy equipment could reduce the infiltration of precipitation or snowmelt and result in increased runoff and subsequent erosion. Erosion and associated sedimentation could result in the localized loss of plant communities in areas where surface soil materials were lost or where sediments accumulate, including areas outside the Burro Mines Complex. Effects might include mortality or reduced growth of plants, changes in species composition, or reduced biodiversity. Species more tolerant of disturbance, including invasive or noxious weed species, might be favored in affected areas.

Seeds of invasive or noxious weed species could be inadvertently brought to the site by vehicles or equipment used during reclamation and revegetation. Invasive species or noxious weeds might also colonize disturbed soils from established populations in nearby areas. The establishment of invasive species or noxious weeds might slow or prevent the establishment of desired plant communities but would be minimized by weed control measures. Reclaimed areas would be monitored until vegetation establishment was successful, and invasive species would be eradicated immediately. Therefore, the spread of these species would be minimized. Based on the assumption that invasive species would be successfully treated, no lasting effects from invasive species would occur and improved vegetation cover would be established at areas being reclaimed. In addition, any noxious weeds or invasive species present in areas to be reclaimed would be replaced by native plant communities over the long term, reducing seed sources for invasive species in adjacent areas.

Overall, the impacts of reclamation activities from Alternative 2 on vegetation would be negligible to minor–adverse in the short-term and beneficial in the long-term. Compliance measures, mitigation measures, and BMPs (see Table 5-1) would further reduce the potential impacts on vegetation.

4.6.2.2 Wetlands

No jurisdictional wetlands are present within the project area. No direct impacts to nearby wetlands associated with the Dolores River would occur under Alternative 2. However, minor sediment could run off from the disturbed areas during reclamation and potentially reach the Dolores River wetlands. These impacts would be negligible and short-term, as revegetation would reduce the potential for sediment as plant cover becomes established.

4.6.2.3 Wildlife

Reclamation activities would affect wildlife by altering existing habitats and the species supported by those habitats. The Burro Mines Complex affected by Alternative 2 generally consists of previously disturbed wildlife habitat areas. The Burro Mines Complex does not provide high-quality habitat for wildlife species. Small tracts of adjacent undisturbed habitats might also be affected by reclamation activities. Acreage of current habitat potentially affected by reclamation activities for Alternative 2 totals 19.0 ac (7.7 ha).

Reclamation is expected to take about 16 weeks and would be scheduled so that there would be no activities conducted during the period of December 1 through May1 (see Section 4.6.2.5). Therefore, winter habitat use by big game, including desert bighorn sheep during lambing season (see also Section 4.6.2.5), and other wildlife species would not be affected. Although it's unlikely, unavoidable circumstances (e.g., delayed start, weather issues) could impact the reclamation schedule to extend work beyond December 1. In this event, an exception may be requested through the Colorado Parks and Wildlife (CPW). An exception may be granted if CPW determines that conditions allow for reclamation activities to continue but are also still protective of the desert bighorn sheep. Otherwise, reclamation activities would be halted until restrictions can be lifted. The mitigation measures described in Table 5-1 for special status species would also be followed.

During reclamation, localized obstructions of wildlife movement could occur. Although habitats adjacent to reclamation activities might remain unaffected, wildlife might tend to avoid these areas because of noise and visual disturbance. Avoidance would be a short-term impact. Traffic and equipment operations during reclamation and revegetation could result in low levels of wildlife mortality but are not expected to cause population-level impacts.

Some fuel and chemical spills could also occur, but they would generally be confined to access roads and project site areas. The probability of wildlife exposure to such spills would be small and limited to a few individuals. Also, a spill prevention and response plan would minimize the potential for, and the impacts from, any spills.

The above-mentioned impacts associated with reclamation activities would last primarily during the period of active reclamation (16 weeks). Overall, the localized impacts on wildlife would be negligible to minor. Post-reclamation conditions should improve forage and/or habitat for wildlife as revegetation of the reclaimed areas occurs. Reclamation of the Burro Mines Complex area is expected to result in a relatively small, but beneficial, increase in wildlife habitat on the 19.0 ac (7.7 ha) reclaimed (area reseeded).

4.6.2.4 Aquatic Biota

Under Alternative 2, there would be a localized disturbance to at least 240 ft^2 (22 m^2) of an ephemeral stream to create a low water crossing for the haul road from the Burro Tunnel Mine to the relocation site. Burro Canyon Creek is an ephemeral stream in the project area and does not support aquatic biota, even during periods of precipitation.

Reclamation of the Burro Mines Complex would disturb up to 19.0 ac (7.7 ha), which could potentially result in erosion and sediment deposition in the Dolores River. However, the potential for sediments (including those that could contain radioactive or chemical contaminants) to enter the Dolores River during reclamation is unlikely, particularly with the appropriate use of compliance measures, mitigation measures, and BMPs to control erosion (see Table 5-1). Areas reclaimed would become less prone to erosion over time because site grading would be completed, and more vegetative cover would be established. Following reclamation, the potential for erosion would be less than what currently exists at the Burro Mines Complex (Alternative 1). Overall, impacts on aquatic biota in the Dolores River near the project area from Alternative 2 would be negligible.

4.6.2.5 Special Status Species

Impacts on special status species from reclamation activities at the Burro Mines Complex are fundamentally similar to those described for impacts on more common and widespread plant, aquatic, and wildlife species described above. However, because of their low population levels, special status species may be more sensitive to impacts than more common and widespread species. Low population size makes these species more vulnerable to the effects of habitat fragmentation, habitat alteration, habitat degradation, human disturbance and harassment, mortality of individuals, and the loss of genetic diversity.

As discussed in Section 3.6.5.1, the Burro Mines Complex is within the range of seven ESA-listed species, including three bird species (Gunnison sage-grouse, Mexican Spotted Owl, and Yellow-billed cuckoo) and four fish species (bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker). The USFWS issued a BO for the ULP lease tracts in 2013 (DOE 2014, Appendix E) and amended it in 2017 (Ribeiro 2016; Timberman 2017). Based on these documents, the proposed work at the Burro Mines Complex would not significantly affect the three federally listed bird species or their designated critical habitat. The USFWS has identified that water depletions may affect the four fish species. However, the volume of construction water for the reclamation activities would be small enough to be mitigated by USFWS activities, as described in the 2013 BO (DOE 2014, Appendix E).

DOE consulted with the USFWS and it agreed with DOE's determination that consultation for this project is not necessary (Vendramel 2019). Impacts of reclamation activities to threatened or endangered species or their designated critical habitat were evaluated in the BO issued for the ULP (DOE 2014, Appendix E). For four of the special status species listed in Table 3.6-3, reclamation activities are unlikely to occur near their habitats. These species are Northern leopard frog, Northern Goshawk, White-faced Ibis, and Northern river otter. If present, impacts on the Naturita milkvetch could occur through direct effects such as mortality and habitat disturbance, as well as indirect effects such as runoff, sedimentation, and dispersion of

fugitive dust. Implementation of mitigation and minimization measures would reduce the potential for impact.

For several special status wildlife species, impacts could occur through direct effects from habitat disturbance (e.g., foraging habitat or movement corridor) and from behavioral disturbance (e.g., from the presence of workers and noise). In order to meet Guideline 2.4.54 of the BLM Tres Rios Field Office RMP (BLM 2015), projects or activities that adversely impact desert bighorn sheep severe winter range and winter concentration areas should be limited or avoided using access restrictions from December 1 through April 15. Similarly, in order to meet Guideline 2.4.53, projects or activities that adversely impact desert bighorn sheep production areas should be limited or avoided from February 1 through May 1.

Although nesting of Bald Eagle, Golden Eagle, and other raptor species are not expected to occur at the Burro Mines Complex; raptor nest surveys should be conducted within ½ mile of the project area prior to reclamation to ensure compliance with the Migratory Bird Treaty Act and the Bald and Golden Eagle protection Act. Also, to meet Guideline 2.4.39 of the BLM Tres Rios Field Office RMP (BLM 2015), the recommended buffer zones and seasonal restrictions for Colorado's raptors (see also CPW 2020) should be followed. For most of the other special status wildlife species, direct impacts could occur from both habitat disturbance and, although less likely, mortality (e.g., if individuals are present and are unable to avoid reclamation activities). These species include the big free-tailed bat, fringed myotis, Gunnison's prairie dog, spotted bat, and Townsend's big-eared bat.

For the bluehead sucker, flannelmouth sucker, and roundtail chub, impacts could occur through indirect effects such as runoff and sedimentation into the Dolores River.

Based on habitat conditions present at the Burro Mines Complex, no adverse population-level impacts due to reclamation are expected for any of the special status species. Following applicable Terrestrial Wildlife Guidelines in the BLM Tres Rios Field Office RMP (BLM 2015); and implementation of compliance measures, mitigation measures, and BMPs (see Table 5-1) would further reduce any potential for reclamation of the Burro Mines Complex to have adverse impacts on the special status species discussed above.

4.7 LAND USE

The ROI evaluated included the land within a 10-mi (16-km) radius of the Burro Mines Complex, with an emphasis on specially designated public land areas.

4.7.1 Alternative 1: No Action

Under Alternative 1, no land use impacts are expected as no reclamation activities would be conducted.

4.7.2 Alternative 2: Reclamation of the Burro Mines Complex

Under Alternative 2, as mine operations could continue at the Burro Tunnel Mine and as there are currently no active land use activities at Burro No. 3 and No. 5 and the relocation site, no land use impacts due to reclamation are expected.

4.8 SOCIOECONOMICS

The ROI evaluated includes Dolores, Montrose, and San Miguel Counties. For the purposes of this EA, the economic impacts were measured in terms of employment and income. Direct impacts would include wages and salaries as well as the purchase of goods and services required for reclamation. Indirect and induced impacts would include project wages and salaries as well as the purchase of goods and services required for reclamation that would subsequently circulate through the economy, creating additional employment and income. Sales of goods and services by retailers in the ROI, together with the purchase of equipment and materials required for reclamation, would provide new sources of indirect employment and income to ROI residents.

As discussed in Section 3.8, the ROI contains large acreages of public lands that are both state and federally managed. These public lands include designated SRMAs (including the Dolores River SRMA), NCAs, WSAs, the Unaweep-Tabeguache Scenic and Historic Byway, State Parks, National Forests, and other areas used for recreation. Recreation and tourism together are an economic driver in the area, with substantial indirect impacts on the local economy.

TABLE 4.8-1 Socioeconomic Impacts of Reclamation in the ROI under Alternative 2

Parameter	Reclamation
Employment (no.)	
Direct	10
Indirect	4
Total	14
Income[a]	
Total	0.45
In-migrants (no.)[b]	0
Vacant housing (no.)[c]	0
Local community service employment[d]	
Teachers (no.)	0
Physicians (no.)	0
Public safety (no.)	0

[a] Unless indicated otherwise, values are reported in $ million 2020.

[b] Reclamation would not result in anyone migrating to the ROI.

[c] Reclamation would not affect vacant rental housing or vacant owner-occupied housing.

[d] Reclamation would not require additional local community employment.

4.8.1 Alternative 1: No Action

Under Alternative 1, there would be no socioeconomic impacts (e.g., no impacts on the local economy and tourism) as no reclamation activities would be performed.

4.8.2 Alternative 2: Reclamation of the Burro Mines Complex

The potential socioeconomic impacts from reclamation activities and relocation of the waste rock materials are expected to be minor. Reclamation would require 10 direct jobs for a project duration of 16 weeks. Reclamation would generate four indirect and induced jobs (see Table 4.8-1). In total, reclamation activities would constitute 0.03% of total employment in the ROI, which comprises Dolores, Montrose and San Miguel counties. Reclamation of the waste rock materials would also produce $0.45 million in income. Based on the available labor supply in the ROI, the current workforce could meet the demand for labor necessary for reclamation; therefore, in-migration of workers or families may not be required. No additional teachers, physicians, or public safety workers would be required.

It is difficult to estimate the impact of any activity on recreation because it is not always clear how it could affect recreational visitation and nonmarket values (i.e., the value of recreational resources for potential or future visits). Impacts on recreation in the area that would

result from reclamation activities are likely to be minor. Because reclamation would require such a small workforce, it is unlikely that traffic would affect recreational activities in the area. Reclamation does not require tall structures; therefore, the visual impacts would be limited. Reclamation ground-disturbing activities are estimated to last only 16 weeks. The shortened timeline, small workforce, and absence of uranium mining would likely result in a minor impact on recreation and tourism in the ROI.

4.9 ENVIRONMENTAL JUSTICE

For potential impacts on environmental justice, the ROI analyzed is for a 10-mi (16-km) radius of the Burro Mines Complex.

4.9.1 Alternative 2: Reclamation of the Burro Mines Complex

As discussed in Section 3.9, there are no disproportionate low-income or minority populations within the 10-mi (16-km) radius of the Borrow Mines Complex. Therefore, reclamation of the Burro Mines Complex under Alternative 2 would have no disproportionate socioeconomic or human health and safety impacts on low-income and minority populations. Similarly, there would be no environmental justice impacts associated with water use, subsistence use, or visual resources.

4.10 TRANSPORTATION

For transportation, the ROI analyzed accounted for the haul roads including county and state roads associated with the reclamation of the Burro Mines Complex.

4.10.1 Alternative 1: No Action

Under Alternative 1, no impacts on transportation are expected as no reclamation activities would be conducted.

4.10.2 Alternative 2: Reclamation of the Burro Mines Complex

For Alternative 2, no changes in current traffic trends near the uranium lease tract are anticipated because no significant supporting truck traffic or equipment moves would occur, and only about 10 reclamation workers would be commuting to the site on a regular basis during reclamation activities. This additional traffic is not a significant increase in the average annual daily traffic of 220 vehicles on SH 141 and would not lead to any issues with traffic flow in the area.

The potential impacts (injuries and fatalities) associated with waste rock material transportation would be vehicle-related as a result of the truck traffic on affected routes. However, the roadways to be used would be improved gravel haul roads that do not normally experience regular commercial or passenger vehicle traffic. A rough approximation of the potential injuries and fatalities due to the waste rock material transportation can be estimated using statistics from the surface-mining industry. Ten-year averages from annual estimates compiled by NIOSH from MSHA data were used.

For the period from 2008 through 2017, the injury and fatality rates for the entire surface mining industry in the United States were 1.53 per 100 FTE and 10.2 per 100,000 FTE, respectively, where 1 FTE represents 2,000 hr (NIOSH 2019a, b). The fractions of the impacts related to haulage averaged over the same 10-year period were 0.308 and 0.353 for injuries and fatalities, respectively (NIOSH 2019c, d).

Transportation of the waste rock material from the Burro Tunnel Mine site is estimated to involve approximately 10 workers over a 16-week period. Based on this information, the total number of estimated worker hours during transportation of the waste rock material to the relocation site from the Burro Tunnel Mine is 6,400 hr. The estimated number of injuries and fatalities due to haulage of the waste rock materials is less than one person (i.e., 0.004 and 0.0001, respectively). Thus, no transportation-related injuries or fatalities are expected under Alternative 2.

Project access of the portion of CR10S that would need to be traversed during the transport of waste rock from the Burro Tunnel Mine to the relocation site would adhere to specifications in a Special Use Permit from San Miguel County.

4.11 CULTURAL RESOURCES

As discussed in Section 3.11, the ROI evaluated included the Burro Mines Complex and any other areas on adjacent lands that could be affected by the reclamation activities.

4.11.1 Alternative 1: No Action

Impacts on historic features present at the Burro Mines Complex are not expected under this alternative. The historic metal ore-bin load-out structure that is considered a historic property would be left in place, and no ground-disturbing activities are proposed. As is the case with cultural resources in any location, adverse impacts from vandalism, whether accidental or on purpose, could occur in areas used for recreation. Cultural resources are also at risk from erosion from natural weather events or recreational activities.

4.11.2 Alternative 2: Reclamation of the Burro Mines Complex

Based on the Section 106 consultation that was conducted (see Appendix F), the Colorado SHPO concurred that no potential adverse impacts to historic features present at the Burro Mines Complex would be expected under Alternative 2 (See Appendix F, Table F-1, Correspondence item #10) . The reclamation design for Alternative 2 involves removal of waste rock from the upper levels of the Burro Tunnel Mine waste rock pile only. No waste rock at Burro No. 3 and No. 5 waste rock piles would be removed. Six existing sediment basins at the Burro Mines Complex (including those below the Burro No.3 and No.5 mine sites) would be improved to mitigate the potential for sediment erosion. Two new sediment basins would be constructed (one below Burro No. 3 and one below the Burro Tunnel Mine site).

The waste rock remaining at the Burro Tunnel Mine would mimic the 1970s era and would support the historical integrity of this mining district consistent with consultation and agreements with the Colorado SHPO (see Appendix F). Essentially, Alternative 2 limits removal of waste rock to only what is necessary to provide additional long-term stability to minimize

future erosion potential, thus, avoiding the loss of integrity of location, setting, feeling associated with the waste rock piles.

Under Alternative 2, key features of the historic mining district such as the historically significant buildings and structures of the mine would be avoided. Other historic onsite features including an ore bin, a tunnel sized for trackless vehicles, multiple vertical shafts, support structures, support building foundations, an air and water line, major portions of a large ventilation system, and one steel headframe with associated ore and waste rock bins would also be retained.

4.12 VISUAL RESOURCES

As indicated in Section 3.12, the ROI evaluated for potential impacts to visual resources is within the 25-mi (40-km) radius of the Burro Mines Complex. The viewshed analysis showed very few areas that may be subject to visual impacts from reclamation activities conducted at the Burro Mines Complex. The actual acreage would likely be even smaller than that indicated by the analysis because of potential screening of views of the lease tracts by vegetation, structures or topography. In addition, a viewer would have to be present within the percentage of the SVRA that has visibility of the activities being conducted at the Burro Mines Complex.

A total of 1,381ac (559 ha; 0.2%) of the Dolores River SRMA has visibility of the Burro Mines Complex, mostly at 0–5 mi (0–8 km). Individuals within this acreage will likely have detailed views of any activity taking place at the Burro Mines Complex. However, no part of the Burro Mines Complex is visible from the Slick Rock Boat Launch KOP.

Over the years, mining activities have altered and modified the landscape throughout the Burro Mines Complex. Impacts include land scarring, the modification of landforms, construction of mining structures and roadways, and the increase of activity in mine locations.

4.12.1 Alternative 1: No Action

Under this alternative, there would be no change to the current levels of contrast or visibility of the Burro Mines Complex from the Dolores River SRMA.

4.12.2 Alternative 1: No Action

Under Alternative 1, no environmental justice impacts are expected as no reclamation activities would be conducted.

4.12.3 Alternative 2: Reclamation of the Burro Mines Complex

Recontouring of the waste rock pile at the Burro Tunnel Mine site would modify the general form, line, and texture of the manmade debris pile. This effort is meant to make the waste rock pile blend in better with the surrounding landform. Although pocking may be initially visually unappealing, over the long term (2 to 5 yr), alternative contrasts in line, color, and texture associated with the erosion control and seeding and revegetation efforts would begin to decrease as vegetation became established in reclaimed areas. There is a chance that invasive species may colonize reclaimed areas; this occurrence likely would produce contrasts of color

and texture over the short term, until infestations were controlled. This alternative also includes the collection and disposition of trash and debris.

Reclamation activity requires work crews, vehicles, and equipment, each of which might produce temporary visual impacts. For instance, traffic involving small vehicles to allow worker access and traffic involving large equipment used for reclamation activities would occur. The movement of workers and heavy machinery would produce visible activity and dust in dry soils. The suspension and visibility of dust would be influenced by the frequency and density of traffic, vehicle speeds and weights, road surface materials, and weather conditions. Visual impacts from truck-created dust typically would be localized to the unpaved roads (BLM 2011).

Temporary parking for vehicles would be needed at or near work locations. Unplanned and unmonitored parking could expand these areas, producing visual contrast from suspended dust and loss of vegetation. Some of the reclamation equipment could also produce emissions during operation and thereby create visible exhaust. In addition, lighting might be needed around work areas. Security and other lighting around and on support structures (e.g., temporary trailers) could contribute to light pollution. These impacts are expected to be temporary but could influence recreationists' or travelers' perception of the area if they are present during reclamation activities.

The construction of a new road might introduce minor visual contrasts to the landscape, depending on the route selected relative to surface contours and on the width, length, and surface treatment of the road. The reclamation of the waste rock pile at the Burro Tunnel Mine site, and expansion of the relocation site area would create greater contrast of line, form, and texture against the surrounding landscape. However, the impacts would be confined to this one area rather than spread throughout the site.

Minimal contrasts may be visible from the Dolores River SRMA, if observers happen to be within the 1,381 ac (559 ha) of the Dolores River SRMA that have views of the Burro Mines Complex. These locations are less than 0.2% of the total acreage of the Dolores SRMA. Visible contrasts from the Slick Rock Boat Launch are non-existent.

In addition, although reclamation of the Burro Mines Complex may not replicate pre-mining conditions or the historic nature that it has recently been determined to be, this effort is meant to make the complex blend in better with the surrounding landform. Reclamation of the Burro Mines Complex would meet the objectives for VRM Class II.

4.13 WASTE MANAGEMENT

As described in Section 3.13, waste other than the waste rock that are the subject of reclamation activities could be generated. Such waste would generally be in the category of non-hazardous solid waste such as debris, miscellaneous trash, and sanitary waste from portable facilities.

4.13.1 Alternative 1: No Action

Alternative 1 is not expected to generate waste as no activity would be conducted.

4.13.2 Alternative 2: Reclamation of the Burro Mines Complex

Potential impacts on waste management practices (described in Section 3.13) for non-hazardous solid waste (e.g., miscellaneous trash and sanitary waste from portable facilities) generated during reclamation activities under Alternative 2 are expected to be minor. Disposal capacity at permitted landfills would be adequate to accommodate any waste generated that would need to be transported off-site. A spill prevention and response plan would be followed to minimize the potential for, and the impacts from, fuel stored and used onsite for the various equipment needed for the reclamation activities.

5 MEASURES TO MINIMIZE ENVIRONMENTAL IMPACTS

Table 5-1 presents compliance measures needed to fulfill regulatory requirements associated with the reclamation of the Burro Mines Complex. Mitigation measures and BMPs are also listed in Table 5-1 to provide additional measures that would further reduce the potential impacts discussed in Chapter 4 of this report. These measures would be considered during the design or planning of the reclamation project.

TABLE 5-1 Measures Identified to Minimize Potential Impacts from Reclamation of the Burro Mines Complex

Measure Description	Compliance Measure	Mitigation Measure	BMP
Reduce dust emissions and air emissions.			
• Apply water or chemical suppressants on unpaved haul roads, disturbed surfaces, and temporary stockpiles, and during dust generating activities.	X		
• Ensure all heavy equipment meets emission standards as required.	X		
• Limit idle time of vehicles and motorized equipment.			X
• Wheeled and tracked vehicles and existing roads shall be used when practical to limit soil disturbance.			X
Identify and protect paleontological resources.			
• Determine and implement appropriate measures to mitigate adverse effects on significant paleontological resources discovered as a result of reclamation activities. Notify other agencies (e.g., Colorado DRMS, BLM) of any paleontological resources discovered, as appropriate. Operations may continue if activities can avoid further impacts on the fossil discovery or can be continued elsewhere.		X	
Reduce noise-related impacts.			
• Maintain noise level below Colorado maximum permissible limits of 55 dBA during the day (7 a.m.–7 p.m.) and of 50 dBA at night (7 p.m.–7 a.m.), and below EPA guideline level of 55 dBA L_{dn} at receptor location.	X		
• Maintain equipment in good working order in accordance with manufacturer specifications.			X
Protect soils from erosion; protect local surface waterbodies from contamination and sedimentation; and protect local aquifers from contamination.			
• Avoid creating excessive slopes during excavation; use special construction techniques, where applicable, in areas of steep slopes, erodible soil, and stream channel crossings.		X	
• Apply all dust control in accordance with appropriate laws and regulations; ensure that dust suppression chemicals are not sprayed in or near surface waters.	X		
• Ensure that applicable local or state permits and stormwater management plan associated with land disturbance and discharges are completed.	X		
• Ensure that all dredge and fill requirements and applicable permits are fulfilled for drainage crossing.	X		
• Ensure operators comply with DRMS and CDPHE requirements regarding surface water and groundwater contamination.	X		
• New access roads shall be constructed to meet applicable standards and shall be designed in accordance with their intended function.	X		
• Ensure all sedimentation and erosion controls are in place to protect drainages and surface waters as needed.	X		

TABLE 5-1 (Cont.)

Measure Description	Compliance Measure	Mitigation Measure	BMP
• Implement erosion control BMPs at channel crossing to reduce the risk of sediment transport to downstream waters and biological resources.			X
• When practicable, schedule channel crossing construction during periods of low to no flow.			X
• Design the stream crossing to preserve natural water flow volumes and drainage patterns as much as possible.			X
Minimize the extent of ground disturbance and the duration of ground-disturbing activities.			
• Minimize the duration of ground-disturbing activities, especially during periods of heavy rainfall.			X
• Minimize new disturbance to soils.		X	
• Use existing roads and disturbed areas to the extent possible before constructing new roads or disturbing new areas.		X	
• Avoid clearing and disturbing sensitive areas (e.g., steep slopes and natural drainages), and minimize the potential for erosion.		X	
• Minimize disturbance to vegetation, soils, drainage channels, and stream banks to extent possible.		X	
Restore grade and reclaim soil and vegetation.			
• Use native seed mixture identified through coordination with cooperating agencies.	X		
• Reestablish the original drainage pattern of all disturbed areas before final reclamation to the extent practicable.		X	
• Monitor seeded areas for some period following seeding to ensure vegetation is reestablished.	X		
• Grade waste rock piles to create a gently sloping (more stable) surface.		X	
• Recontour soil areas and cut and fill slopes, berms, and other disturbed areas to approximate naturally occurring slopes.		X	
Protect wildlife and wildlife habitats from ground disturbance and general site activities.			
• Conduct pre-disturbance surveys for threatened, endangered, and sensitive species within all areas that would be disturbed by reclamation activities. These surveys would be used to determine the presence of sensitive species on the Burro Mines Complex and to develop the appropriate measures to avoid, minimize, or mitigate impacts on these species. If sensitive species are in the area that might be reclaimed, coordination with the USFWS and CPW would be necessary to determine the appropriate species-specific measures.		X	
• Exclude reclamation activities within 0.25 mi (0.4 km) of the Dolores River to avoid impacts on wildlife including the desert bighorn sheep movement corridor. However, since the project location is within 0.25 mi (0.4 km) of the Dolores River, reclamation activities would be scheduled to avoid impacts on a desert bighorn sheep movement corridor (and other wildlife).		X	
• Establish buffer zones around sensitive habitats, and either exclude reclamation activities from those areas or modify them within those areas, to the extent practicable.			X
• If any federally listed threatened and endangered species are found during any phase of the project, consult with the USFWS as required by Section 7 of the ESA and determine an appropriate course of action to avoid or mitigate impacts.	X		

TABLE 5-1 (Cont.)

Measure Description	Compliance Measure	Mitigation Measure	BMP
• Conduct raptor nest surveys to ensure compliance with the Migratory Bird Treaty Act; follow the recommended buffer zones and seasonal restrictions for Colorado's raptors (BLM 2015; CPW 2020).	X		
• Relocate wildlife found in harm's way away from the area of the activity when safe to do so.			X
• Exclude reclamation activities within 0.25 mi (0.4 km) of the Dolores River to avoid impacts on wildlife including the desert bighorn sheep movement corridor. However, since the project location is within 0.25 mi (0.4 km) of the Dolores River, reclamation activities would be scheduled to avoid impacts on a desert bighorn sheep movement corridor (and other wildlife).		X	
Minimize the establishment and spread of invasive (vegetative) species.			
• Monitor the area regularly and eradicate invasive species during the appropriate life-cycle stage of the species.	X		
• Use native seed mixture identified through coordination with cooperating agencies. .	X		
• Pressure wash equipment (at an off-site location) prior to arriving on site to avoid introducing invasive weeds.			X
Identify and protect cultural and historic resources.			
• Ensure that all activities comply with Section 106 of the NHPA.	X		
• Identify through searches of records, field surveys, and consultation with tribes, as necessary, all cultural resources in the area of potential effects, and evaluate them for eligibility for inclusion on the NRHP. Implement mitigation measures agreed to with the SHPO to avoid adverse effects to historical properties	X		
• Pause or stop work to address unanticipated cultural resources encountered during reclamation activities.			X
Minimize contrast with surrounding areas.			
• Avoid installing gravel and pavement wherever possible to reduce contrasts in color and texture with the existing landscape to the extent practicable.			X
Ensure safe and proper transportation.			
• Use a gravel track pad or similar method to minimize tracking of mud and dirt from any mine site onto the local public and county roads that provide site access.			X
• Ensure that drivers meet applicable U.S. Department of Transportation training and qualification requirements.	X		
• Ensure road improvements and construction of new haul route is in accordance with applicable transportation permits and requirements.	X		
• Ensure that waste rock transport vehicles meet applicable U.S. Department of Transportation requirements.	X		
Ensure safe and proper fuel handling and spill management.			
• Follow a fuel spill prevention and response plan.			X

6 CUMULATIVE IMPACTS

Cumulative impacts are defined as the incremental environmental impact or effect of the Proposed Action, together with impacts of past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR 1508.7). Geographic boundaries for cumulative impacts can vary by resource and can be affected by the amount of time an impact remains in the environment, the extent to which such an impact can migrate, and the magnitude of that impact. For this analysis, the ROI is conservatively defined as 10 mi (16 km) or less (Figure 6-1). This ROI includes the lease tracts within the Slick Rock area (Lease Tracts 10, 11, 11A, 12, 13, 13A, 14, 15, 15A, 16, and 16A), as well as Lease Tract 17, which occurs near the Montrose County–San Miguel County border. Effective January 6, 2020, DOE executed new 10-year lease agreements for these and all other lease tracts (excluding Lease Tracts 8A and 14). DOE's action allows its lessees to submit exploration and mining plans to DOE for review and approval. Most of the land within the ROI is administered by the BLM (Figure 6-1).

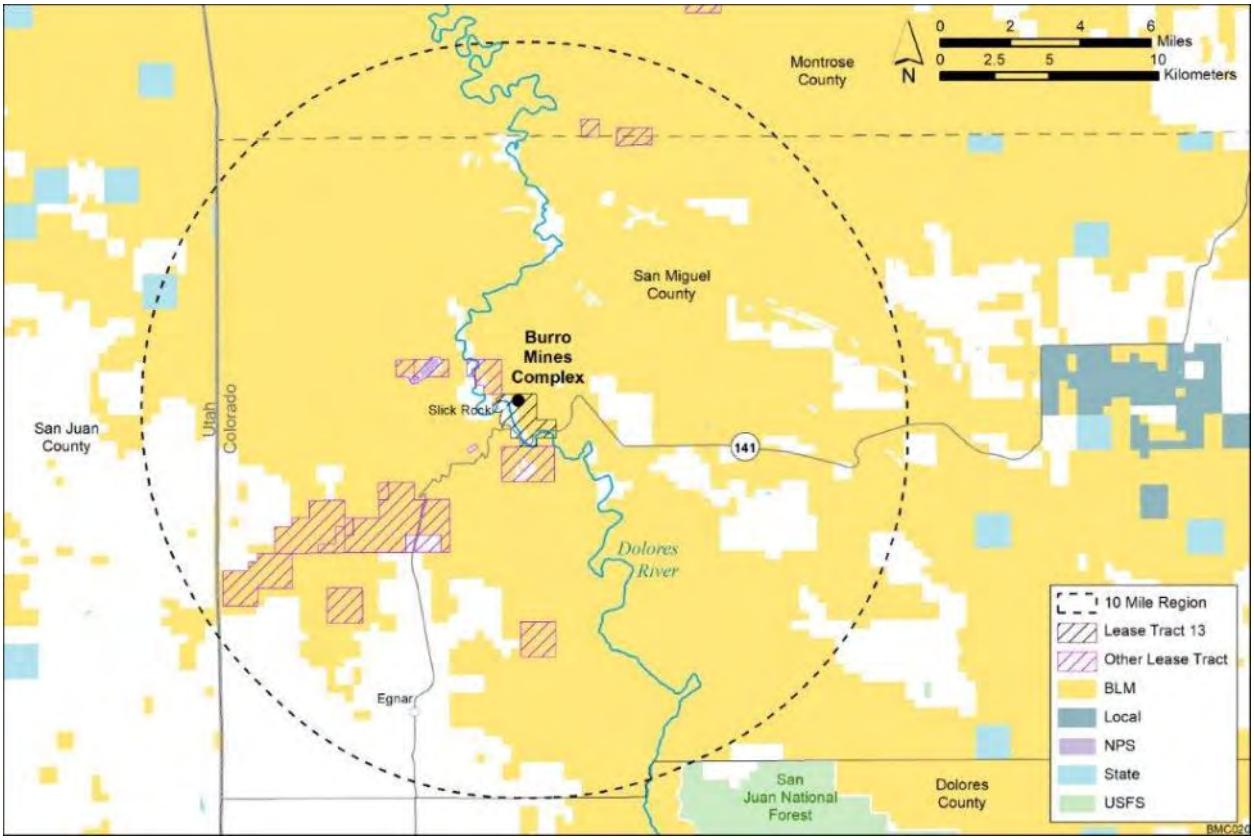

FIGURE 6-1 Land Areas Evaluated in the ROI

6.1 REASONABLY FORESEEABLE, ONGOING, AND PAST ACTIONS

The following paragraphs address the reasonably foreseeable, ongoing, and past actions within the ROI that potentially contribute to cumulative impacts.

6.1.1 Remediated Slick Rock Processing and Disposal Sites

Among the UMTRCA Title 1 disposal sites addressed in the ULP PEIS (DOE 2014) are the remediated Slick Rock processing and disposal sites near the Burro Mines Complex area. The Slick Rock processing sites consist of two former uranium and vanadium ore processing facilities (Slick Rock East and Slick Rock West). Both sites are adjacent to the Dolores River and have been recontoured and seeded with native grasses. The 12-acre (4-ha) Slick Rock disposal cell, located about 5 mi (8 km) east of the processing sites (1.2 mi [1.9 km] northeast of Burro No. 5), contains about 129,000 yd^3 of tailings and other contaminated materials removed from the Slick Rock processing sites (DOE 2019b).

DOE monitors groundwater and surface water to verify that natural flushing at the Slick Rock sites is protective of human health and the environment (DOE 2019b). Historical milling operations at the Slick Rock processing sites created contamination in alluvial groundwater (selenium and uranium are main contaminants in groundwater at the Slick Rock East site, and benzene, manganese, molybdenum, nitrate, Ra-226, Ra-228, selenium, toluene, and uranium at the Slick Rock West site). Past milling operations have had no detectable effect on water quality of the Dolores River (DOE 2019a).

6.1.2 Mine Exploration, Development, Mining, and Reclamation

Within the Slick Rock Mining District, there are 862 active claims covering 17,798 ac (7,202 ha), including 369 mines. The major commodities mined in San Miguel County are uranium, vanadium, gold, silver, lead, zinc, and copper (The Diggings 2019). Impacts from mine exploration, development, mining, and reclamation would be like those addressed in the ULP PEIS (DOE 2014). There are potentially fewer radiological concerns for commodities mined other than uranium. There are uranium/vanadium mines in need of reclamation on ULP Lease Tracts 11, 13, and 15 (DOE 2014). Within the immediate Burro Mines Complex, reclamation at Burro No. 7 was completed in the late 1990s, while the New Ellison Mine waste rock pile is currently a permitted mining operation.

Within the ROI, exploration plans identified for Lease Tracts 13A, 15A, and 17 (DOE 2014) are no longer approved; they were withdrawn by the respective lessees in 2011. Therefore, cumulative impacts associated with exploration activities within the ROI would not occur.

Impacts associated with mine development and mining activities include altered visual resources, dust generation, particulate and criteria pollutant emissions, radioactive dust and gas emissions, soil disturbance, vegetation clearing, wildlife displacement, habitat degradation, health impacts on mine workers and the general public related to radiation or other hazardous materials exposure, increased traffic, potential damage to cultural and paleontological resources, and decreases in recreation and tourism-related recreation (DOE 2014). Impacts are expected to be minimal to negligible with adherence to mitigation measures, BMPs, and regulatory requirements.

Reclamation has been completed for areas disturbed by mining on Lease Tracts 10, 11, 11A, 12, 13, 16, 16A, and 17. In 2014, Gold Eagle Mining, Inc. submitted technical revision applications to the Colorado DRMS for their reclamation plans for the JD-5 Mine on Lease Tract

5 and for the Burro Mine, Ellison Mine and Hawkeye Mine on Lease Tract 13 (Coram 2014). Reclamation of these mines will involve sealing or gating of portals, removal of structures and cleanup, disposition of waste, site grading and contouring, weed control, and revegetation. At the time of submittal in 2014, the court injunction on DOE's ULP was still in place and did not allow DOE's review of these reclamation plans. The court injunction was lifted in March 2019; and DOE has contacted the lessee for any updates regarding these reclamation plans before proceeding with the review. Impacts from other mines within the ROI would be comparable to those described for the Burro Mines Complex sites (Chapter 4). In addition, there could have been impacts related to the closure of mine entrances. Over the last 30 years or so, where adits or portals are completely closed – polyurethane foam has been typically applied to completely close the opening. The foam is then covered by rocks and/or soils. Mine portal openings and adits have been also reclaimed by closing the opening with large rocks and then backfilling them with available materials from the waste rock piles. Some mine actions may have included the use of mine gates to exclude people but also to conserve potential bat habitat.

6.1.3 Existing and Proposed Utility Corridors

The only existing major utility corridor within the ROI is the existing Rocky Mountain natural gas pipeline. Within the immediate Burro Mines Complex area, the pipeline is located between CR S8 and the Burro Tunnel Mine waste rock pile. At the Slick Rock gravel pit road, the pipeline heads to the northeast along a line that is just south of the Burro No. 7. There are no planned major utilities planned within the ROI.

6.1.4 BLM Tres Rios Field Office Resource Management Plan

The BLM Tres Rios RMP provides strategic guidance for future management of BLM-administered lands within the Tres Rios Field Office. It guides the restoration or maintenance of the health of the lands to provide sustainable uses, benefits, products, services, and visitor opportunities. Various objectives, standards, and/or guidelines are provided in the RMP for managing the lands and resources within the Tres Rios Field Office (BLM 2015). The Tres Rios Field Office prepared an RMP amendment and associated EA (BLM 2019) to evaluate and consider management prescriptions for ACECs nominated during development of the BLM Tres Rios Field Office RMP, with a Decision Record for the amendment published in January 2020 (BLM 2020). Among the three ACECs addressed in the RMP amendment and EA, the Gypsum Valley ACEC is within the ROI. The closest portion of the ACEC is over 4 mi (6 km) northeast of the Burro Mines Complex area.

6.1.5 Oil and Gas Exploration and Extraction

The BLM routinely offers land parcels for competitive oil and gas leasing to allow exploration and development of oil and gas resources for public sale. The contribution to cumulative impacts from oil and gas exploration would be like those listed for mining, except that exposure to oil and gas emissions would be a greater concern than radiological exposure. The BLM Tres Rios Field Office RMP addresses the orderly and environmentally responsible development of oil and gas deposits within the ROI (BLM 2015).

6.1.6 Grazing

Both cattle and sheep grazing occur within the ROI. Impacts potentially associated with grazing include localized gaseous emissions from livestock digestive processes, fugitive dust, reduced vegetative cover and biological soil crusts, reduction in native vegetation, upland soil and stream channel erosion, competition with wildlife, destruction or alteration of wildlife habitat, destruction of cultural resources or historic properties, and introduction of solid and hazardous wastes. The BLM Tres Rios Field office RMP addresses livestock and rangeland management within the ROI (BLM 2015).

6.1.7 Other Reasonably Foreseeable, Ongoing, and Past Actions

Several other reasonably foreseeable, ongoing, and past actions could contribute to cumulative impacts on one or more resources within the ROI. Some of these may be a net benefit, while others could be considered adverse. Beneficial actions include wildlife habitat improvements, wildlife conservation, and vegetation and forest (fuels) management. These meet the objectives, standards, and/or guidelines listed in the BLM Tres Rios Field office RMP (BLM 2015). The Dolores River Restoration Partnership (2019) conducts invasive plant removal activities within the river's riparian areas to improve native plant communities, wildlife habitat and forage, and recreational opportunities, as well as to reduce the risks associated with wildfire.

The Paradox Valley Desalination Plant, operated by the Bureau of Reclamation (BOR), is located outside of the ROI but is applicable when cumulative impacts within the ROI are being considered as it improves water quality in the Dolores River. Located near Bedrock in Montrose County, the plant prevents natural salt loads in the groundwater from entering the Dolores River by intercepting and disposing of brine via deep-well injection. However, the high-pressure brine injection has been known to trigger small earthquakes in the area (Duke 2019). As the injection well is nearing the end of its useful life, the BOR has prepared a draft Environmental Impact Statement (EIS) to investigate alternatives for disposing of brine in order to enhance and protect the quality of water available in the Colorado River for use in the U.S. and Mexico (BOR 2019). Alternatives being considered in the EIS include no action (no salinity control in the Paradox Valley), a new injection well, evaporation ponds, and zero liquid discharge technology.

The BOR built and operates the McPhee Dam on the Dolores River, which was built in 1984 as a part of the Dolores Project (BOR 2009). The stream flow in the Dolores River near Slick Rock has been regulated by the water release from the McPhee Dam since then. The Dolores Project provides water for irrigation (90,900 ac-ft/yr) and municipal and industrial use (8,700 ac-ft/yr). In addition, the McPhee Dam provides water for recreation and hydroelectric power generation (BOR 2011).

Reasonably foreseeable trends that would result in cumulative impacts on recreation include continued demand for all recreation opportunities currently available on BLM lands, especially increased demand for close-to-home recreation opportunities for residents. Increased visitation is assumed due to a growing regional population, the outdoor-oriented lifestyle of Colorado residents, and increases in tourism due to promotion and increased popularity of BLM and USFS lands. Recreational activities near the Burro Mines Complex area include hunting, fishing, and boating (e.g., canoeing and kayaking). The Slick Rock boat launch is located just south of the Burro Mines Complex area. The Burro Mines Complex area occurs within the Dolores River SRMA. The SRMA is managed to provide a broad range of recreational benefits, particularly to river users (BLM 2015).

Climate change is primarily associated with human-induced emissions of heat-trapping gases, so-called GHGs. These emissions come mostly from the burning of fossil fuels (e.g., coal, oil, and natural gas), with considerable contributions from land use changes, such as deforestation or agricultural practices. GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorine-containing halogenated substances—hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). Some GHGs (CO_2, CH_4, and N_2O) are both naturally occurring and the product of industrial activities, while fluorine-containing halogenated substances are manmade and are present in the atmosphere exclusively due to human activities (EPA 2019a). It was anticipated that by 2020, electricity use (28%), followed by transportation (24%), would be the primary contributor to GHG emissions in Colorado (Arnold et al. 2014). Fossil fuel combustion and natural gas and oil systems would account for about 20% and 10%, respectively, of total state GHG emissions. Non-energy-related emissions from agriculture, mining, industrial processes, and waste management account for the rest of the GHG emissions (Arnold et al. 2014).

6.2 CONTRIBUTION TO CUMULATIVE IMPACTS FROM THE RECLAMATION OF THE BURRO MINES COMPLEX

Table 6-1 summarizes the contributions to cumulative impacts in the ROI from reclamation of the Burro Mines Complex (Alternative 2). For Alternative 1 (the No Action Alternative), information provided in Section 3 represents current conditions in the Burro Mines Complex area that would essentially represent ongoing and past actions in the area that contribute to overall cumulative impacts in the ROI.

It is expected that the contribution of impacts from reclamation of the Burro Mines Complex to cumulative impacts would be negligible. There could be a temporary and localized minor contribution for a few resources (Table 6-1).

TABLE 6-1 Contributions to Cumulative Impacts from the Reclamation of the Burro Mines Complex

Resource Area	Anticipated Level of Impacts	Comments
Air quality	Negligible	No measurable impacts on regional ozone or AQRVs at Class 1 areas.
Noise	Negligible	Noise levels are not expected to exceed daytime maximum permissible limits in a residential zone.
Soils	Negligible	Impacts would be localized and short in duration.
Water Resources	Positive long-term impacts	Future erosion to the Dolores River from the waste rock piles would be prevented or minimized. Limited and short-term impacts on surface water use (e.g., for dust control) and water quality.
Human health	Negligible	Waste rock materials to be reclaimed do not currently present a health risk. Disposal, recontouring, covering with soil, and seeding (eventually leading to vegetative cover) would further reduce any radiological exposures over the long-term.

TABLE 6-1 (Cont.)

Resource Area	Anticipated Level of Impacts	Comments
Ecological resources (vegetation and wetlands)	Negligible to minor	Short-term loss of existing sparse vegetation cover, but long-term establishment of native plant communities. No wetland impacts expected.
Ecological resources (wildlife)	Negligible to minor	Short-term loss of low-quality wildlife habitat, but long-term establishment of higher quality wildlife habitat; also, short-term disturbance to wildlife within and near areas of reclamation.
Ecological resources (aquatic biota)	Negligible	Areas being reclaimed would become less prone to erosion over time because site grading would be completed, and vegetative cover would be established. Following reclamation, the potential for erosion would be less than what currently exists at the Burro Mines Complex.
Ecological resources (threatened, endangered, and sensitive species)	Negligible	Impacts could occur on those special status species that may occur at or near the mine site(s) through direct effects such as mortality or disturbance of habitat resulting from reclamation activities. Overall, no adverse population-level impacts anticipated for any special status species; long-term beneficial impacts may occur from improved habitats once reclamation sites become vegetated. Water depletions from the Dolores River (0.05 ac-ft/month) would result in negligible impacts to the ESA-listed fish species (bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker).
Land use	Negligible	Reclamation activities would not affect current land use in nearby areas. Post-reclamation, other land use activities within the immediate area could occur at the Burro Mines Complex, including the potential for mining to occur at the Burro Tunnel Mine.
Socioeconomics and environmental justice	Negligible	Reclamation activities could produce a short-term, very small increase in total employment in San Miguel County. There would be no disproportionately high and adverse impacts on minority or low-income populations.
Transportation	Negligible	Daily increase in traffic on major roads would be limited. Most reclamation-related traffic would occur on haul roads. A portion of one county road would be modified to function as a haul road between the Burro Tunnel Mine and the relocation site (for Alternative 2).
Cultural and paleontological resources	Negligible	Reclamation would comply with agreed upon measures to retain onsite features that contributes to the historic significance of the Burro Mines Complex including an ore bin, a tunnel sized for trackless vehicles, multiple vertical shafts, support structures, support building foundations, an air and water line, major portions of a large ventilation system, and one steel headframe with associated ore and waste rock bins.
Visual resources	Negligible	Reclamation activities could alter vegetation and landform conditions creating a localized, short-term visual impact. In the long-term, revegetation of the Burro Mines Complex area would establish vegetation and landform conditions to those of surrounding areas.
Waste management	Negligible	Wastes (sanitary waste and miscellaneous trash) generated from reclamation activities would be limited and would be disposed of at a licensed off-site location.

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APPENDIX A:
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APPENDIX B: NOTIFICATION RECIPIENTS AND SCOPING COMMENTS RECEIVED

In accordance with the requirements of the National Environmental Policy Act of 1969, the U.S. Department of Energy (DOE) sent notification letters to applicable federal, state, and local agencies, local residents, affected organizations, and interested tribes regarding its preparation of the Draft Environmental Assessment for the proposed reclamation of the Burro Mines Complex in San Miguel County, Colorado. Table B-1 provides a list of the recipients of the notification letters sent by DOE; and Table B-2 provides a list of the correspondence received by DOE in response to its notification. The correspondence listed in Table B-2 contained scoping comments for which responses from DOE are provided in Appendix C, Table C-1.

Similarly, the Bureau of land Management (BLM) also sent notification letters and emails regarding its connected action for determining whether it could grant the right-of-way (ROW) approval being requested by DOE for the preferred alternative (Alternative 2) in the Draft EA. Note that the preferred alternative in this Final EA no longer requires a ROW from BLM. Table B-3 lists the recipients of the notification letters and emails sent by BLM. Table B-4 lists the scoping comment correspondence received by BLM in response to its notification.

TABLE B-1 DOE Notification Recipients

#	Recipient	Job Title	Name	City	State	Date Transmitted
1	Black Hills Corporation	Resident landowner	No name provided	Rapid City	SD	1/7/2020
2	Colorado Department of Public Health and Environment	Director of Environmental Programs	Rudolph, Martha E.	Denver	CO	1/7/2020
3	Colorado Division of Reclamation, Mining and Safety[a]	Minerals Program Director	Means, Russ	Grand Junction	CO	1/7/2020
4	Colorado Parks and Wildlife Southwest Region	–[b]	No name provided	Montrose	CO	1/7/2020
5	Dolores River Coalition	Coordinator	Hill, Lee-Ann	Cortez	CO	1/7/2020
6	Dolores River Boating Advocates	Executive Director	Clark, Amber	Dolores	CO	1/7/2020
7	Gold Eagle Mining, Inc.	President	Coram, Don	Montrose	CO	1/7/2020
8	James Ranch Agriprises, LLC	Resident landowner	James, David	Durango	CO	1/7/2020
9	Montrose County Land Use Department	Director	White, Steve	Montrose	CO	1/7/2020
10	Pueblo of Zuni	Governor	Panteah, Val	Zuni	NM	1/7/2020

TABLE B-1 (Cont.)

#	Recipient	Job Title	Name	City	State	Date Transmitted
11	San Miguel County Clerk & Recorder's Office	County Clerk	Van Damme, Stephanie	Telluride	CO	1/7/2020
12	San Miguel County Commission	Board of County Commissioners	No name provided	Telluride	CO	1/7/2020
13	San Miguel Power Association	Manager of Engineering	Riley, Bill	Nucla	CO	1/7/2020
14	State of Colorado	U.S. Senate	Bennet, Michael	Washington	DC	1/7/2020
15	State of Colorado	State Senator	Coram, Don	Denver	CO	1/7/2020
16	State of Colorado	U.S. Senate	Gardner, Cory	Washington	DC	1/7/2020
17	State of Colorado	U.S. House of Representatives	Tipton, Scott	Washington	DC	1/7/2020
18	State of Colorado	State Representative	Soper, Matt	Denver	CO	1/7/2020
19	U.S. Army Corp of Engineers	Sacramento	No name provided	Sacramento	CA	1/7/2020
20	U.S. Bureau of Land Management Southwest District Office[a]	NEPA Program Coordinator	Phillips, Gina	Montrose	CO	1/7/2020
21	U.S. Environmental Protection Agency – Region	Staff Director	Houston, Robert	–	–	1/7/2020
22	U.S. Environmental Protection Agency	NEPA Program Director	Strobel, Philip	Denver	CO	1/7/2020
23	Umetco Minerals Corporation	Remediation Leader	Gieck, Tom	Grand Junction	CO	1/7/2020
24	Uranium Energy Corporation	Vice President of Exploration	Yancy, Clyde	Corpus Christi	TX	1/7/2020
25	Western Governors' Association	Policy Advisor	Beckstead, Britta	Denver	CO	1/7/2020
26	–	Resident landowner	Brownlee, Scott	Montrose	CO	1/7/2020
27	–	Resident landowner	Crocker-Bedford, Cole and Kara-Lynn	Slick Rock	CO	1/7/2020
28	–	Resident landowner - location 1	Dufficy, John	Slick Rock	CO	1/7/2020
29	–	Resident landowner - location 2	Dufficy, John	Aspen	CO	1/7/2020
30	–	Resident landowner	Randolf, Mary	Egnar	CO	1/7/2020

TABLE B-1 (Cont.)

#	Recipient	Job Title	Name	City	State	Date Transmitted
31	Ute Indian Tribe of Unitah and Ouray Reservation	Chairman	Duncan, Luke	–	–	3/3/2020
32	The Hopi Tribe	Chairman	Honanie, Herman	–	–	3/3/2020
33	Pueblo of Acoma	Governor	Vallo, Brian D.	–	–	3/3/2020
34	Pueblo of Cochiti	Governor	Naranjo, Charles D.	–	–	3/3/2020
35	Southern Ute Indian Tribe	Chairman	Sage, Christine	–	–	3/3/2020
36	The Navajo Nation	President	Nez, Jonathan	–	–	3/3/2020
37	Pueblo of Isleta	Governor	Zuni, Max	–	–	3/3/2020
38	Ute Mountain Tribe of the UT	Chairperson	Heart, Manuel	–	–	3/3/2020
39	Pueblo of Jemez	Governor	Toledo, David M.	–	–	3/3/2020
40	Pueblo of Pojoaque	Governor	Talachy, Joseph	Santa Fe	NM	3/3/2020
41	Pueblo of San Felipe	Governor	Ortiz, Anthony	San Felipe Pueblo	NM	3/3/2020
42	Pueblo of Santa Clara	Governor	Chavarria, J. Michael	Espanola	NM	3/3/2020
43	Pueblo of Taos	Governor	Concha, Edwin	Taos	NM	3/3/2020
44	The Zuni Tribe of the Zuni Reservation	Governor	Panteah, Val	Zuni	NM	3/3/2020

[a] Invitation letters to be a cooperating agency in the preparation of the EA.

[b] "–"means not available or not applicable.

TABLE B-2 Correspondence Received by DOE in Response to Its Notification

#	Date of Letter	Sender	Recipient
1	January 19, 2020	Mary Randolph (Resident, Slick Rock, Colorado)	U.S. Department of Energy, Office of Legacy Management (D.L. Barr, Uranium Leasing Program Manager) U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Director, Office of Site Operations)
2	January 24, 2020	San Miguel County, Colorado, Board of Commissioners (H. Cooper, Chair, L. Waring, Vice Chair, K. Holstrom, Commissioner)	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Director, Office of Site Operations) U.S. Department of Energy, Office of Legacy Management (D.L. Barr, Uranium Leasing Program Manager)
3	January 24, 2019	Information Network for Responsible Mining (J. Thurston, Executive Director) Sheep Mountain Alliance (K. (Lexi) Tuddenham, Executive Director)	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Director, Office of Site Operations) U.S. Department of Energy, Office of Legacy Management (D.L. Barr, Uranium Leasing Program Manager)
4	February 4, 2020	San Miguel County, Colorado, Board of Commissioners (H. Cooper, Chair, L. Waring, Vice Chair, K. Holstrom, Commissioner)	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Director, Office of Site Operations) U.S. Department of Energy, Office of Legacy Management (D.L. Barr, Uranium Leasing Program Manager)
5	February 7, 2020	Uranium Energy Corp (UEC) (C.L. Yancey, PG | VP Exploration)	U.S. Department of Energy, Office of Legacy Management (D.S. Shafer, Director, Office of Site Operations)

TABLE B-3 BLM Notification Recipients

#	Recipient	Job Title	Name	City	State	Date Transmitted
1	Black Hills Corporation	Resident landowner	No name provided	Rapid City	SD	6/16/2020
2	Colorado Department of Public Health and Environment	Director of Environmental Programs	Rudolph, Martha E.	Denver	CO	6/16/2020
3	Colorado Division of Reclamation, Mining and Safety	Minerals Program Director	Means, Russ	Grand Junction	CO	6/16/2020
4	Colorado Parks and Wildlife Southwest Region	–[a]	No name provided	Montrose	CO	6/16/2020
5	Dolores River Coalition	Coordinator	Hill, Lee-Ann	Cortez	CO	6/16/2020
6	Dolores River Boating Advocates	Executive Director	Clark, Amber	Dolores	CO	6/16/2020
7	Gold Eagle Mining, Inc.	President	Coram, Don	Montrose	CO	6/16/2020
8	James Ranch Agriprises, LLC	Resident landowner	James, David	Durango	CO	6/16/2020
9	Montrose County Land Use Department	Director	White. Steve	Montrose	CO	6/16/2020
10	San Miguel County Clerk & Recorder's Office	County Clerk	Van Damme, Stephanie	Telluride	CO	6/16/2020
11	San Miguel County Commission	Board of County Commissioners	No name provided	Telluride	CO	6/16/2020
12	San Miguel Power Association	Manager of Engineering	Riley, Bill	Nucla	CO	6/16/2020
13	State of Colorado	U.S. Senate	Bennet, Michael	Washington	DC	6/16/2020
14	State of Colorado	State Senator	Coram, Don	Denver	CO	6/16/2020
15	State of Colorado	U.S. Senate	Gardner, Cory	Washington	DC	6/16/2020
16	State of Colorado	U.S. House of Representatives	Tipton, Scott	Washington	DC	6/16/2020
17	State of Colorado	State Representative	Soper, Matt	Denver	CO	6/16/2020
18	U.S. Army Corp of Engineers	Sacramento	No name provided	Sacramento	CA	6/16/2020

TABLE B-3 (Cont.)

#	Recipient	Job Title	Name	City	State	Date Transmitted
19	U.S. Environmental Protection Agency – Region	Staff Director	Houston, Robert	–	–	6/16/2020
20	U.S. Environmental Protection Agency	NEPA Program Director	Strobel, Philip	Denver	CO	6/16/2020
21	Umetco Minerals Corporation	Remediation Leader	Gieck, Tom	Grand Junction	CO	6/16/2020
22	Uranium Energy Corporation	Vice President of Exploration	Yancy, Clyde	Corpus Christi	TX	6/16/2020
23	Western Governors' Association	Policy Advisor	Beckstead, Britta	Denver	CO	6/16/2020
24	–	Resident landowner	Brownlee, Scott	Montrose	CO	6/16/2020
25	–	Resident landowner	Crocker-Bedford, Cole and Kara-Lynn	Slick Rock	CO	6/16/2020
26	–	Resident landowner - location 1	Dufficy, John	Slick Rock	CO	6/16/2020
27	–	Resident landowner - location 2	Dufficy, John	Aspen	CO	6/16/2020
28	–	Resident landowner	Randolf, Mary	Egnar	CO	6/16/2020
29	–	–	Blackburn, Fred M.	Cortez	CO	6/16/2020
30	–	–	Ferguson, Elise R.	Oakland	CA	6/16/2020
31	–	–	Meyers, Terry E.	Grand Junction	CO	6/16/2020
32	–	–	Shaw, Gary	Mancos	CO	6/16/2020
33	–	–	Thurston, Jennifer	Paradox	CO	6/16/2020
34	–	–	Belt, Chris P.	Dolores	CO	6/16/2020
35	–	–	Church, Clyde	–	–	6/16/2020
36	–	–	Davis, Richard P.	Cortez	CO	6/16/2020
37	–	–	Foster, Ellen	–	–	6/16/2020
38	–	–	Foster, Ric	Pocatello	ID	6/16/2020
39	–	–	Garchar, Steve	Dove Creek	CO	6/16/2020
40	–	–	Goff, Deana M.	Mancos	CO	6/16/2020
41	–	–	Jakoby, Leslie	–	–	6/16/2020

TABLE B-3 (Cont.)

#	Recipient	Job Title	Name	City	State	Date Transmitted
42	–	–	Kleinert, James	Telluride	CO	6/16/2020
43	–	–	Kolner, Betty Ann	–	–	6/16/2020
44	–	–	Kukuk, Janelle	Creede	CO	6/16/2020
45	–	–	Lachelt, Gwen	–	–	6/16/2020
46	–	–	Lanier, Timothy A.	Pleasant View	CO	6/16/2020
47	–	–	Magee, Brian	Durango	CO	6/16/2020
48	–	–	Mayer-Gawlik, Jan	–	–	6/16/2020
49	–	–	McAfee, Chuck	Lewis	CO	6/16/2020
50	–	–	Noyes, Ron D.	Cortez	CO	6/16/2020
51	–	–	Pargin, Steve	Ignacio	CO	6/16/2020
52	–	–	Pearson, Mark,	Durango	CO	6/16/2020
53	–	–	Pennington, Roger A.	Bayfield	CO	6/16/2020
54	–	–	Popejoy, Mike	–	–	6/16/2020
55	–	–	Richard, Robin E.	Cortez	CO	6/16/2020
56	–	–	Robb, Arlo R.	Cortez	CO	6/16/2020
57	–	–	Taylor, Tracy E.	Rico	CO	6/16/2020
58	–	–	Thorpe, Matt	Durango	CO	6/16/2020
59	–	–	Westendorff, Julie	–	–	6/16/2020
60	–	–	Williams, Bill K.	Dolores	CO	6/16/2020
61	–	–	Williams, Scott	Cortez	CO	6/16/2020
62	Ute Indian Tribe of Uintah and Ouray Reservation	Chairman	Duncan, Luke	Ft. Duchesne	UT	6/17/2020
63	The Hopi Tribe	Chairman	Honanie, Herman	–	–	6/17/2020
64	Pueblo of Acoma	Governor	Vallo, Brian D.	Acoma	NM	6/17/2020
65	Pueblo of Cochiti	Governor	Naranjo, Charles D.	–	–	6/17/2020
66	Southern Ute Indian Tribe	Chairman	Sage, Christine	Ignacio	CO	6/17/2020
67	The Navajo Nation	President	Nez, Jonathan	Window Rock	AZ	6/17/2020

TABLE B-3 (Cont.)

#	Recipient	Job Title	Name	City	State	Date Transmitted
68	Pueblo of Isleta	Governor	Zuni, Max	Isleta	NM	6/17/2020
69	Pueblo of Jemez	Governor	Toledo, David M.	Jemez Pueblo	NM	6/17/2020
70	Pueblo of Pojoaque	Governor	Talachy, Joseph	Santa Fe	NM	6/17/2020
71	Pueblo of San Felipe	Governor	Ortiz, Anthony	San Felipe Pueblo	NM	6/17/2020
72	Pueblo of Santa Clara	Governor	Chavarria, J. Michael	Espanola	NM	6/17/2020
73	Pueblo of Taos	Governor	Concha, Edwin	Taos	NM	6/17/2020
74	The Zuni Tribe of the Zuni Reservation	Governor	Panteah, Val	Zuni	NM	6/17/2020
75	Jicarilla Apache Nation	President	Paiz, Darrell	Dulce	NM	6/17/2020
76	Kewa Pueblo	Governor	Moquino, Thomas	Santo Domingo	NM	6/17/2020
77	Ohkay Owingeh	Governor	Lovato, Ron	Ohkay Owingeh	NM	6/17/2020
78	Pueblo de Cochiti	Governor	Narnjo, Charles	Cochiti Pueblo	NM	6/17/2020
79	Pueblo de San Ildefonso	Governor	Martinez, Perry	Santa Fe	NM	6/17/2020
80	Pueblo of Laguna	Governor	Herrera, Jr, Wilfred	Laguna Pueblo	NM	6/17/2020
81	Pueblo of Nambe	Governor	Perez, Phillip A.	Santa Fe	NM	6/17/2020
82	Pueblo of Picuris	Governor	Quanchello, Craig	Penasco	NM	6/17/2020
83	Pueblo of Pojoaque	Governor	Talachy, Joseph M.	Santa Fe	NM	6/17/2020
84	Pueblo of Sandia	Governor	Paisano, Stuart	Bernalillo	NM	6/17/2020
85	Pueblo of Santa Ana	Governor	Montoya, Lawrence	Santa Ana Pueblo	NM	6/17/2020
86	Pueblo of Tesuque	Governor	Mora, Robert	Santa Fe	NM	6/17/2020
87	Pueblo of Zia	Governor	Medina, Fred	Zia Pueblo	NM	6/17/2020
88	The Hopi Tribe	Chairman	Nuvangyao, Timothy L.	Kykotsmovi	AZ	6/17/2020
89	Ute Mountain Ute Tribe	Chairman	Heart, Manuel	Towaoc	CO	6/17/2020
90	Ysleta del Sur Pueblo	Governor	Silvas, Michael	El Paso	TX	6/17/2020
91	Jicarilla Apache Nation	THPO/NAGPRA Contact	Blythe, Jeff	Dulce	NM	6/17/2020
92	The Navajo Nation	Navajo Cultural Specialist	Begay, Timothy	Window Rock	AZ	6/17/2020

TABLE B-3 (Cont.)

#	Recipient	Job Title	Name	City	State	Date Transmitted
93	The Navajo Nation	Department Manager III	Begay, Richard	Window Rock	AZ	6/17/2020
94	Ohkay Owingeh	THPO	Montoya, Michael	Ohkay Owingeh	NM	6/17/2020
95	Ohkay Owingeh	Natural Resources Director	Phillips, Larry	Ohkay Owingeh	NM	6/17/2020
96	Pueblo de Cochiti	NAGPRA Representative	Pecos, Jay	Cochiti	NM	6/17/2020
97	Pueblo de San Ildefonso	Tribal Historic Preservation Officer	Aguillar, Joseph	Santa Fe	NM	6/17/2020
98	Pueblo of Acoma	Director	Scissons, Todd	Pueblo of Acoma	NM	6/17/2020
99	Pueblo of Isleta	Tribal Historic Preservation Officer	Walt, Henry	Isleta Pueblo	NM	6/17/2020
100	Pueblo of Jemez	THPO	Toya, Christopher	Jemez Pueblo	NM	6/17/2020
101	Pueblo of Laguna	Governor	Herrera, Jr., Wilfred	Laguna Pueblo	NM	6/17/2020
102	Pueblo of Laguna	THPO	Smith Sr, Richard	Laguna Pueblo	NM	6/17/2020
103	Pueblo of Nambe	NAGPRA Contact	Garcia, Arnold J.	Santa Fe	NM	6/17/2020
104	Pueblo of Picuris	NAGPRA Contact	Shields, Cecilia	Penasco	NM	6/17/2020
105	Pueblo of Picuris	Administrator	Tenorio, Shannon	Penasco	NM	6/17/2020
106	Pueblo of Pojoaque	Tribal Historic Preservation Officer	Bernstein, Bruce	Santa Fe	NM	6/17/2020
107	Pueblo of San Felipe	Acting THPO	Duran, Ruben	San Felipe Pueblo	NM	6/17/2020
108	Pueblo of Sandia	Environmental Director	Tracy, Jessica	Bernalillo	NM	6/17/2020
109	Pueblo of Santa Ana	THPO	Menchengo, Timothy	Santa Ana Pueblo	NM	6/17/2020
110	Pueblo of Santa Clara	Acting THPO	Naranjo, Danny	Espanola	NM	6/17/2020
111	Pueblo of Taos	Executive Assistant	Romero, Tina	Taos	NM	6/17/2020
112	Pueblo of Tesuque	THPO	Mitchell, Mark	Santa Fe	NM	6/17/2020
113	Pueblo of Tesuque	Assistant THPO	Mora, Bernard	Santa Fe	NM	6/17/2020
114	Pueblo of Zia	Interim Director	Young, Jesse	Zia Pueblo	NM	6/17/2020

TABLE B-3 (Cont.)

#	Recipient	Job Title	Name	City	State	Date Transmitted
115	Southern Ute Indian Tribe	NAGPRA Coordinator	Atencio, Cassandra	Ignacio	CO	6/17/2020
116	Southern Ute Indian Tribe	NAGPRA Apprentice	Briggs, Garrett	Ignacio	CO	6/17/2020
117	The Hopi Tribe	Chairman	Nuvangyaoma, Timothy L.	Kykotsmovi	AZ	6/17/2020
118	The Hopi Tribe	Interim Director	Koyiyumptewa, Stuart	Kykotsmovi	AZ	6/17/2020
119	The Hopi Tribe	Repatriation Coordinator	Lomayestewa, Lee Wayne	Kykotsmovi	AZ	6/17/2020
120	Ute Indian Tribe (Uintah & Ouray Reservation)	Director	Chapoose, Betsy	Ft. Duchesne	UT	6/17/2020
121	Ute Mountain Ute Tribe	NAGPRA Representative/THPO	Knight, Sr., Terry	Towaoc	CO	6/17/2020
122	Ute Mountain Ute Tribe	Tribal Administrator	Shurack, Nikki	Towaoc	CO	6/17/2020
123	Ysleta del Sur Pueblo	NAGPRA Representative	Quezada, Rick	El Paso	TX	6/17/2020
124	The Zuni Tribe of the Zuni Reservation	Acting Director	Dongoske, Kurt	Zuni	NM	6/17/2020

[a] "–"means not available or not applicable.

TABLE B-4 Correspondence Received by BLM in Response to Its Notification

#	Date of Letter	Sender	Recipient
1	June 28, 2020	Leon and Mary Randolph (Resident, Slick Rock, Colorado)	U.S. Bureau of Land Management (J. Blair, Tres Rios Field office, Geologist)
2	July 6, 2020	San Miguel County, Colorado, Board of Commissioners (H. Cooper, Chair, L. Waring, Vice Chair, K. Holstrom, Commissioner)	Bureau of Land Management (J. Blair, Tres Rios Field Office, Geologist)
3	July 6, 2020	Information Network for Responsible Mining (J. Thurston, Executive Director) Sheep Mountain Alliance (K. (Lexi) Tuddenham, Executive Director)	Bureau of Land Management (J. Blair, Tres Rios Field Office, Geologist)

APPENDIX C:
DOE RESPONSES TO SCOPING COMMENTS

The U.S. Department of Energy (DOE) received scoping comments in response to its notification regarding its Proposed Action of reclamation of the Burro Mines Complex (see Appendix B, Tables B-1 and B-2 for lists of notification correspondence sent and received). Table C-1 below presents the comments and DOE's responses.

TABLE C-1 Scoping Comments and DOE Responses

#	Comment	Response
1.[a]	We would like to state that we are very much "against" the option 3. Relocating the mine waste material from the Burro Mine Complex to an abandoned gravel pit located approx. 0.5 miles south of the Burro Tunnel mine and reclaiming the Burro Mine Complex site. That site is adjacent to our property and definitely do NOT want the clean up there. We feel that would definitely cause our land to have a lower appraisal value. At some point in time we may wish to open a gravel pit site on our side of the property and feel that would be hazardous being that close, or another possibility is that we would sell that property and someone would wish to build a home at that site. So again we state we are VERY much against the option #3. Please consider our serious reservations in this matter.	The waste rock relocation and final reclaimed state would be conducted in accordance with Colorado Division of Reclamation, Mining, and Safety (DRMS) requirements. Viable ore was removed during the mining process, leaving behind the waste rock that is currently at the Burro Mines Complex. Waste rock are exempt from Resource Conservation and Recovery Act hazardous waste requirements which state that solid waste from the extraction, beneficiation, and processing of ores and minerals are not hazardous waste. The potential impacts to human health were evaluated in this EA. The evaluation included that for a resident living on land near the relocation site after the waste rock have been placed (see Section 4.5 of this EA). The visual aesthetics at the relocation site after the reclamation project is completed would bring the site closer to its original topography and provide stabilization and vegetation. DOE carefully considered the results of the impact evaluation discussed in the EA in deciding that the Preferred Alternative meets the purpose and need; and that it would provide an approach that is environmentally protective, but also fiscally responsible and efficient from an engineering standpoint.
2.[b]	We are concerned about the number of unreclaimed or abandoned uranium mines in the west end of our County and the risks they pose to public safety and the environment. We support efforts to reclaim these contaminated lands as long as reclamation actions are conducted with best management practices and with containment engineering that is built to last.	DOE evaluates abandoned uranium mines as part of its Defense-Related Uranium Mines Program. DOE works with the responsible land management agencies to mitigate safety and environmental hazards associated with them. The Burro Mines Complex that is the subject of the Proposed Action for this EA is not part of DOE's Defense-Related Uranium Mines program. DOE employs best management practices and validates permanent engineering structures for all reclamation projects and would do the same for the proposed reclamation of the Burro Mines Complex.

TABLE C-1 (Cont.)

#	Comment	Response
3.[b]	Consult with San Miguel County Road & Bridge Department. The road labels identified on the map included with the notice are not correct. We ask that you consult with the San Miguel County Road & Bridge Department to confirm the location and name of the roads which will be used for construction and hauling activities during the reclamation. Permits and bonds may be required and even if the DOE is exempted from these requirements, we ask that you work with our Road & Bridge Department to adequately address our local land use regulations.	DOE has contacted San Miguel County's Road and Bridge Department to confirm locations and names of roads to be used in this project. DOE has also contacted San Miguel County's Planning Department to determine necessary permitting and surety requirements.
4.[b]	Consult with Colorado Parks and Wildlife (CPW). We ask that you consult with CPW to ensure that there are no adverse impacts to wildlife including native fish, desert bighorn sheep, mule deer, raptors or any other species identified by CPW as important or sensitive.	Potential impacts to wildlife and their habitat, including species listed under the state of Colorado, the BLM, and the Endangered Species Act (ESA) were evaluated in this EA (see Section 4.6). DOE has notified CPW about this project and would continue coordination and communication throughout this project.
5.[b]	Monitoring is needed to ensure effective reclamation. The Burro Tunnel Mines Complex has documented stormwater runoff, sedimentation and erosion issues. We are aware of concerns that uranium concentrations in the Dolores River increase downstream of this complex. All EA alternatives should include a robust analysis of present conditions and ensure that onsite reclamation and/or relocation of mine dumps or waste rock are hydrologically isolated from the Dolores River with no potential to mobilize contaminants through surface water runoff or groundwater discharge. We ask that a baseline characterization and post-reclamation monitoring be conducted and available to the County and the general public.	The purpose of this project is to mitigate sediment run-off from the waste rock piles located at the Burro Mines Complex into the Dolores River and thus, avoid the associated impacts to the Dolores River. As previously stated, this reclamation project would be conducted in accordance with Colorado DRMS requirements. Characterization and monitoring of surface water runoff would not be needed to implement the Proposed Action. However, the evaluation presented in this EA does include the affected environment pertinent to the Proposed Action and the associated potential impacts (see Sections 3.4 and 4.4). Post-reclamation monitoring would be conducted for five years following the completion of the reclamation project to ensure that adequate revegetation of disturbed areas occur and to control invasive species.

TABLE C-1 (Cont.)

#	Comment	Response
6.[b]	Reclamation actions should produce a complete clean up and restoration of the complex. We ask that all mine features associated with this complex are reclaimed and restored to their natural pre-mining condition as closely as possible, including land cover type, vegetation and contours. All of the related mine buildings should be removed. The reclamation alternatives considered in the EA should incorporate eradication of invasive species and require post-reclamation monitoring and treatment if invasive species are found. The Dolores River riparian area is an area of growing recreational and ecological importance to the entire region. The river has been negatively impacted by related mining activities in this area and should be restored as part of this project. In order to ensure transparency and the local, state and federal coordination needed for adequate remediation, we ask for consistent identification and labeling of mine features between the DOE and the Colorado Division of Reclamation, Mining and Safety (DRMS).	ULP Lease Tract C-SR-13 contains an active mine under lease by DOE. Waste rock being addressed by the Proposed Action are mostly pre-law [pre-permitting by Colorado DRMS]. Reclamation efforts are intended to relocate waste rock away from the Dolores River. In accordance with the Colorado State Historic Preservation Office (SHPO), the buildings and other structures associated with the Burro Mines Complex would be left in place to preserve their historical significance. Reclamation activities would include revegetation of disturbed areas and post-reclamation activities would include monitoring of those areas for at least 5 years after the construction activities are complete. Monitoring would include control of invasive species. DOE is coordinating this reclamation project with the Bureau of Land Management (BLM), Colorado SHPO, and Colorado DRMS to ensure that each agencies' concerns are adequately addressed. To the extent possible, consistency with identification and labeling of mine features between DOE and DRMS is coordinated.
7.[b]	Include the Gold Eagle Mining Company site in remediation activities. DOE's notice for an EA mentions three mine sites, but DRMS has received a recent site map showing four (1). It is our understanding from Don Coram the owner of Gold Eagle Mining Company which owns the surface estate of the Burro Mine tunnel that he supports the remediation activities, which will include the mining activities on his land.	The Reclamation of the Burro Mines Complex involves three mines: the Burro Tunnel mine, and Burro Nos. 3 and 5 Shaft mines. The Burro No. 7 mine has already been reclaimed and is not part of the Proposed Action. The New Ellison mine is currently permitted with DRMS by Gold Eagle Mining, Inc. (GEMI). DOE would continue to coordinate with GEMI throughout this project.
8.[b]	Avoid impacts to adjacent private property. Alternative #3 includes a plan to consolidate mine waste to an abandoned gravel pit. We understand that this gravel pit is located adjacent to private property and this could significantly impact the use and value of this private property in San Miguel County. We ask that you consider another location if it is determined that the mine waste needs to be moved off site.	DOE has considered two other locations for the relocation of the waste rock from the Burro Mines Complex (see Section 2.3 of this EA). Based on the evaluation presented for these two locations and compared with the preferred relocation site, the Preferred Alternative would be best to address the purpose and need for DOE's action and would be protective of human health and the environment. Should this reclamation activity take place adjacent to a private property, DOE would coordinate with the landowner(s) throughout the project.

TABLE C-1 (Cont.)

#	Comment	Response
9.[b]	Adequate bonding is needed for post-reclamation monitoring. We understand that DRMS holds a $100 financial assurance bond, but that DOE has jurisdiction over the financial warranty for this project. We ask that the alternatives include at least five years of post-reclamation monitoring, including water quality testing upstream and downstream of the mine complex and a new repository if that alternative is implemented. The DOE should require a meaningful financial warranty that will cover the entire cost of the project including the post-reclamation monitoring.	DOE is undertaking this project and thus, no financial warranty is required for this Federal project. DOE would conduct post-reclamation monitoring as included in the design plans for the Preferred Alternative. See also responses to comments #5 and #6.
10.[c]	These comments are submitted on behalf of Information Network for Responsible Mining (INFORM) and Sheep Mountain Alliance (SMA). Our organizations were co-plaintiffs in the case CEC v. Office of Legacy Management (08- CV-01624-WJM-MJW). As such, we respectfully request that you provide notice to us of all future comment opportunities related to the implementation of the court decision in that case and all other opportunities, including site-specific EAs, related to the Uranium Leasing Program.	As requested, DOE will include INFORM and SMA in future notices pertaining to this EA and future activities associated with the Uranium Leasing Program, as warranted. With regards to this EA, DOE would like to clarify that the Proposed Action is not associated with the ULP PEIS as the waste rock piles being proposed for reclamation are legacy (pre-law) materials that resulted from private, non-lease related mining activities. This is also why the proposed project is a DOE federally funded action rather than one proposed by the lessee under their lease agreement and in accordance with the ULP PEIS.
11.[c]	Although LM is required under NEPA to develop a No Action Alternative, we urge you not to consider it as a final action when the NEPA process is concluded. It is our position that reclamation of C-SR-13 must occur as a matter of environmental necessity, that future uranium mining at that location is unnecessary and economically feasible, and by extension that all leasing should be ended entirely and all lease tracts fully reclaimed. However, the No Action Alternative should be fully analyzed in order to provide a useful understanding of the comprehensive impacts of existing conditions at the Burro Tunnel Mine Complex. To date, a comprehensive analysis of the ongoing impacts and damages to the environment have not been properly understood or disclosed, and therefore we look forward to DOE's analysis and careful documentation of the existing problems on the tract, the cumulative impacts to surrounding public lands, and impacts to the Dolores River, among others. Only by thoroughly understanding existing problems caused by the mines can an appropriate reclamation plan be developed. We hope that this occurs as part of the final outcome of this site-specific process and that LM will ultimately do the same for all the lease tracts.	As required under NEPA, this EA has included a No Action Alternative as Alternative 1. DOE has identified Alternative 2, Reclamation of the Burro Mines Complex, as the Preferred Alternative. The evaluation included in the EA addresses the affected environment and associated potential impacts to support DOE's identification of the Preferred Alternative (see Chapters 3 and 4). Currently, mining at the Burro Tunnel lease tract is a legal operation permitted by Colorado DRMS.

TABLE C-1 (Cont.)

#	Comment	Response
12.[c]	On the map that accompanies the scoping notice, a new haul road is indicated but no additional information about that is provided. It is our position that a new haul road, especially one that crosses Burros Canyon, is unnecessary. If a new haul road is selected in a final alternative, it should only be a temporary road used for cleanup and then ultimately reclaimed. An access road already exists that connects to the county road, which can be used for hauling materials to a new depository. This road is located on the patented land inholding that is owned by the lessee, Gold Eagle Mining Inc., and there is no reason to believe that Gold Eagle Mining Inc. would not allow LM to use it for this purpose, especially considering that a legal business relationship between you already exists. LM should do everything possible to avoid new road construction.	The need for the new haul road and its construction and post-reclamation management has been incorporated into the evaluations discussed in this EA. The EA evaluations also included analysis of potential impacts associated with using the existing county roads as the haul route. The canyon crossing would also be constructed in accordance with the Clean Water Act and U.S. Army Corps of Engineers nationwide permits, as applicable.
13.[c]	The Proposed Action that would relocate the waste material just south of the mines and further away from the river is also our preferred outcome, depending, of course, on the final analysis and anticipated impacts that will be disclosed in the EA. In addition to the old gravel site indicated on the map, LM should also consider the possibility of a disposal site located on the mesa above Burros Canyon near the existing UMTRCA tailings depository for the Slick Rock Mill. It is possible there would be fewer impacts and that waste could be more easily managed and monitored there in the future.	In addition to the existing gravel pit site, DOE considered two other relocation sites as discussed in Section 2.3 of this EA.
14.[c]	The Burro Tunnel Mine Complex is located both on public and private lands with clear lines of demarcation, but the environmental impacts are not so easily dissected. LM must consider the impacts of reclaiming the lease tract on the adjacent patented claims, and the significant need for reclaiming the entire area comprehensively in order to protect the watershed. In 2014, the Colorado Mined Land Reclamation Board ordered Gold Eagle Mining Inc. to reclaim its entire state-permitted area, which includes both the patented claims and the areas leased by LM within 180 days of approval of the reclamation plan. However, since that time, LM has blocked the implementation of that state order by declining to approve the reclamation plan submitted by Gold Eagle Mining. Now that site-specific NEPA analysis for reclamation has initiated, we request that you cooperate with the state so that it can meet its obligation to implement the 2014 order and allow a complete cleanup to proceed. (See enclosed attachment of the board order.) The aspects of reclamation that will occur on private land should be considered in conjunction with LM's plan for the sections of mine that are on public land.	The scope of the Proposed Action as evaluated in this EA is consistent with the purpose and need identified in Section 1.3. DOE's Proposed Action in this EA is to mitigate potential future sediment runoff to the nearby Dolores River from the Burro Mines Complex. As such, the alternatives and the evaluations in the EA have been identified and adequately scoped to provide the information needed to support selection of the Preferred Alternative. The implementation of the Proposed Action would affect GEMI's Burro Tunnel mine permit. DOE would coordinate with GEMI and the Colorado DRMS to ensure both parties obligations under the Stipulated Agreement are satisfied. After the injunction was lifted, DOE contacted GEMI to provide them the opportunity to review/revise their submitted reclamation plans before DOE proceeds to conduct its review of these plans.

TABLE C-1 (Cont.)

#	Comment	Response
15.[c]	In the previous decade, LM allowed Gold Eagle Mining to conduct reclamation work on the lease tract in lieu of paying royalties under the RILOR program. That was a mistake, and we continue to oppose the practice of waiving public revenues in this manner. Tamarisk was removed along the banks of the Dolores River at that time but the riverbanks adjacent to the mining areas remain in very poor condition, further exacerbated by the presence of eroding waste piles. LM should consider the benefits of completely restoring the river corridor as it passes through the lease tract and include this in a final reclamation plan. The river corridor was healthy and in its natural state prior to mining, and now that mining is concluded those impacts should be addressed and original conditions restored. LM should also consider the necessity of protecting the river corridor in the future and should develop an alternative that re-draws the boundaries of C-SR-13 to entirely exclude the river corridor. A fully engineered stormwater management system is necessary in order to fully protect the river.	The activities mentioned in this comment are outside the scope of this EA. See also response to comment #14. As far as activities that are associated with the ULP lease tracts, future lease holder activities would follow mitigation measures identified in the ULP PEIS (including those to protect the river corridor).
16.[c]	LM must also consider the impacts to wildlife habitat and the presence of species listed under the Endangered Species Act. Species of special concern in the Slick Rock Area include the willow flycatcher, Yellow-billed cuckoo, bats, desert bighorn, river otter and endangered Colorado River fish, and the canyon also provides important winter habitat for game species such as deer, elk and pronghorn.	To address potential impacts on the affected environment for ecological resources identified in this EA (see Section 3.6), potential impacts to wildlife and their habitat, including species listed under the Endangered Species Act were evaluated (see Section 4.6). Reclamation activities would not begin during winter; therefore, winter habitat use by big game and other wildlife species would not be affected.
17.[c]	The cultural and historic significance of the area must also be analyzed in the EA in order to comply with the National Historic Preservation Act. At the Hawkeye Mine (which is part of the Burro Complex) the operator damaged a historic load out structure with a bulldozer, and it has been allowed to remain in its leaning position in a manner that creates a public safety hazard. This structure should either be stabilized or removed, and if its historic value is going to be asserted, then documentation should be provided in order to support that. In addition, the significance of the area and the presence of Indigenous Peoples and their involvement in mining the area has not been adequately documented in the past and has been routinely overlooked in regional histories. Despite that, the Navajo people in particular have strong connection to the area and should be considered in the EA analysis. (See attached Gallup Independent story.)	The EA evaluated potential impacts to culturally significant features, both archeological and architectural in accordance with the National Historic Preservation Act (NHPA) (see Section 4.11). Native American Tribes have been notified about this reclamation project as requested to identify any culturally significant religious properties. Although not part of this project, DOE consulted with the SHPO regarding removal of the Hawkeye ore bin because drainage has eroded the footing. DOE has subsequently instructed GEMI to remove and relocate the Hawkeye ore bin (and this has been accomplished since issuance of the Draft EA).

TABLE C-1 (Cont.)

#	Comment	Response
18.[c]	LM must also consider the specific impacts and problems associated with the mining or uranium and the best alternative for reclaiming areas now covered with radioactive materials. LM should establish a radium standard for soils, and should follow EPA's guidance that limits the amount of radium in topsoils to 5 picocuries per gram. In addition, radon that is exhaled by the mines should be sequestered with adequate controls in place at the mines' adits in order to limit those emissions. Although there are only a few residences in Slick Rock, the people who live there experience much higher risks of diseases and poor health outcomes related to exposure to radioactive materials, and the Slick Rock area is a destination for rafters, hikers, climbers, hunters and other recreationists. Any final remedy developed for the lease tract must limit the public health impacts of radioactivity as much as possible.	The scope of the Proposed Action as evaluated in this EA is consistent with the purpose and need identified in Section 1.3. DOE's Proposed Action in this EA is to mitigate potential future sediment runoff to the nearby Dolores River from the Burro Mines Complex. As such, the alternatives and the evaluations in the EA have been identified and adequately scoped to provide the information needed to support selection of a Preferred Alternative that would be protective of human health and the environment.
19.[c]	In addition, a comprehensive understanding and analysis of the water quality impacts to the river must be included in the EA. Because of the size and history of the mining complex, extensive underground development and significant waste piles that have been left unreclaimed for many decades, groundwater infiltration and downgradient contamination is likely. The EA must determine what those impacts are and address them. Historically, water quality monitoring for the Dolores River has indicated elevated levels of uranium in the surface water as well, including data reported as part of the UMTRCA site monitoring, and this adverse water quality impact is very likely exacerbated by the mines' existing waste piles. Reducing the release of radioactive constituents as well as other toxins into the river and groundwater systems is vitally important.	The affected environment for water resources (including groundwater) and the potential impacts from the two alternatives considered were evaluated in this EA (see Sections 3.4 and 4.4).
20.[c]	Lastly, LM should expand the project area under consideration and include the entire lease tract, not just the limited area around the existing mine complex. Impacts of uranium mines extend far beyond the permit boundaries and the entire lease tract experiences those impacts. LM should develop an EA that includes the entire tract area, fully document and disclose all existing conditions, and reclaim the entire area. It is finally time to begin resolving the extensive environmental problems created by uranium mining at the direction of the U.S. government.	See response to comment # 14.

TABLE C-1 (Cont.)

#	Comment	Response
21.[d]	Remediation of County Roads and Ditches Considering the history of mining activity and the lack of remediation, we have concerns about potential radioactivity on all public and private roads throughout the Slick Rock area and the uranium mining district in general. As part of these remediation actions we ask that testing be conducted on county roads throughout the Slick Rock area and clean-up activities include county roads and ditches determined to have above acceptable levels of radioactivity. We also ask that all remediation activities include actions that will contain tailings away from county roads and ditches to prevent further distributions of these materials as our roads are graded in the future.	The roads and ditches that exist throughout the Slick Rock area are beyond the scope of this project. The purpose of this project is to mitigate sediment run-off from the Burro Mines Complex into the Dolores River and thus, avoid the associated impacts to the Dolores River.
22.[d]	Impacts to Adjacent Private Property Owners The environmental assessment should prevent adverse health, safety and environmental impacts to nearby private property that could also negatively impact property values or uses.	The two alternatives discussed in this EA were each evaluated for potential impacts to human health, safety and various environmental resources in accordance with NEPA requirements (see Chapter 4). See also response to comment #1.
23.[e]	I just received your January 6, 2020 letter addressing DOE's proposed reclamation on their lease tracts C-SR-13 and 13A. Not sure where the letter has been for the past month? As you are aware UEC holds the mining claims to the north and east of the DOE lease tracts, including the claims covering the three Burro shafts shown on your map. FYI, some historic maps show the Burro #3 shaft labeled as the Burro #1 shaft. Is it DOE's intent to close the Burro Adit (or tunnel as you letter refers to it)? At this time I have no substantive questions or comments, and look forward to reviewing the document.	DOE is aware that UEC holds mining claims in the immediate area. DOE is not proposing to close the Burro Tunnel portal as part of this reclamation project, as it is part of the lessee's permitted infrastructure.

[a] From correspondence listed as #1 on Table B-2.

[b] From correspondence listed as #2 on Table B-2.

[c] From correspondence listed as #3 on Table B-2.

[d] From correspondence listed as #4 on Table B-2.

[e] From correspondence listed as #5 on Table B-2.

APPENDIX D:
DISTRIBUTION FOR THE DRAFT EA

Tables D-1 and D-2 provide the U.S. Department of Energy (DOE) and the Bureau of Land Management (BLM) distribution lists for the Draft Environmental Assessment (EA), respectively.

TABLE D-1 DOE Distribution List for the Draft EA

Counties:
Montrose County Land Use Department
San Miguel County Clerk & Recorder's Office
San Miguel County Commission
San Miguel Power Association

Federal Agencies:
U.S. Army Corp of Engineers
U.S. Bureau of Land Management Southwest District Office
U.S. Bureau of Land Management Tres Rios Field Office
U.S. Environmental Protection Agency

Individuals:
Brownlee, Scott
Crocker-Bedford, Cole and Kara-Lynn
Dufficy, John
Randolph, Mary

Interested Tribes:
The Hopi Tribe
The Navajo Nation
Pueblo of Acoma
Pueblo of Cochiti
Pueblo of Isleta
Pueblo of Jemez
Pueblo of Pojoaque
Pueblo of San Felipe
Pueblo of Santa Clara
Pueblo of Taos
Pueblo of Zuni
Southern Ute Indian Tribe
Ute Indian Tribe of Uintah and Ouray Reservation
Ute Mountain Tribe of the Ute
The Zuni Tribe of the Zuni Reservation

Members of Congress:
State of Colorado, U.S. House of Representatives
State of Colorado, U.S. Senator

Members of State Legislature:
State of Colorado, State Representative
State of Colorado, State Senator

Organizations:
Dolores River Boating Advocates
Dolores River Coalition
Information Network for Responsible Mining (INFORM)
Sheep Mountain Alliance (SMA)
Western Governors' Association

Private Companies:
Black Hills Corporation
Gold Eagle Mining, Inc.
James Ranch Agriprises, LLC
Umetco Minerals Corporation
Uranium Energy Corporation

State Agencies:
Colorado Department of Public Health and Environment
Colorado Division of Reclamation, Mining and Safety
Colorado Parks and Wildlife Southwest Region

TABLE D-2 BLM Distribution List for the Draft EA

Counties:
Montrose County Land Use Department
San Miguel County Clerk & Recorder's Office
San Miguel County Commission
San Miguel Power Association

Federal Agencies:
U.S. Army Corp of Engineers
U.S. Bureau of Land Management Southwest District Office
U.S. Bureau of Land Management Tres Rios Field Office
U.S. Environmental Protection Agency

Individuals:
Belt, Chris P.
Blackburn, Fred M.
Brownlee, Scott
Church, Clyde
Crocker-Bedford, Cole and Kara-Lynn
Davis, Richard P.
Dufficy, John
Ferguson, Elise R.
Foster, Ellen
Foster, Ric
Garchar, Steve
Goff, Deana M.
Jakoby, Leslie
Kleinert, James
Kolner, Betty Ann
Kukuk, Janelle
Lachelt, Gwen
Lanier, Timothy A.
Magee, Brian
Mayer-Gawlik, Jan
McAfee, Chuck
Meyers, Terry E.
Noyes, Ron D.
Pargin, Steve
Pearson, Mark,
Pennington, Roger A.
Popejoy, Mike
Randolph, Leon and Mary
Richard, Robin E.
Robb, Arlo R.
Shaw, Gary
Taylor, Tracy E.
Thorpe, Matt
Thurston, Jennifer
Westendorff, Julie
Williams, Bill K.
Williams, Scott

Interested Tribes:
The Hopi Tribe
Jicarilla Apache Nation
Kewa Pueblo
The Navajo Nation
Ohkay Owingeh
Pueblo de Cochiti
Pueblo de San Ildefonso
Pueblo of Acoma
Pueblo of Cochiti
Pueblo of Isleta
Pueblo of Jemez
Pueblo of Laguna
Pueblo of Nambe
Pueblo of Picuris
Pueblo of Pojoaque
Pueblo of San Felipe
Pueblo of Sandia
Pueblo of Santa Ana
Pueblo of Santa Clara
Pueblo of Taos
Pueblo of Tesuque
Pueblo of Zia
Southern Ute Indian Tribe
Ute Indian Tribe of Uintah and Ouray Reservation
Ute Mountain Ute Tribe
Ysleta del Sur Pueblo
The Zuni Tribe of the Zuni Reservation

Members of Congress:
State of Colorado, U.S. House of Representatives
State of Colorado, U.S. Senator

TABLE D-2 (Cont.)

Members of State Legislature:
State of Colorado, State Representative
State of Colorado, State Senator

Organizations:
Dolores River Boating Advocates
Dolores River Coalition
Information Network for Responsible Mining (INFORM)
Sheep Mountain Alliance (SMA)
Western Governors' Association

Private Companies:
Black Hills Corporation
Gold Eagle Mining, Inc.
James Ranch Agriprises, LLC
Umetco Minerals Corporation
Uranium Energy Corporation

State Agencies:
Colorado Department of Public Health and Environment
Colorado Division of Reclamation, Mining and Safety
Colorado Parks and Wildlife Southwest Region

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APPENDIX E:
RESPONSES TO PUBLIC COMMENTS RECEIVED ON THE DRAFT EA

The U.S. Department of Energy (DOE) received a total of five comment documents; two were from individuals and three were from organizations. Comment documents that were received as e-mails were assigned a prefix of "E"; and letters assigned an "L". All comment documents received on the Draft Environmental Assessment (EA) were reviewed, and individual comments identified from each comment document were given a distinct comment number. For example, if the comment letter that was assigned the number 1 and had three comments identified, then the comments were given identifiers of L1-1, L1-2, and L1-3, respectively. Comments were evaluated to determine whether additional or corrected information was needed and whether additional or revised text would clarify the information being conveyed. The comment e-mails and letters received from the public review and comment period of the Draft EA are listed in Table E-1. Images of the letters and emails received are included in subsequent pages of this appendix; specific comments are identified with DOE responses provided in corresponding opposite pages.

TABLE E-1 Individuals and Organizations that Submitted Comments during the Public Review and Comment Period

Individual/Organization	Comment Document Identifier	Page #
Mary and Leon Randolph	E1	E-2
Douglas Tooley	E2	E-3
EPA[a] Region 8	L1	E-4
INFORM[b] and SMA[c]	L2	E-7
Colorado DRMS[d]	L3	E-10

[a] U.S. Environmental Protection Agency (EPA)

[b] Information Network for Responsible Mining (INFORM)

[c] Sheep Mountain Alliance (SMA)

[d] Colorado Division of Reclamation, Mining and Safety (DRMS)

Randolph, Mary and Leon, Commenter ID No. E1

ULinfo

From: Mary Randolph <mrand_2@yahoo.com>
Sent: Thursday, August 6, 2020 6:39 PM
To: ULinfo
Subject: [EXTERNAL]

To whom it may concern;
We are the only land owners adjacent to the DOE/EA-2121 analyzes the potential environmental impacts of the proposed reclamation of the Burro Mines Complex. The complex is located in the Slick Rock area of southwestern San Miguel County, Colorado, on DOE Uranium Lease Tract SR-13.

We are very much against the area the clean up option 1 is being planned as we feel it will dramatically decrease the valuation of our property and the chances of selling it in the future. That area adjacent to the proposed site it a prospect site for a future home and we feel that no one will ever want to purchase it once the reclamation of uranium clean up is there. We would like more clarity and discussion on this project as it does impact our future plans.
We really hope there is some other consideration for this effort.
Thank you,
Leon and Mary Randolph
21173 HWY 141 Unit 6
Slick Rock, CO 81325
970 677 2772

E1-1

****
This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.
****

E1-1 DOE's purpose and need for the proposed reclamation project is to protect the Dolores River from further sediment load originating from legacy waste rock at the Burro Mines Complex. The proposed reclamation activities would prevent further runoff (flash floods) associated with future major storm events from eroding waste rock into the river.

The waste rock relocation and final reclaimed state would be conducted in accordance with Colorado DRMS requirements. The potential impacts to human health were evaluated in this EA. The evaluation included that for a resident living on land near the relocation site after the waste rock have been placed (see Section 4.5 of this EA). The relocation site would be stabilized and revegetated after placement of waste rock so that the area would visually be in line with the previous use of the relocation site as a gravel pit.

In response to the commenter's scoping comments requesting a discussion with DOE, a meeting was held on April 22, 2020, in which further details of the reclamation project was shared by DOE. See Appendix C for the responses to scoping comments received from the commenter. DOE has considered scoping comments and comments on the Draft EA received from the commenter in its development of this Final EA and the Draft Finding of No Significant Impact.

Douglas Tooley, Commenter ID No. E2

ULinfo

From: Douglas Tooley <douglas@motleytools.com>
Sent: Wednesday, September 2, 2020 12:13 PM
To: ULinfo
Cc: Lynn Padgett; don.coram.senate@state.co.us
Subject: [EXTERNAL] DOE/EA 2121/Burro Mine Comments

I appreciate the DOE's efforts in this area. Responsible management of Uranium resources is a crucial part of the national interest.

I have one general comment.

There is recreational potential in some of the mining areas in Western San Miguel County and I understand that other areas may see future mining activity.

As such these multiple uses should be balanced and planned.

I cannot assess the Burro mines on that standard, however I would presume a recreational focus would be more compatible with residential concerns, as expressed with regards to this specific project.

Douglas Tooley
MotleyTools.com/blog

****
This message does not originate from a known Department of Energy email system.
Use caution if this message contains attachments, links or requests for information.
****

E2-1

E2-1 Comment noted. The EA (Draft and Final) includes an analysis for a recreational visitor to the Burro Mines Complex and determined that conditions at the complex currently and after reclamation would be protective for a recreational visitor (see Section 4.5). Conditions are also protective for the current residents and /or future residents (see Section 4.5). Visual aesthetics during recreational visits to the area, such as rafting the Dolores River, would be improved with the Proposed Action.

EPA Region 8, Commenter ID No. L1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone (800) 227-8917
www.epa.gov/region08

September 4, 2020

Ref: 8ORA-N

U.S. Department of Energy
Office of Legacy Management
11035 Dover Street, Suite 600
Westminster, Colorado 80021

The U.S. Environmental Protection Agency has reviewed the U.S. Department of Energy (DOE) Environmental Assessment (EA) For Reclamation of the Burro Mines Complex in San Miguel County, Colorado. The proposed action involves the reclamation of three legacy mine sites associated with the Burro Mines Complex near Slick Rock, Colorado with relocation of the waste rock to a nearby former gravel pit. The following comments were prepared in accordance with our responsibilities under the National Environmental Policy Act. We have several recommendations for inclusion in the EA and Finding of No Significant Impact (FONSI) to reduce potential impacts to water resources and reduce the risk of exposure to radiation and particulate that could be generated from the waste rock.

Comments and Recommendations

Section 4.1 Air Quality

The EA includes engine exhaust in its air emission estimates for the proposed action (p. 52). However, it does not include how many trucks and earth moving equipment will be used at each site. To better understand the proposed action, we recommend the EA include descriptions of the equipment to be used or include an equipment roster. We also recommend providing an explanation of why the latest version of MOVES (MOVES2014b) was not used to estimate emissions and whether the use of older emission models could result in a lower confidence in the emission estimates. L1-1 L1-2

Section 4.4 Water Resources

The EA notes that an unpaved haul route would be constructed across an intermittent stream where road base materials would be temporarily installed (p. 57). We recommend constructing unavoidable road stream crossings during periods of low or no flow to avoid fish spawning and incubation periods (if applicable), or dewater relevant stream segments prior to construction; provide adequate road drainage and erosion control to avoid routing sediment to streams; design roads to allow for natural drainage patterns; and conduct road decommissioning and rehabilitation to restore stream function to prevent an increase in overall watershed impacts. L1-3 L1-4

The EA notes that potential impacts to shallow aquifers are not expected due to the limited nature of excavation required to move the waste rock piles to the relocation site, and the implementation of mitigation measures and best management practices (p. 58). We recommend the EA include appropriate design features to address siting of management areas and facilities to protect these vulnerable resources. We recommend establishing proper equipment and vehicle fueling and maintenance practices; L1-5

L1-1 A list of equipment that could be used for the reclamation project has been included in this Final EA (see Section 4.1).

L1-2 The potential emissions from the reclamation project presented in the Draft EA (and in this Final EA) were based on emission factors recommended by the EPA before the model MOVES was developed. The emission factors applied are higher than those incorporated into the MOVES model (resulting in higher emissions). As such, the potential emissions presented provide a conservative estimate; the estimates suggest that potential impacts are minimal. The method used in deriving the estimates is the same as that conducted for other DOE projects (e.g., ULP).

L1-3 The National Wetlands Inventory classifies the channel where the haul road would cross as "intermittent," a classification that includes both intermittent and ephemeral streams. This channel only carries water directly from precipitation events with no contribution from groundwater sources and is therefore ephemeral. Even though the channel is probably not jurisdictional, DOE plans to apply Clean Water Act Section 404 Nationwide Permit protection and other protective measures (see Table 5.1) to ensure that environmental resources in and downstream of the channel are protected. Text has been added to Table 5.1 to further clarify measures that would be implemented at the stream crossing.

L1-4 The new unpaved haul road or crossing would remain in place after completion of the reclamation project. This crossing would be constructed as a low-water crossing at existing grade and would be stabilized with articulated concrete to maintain natural drainage patterns that should not alter stream function even as it remains in place. Implementation of necessary BMPs would prevent or avoid any potential impacts including to the watershed.

L1-5 The design for the new unpaved haul road would take into consideration necessary measures to protect environmental resources. See Table 5.1 for list of compliance measures, mitigation measures, and BMPs anticipated and/or planned for the reclamation project.

EPA Region 8, Commenter ID No. L1 (Cont.)

providing well-maintained toilets, including secondary containment pans under portable toilets where possible, and inspecting vehicles, equipment and storage tanks regularly for leaks.

Section 4.5 Human Health

Section 4.5.2.1 includes the calculated radiation dose resulting from the waste rock piles for the hypothetical resident, recreationist and reclamation worker (pp. 78-79). We recommend the EA explain what model was used to estimate radionuclide dose and include any necessary inputs to the model. In doing so, we recommend verifying the area of the source included in the model. It appears that the conversion of the area from square feet to square kilometers resulted in an error. We also recommend including an estimate of the dose at actual existing residences based on the dose at distances from the waste rock to the hypothetical residence. L1-6 L1-7 L1-8

Section 5 Measures to Minimize Environmental Impacts

The EA predicts potential occasional exceedances of the PM_{10} National Ambient Air Quality Standard at the project boundary or on publicly accessible roads (p. 52). We recommend that frequent watering be conducted such that there is no visible dust plume. This will reduce the likelihood of exceedances of the PM_{10} standard and reduce potential exposure to PM that has elevated radionuclide activity. L1-9

We recommend that the material in loaded trucks be sprayed down or covered with a tarp to prevent migration of dust to unaffected areas during the transport of the waste rock. This will prevent areas from becoming contaminated with waste rock and reduce the potential for elevated PM and radionuclide exposure.

We recommend that track out areas be constructed to reduce the chance that waste rock will contaminate the route to the relocation site. If trucks are covered in waste rock dust it may be appropriate to wash down the trucks before leaving the waste rock site.

We recommend the siting and construction of equipment spray down areas to avoid impacts to drainages and surface waterbodies.

We recommend a spill plan in the case a haul truck overturns between the mine site and the gravel pit including law enforcement notification requirements.

We recommend a section addressing public health that includes considerations for the following: L1-10

- Worker respiratory protection;
- Eye protection (to reduce the potential for dust to deposit on the eye);
- The use of disposable coveralls and boot covers and daily decontamination procedures for workers prior to leaving the site;
- Provisions for decontamination (wash down) of equipment before leaving the site; and
- Minimize unnecessary travel of nonessential vehicles on areas covered by waste rock.

2

L1-6 Text has been added to identify the models used in deriving the dose estimates presented Section 4.5. Doses were estimated using DOE's Residual Radioactivity or RESRAD code; and EPA's CAP-88 PC tool under the National Emissions Standard for Hazardous Air pollutants or NESHAP, was used for determining air particulates emanating from the waste rock materials.

L1-7 The conversion error has been corrected. The assumed area in square feet should have been converted to square meters.

L1-8 As discussed in Section 4.5.2, current residents would not receive any dose other than from natural background because they are not located along the prevailing wind direction (i.e., particulate emissions from the project location would not blow in the direction of the current residences). This is the reason why doses were also estimated for a hypothetical resident that is located along the prevailing wind direction in order to provide that information. The estimates shown in Section 4.5.2 indicate that potential doses for the hypothetical resident are small and indistinguishable from natural background.

L1-9 As stated in the EA (Draft and Final), applicable compliance measures would be met, and necessary mitigation measures and BMPs would be implemented in conducting the reclamation project to ensure protection of public health and the environment.

L1-10 Mitigation measures and best management practices (BMPs) are listed in Table 5-1. These measures and BMPs could further minimize or prevent potential impacts from the proposed reclamation project. They are considered standard industry practices and have been proven to be effective. Table 5-1 includes measures addressing the various aspects of the reclamation project including those for dust suppression, spill prevention and management.

EPA Region 8, Commenter ID No. L1 (Cont.)

We appreciate the opportunity to provide comments on this EA. If you have any questions about our recommendations, please contact me at (303) 312-6704, or Shannon Snyder, lead reviewer for this project, at (303) 312-6335 or snyder.shannon@epa.gov.

Sincerely,

Philip S. Strobel
Chief, NEPA Branch
Office of the Regional Administrator

3

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INFORM and SMA, Commenter ID No. L2

September 8, 2020

David S. Shafer
Director, Office of Site Operations
Department of Energy
Office of Legacy Management
11035 Dover St., Ste 600 Westminster, CO 80021-5587

Via email to David.Shafer@lm.doe.gov and Deborah.Barr@lm.doe.gov

Re: Comments on Draft Environmental Assessment for Reclamation of the Burros Mines Complex, DOE/EA-2121

Dear Mr Shafer and Office of Legacy Management,

Thank you for the opportunity to comment on the Draft Environmental Assessment for Reclamation of the Burros Mines Complex, DOE/EA-2121. These comments are submitted on behalf of Information Network for Responsible Mining (INFORM) and Sheep Mountain Alliance (SMA). Our organizations were co-plaintiffs in the case CEC v. Office of Legacy Management (08- CV-01624-WJM-MJW). L2-1

Our organizations support Alternative 2 as generally proposed and the reclamation of mined areas within DOE Lease Tract SR-13 and offering the following comments on issues addressed in the Draft EA:

1. DOE has described the proposed action as one that is completely disconnected and distinct from Legacy Management's Uranium Leasing Program and states that the Draft Environmental Assessment is not related to the ULP Programmatic Environmental Impact Statement and the subsequent legal requirements that a site-specific Environmental Assessment for individual lease tracts be conducted. This assertion fails to consider the informative value of the Draft EA as a basis for analyzing any future actions on the lease tract by attempting to partition reclamation away from other leasing activities. More importantly, if the assertion that there is no connection between the proposed action and the ULP is to be true, then the Draft EA has failed entirely to analyze the ULP as a Connected Action, because any mention of how leasing and lease-authorized mining and exploration activities will impact the reclamation project is missing in the Draft EA. This conflict needs to be resolved in the final draft. L2-2

2. DOE states that the current lessee's state-permitted areas and private lands within the lease tract are not included or addressed in the Draft EA. This is a disservice to the public interest. DOE is essentially proposing an incomplete action that will not fully address the environmental problems within Burros Canyon because it fails to comprehensively address all the existing sources of pollution and contamination. Furthermore, DOE is conveniently ignoring the relationship between the contemporary, permitted operations L2-3

L2-1 DOE notes your support for Alternative 2.

L2-2 DOE's purpose and need for the proposed reclamation project is protect the Dolores River from further sediment load originating from legacy waste rock at the Burro Mines Complex. The proposed reclamation activities would prevent further runoff (flash floods) associated with future major storm events from eroding waste rock into the river.

Although this proposed reclamation project is located primarily on a Uranium Lease Tract, this project is not connected with current and future ULP activities. The implementation of the reclamation project for the Burro Mines Complex as described in Alternative 2 in this Final EA is not dependent on any ULP action and as such, it is not a connected action; this is consistent with Council of Environmental Quality (CEQ) guidelines for National Environmental Policy Act (NEPA) reviews.

The Draft EA did discuss as a connected action, the right-of-way (ROW) action that the U.S. Bureau of Land Management (BLM) needed to undertake for the Alternative 2 of the Draft EA. Alternative 2 in this Final EA no longer requires a ROW from the BLM. Hence, any discussion about a connected action has been deleted.

L2-3 As stated in Response L2-2, the purpose and need for DOE's action is to provide additional protection to the Dolores River by minimizing future sediment load originating from legacy waste rock at the Burro Mines Complex. (see also Appendix C for responses to similar scoping comments).

INFORM and SMA, Commenter ID No. L2 (Cont.)

under the current iteration of the ULP and the actual condition of the landscape; of course the era of time when the disturbance occurred has no connection at all to the environmental impairment that exists today. This is an unacceptable stance coming from DOE, especially considering that DOE has control over all of the lessee's activities. DOE has also blocked the approval of a reclamation plan to satisfy a state reclamation order for these areas since 2015. Approving that plan and comprehensively addressing all the reclamation needs within the lease tract in tandem would have been the appropriate action to take and the one most beneficial to the public and protective of the environment, yet for some reason that's not what DOE is proposing.

L2-3 (Cont.)

L2-4

3. The exclusion of Burros No. 7 from the proposed action is inexplicable, and there is no reason not to include this area within the current project. DOE describes the Burro No. 7 shaft and waste pile as already reclaimed, yet the Draft EA provides no additional information about the conditions of that section of the canyon. The reclamation that is mentioned occurred decades ago and the waste pile has not maintained its integrity. In fact, the "reclaimed" waste pile is clearly visible in the Draft EA's photographs as a disturbed area that contrasts starkly with the more natural features and soil conditions of the canyon. The waste pile continues to actively erode toxic and radioactive contaminants into the canyon. The decision to exclude the Burros No. 7 area from this larger canyon reclamation plan is a major flaw in DOE's proposal, for it makes no sense at all to reclaim the canyon just downslope of the Burros No. 7 and yet leave the deteriorating waste pile just above. Reclamation work just below will see its impact reduced and lessened as the Burros No. 7 area continues to be neglected. The scope and size of the reclamation program as proposed and described in the Draft EA is simply insufficient.

L2-5

4. As a further means toward fully disclosing the existing conditions of Burros Canyon and the need for reclamation, the Draft EA should include radiological surveys of the surface conditions in the canyon, including the Burros No. 7 area, which could shed further light on why a larger cleanup area is necessary. In addition, the discussion about the value of waste rock piles to the overall historic landscape excludes entirely any discussion of their radioactivity and the possibility of broad contamination. Information and radiological assessment of these areas needs to be provided in more comprehensively, and consideration of the historic designation of any of these areas needs to be balanced with the need to protect the environment and public health from radiation.

L2-6

5. More detail about the surface water conditions should be disclosed in the final EA. DOE asserts that there is no impact from the Burros Canyon Mines to the surface water quality of the Dolores River by mentioning monitoring data from a point one mile downstream. The EA should include this specific data, which does show elevated levels of multiple constituents of concern, and explain in more detail the impacts of the mine on the river's water quality.

L2-7

Thank you for the opportunity to comment on the Draft Environmental Assessment. We look forward to the final draft.

L2-4 The court injunction from October 2011 to March 2019 prohibited DOE in conducting any activity on the ULP including review and /or approval of any plans submitted by the lessees (including the 2014 reclamation plans mentioned in this comment). Since the injunction has been lifted, DOE is now evaluating lease-holder plans submitted in 2014 by Gold Eagle Mining for four lease tracts. DOE has also evaluated potential cumulative impacts from these lease-holder plans (see Chapter 6 of this Final EA).

L2-5 DOE's project scope does not include the Burro No. 7 mine site because that mine site (shaft and associated surface features) is located on an unpatented mining claim that was historically controlled by Union Carbide Corporation (UCC), more recently known as Umetco Minerals Corporation. The mine-waste-rock originated from mine workings entirely located on the Burro and Jack unpatented mining claims. The mine-waste-rock was allowed to spill over onto DOE Lease tract through a special use permit issued to UCC by the BLM. The Burro No. 7 mine site has never been associated with the ULP. The mine site was reclaimed by the claimant, Umetco, in the 1997-1998 timeframe as part of their permit obligation with DRMS and BLM. DOE and the ULP was not associated with that activity either. DRMS considers the reclamation of that site to be a success.

L2-6 This proposed reclamation project is to address potential future sediment erosion into the Dolores River. It is not a radiological cleanup project.

The EA (Draft and Final) included an analysis of potential impacts to human health and ecological resources based on a concentration of 70 pCi/g of radium in the waste rock. This is the maximum concentration from a sample collected at a ULP mine. The potential impacts were determined to be small and the same as that due to natural background. The 70 pCi/g concentration is equivalent to about 0.02% of uranium in the waste rock. Note that the uranium mining industry considers waste rock as material that contains 0.05% or less of uranium. Generally, the industry goal is to process as much of the ore content as possible. Dose estimates at 0.5% uranium content in the waste rock or 2.4 times the concentration used for the analysis (i.e., 168 pCi/g versus 70 pCi/g) would still result in a small dose or impact.

L2-7 The discussion included in the EA (Draft and Final) provides adequate information to support the impact analysis regarding surface water quality.

In Section 3.4.1, nonattainment due to total iron concentrations for a segment of the Dolores River that runs adjacent to the Burro Mines Complex is identified. This is per the state's determination on effects on physical, biological, and presence of chemical constituents. Nonattainment does not appear to be associated with historical activities at Lease Tract C-SR-13 where the Burro Mines Complex is located. In addition to the state surface water quality assessment, annual monitoring results for uranium and several other chemical constituents (manganese, molybdenum, nitrate, selenium) at Slick Rock East and Slick Rock West, which are located in the floodplain of the Dolores River about 1 mi (1.6 km) downstream of the Burro Mines Complex, indicate that all analytes are currently below the EPA drinking water standards and Uranium Mill Tailings Radiation Control Act (UMTRCA) maximum concentration limits (MCLs). Surface wáter data reported for 2017 and 2018 for the Slick Rock East and Slick Rock West sites have been stable. This indicates that the Burro Mines Complex has not affected surface water conditions at the Dolores River.

INFORM and SMA, Commenter ID No. L2 (Cont.)

Sincerely,

Jennifer Thurston
Executive Director
Information Network for Responsible Mining
P.O. Box 332
Paradox, CO 81429
(970) 859-7456
jennifer@informcolorado.org

Karen (Lexi) Tuddenham
Executive Director
Sheep Mountain Alliance
P.O. Box 389
Telluride, CO 81435
(970) 728-3729
lexi@sheepmountainalliance.org

CDRMS, Commenter ID No. L3

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

September 8, 2020

Department of Energy
Legacy Management

RE: Draft Environmental Assessment Comments for the Reclamation of The Burro Mines Complex in San Miguel County, Colorado

Dear Legacy Management,

As a Cooperating Agency, the Colorado Division of Reclamation, Mining and Safety and the Colorado Department of Natural Resources (CDRMS/DNR) appreciate the opportunity to submit comments regarding the draft Environmental Assessment (EA) for the proposed reclamation of the Burro Mines Complex (Burro Mines), in San Miguel County, Colorado.

CDRMS has a vested interest reclamation of the Burro Mines as it has approved and issued reclamation permits for three of the mines in the Burro Canyon area. This area has a complex intermingling of historic and present day mining and ownership making meaningful reclamation and returning the lands to a beneficial use for the general public difficult.

After careful review of the draft EA, CDRMS believes that Alternative 2: "Reclamation of the Burro Mines Complex" provides the most comprehensive plan to address the Burro Canyon impacts from all mining as opposed to isolated reclamation of specific areas. The comprehensive approach will address stormwater management and sedimentation issues for the watershed as an entire unit which is critical for managing environmental impacts from past mining. Also, the proposed EA Alternative 2 addresses reclamation and stabilization of historical mine features that protect human health and safety.

CDRMS looks forward to cooperating with the DOE / Legacy Management team as it moves forward in the design and initiation of reclamation and remediation of the Burro Mines Complex.

Best Regards,

Russ Means
Program Director
Division of Reclamation, Mining and Safety

1313 Sherman Street, Room 215, Denver, CO 80203 P 303.866.3567 F 303.832.8106 http://mining.state.co.us
Jared Polis, Governor | Daniel Gibbs, Executive Director | Virginia Brannon, Director

L3-1

L3-1 DOE notes your support for Alternative 2 and will continue to work with CDRMS as the reclamation project moves forward.

APPENDIX F: CONSULTATION WITH THE COLORADO STATE HISTORIC PRESERVATION OFFICE

During the preparation of this Environmental Assessment (EA), the U.S. Department of Energy (DOE) consulted with the Colorado State Historic Preservation Office (SHPO) to evaluate potential architectural and archaeological resources at the Burro Mines Complex in accordance with Section 106 requirements of the National Historic Preservation Act (NHPA). Table F-1 lists the consultation correspondence between DOE and the Colorado SHPO.

As stated in Section 1.4.2 of this Final EA, the consultation resulted in DOE's modification of Alternative 2 which is the Preferred Alternative. Section 2.2 of this Final EA provides a detailed description of the modified Alternative 2. Based on DOE's proposed reclamation project described in the modified Alternative 2, the Colorado SHPO concurred with DOE's finding of no adverse effects to historic properties at the area of potential effect (APE) (see Correspondence item #10 in Table F-1).

TABLE F-1 Consultation Correspondence between DOE and the Colorado SHPO

Correspond-ence Item	Page #	Sender	Recipient	Date	Purpose of Correspondence
1	F-3	Barr, D.L., Program Manager, DOE	Turner, S., State Historic Preservation Officer, Colorado SHPO	May 21, 2020	DOE letter requesting initiation of consultation with the Colorado SHPO.
2	F-8	Norton, H.K., State Historic Preservation Officer, Colorado SHPO	Barr, D.L., Program Manager, DOE	June 18, 2020	Colorado SHPO letter responding to DOE's May 21, 2020 letter (Correspondence item #1) initiating consultation. Colorado SHPO requested additional information regarding the proposed reclamation project.
3	F-10	Barr, D.L. Program Manager, DOE	Marques, M., Section 106 Compliance Officer, Colorado SHPO	July 20, 2020	DOE letter providing the 30% design of the reclamation project. DOE determined that archaeological site 5SM.8290 is not eligible for the National Register of Historic Places (NRHP) under any criteria.
4	F-44	Marques, M., Section 106 Compliance Officer, Colorado SHPO	Barr, D.L., Program Manager, DOE	July 29, 2020	Colorado SHPO e-mail responding to DOE's letter dated July 20, 2020 (Correspondence item #3), requesting additional documentation on a lithic quarry and associated artifacts that are near archaeological site 5SM.8290.
5	F-45	Barr, D.L. Program Manager, DOE	Marques, M., Section 106 Compliance Officer, Colorado SHPO	August 17, 2020	DOE e-mail providing additional information on archaeological site 5SM.8290, detailed information on the Proposed Action, and the draft reclamation design drawings.

TABLE F-1 (Cont.)

Correspond-ence Item	Page #	Sender	Recipient	Date	Purpose
6	F-50	Norton, H.K., State Historic Preservation Officer, Colorado SHPO	Barr, D.L., Program Manager, DOE	August 21, 2020	Colorado SHPO letter concurring with DOE's determination that archaeological site 5SM.8290 is not eligible for the NRHP under any criteria.
7	F-51	Barr, D.L., Program Manager, DOE	Turner, S., State Historic Preservation Officer, Colorado SHPO	October 1, 2020	DOE letter providing the 60% design of the proposed reclamation project. DOE stated in the letter that it has determined that the proposed undertaking would have no adverse effects on the historic nature of the Burro Mines Complex due to the avoidance and minimization measures incorporated into the 60% design.
8	F-79	Norton, H.K., State Historic Preservation Officer, Colorado SHPO	Barr, D.L., Program Manager, DOE	October 20, 2020	Colorado SHPO letter requesting additional information on the area of potential effects (APE); the Colorado SHPO did not agree with DOE's determination of no adverse effects stated in its October 1, 2020 letter (Correspondence item #7) based on its 60% design.
9	F-81	Barr, D.L., Program Manager, DOE	Turner, S., State Historic Preservation Officer, Colorado SHPO	December 22, 2020	DOE letter providing the 70% design which represented a modification of the proposed reclamation project. The 70% design involves no removal of waste rock from Burro No. 3 and Burro No. 5, removal of only the upper tiers of the waste rock pile at the Burro Tunnel Mine site, improving six existing sediment basins, and installing two new sediment basins. This design is the Alternative 2 (which is the Preferred Alternative) evaluated in this Final EA.
10	F-130	Norton, H.K., State Historic Preservation Officer, Colorado SHPO	Barr, D.L., Program Manager, DOE	December 29, 2020	Colorado SHPO letter concurring with DOE's finding of no adverse effects to historic properties at the APE based on the 70% design that was provided in DOE's December 22, 2020 letter (Correspondence item #9). The Colorado SHPO also did not object to the APE identified by DOE as consisting of site numbers 5SM.2725 and 5SM.8290; and that site number SM.2725 was previously determined eligible for the NRHP while site number 5SM.8290 was previously determined not eligible for the NRHP.

Barr, D.L., DOE, Consultation Correspondence Item #1

Department of Energy
Washington, DC 20585

May 21, 2020

Mr. Steve Turner
State Historic Preservation Officer
Colorado State Historic Preservation Office
History Colorado
1200 Broadway
Denver, CO 80203

Subject: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County

Dear Mr. Turner:

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) and the Bureau of Land Management (BLM) are developing plans to conduct the reclamation of vintage, aged (i.e., 50 years or more in age) waste rock associated with the Burro Mines complex in Burro Canyon, San Miguel County, Colorado. The proposed reclamation is intended to mitigate the potential for future stormwater erosion and sediment discharge into the adjacent Dolores River due to stormwater-induced erosion of waste rock piles adjacent to the river.

This letter initiates Section 106 consultation with your office on the proposed reclamation activity by conveying the findings of the enclosed archeological survey conducted by BLM and architectural history survey completed by LM regarding the potential for historic property in the proposed reclamation location. Once the reclamation plans are complete, they will be shared with your office.

DOE has made the following determinations. The Burro Mines complex eligible for listing on the National Register of Historic Places as a Historic District under Criterion A, Criterion C, and Criterion G. The period of significance for the Burro Mines complex is from circa 1952 to the end of operations in circa 1984. The waste rock pile under consideration for reclamation constitutes a contributing element to the Burro Mines historic property. The prehistoric component of the site does not contribute to the eligibility of this site. DOE will determine the effects of the potential undertaking, once the reclamation plans are complete.

Background:

LM and BLM have collaborated on the analysis of archaeological, architectural, and landscape resources at Burro Canyon to define the historic properties within the area of potential effect (APE) at this location, and the context in which they were established. The Burro Mines complex (5SM.2725) consists of the remnants of a historic hard-rock uranium mine located on BLM-owned, LM-managed land. The Burro Mines complex includes four separate and distinct mine sites; the

Barr, D.L., DOE, Consultation Correspondence Item #1 (Cont.)

Burro Tunnel mine, the Burro No. 3 shaft mine, the Burro No. 5 shaft mine and the Burro No. 7 shaft mine. The file and literature search indicated three previous inventories within the project location; two previously recorded sites (5SM.2725 and 2726) and one previously recorded isolated find (5SM.1501). Remaining onsite features include an ore bin, a tunnel sized for trackless vehicles, multiple vertical shafts, support structures, support building foundations, an air and water line, major portions of a large ventilation system, and one steel headframe with associated ore and waste rock bins.

BLM's archaeological work included a field inventory covering 93 acres of new survey. This resulted in their documentation of the Burro Mines complex in its entirety and one new prehistoric site (5SM.8290). The various Burro Mine features have been combined into one continuous site under the site number 5SM.2725 for the entire complex. Site number 5SM.2726 will be retired following this recording. BLM also identified a prehistoric component within the Burro Mines complex and identified no other cultural resources during their survey.

The Burro Mines complex retains features not normally found on small-scale uranium mining operations in this region. This makes the Burro Mines complex significant because the remaining features retain a rare degree of integrity not typically found at uranium and vanadium mine sites in the region. Remaining architectural and archaeological assemblages include: Burro Tunnel mine (mine features include an ore bin, ore bin trestle, waste rock, and road and loadout area), Burro No. 5 mine (support buildings, shaft, steam engine, boiler, engine cooler, and waste rock) and Burro No. 7 mine (headframe, hoist house with hoist, waste rock, access road, air and water line, and vehicles). Reclamation activity at the Burro No. 3 mine included removal of the majority of buildings and structures that once existed; however, it retains sufficient features to contribute to the overall design, setting, and feeling of the mine complex.

The Burro Mines complex is eligible for listing under Criterion A for its association with broad patterns in U.S. history. Specifically, the mine produced vanadium and uranium ore used by U.S. defense and consumer industries during the Cold War. The Burro Mines complex, which operated from circa 1952 until circa 1984, maintains integrity of location, design, workmanship, and materials. The surrounding area, a desert canyon adjacent to a perennial river, contributes to the site's integrity of setting, feeling, and association. The Burro Mines complex is an excellent example of a hard-rock uranium mine that operated within the larger time period of the Cold War as a district (i.e., a collection of related buildings and structures that share a common theme).

Barr, D.L., DOE, Consultation Correspondence Item #1 (Cont.)

The Burro Mines complex contains sufficient structural remnants and archaeological assemblages that strongly retain the aspect of design, making the mine complex also eligible for listing under Criterion C. The surrounding landscape retains substantial features associated with mining during the 1950-1980s, such as the myriad of access roads blazed through the landscape. The mine's overall footprint speaks of its development during a time that predates the majority of the current environmentally-driven limitations on the surface activity of a modern mine. The archaeological assemblages discussed above, combined with structural features across the complex such as roads, water line, powerlines, an explosive magazine, vent holes, and other features and artifacts, convey that the individual mine sites were part of a larger industrial landscape.

Lastly, the period of significance for the Burro Mines complex extends to the end of operations in circa 1984 because the mine's operations during the 1970s and 1980s contributed to the continuation of the nuclear industry during the Cold War. The period of mining activity that is less than 50 years in age is eligible under Criteria Consideration G for its exceptional importance. During this time, the uranium mining industry responded to the nation's energy-related nuclear capabilities. During the 1970s and 1980s, the federal government no longer purchased uranium for military uses. Instead, it promoted nuclear power, which became a significant energy source. Given the large-scale operation at the Burro Mine, which yielded high volumes of ore, this mine complex can be considered to have rendered significant contributions of uranium ore to the nuclear power programs of the time period.

BLM participation in this project included their analysis of the APE for archaeological resources. As documented in the enclosed site form, the prehistoric component of the site does not contribute to the eligibility of this site.

As discussed in detail in the enclosed documents, this waste rock constitutes a contributing element to a historic district at this location. Therefore, it is our conclusion the loss of integrity of location, setting, feeling, and association with the reclamation waste rock piles could have an adverse effect on historic property if conditions were not applied to the proposed activity. We are currently developing reclamation plans in conjunction with BLM that includes conditions to reduce effects to a level that is no longer adverse. Once the details of the plans are complete, they will be shared with your office for your review and comment. It is our intent to conduct reclamation of the Burro Mines complex in a manner to maintain historic significance that preserves the potential for future use in some form of interpretive manner.

LM is currently preparing an Environmental Assessment (EA) that evaluates the proposed reclamation activities (preferred action) as well as the no action alternative. The preferred action alternative would result in the reclamation of the

Barr, D.L., DOE, Consultation Correspondence Item #1 (Cont.)

existing waste rock piles in Burro Canyon. This includes the entire waste rock pile at the Burro Tunnel mine and the crown portion of waste rock piles at Burro No. 3 and No. 5 mines, which would be relocated to an existing gravel pit within the Burro Mines complex. The remaining portions of the waste rock piles would be recontoured and reclaimed in place to provide for their revegetation and long-term stabilization.

The key features of the historic mining district would be avoided by the proposed work. The work proposed on the waste rock piles to remain in place would preserve them long term by minimizing their potential for erosion. Meanwhile, the removal of some of the most recently deposited waste rock (circa 1970s and 1980s) from the Burro Tunnel mine site would be done in such a way that there would be no adverse effect to the historic significance of the district and its associated landscape because of the conditions LM will be applying during the development of the reclamation plans. The LM/BLM determination of effect would be based on the reclamation plans which will be shared with your office when they become available.

LM is initiating consultation with your office as we continue through the EA process and develop measurable ways to mitigate adverse effects to this historic property. Once completed, LM will submit the engineering design to your office to continue the consultation process. In the interim, LM appreciates your participation and input based on the content of this letter.

Please contact me at (720) 880-4352 or Deborah.Barr@lm.doe.gov. Please address any correspondence to:

U.S. Department of Energy
Office of Legacy Management
11035 Dover St., Ste. 600
Westminster, CO 80021-5587

Sincerely,

Deborah L Barr

Digitally signed by DEBORAH BARR
Date: 2020.05.21 14:34:41 -06'00'

Deborah L. Barr, P.G.
Uranium Leasing Program Manager

Enclosures

Barr, D.L., DOE, Consultation Correspondence Item #1 (Cont.)

cc w/enclosures:
James Blair, BLM Tres Rios (e)
Connie Clementson, BLM Tres Rios (e)
Chris Krassin, BLM Tres Rios (e)
Brian Yaquinto, BLM Tres Rios (e)
Padraic Benson, DOE-LM (e)
Jay Glascock, DOE-LM (e)
Tracy Ribeiro, DOE-LM (e)
Ed Cotter, Navarro (e)
Jim Denier, Navarro (e)
Miquette Gerber, Navarro (e)
Nicole Olin, Navarro (e)
Scott Osborn, Navarro (e)
Joe Trnka, Navarro (e)
DOE Read File
File: ULP 3000-06

Norton, H.K., Colorado SHPO, Consultation Correspondence Item #2

HISTORY Colorado

Deborah L. Barr
Uranium Leasing Program Manager
U.S. Department of Energy
Office of Legacy Management
11035 Dover Street, Suite 600
Westminster, CO 80021-5587

RE: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County (HC# 77950)

Dear Ms. Barr,

Thank you for your correspondence dated May 21, 2020 and received by our office on June 8, 2020 seeking to initiate review of the above referenced undertaking pursuant to the Programmatic Agreement Among the U.S. Department of Energy – Office of Legacy Management, the U.S. Department of the Interior – Bureau of Land Management – Colorado State Office, the Colorado State Historic Preservation Office, and the Pueblo of Zuni Regarding the Uranium Leasing Program within Mesa, Montrose, and San Miguel Counties, Colorado (PA). The Department of Energy's Office of Legacy Management (LM) is coordinating with the Bureau of Land Management (BLM) to implement the undertaking. LM is the lead agency involved under Section 106 of NHPA.

We thank you for the documentation you have provided. We understand that the undertaking proposes to reclaim waste rock associated with the Burro Mine Complex (5SM.2725). The provided documentation notes that your agency will submit detailed plans to our office once they are completed for continued consultation under Stipulation V and VI of the PA. We, however, note that your correspondence states that "Meanwhile, the removal of some of the most recently deposited waste rock (circa 1970s and 1980s) from the Burro Tunnel mine site would be done in such a way that there would be no adverse effect to the historic significance of the district and its associated landscape."

It is unclear based on the documentation provided if your agency plans on removing the waste rock pile during the development of the reclamation plan. The statement suggests that your agency will proceed with the undertaking prior to the completion of the consultation process. We cannot agree with the finding that the removal of the waste rock from the 1970s and 1980s would result in no adverse effects. The work will occur in the boundaries of a historic property (5SM.2725) and the provided documentation notes that the 1970s and 1980s components of the site comprise contributing elements that meet Criteria Consideration G. Since the undertaking includes the proposed removal of the waste rock from the 1970s and 1980s, the removal of the 1970s and 1980s waste rock requires additional consultation.

We request that you provide additional information to our office for further consultation. The information should include the details on the entirety of the proposed mine reclamation including all proposed treatment areas, temporary use areas, access roads, and staging areas. Please provide additional details, drawings, maps, and photographs as necessary to provide an understanding of the undertaking and area of potential effects (APE). This should include a description of areas of indirect and cumulative effects.

We note that an archaeological inventory [*A Class III Cultural Resource Inventory for the Burro Mine Complex (5SM.2725), U.S. Department of Energy Office of Legacy Management, Waste Rock Reclamation Project, in San Miguel County, Colorado*] and an architectural inventory (*Historic Property Survey Burro Mines Complex, San Miguel County, Colorado*) were completed for the proposed undertaking according to Stipulation V of the PA.

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HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

Norton, H.K., Colorado SHPO, Consultation Correspondence Item #2 (Cont.)

The following comprises our findings, based on the documentation provided, regarding the eligibility of resources identified in the APE for the National Register of Historic Places (NRHP):

- We concur with your determination that 5SM.2725 is eligible for the NRHP under Criteria A and C as well as under Criteria Consideration G. We, however, note that the historic archaeology component form for the resource states that "Features could contribute significant information (on) post 1950s mining technology, engineering, mine operations, and design." As a result, we recommend reconsidering the resource as also eligible for the NRHP under Criterion D.

  Further, we note that the prehistoric archaeological component form did not discuss a "Chalcedony Biface, IF" that was combined with the resource. In addition, the two cultural resource reports show different boundaries for the resource. The documents associated with the archaeological inventory shows evidence for a larger boundary than the architectural inventory. We recommend clarifying and updating cultural resource inventory forms and reports as necessary to address these discrepancies.

- The provided documentation notes that 5SM.2726 was combined with 5SM.2725 under the 5SM.2725 Smithsonian Number.

- We request additional information on 5SM.8290 before making a statement on the eligibility of the resource. The cultural resource inventory forms provided did not include a prehistoric archaeological component form. The sketch map also contains discrepancies. The inventory form and archaeological report notes that the resource contains a lithic quarry with two tools (L1 and L2). The map shows the lithic quarry and the tools outside the boundary of the site. We request the redrawing of the boundary to include the full extent of artifacts and features associated with the resource as well as the completion of a prehistoric archaeological component form (1401). Please submit the updated documents for our review.

- We also note that the archaeological inventory report contains errors. The report contains a subsection titled "5SM.8290." The subsection, however, discusses 5SM.2725. The report does not include information pertaining to 5SM.8290. We request the revision of the report to address the identified errors and information gaps and the submission of the revised report to our office for review.

We look forward to continued consultation regarding the proposed undertaking pursuant to Stipulations V and VI.

We request being involved in the consultation process with the local government and other consulting parties, which as stipulated in 36 CFR 800.3 and Stipulation II of the PA is required to be notified of the undertaking. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If you have any questions, please contact Matthew Marques, Section 106 Compliance Manager, at (303) 866-4678, or matthew.marques@state.co.us.

Sincerely,

Dr. Holly K Norton

Digitally signed by Dr. Holly K Norton
Date: 2020.06.18 13:28:40 -06'00'

Steve Turner, AIA
State Historic Preservation Officer

HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

Barr, D.L., DOE, Consultation Correspondence Item #3

Department of Energy
Washington, DC 20585
July 20, 2020

Mr. Matthew Marques
Section 106 Compliance Officer
Colorado State Historic Preservation Office
History Colorado
1200 Broadway
Denver, CO 80203

Subject: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County, Colorado (HC# 77950)

Dear Mr. Marques:

Thank you for taking the time to discuss the U.S. Department of Energy Office of Legacy Management (LM) and U.S. Bureau of Land Management (BLM) plans to conduct the reclamation of vintage-aged i.e., 50 years or more in age waste rock associated with the Burro Mines complex in Burro Canyon, San Miguel County, Colorado.

As discussed, the proposed work is not being done under the aegis of the Programmatic Agreement developed in consultation with your office for the Uranium Leasing Program (ULP). It is our opinion that the proposed reclamation work is unrelated to ULP activity, so it merits National Historic Preservation Act Section 106 review on its own.

It is our intention to share reclamation design plans once they are sufficiently developed, including details, drawings, maps, and photographs as necessary to provide an understanding of the undertaking and area of potential effects including areas of indirect and cumulative effects, if found. We intend to provide our formal determination of effect along with the reclamation design plans.

We would like to address the questions asked in your office's letter dated June 18 regarding the archaeological survey report. Enclosed is BLM's revised report to address these issues.

BLM did consider the mining resources for their potential to express eligibility under Criterion D. The criteria for eligibility were based on the historic mining context multiple property listing for historic radium and vanadium mining prepared by Eric Twitty. In accordance with the guidelines in that context, the Burro Mines complex would not likely qualify under Criterion D. Few mining complexes would be eligible under Criterion D because most information can be collected by detailed recordation of surface features. Although exceptions may exist, it is unlikely the Burro Mines complex would retain significant information under Criterion D. Criteria A, C, and exemption Criterion G remain the most appropriate criteria for which the Burro Mine is eligible.

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Barr, D.L., DOE, Consultation Correspondence Item #3 (Cont.)

With respect to the chalcedony biface, it was not part of the prehistoric component and was located between Burro #5 and Burro #7. It is noted on the site map in the management data form for site 5SM.8290; the form also provides a photo. This is clarified in the enclosed revised report. No further documentation of this isolated find is required. The boundaries (both site and survey) provided by BLM will be the official project boundaries. Also, Geographic Information System shapefiles of the boundaries will be provided once they are finalized.

As noted in the enclosed component form, given the quality of the local material, which is the source for Burro Canyon chert, opportunistic lithic quarrying of naturally occurring lithic material eroding from side slopes is ubiquitous across the entire region, which could be considered a lithic landscape. Unless there are significant concentrations of lithic material having evidence of being worked or features, this behavior does not represent a site and should not be recorded. Capturing this behavior only create large, meaningless boundaries impossible to effectively record and manage. The location of this noted ephemeral quarrying is simply labeled on the 5SM.8290 site map to capture that it is occurring but should not be included as part of the site. The boundary is accurate to what is observed as a site.

Finally, LM is conducting consultation with the local government and other consulting parties, as mentioned in your letter, through the National Environmental Policy Act (NEPA) and through the local permitting process, as needed, with San Miguel County. We would be happy to provide a copy of the NEPA document when it becomes available; however, we are not using the NEPA process to substitute for the Section 106 process. We intend to continue consultation with your office as this project moves forward.

Should you wish to discuss this finding and the methods selected to minimize our effects on historic property, please contact me at (720) 880-4352 or Deborah.Barr@lm.doe.gov. Please address any correspondence to:

U.S. Department of Energy
Office of Legacy Management
11035 Dover St., Ste. 600
Westminster, CO 80021-5587

Sincerely,

Deborah L Barr

Digitally signed by DEBORAH BARR
Date: 2020.07.20 16:04:18 -06'00'

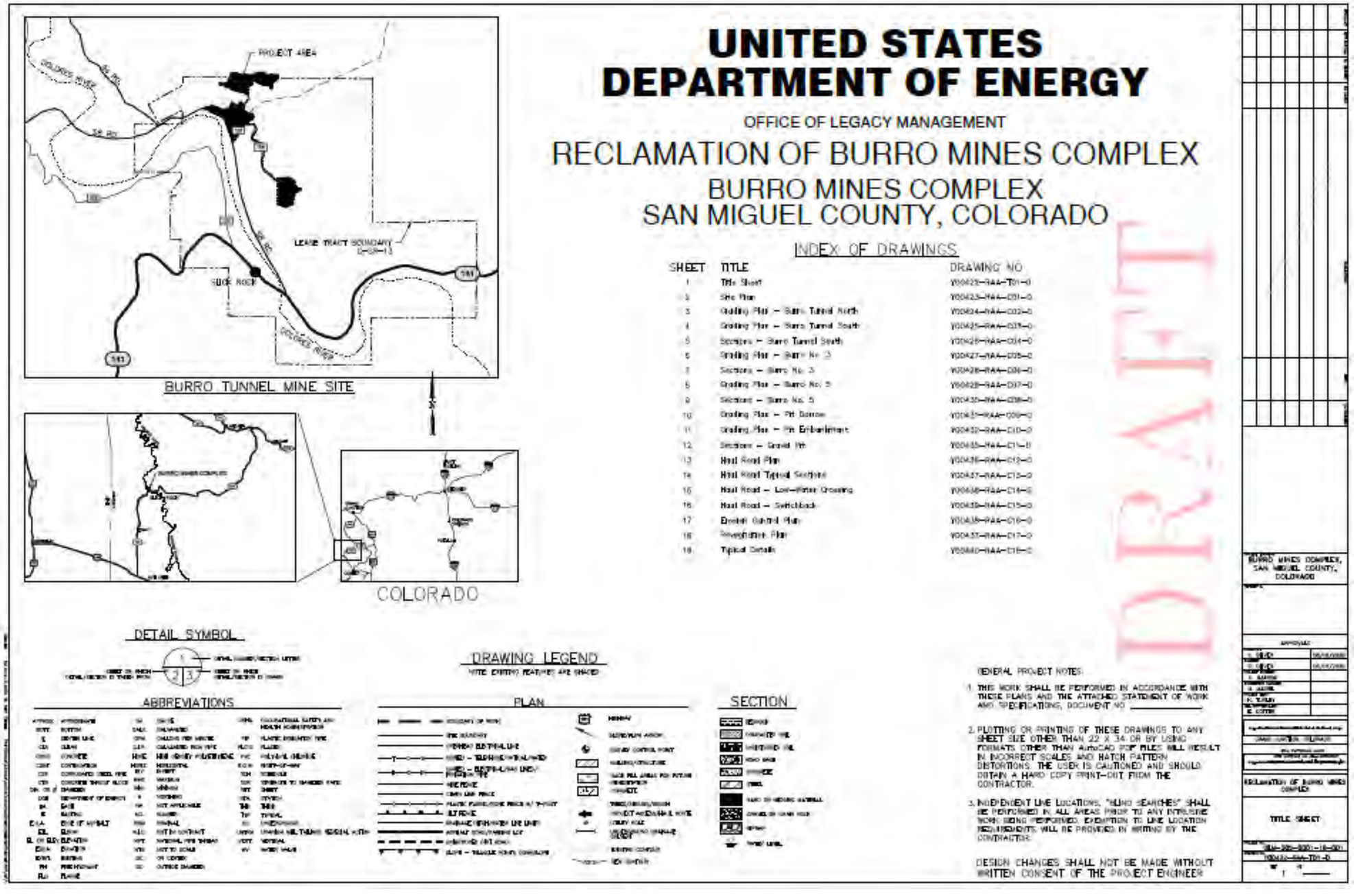
Deborah L. Barr, P.G.
Uranium Leasing Program Manager

Enclosures

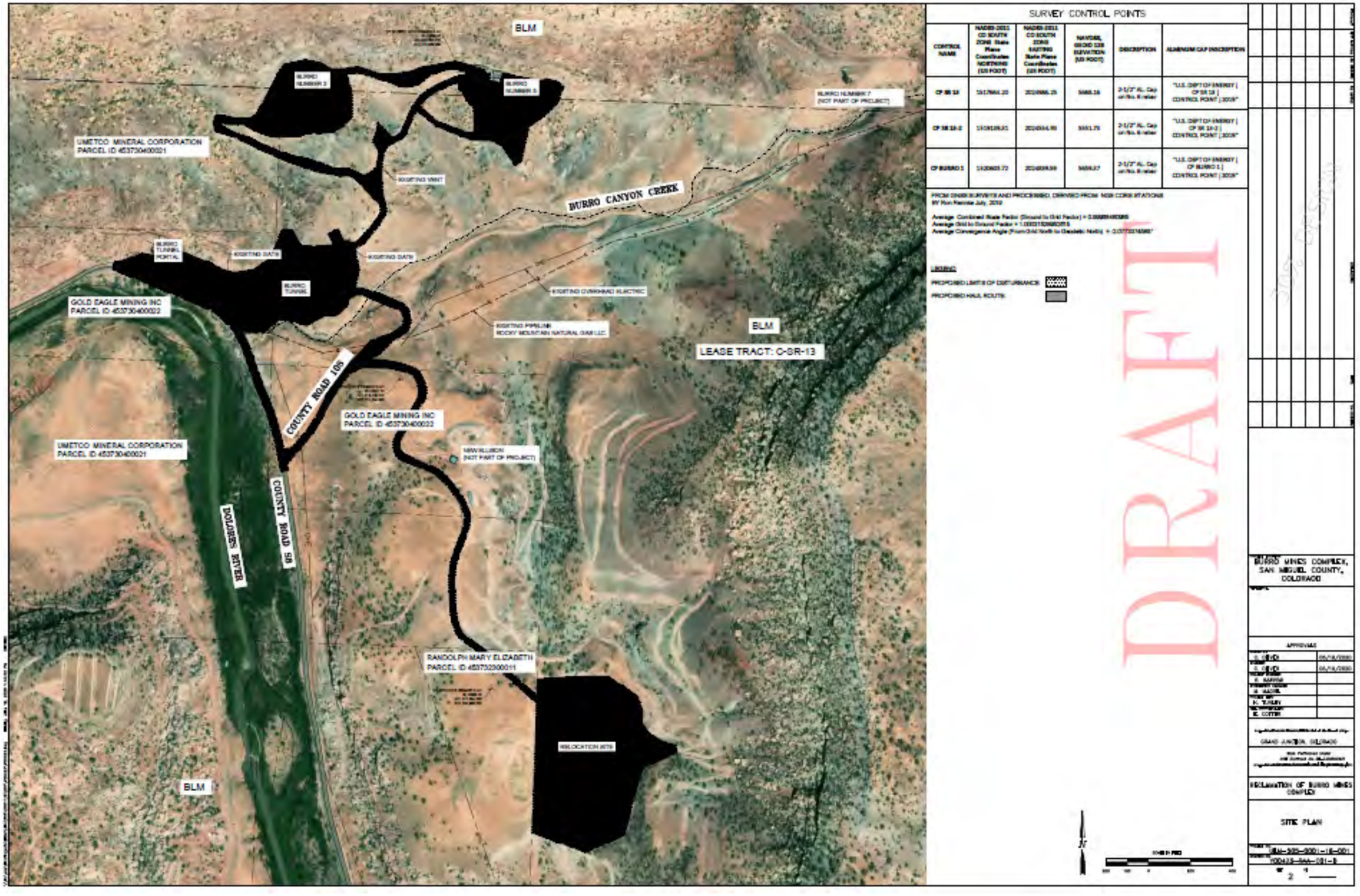
Barr, D.L., DOE, Consultation Correspondence Item #3 (Cont.)

cc w/enclosures:
Brian Yaquinto, BLM Tres Rios (e)
Padraic Benson, DOE-LM (e)
Jay Glascock, DOE-LM (e)
Tracy Ribeiro, DOE-LM (e)
Ed Cotter, Navarro (e)
Jim Denier, Navarro (e)
Miquette Gerber, Navarro (e)
Tom Johnson, Navarro (e)
Nicole Olin, Navarro (e)
Scott Osborn, Navarro (e)
Joe Trnka, Navarro (e)
DOE Read File
File: FOLD/20/903

Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 1



Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 1 (Cont.)



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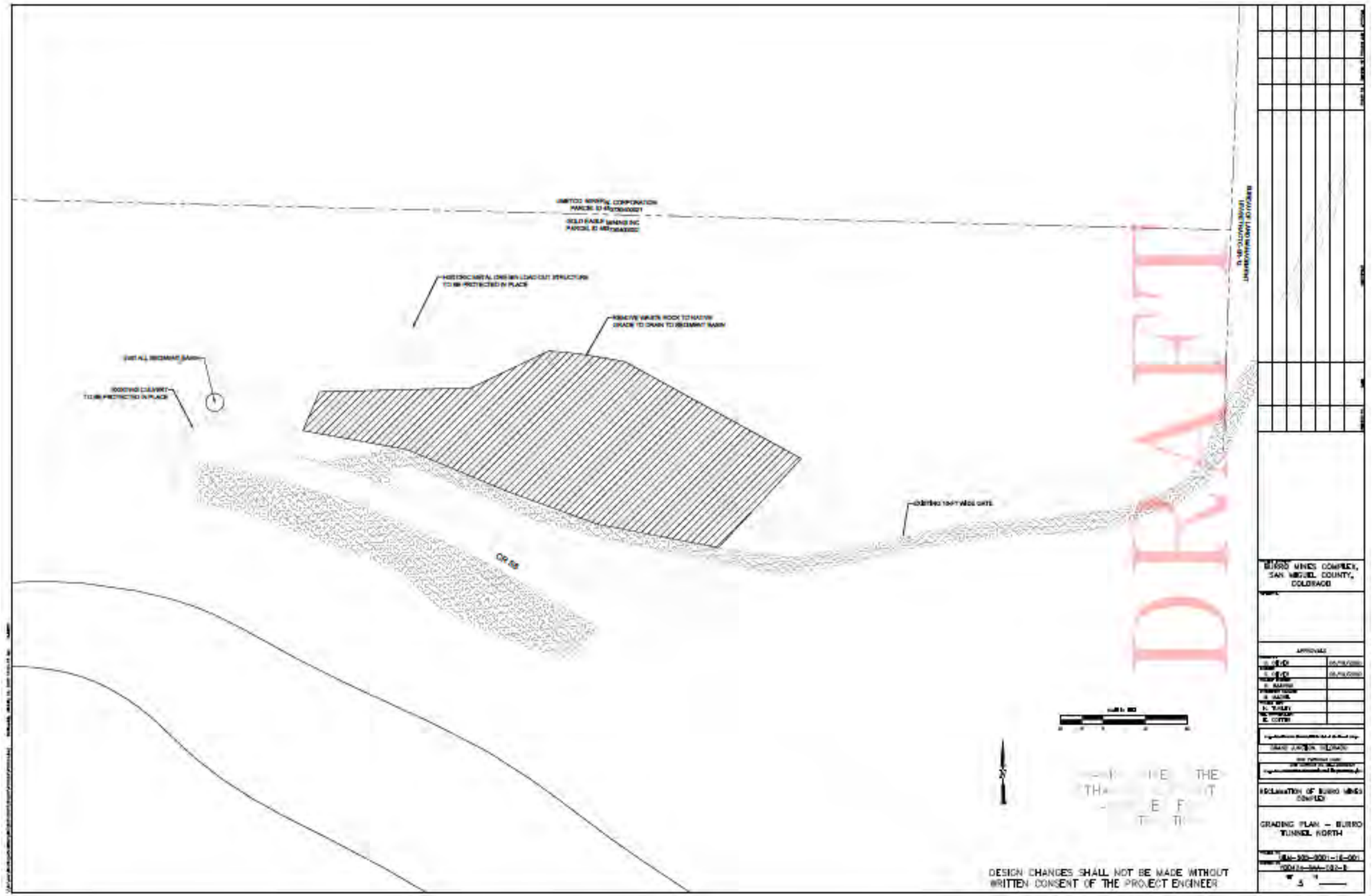

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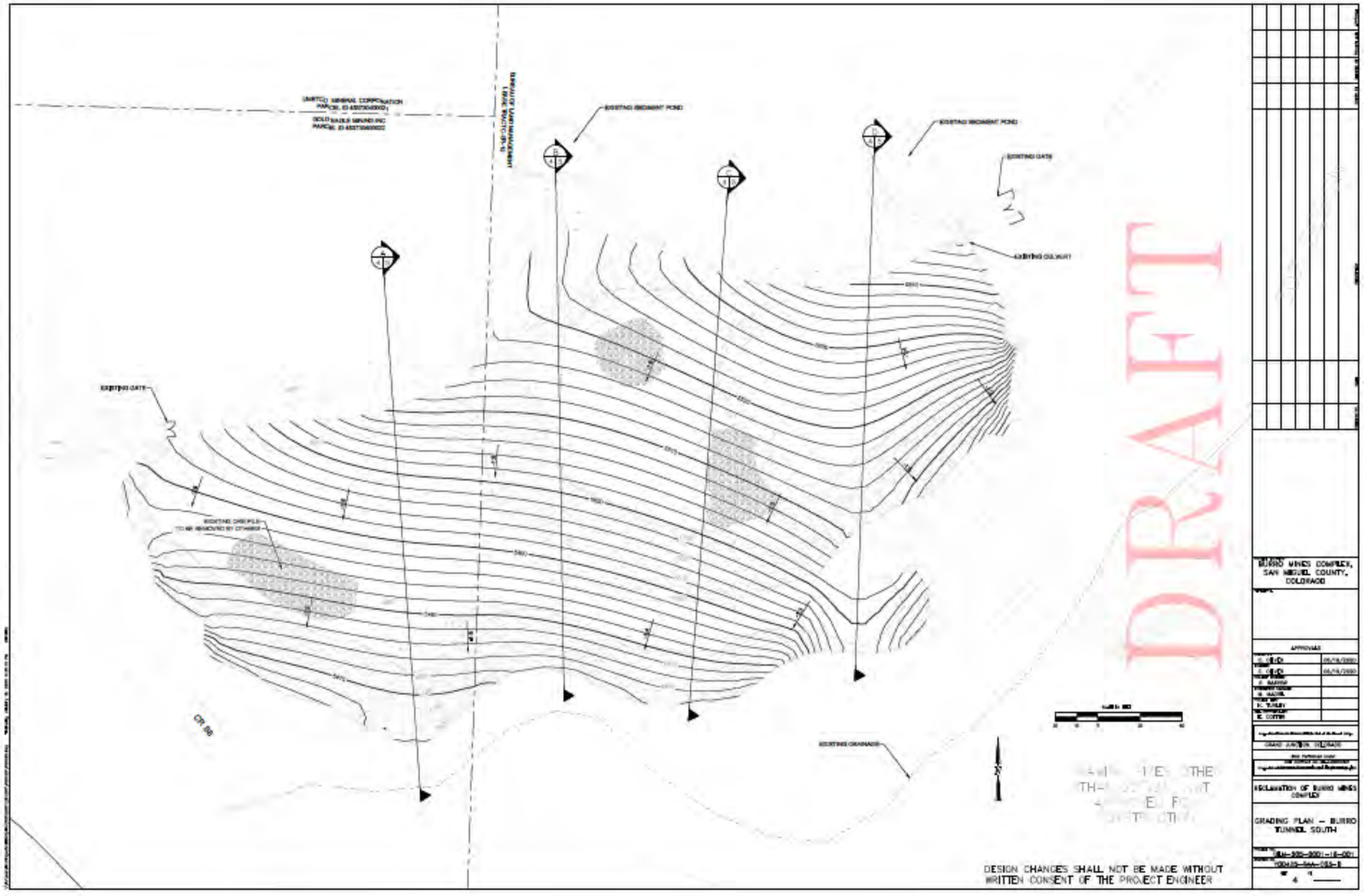

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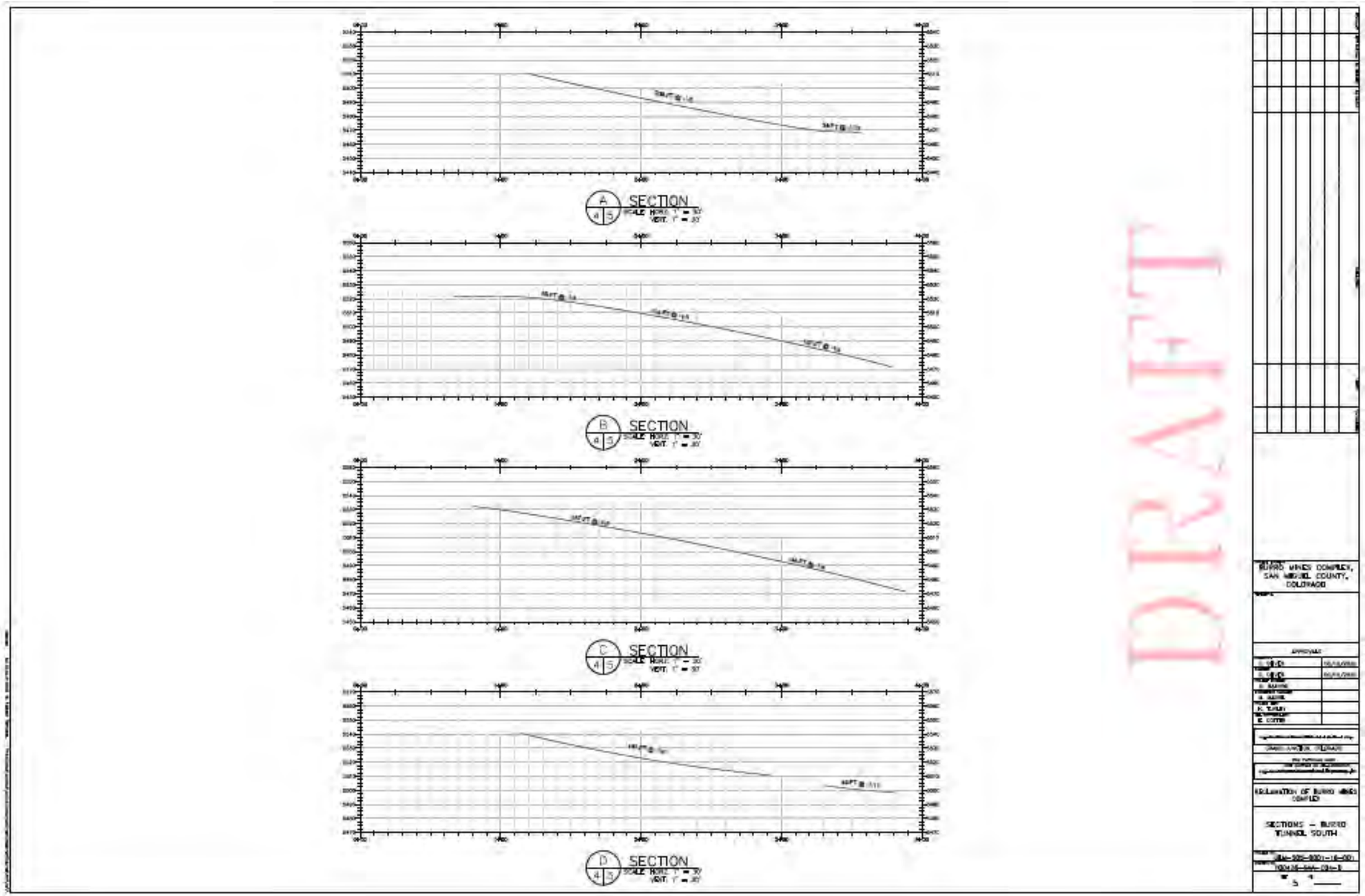

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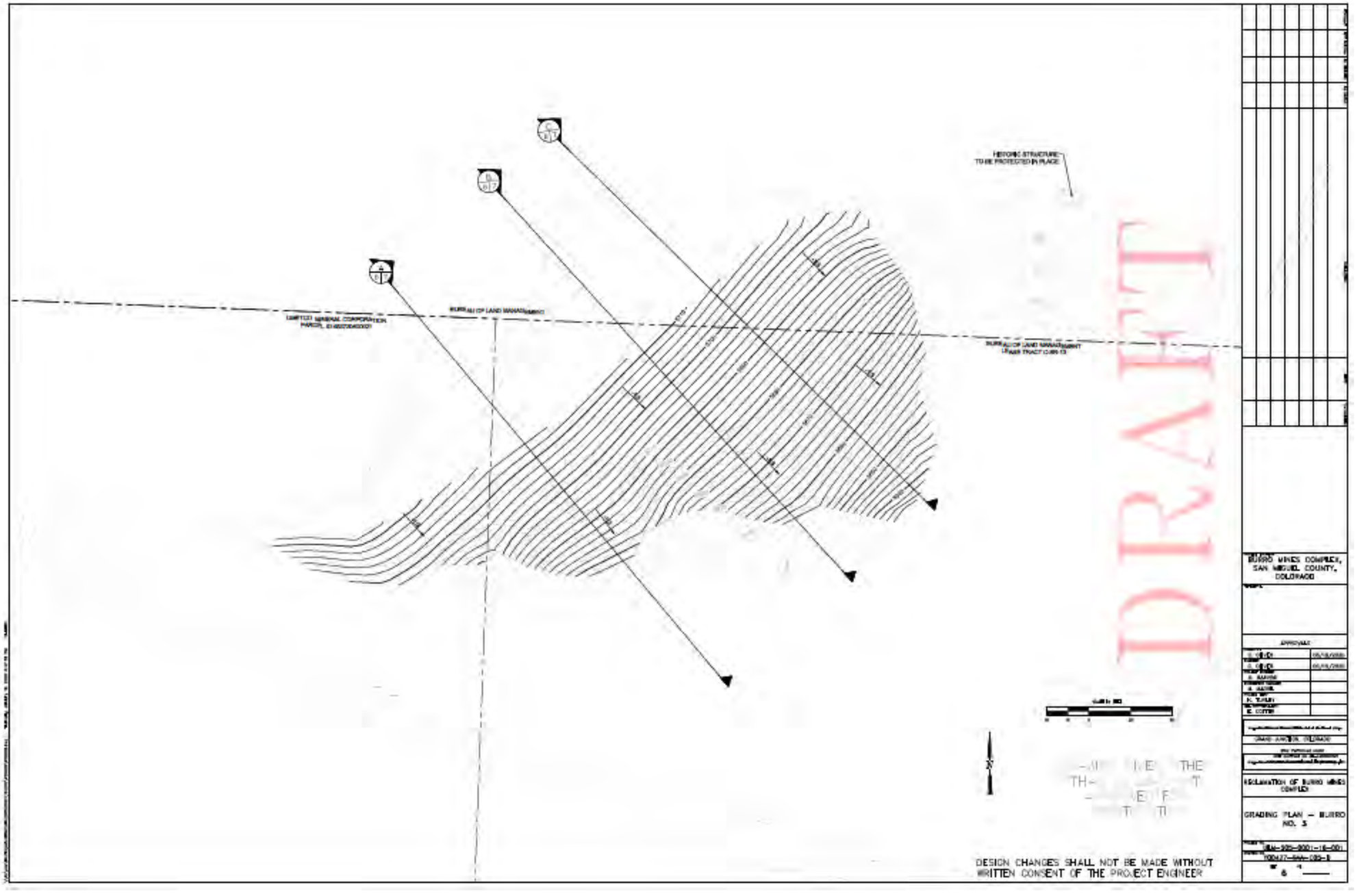

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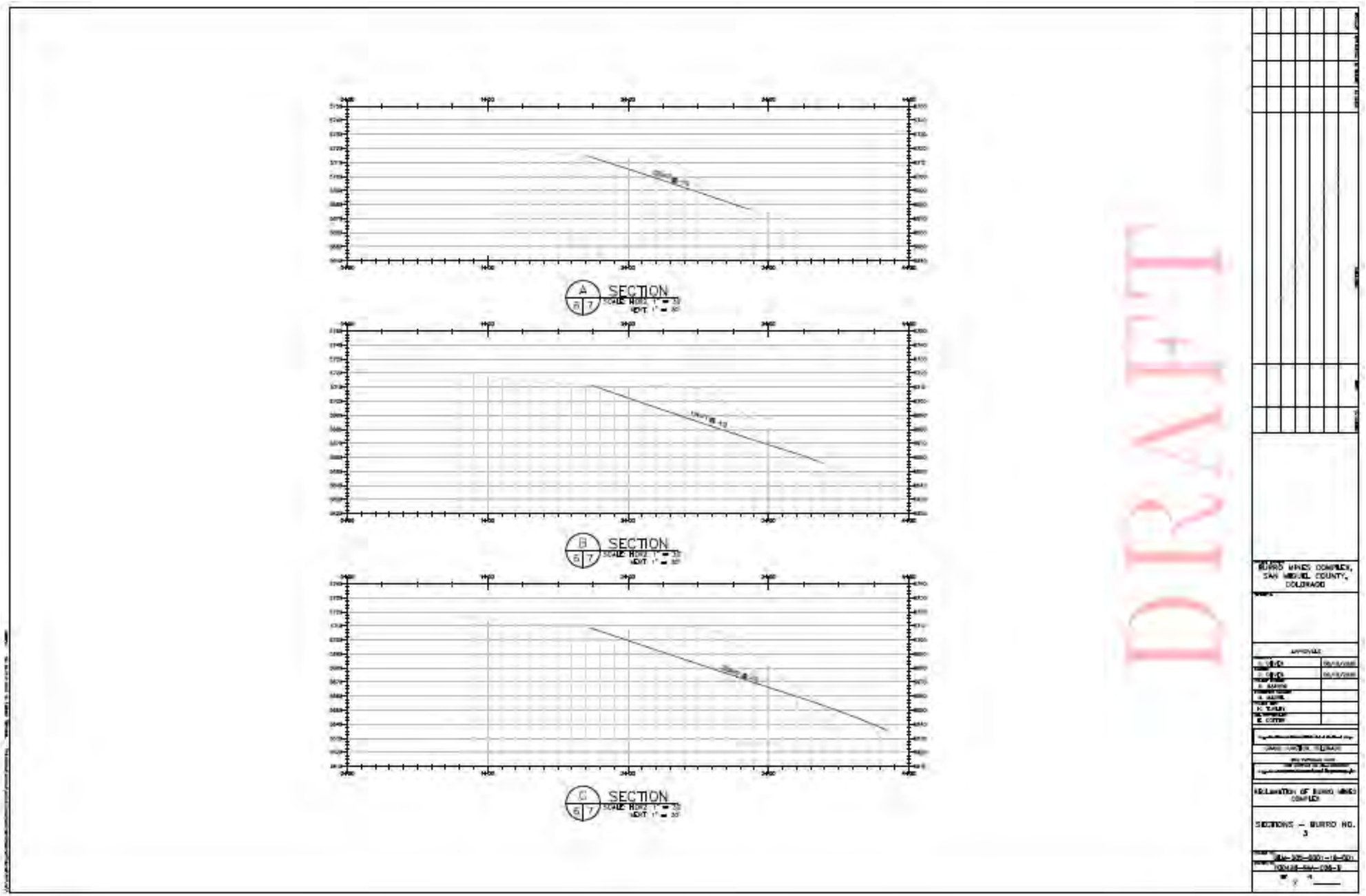

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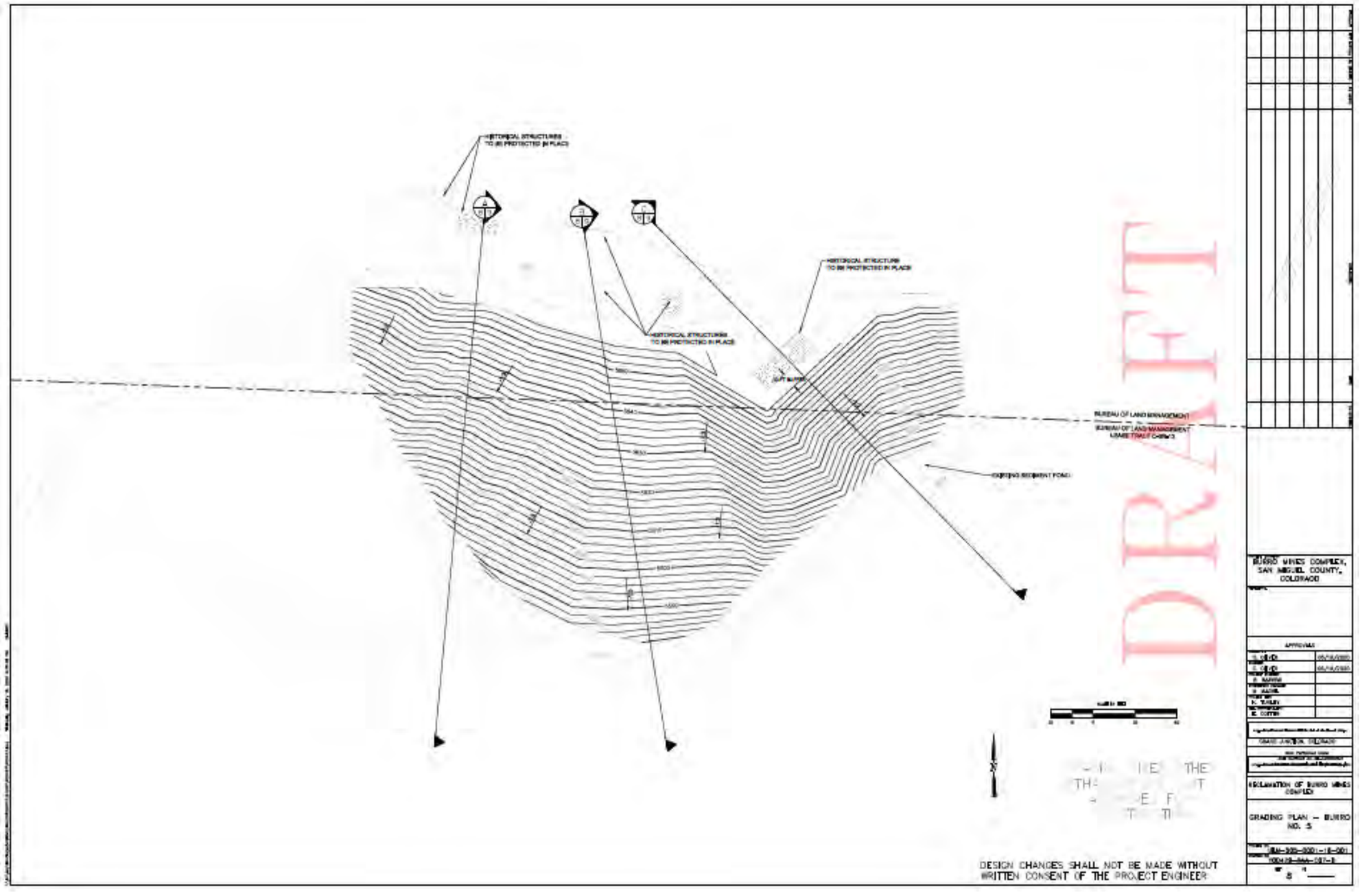

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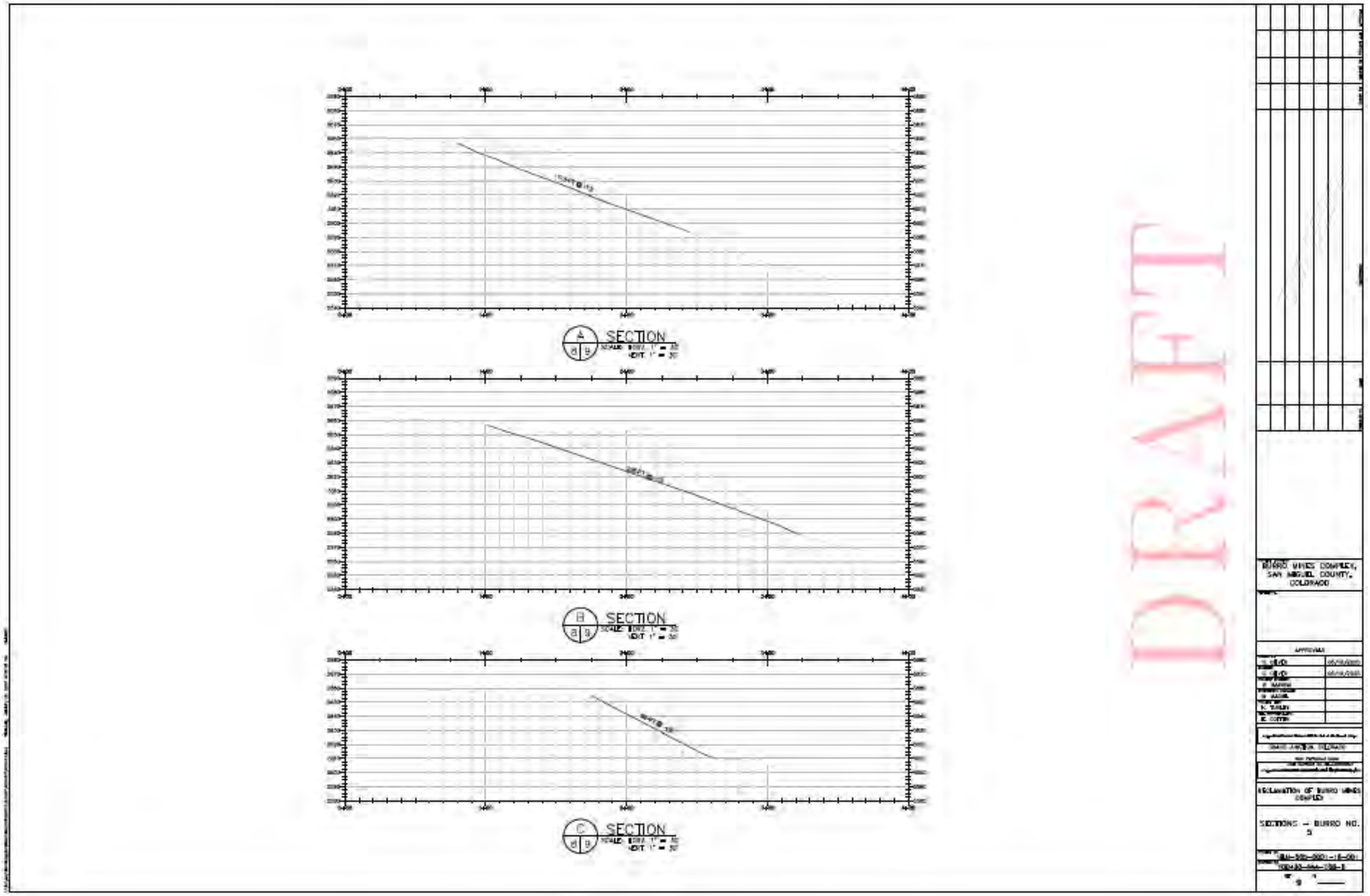

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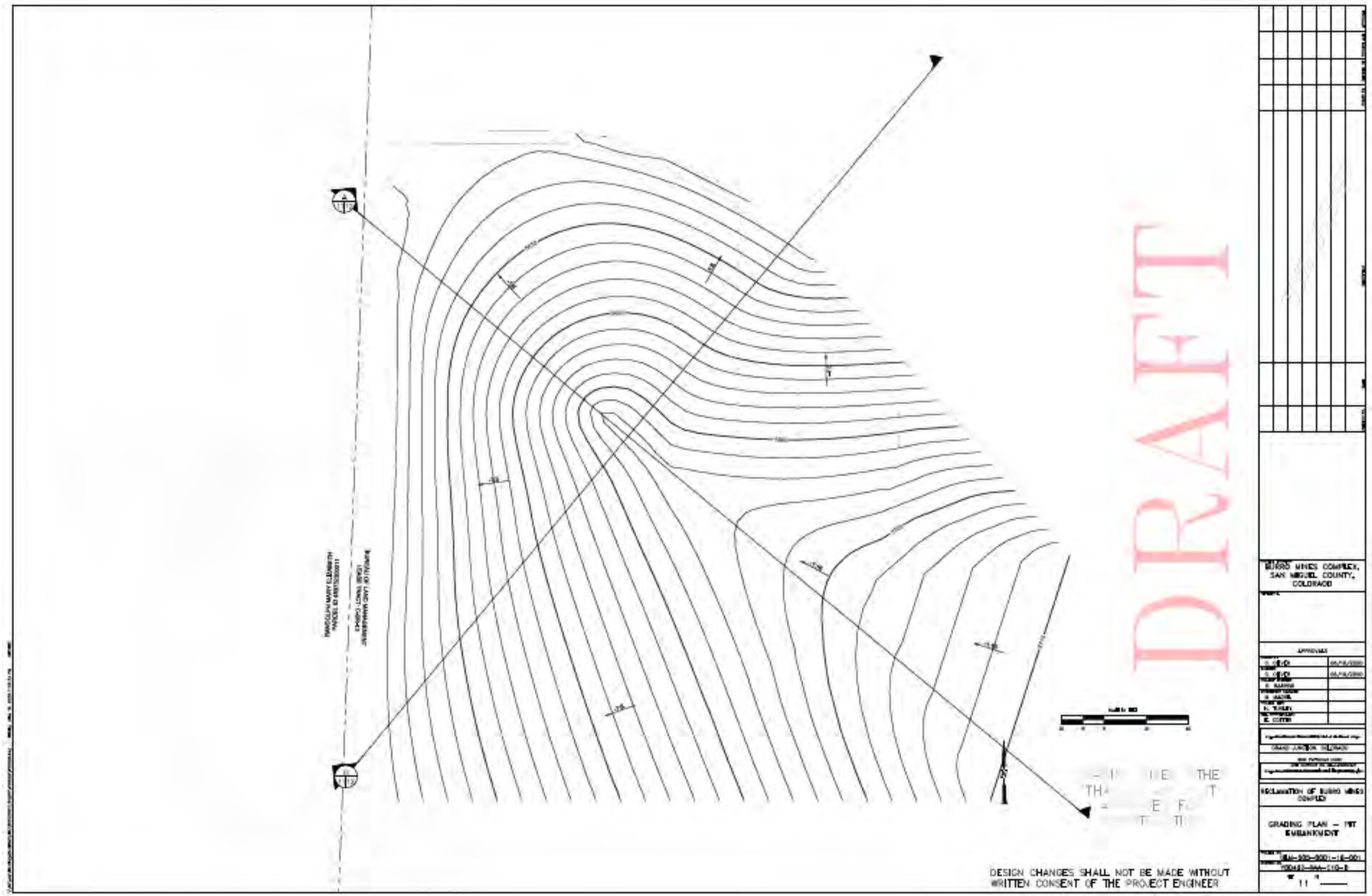
Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 1 (Cont.)



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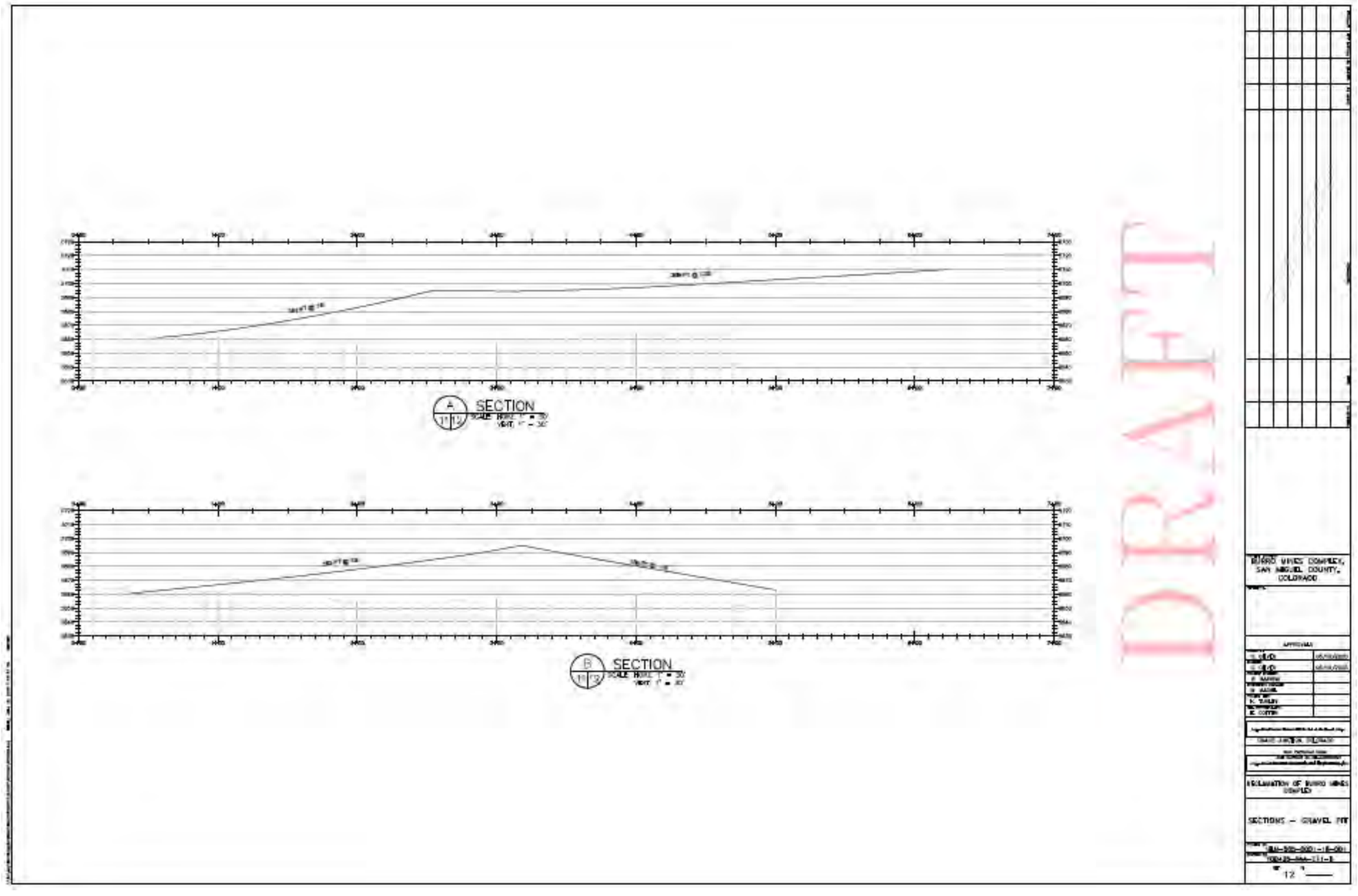

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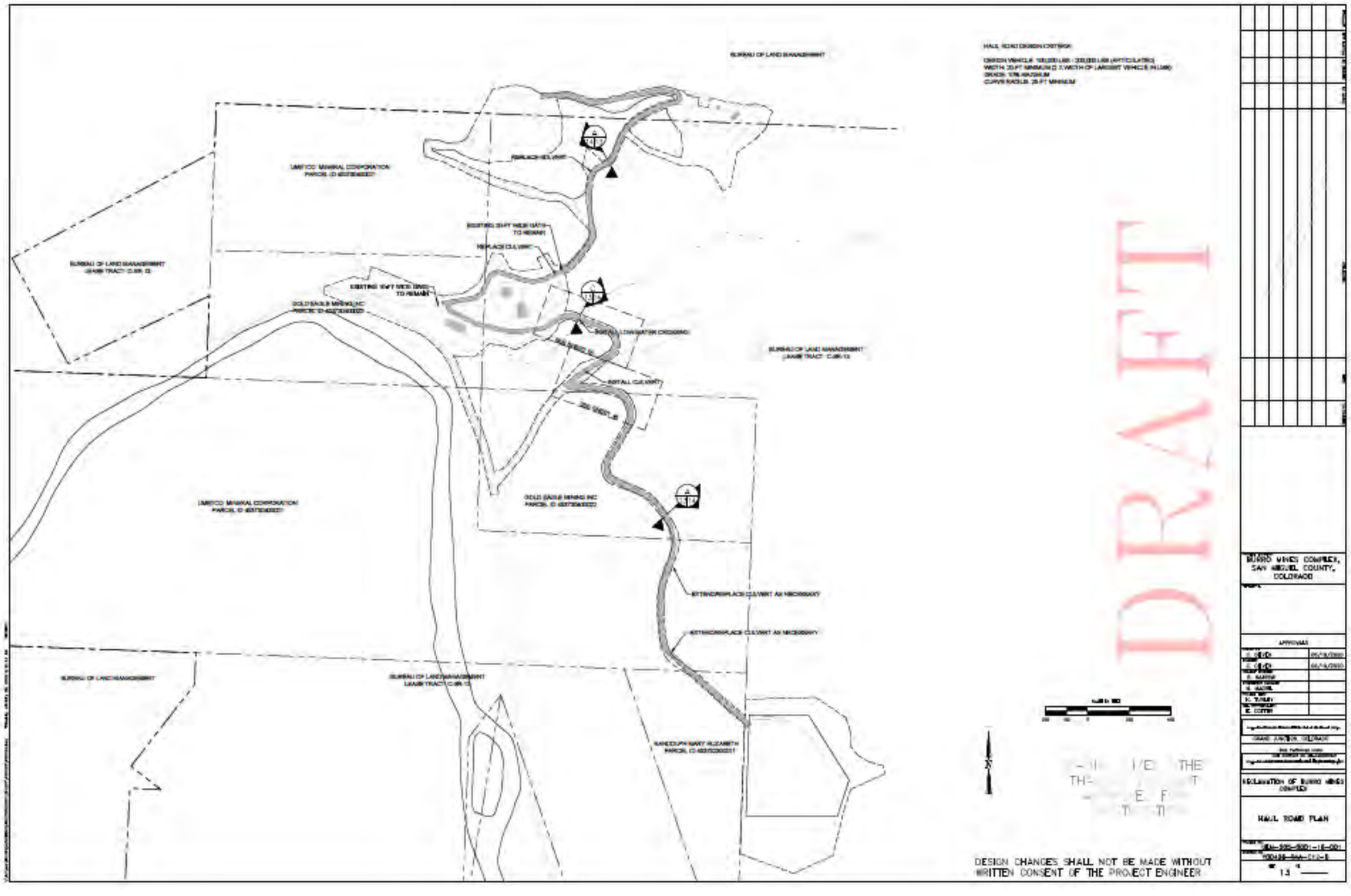

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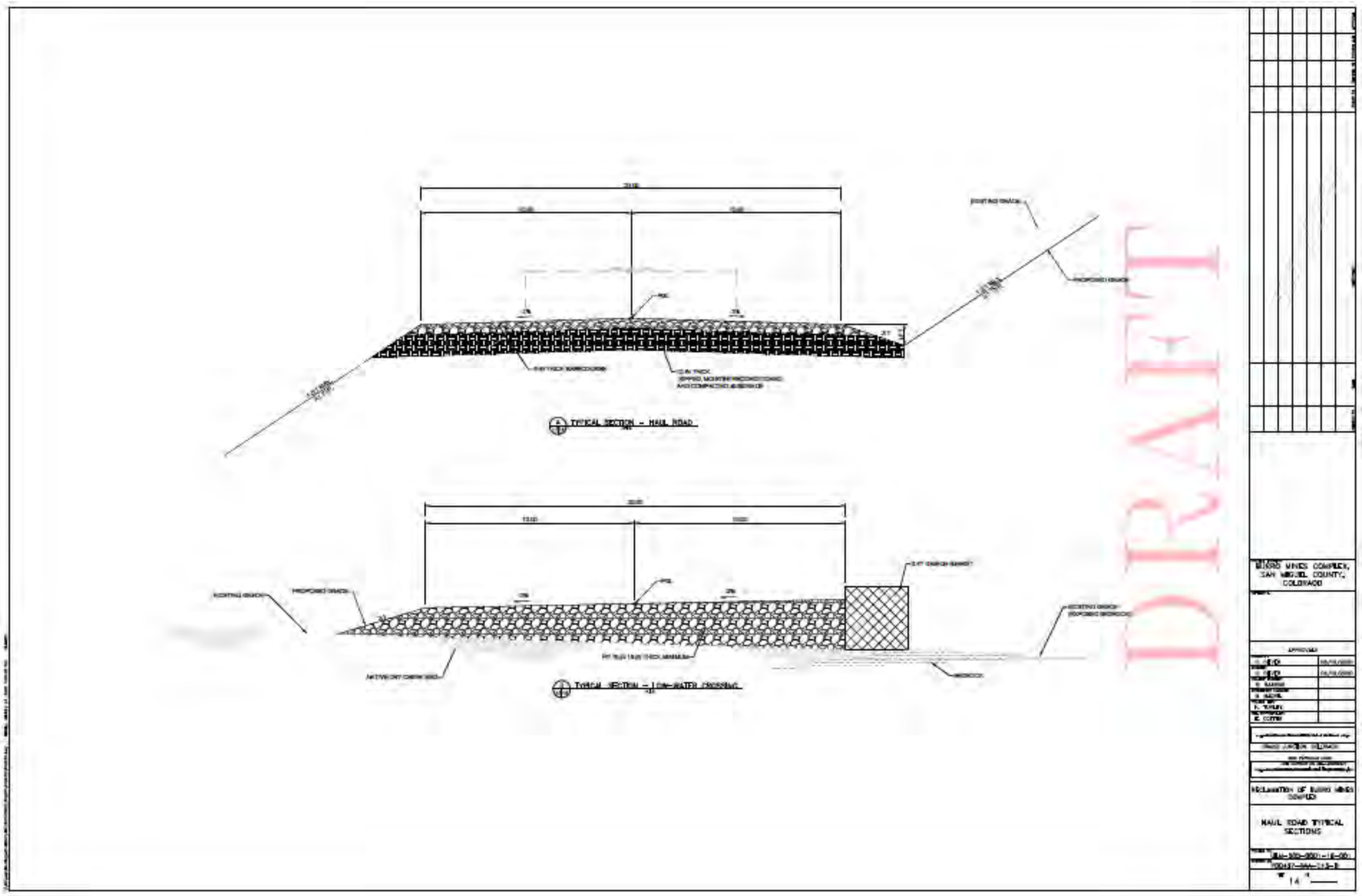

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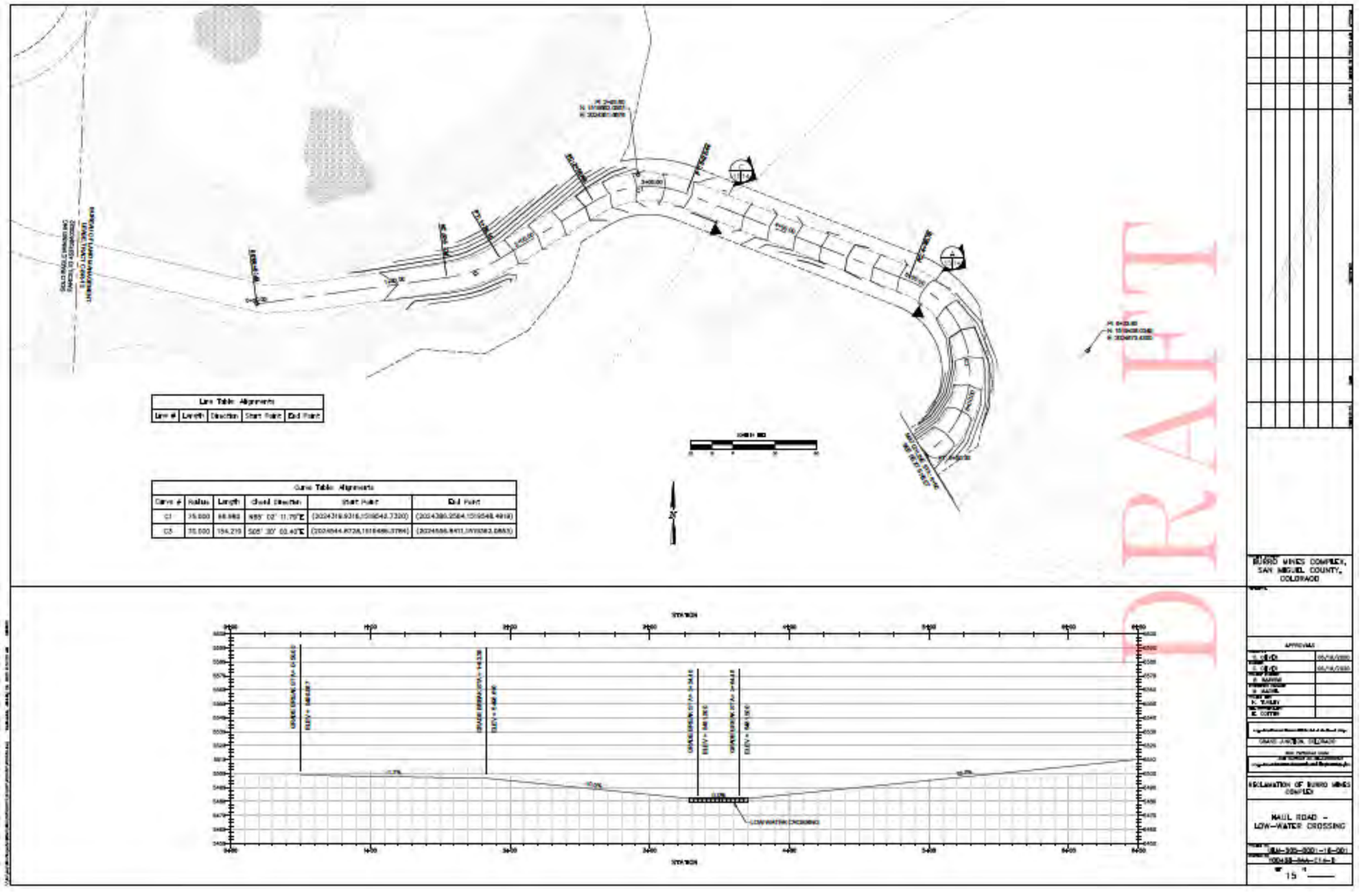

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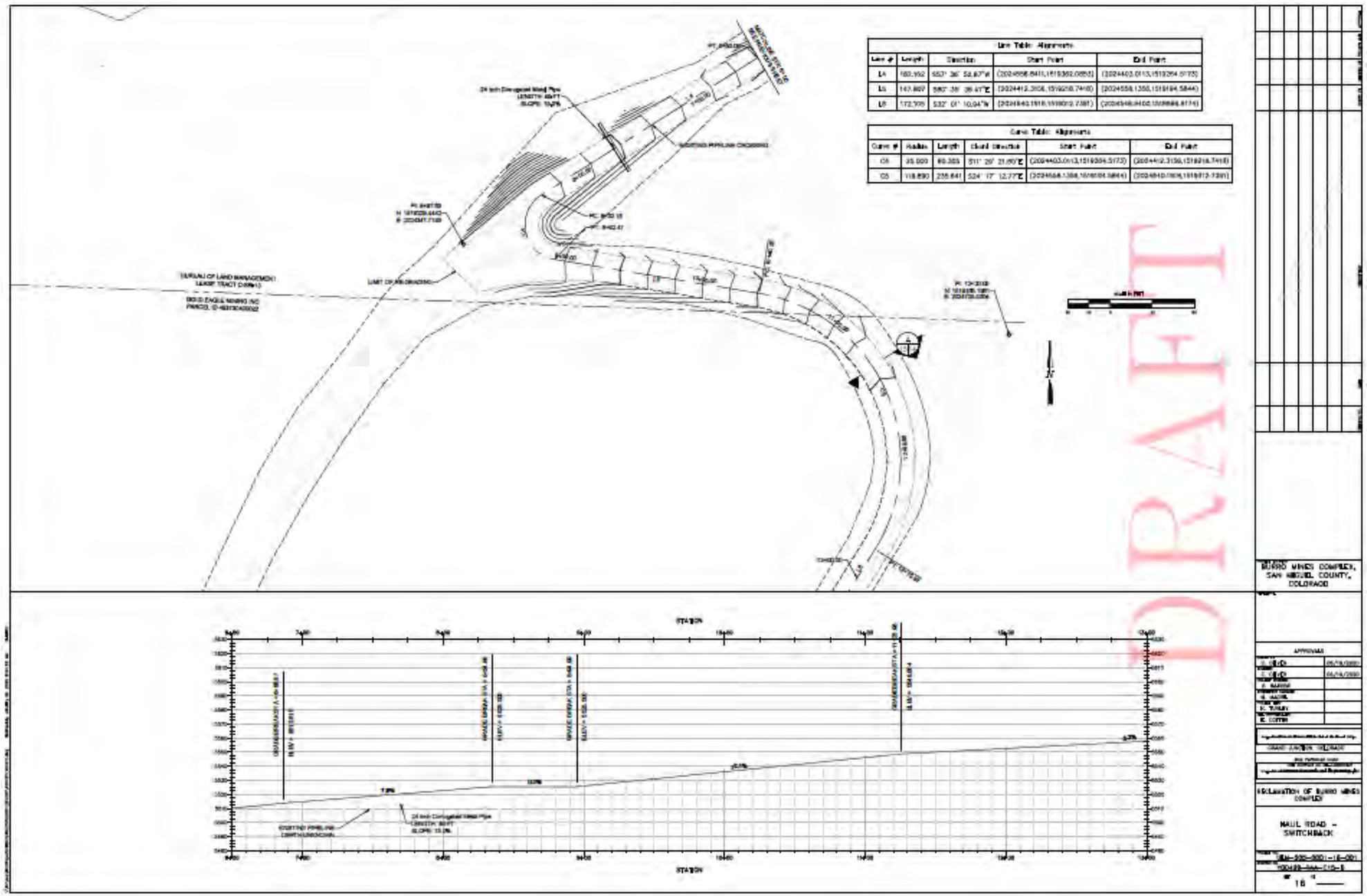
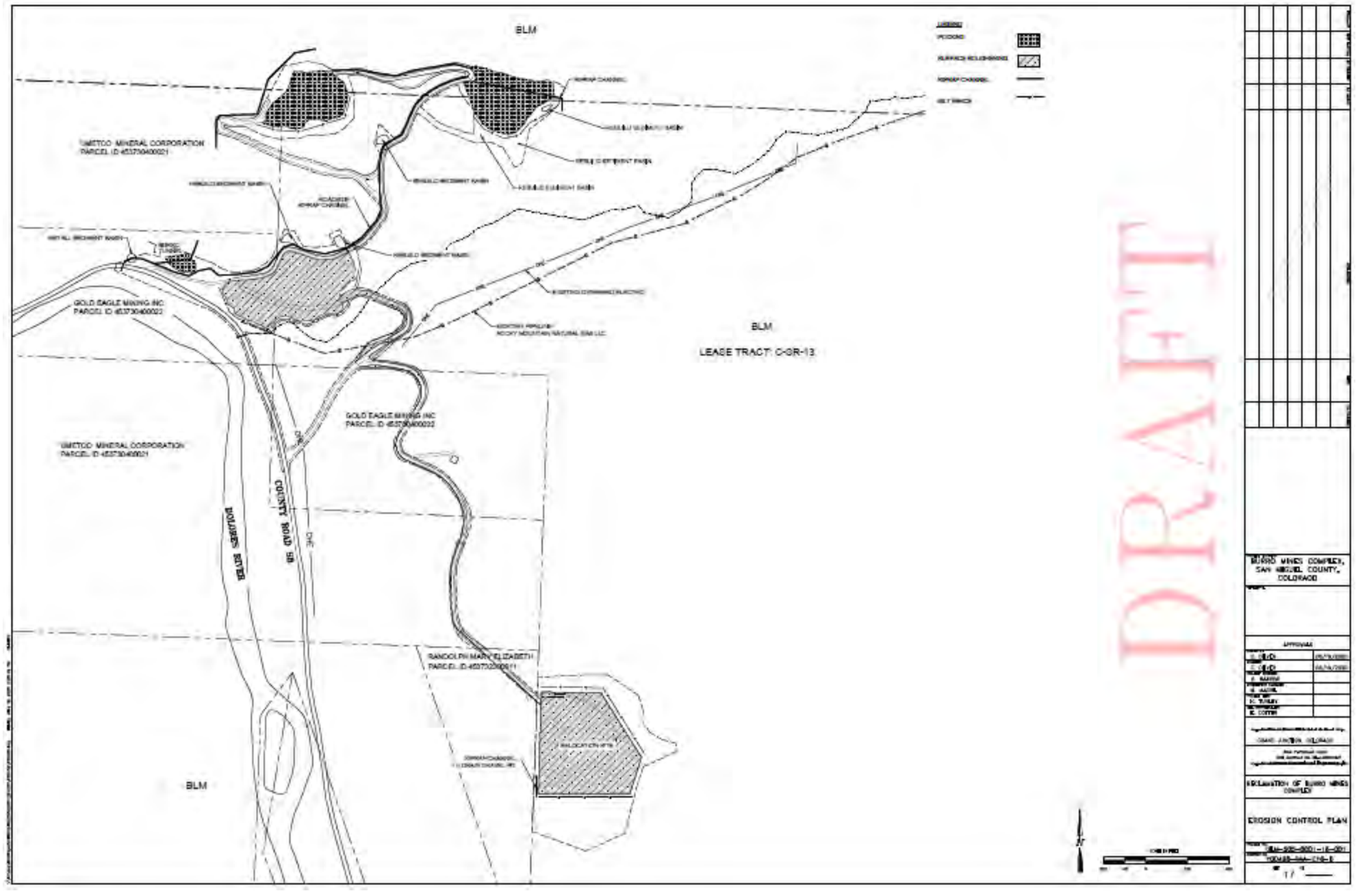
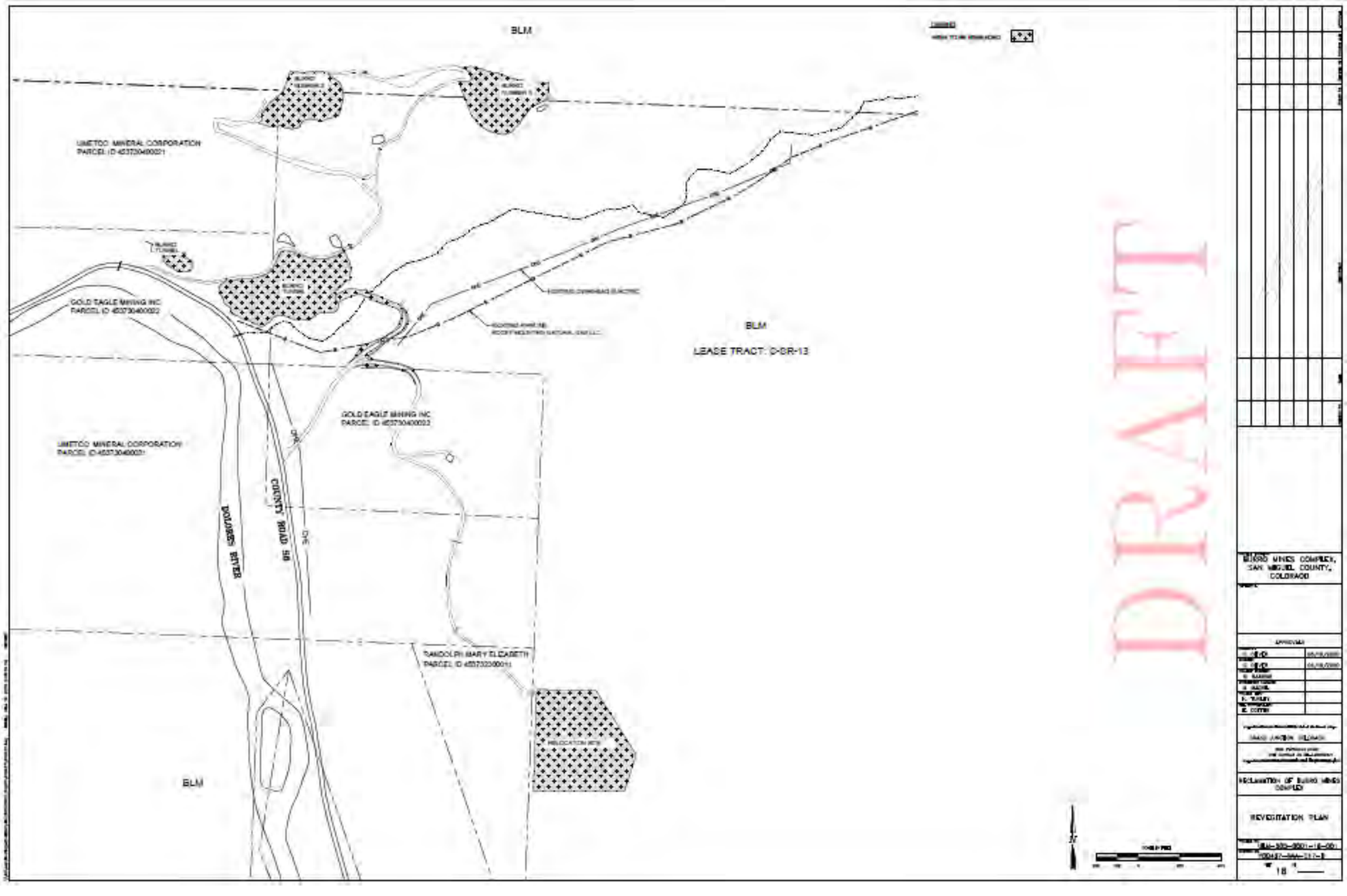


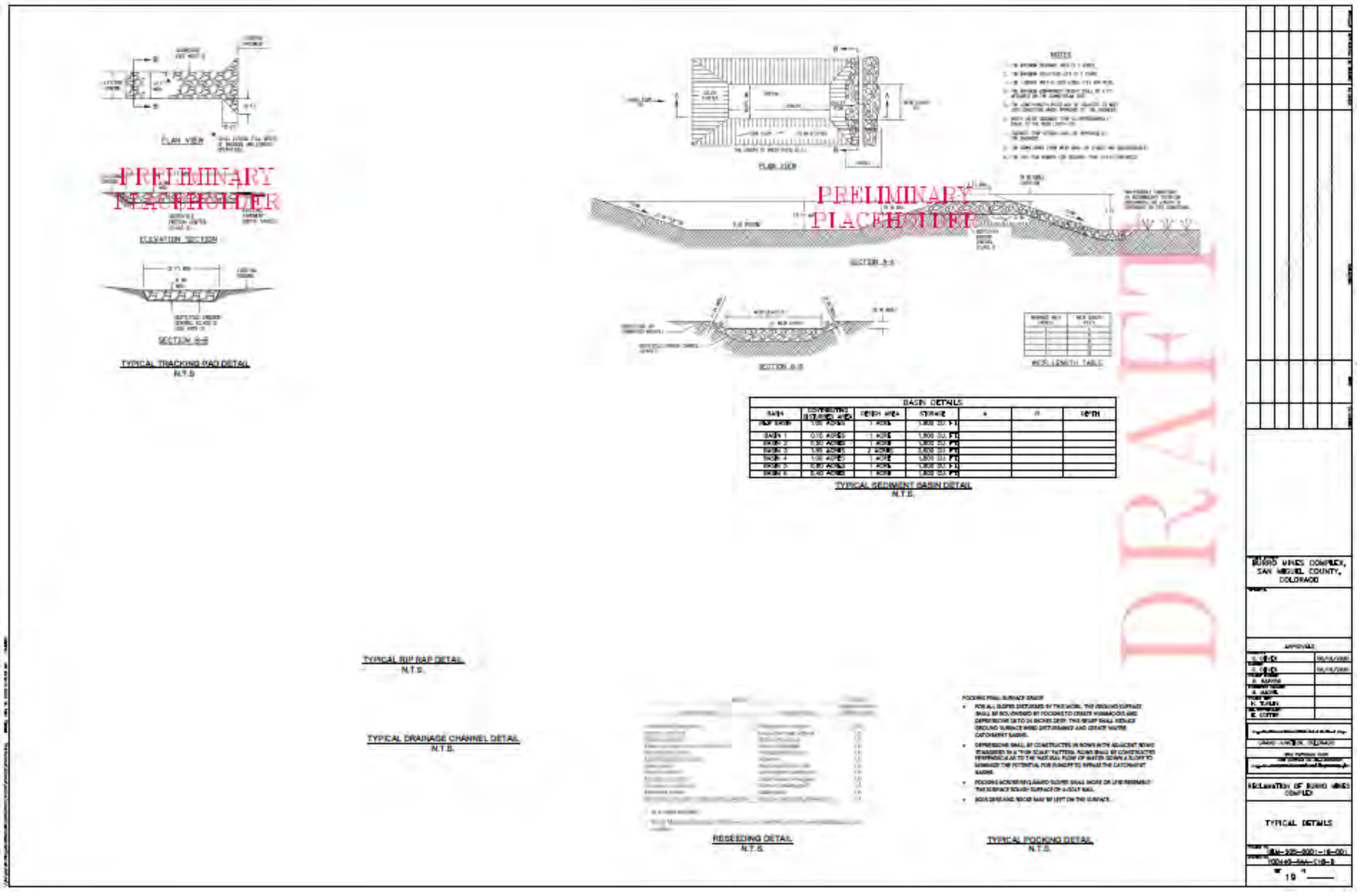
Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2

COLORADO CULTURAL RESOURCE SURVEY OAHP1400
Management Data Form Rev. 11/10

A *Management Data Form* should be completed for each cultural resource recorded during an archaeological survey. Isolated finds and revisits are the exception and they do not require a *Management Data Form*. Please attach the appropriate component forms and use continuation pages if necessary. Fields can be expanded or compressed as necessary.

1. **Resource Number**: 5SM.8290
2. **Temporary Resource Number**:

3. **Attachments (check as many as apply)**
☒ Prehistoric Archaeological Component
☐ Historic Archaeological Component
☐ Historic Architectural Component Form
☐ Linear Component
☒ Sketch/Instrument Map (required)
☒ U.S.G.S. Map Photocopy (required)
☒ Photograph(s) (required)
☐ Other, specify:

4. **Official determination (OAHP use only)**
☐ Determined Eligible NR\SR ____
☐ Determined Not Eligible NR\SR ____
☐ Nominated ____
☐ Need Data NR\SR ____
☐ Contributing to NR Dist.\SR Dist. ____
☐ Not Contributing to NR Dist.\SR Dist. ____
☐ Supports overall linear eligibility NR\SR ____
☐ Does not support overall linear eligibility NR\SR ____

I. IDENTIFICATION
5. **Resource Name**:

6. **Project Name/Number**: A Class III Cultural Resource Inventory for the Burro Mine Complex (5SM.2725), U.S. Department of Energy Office of Legacy Management, Waste Rock Reclamation Project, in San Miguel County Colorado

7. **Government Involvement**: ☐ Local ☐ State ☒ Federal
Agency: Bureau of Land Management, Tres Rios Field Office, Department of Energy-Legacy Management

8. **Site Categories** (check as many as apply):
Prehistoric: ☒ archaeological site ☐ paleontological site ☐ In existing National Register District
National Register District name:
Historic: ☐ archaeology site ☐ building(s) ☐ structure(s) ☐ object(s) ☐ In existing National Register District
National Register District name:

9. **Owner(s) Name and Address**: Department of Energy-Legacy Management, Lease Tract C-SR-13.

10. **Boundary Description and Justification**: Visible extent of surface artifacts and features

11. **Site/Property Dimensions** Length: 230m Width: 94m Area: 14202m² Acres: 3.5
Area was calculated as: ☐ Length x Width (rectangle/square) ☐ Length x Width x 0.785 ☒ GIS

II. LOCATION
12. **Legal Location**
PM NM Township 44N Range 18W Section 29
If section is irregular, explain alignment method:

13. **USGS Quad**: Horse Range Mesa 14. **County**: San Miguel

15. **UTM Coordinates**: Datum used ☐ NAD 27 ☒ NAD 83 ☐ WGS 84 Other:
A. Zone 12N; 685580.44 mE 4212942.46 mN

16. **UTM Source**: ☒ Corrected GPS/rectified survey (<5m error) ☐ Uncorrected GPS ☐ Map template
Other (explain):

17. **Site elevation** (feet): Average 5700

18. **Address**: n/a Lot: Block: Addition:

19. **Location/Access**: 5SM.8290 is located east of County Road S10, which is adjacent to County Road S8.

Page 1 of 10

Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Management Data Form

Resource Number: 5SM.8290 **Temporary Resource Number**:

III. NATURAL ENVIRONMENT/SITE CONDITION

20. **General Description** (should include both, on site, as well as geographical setting with aspect, landforms, vegetation, soils, depositional environment, water, and ground visibility): 5SM.8290 is in Burro Canyon proper immediately east of the Dolores River. Vegetation on site includes sparse grasses/forbes. Soils onsite are largely Entisols characterized loam and sandy loams.

21. **Soil depth (cm) and description**: In general, soils are moderately deep, but unlikely to contain intact buried cultural deposits based on the surface artifact assemblage and the prevalent sheetwash across the site.

22. **Condition**

a. Architectural/Structural
- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Deteriorated
- ☐ Ruin

b. Archaeological/Paleontological
- ☐ Undisturbed
- ☐ Light disturbance
- ☒ Moderate disturbance
- ☐ Heavy disturbance
- ☐ Total disturbance

23. **Describe condition**: The site is in overall fair condition, with negative impacts resulting from sheetwash and deflation. A large portion of the site has a pipeline running through it which has disturbed roughly .6 acres of the site

24. **Vandalism**: ☐ Yes ☒ No
Describe: None observed

IV. NATIONAL/STATE REGISTER ELIGIBILITY ASSESSMENT

25. **Context or Theme**: Lipe, William et al. (1999) *Colorado Prehistory: A Context for the Southern Colorado River Basin*. Colorado Council of Professional Archaeologist.

26. **Applicable National Register Criteria**:
- ☐ A. Associated with events that have made a significant contribution to the broad pattern of our history
- ☐ B. Associated with the lives of persons significant in our past
- ☐ C. Embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- ☐ D. Has yielded, or may be likely to yield, information important in history or prehistory
- ☒ Does not meet any of the National Register criteria
- ☐ Qualifies under exceptions A through G. List exception(s): G. Properties that Have Achieved Significance Within the Past Fifty Years

27. **Applicable State Register Criteria**:
- ☐ A. Property is associated with events that have made a significant contribution to history
- ☐ B. Property is connected with persons significant in history
- ☐ C. Property has distinctive characteristics of a type, period, method of construction or artisan
- ☐ D. Property is of geographic importance
- ☐ E. Property contains the possibility of important discoveries related to prehistory or history
- ☒ Does not meet any of the State Register criteria

28. **Area(s) of significance**: N/a

29. **Period(s) of significance**: N/a

30. **Level of significance**: ☐ National ☐ State ☐ Local

31. **Statement of significance**: 5SM.8290 is recommended not eligible for inclusion on the NRHP under any criterion. Site 5SM.8290 is in fair condition with moderate negative impacts resulting sheetwash, deflation, and a pipeline installation. These impacts have contributed to the displacement of surficial artifacts and the churning of near-surface sediments. There also is little potential for buried cultural materials to remain that would further characterize the site beyond what is on the surface. As a result, there is no potential to preserve a buried, intact, and continuous cultural layer that could provide significant information to the study of regional prehistory under Criterion D.

(Page 2 of 10)

Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Management Data Form

Resource Number: 5SM.8290 **Temporary Resource Number**:

32. **Statement of historic integrity related to significance**: The site retains integrity of location. Due to its location near the Burro mine, powerline, road, and pipeline, it does not retain setting or feeling. Given the small quantity of unremarkable artifacts, it is difficult to assess the integrity of design, materials, workmanship, and association.

33. **National Register Eligibility Field Assessment**: ☐ Eligible ☒ Not eligible ☐ Need data
Linear Segment Evaluation (if applicable): ☐ Supporting ☐ Non Supporting
34. **Status in an Existing National Register District**: ☐ Contributing ☐ Non-contributing
35. **State Register Eligibility Field Assessment**: ☐ Eligible ☒ Not eligible ☐ Need data
36. **Status in an Existing State Register District**: ☐ Contributing ☐Non-contributing
37. **National/State Register District Potential**: ☐ Yes ☒ No Describe:
38. **Cultural Landscape Potential**: ☐ Yes ☒ No Describe: The site does not meet the definition of a landscape as defined by the *Planning, Treatment and Management of Historic Landscapes from Preservation Brief 36*.

39. **If Yes to either 37 or 38, is this site**: ☐ Contributing ☐ Non-contributing Explain:

V. MANAGEMENT AND ADMINISTRATIVE DATA

40. **Threats to Resource**: ☒ Water erosion ☒ Wind erosion ☐ Grazing ☐ Neglect ☐ Vandalism ☐Recreation ☒ Construction ☐ Other (explain):

41. **Existing protection** ☐ None ☐ Marked ☐ Fenced ☐ Patrolled ☒ Access controlled
Other (specify):
Comments: Private/DOE lands help restrict access by the public into this area.

42. **Local landmark designation**: N/a 43. **Easement**: N/a
44. **Recorder's Management Recommendations**: None, no further work recommended.

VI. DOCUMENTATION

45. **Previous actions accomplished at the site**: ☐ Tested ☐ Partial excavation ☐ Complete excavation
Date(s):
a. Excavations:
b. Stabilization: Date(s):
c. HABS/HAER documentation [date(s) and numbers]:
d. Other:

46. **Known collections/reports/interviews and other references (list)**:

47. **Primary location of additional data**: OAHP and Dolores Public Lands Office

48. **State or Federal Permit number**:

49. **Collection**: Artifact collection authorized: ☒ Yes ☐ No Were artifacts collected: ☐ Yes ☒ No
Artifact repository:
Collection method: ☐ Diagnostics ☐ Grab Sample ☐ Random Sample
Other (specify):

50. **Photograph Numbers**:
Files or negatives stored at: Dolores Public Lands Office

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Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Management Data Form

Resource Number: 5SM.8290 **Temporary Resource Number**:

51. **Report title**: A Class III Cultural Resource Inventory for the Burro Mine Complex (5SM.2725), U.S. Department of Energy Office of Legacy Management, Waste Rock Reclamation Project, in San Miguel County Colorado. (BLM project number: TR20002, OAHP project number: SM.LM.R364).

52. **Recorder(s)**: Brian Yaquinto Date: 4/22/2020

53. **Recorder affiliation**: Archeologists, Tres Rios Field Office

Phone number/Email: 970-882-1132, byaquinto@blm.gov

NOTE: Please attach a site map, a photocopy of the USGS 1:24000 map indicating resource location, and photographs.

Colorado Historical Society – Office of Archaeology & Historic Preservation
1560 Broadway, Suite 400 Denver, CO 80202
303-866-3395

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Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Figure 1. Site Overview, photo looking across Feature 1.

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Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Figure 2. L1 on site map, tested piece of Kb/Jmb silicified mudstone.

Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Management Data Form

Resource Number: 5SM.8290 **Temporary Resource Number**:

Figure 3. L3 on site map, Kdb chert scraper.

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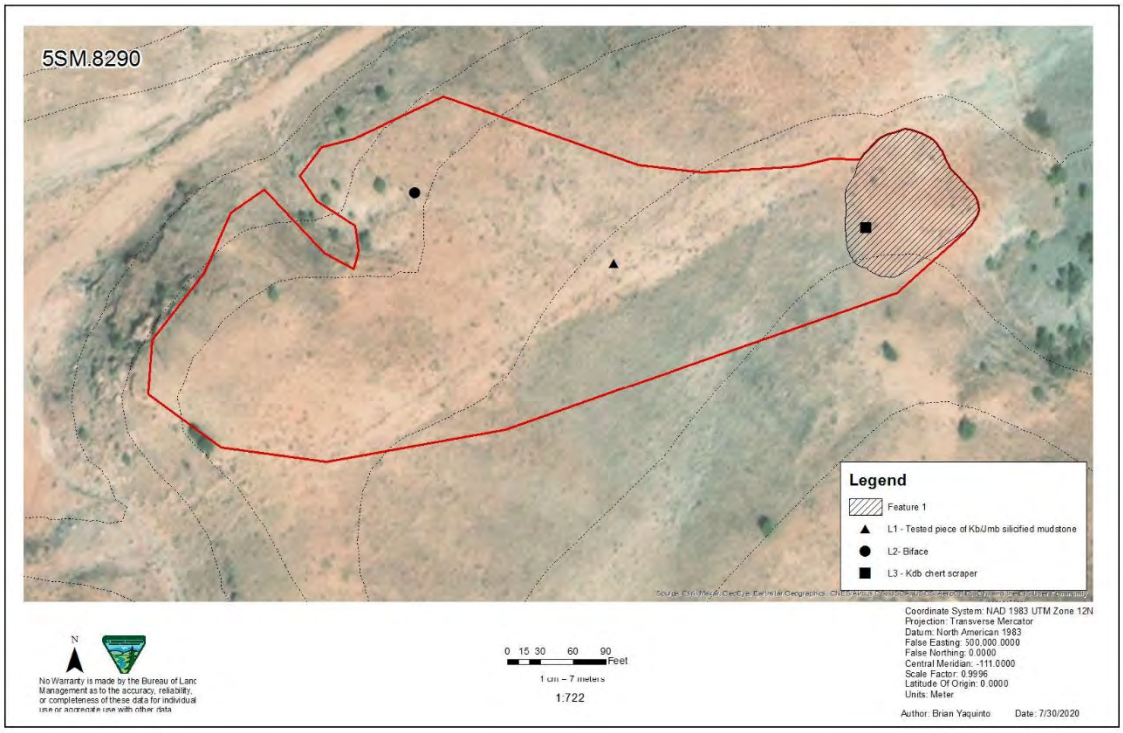
Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Management Data Form

Resource Number: 5SM.8290 **Temporary Resource Number**:

Figure 4. L2 on site map, chalcedony biface fragment.

Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)



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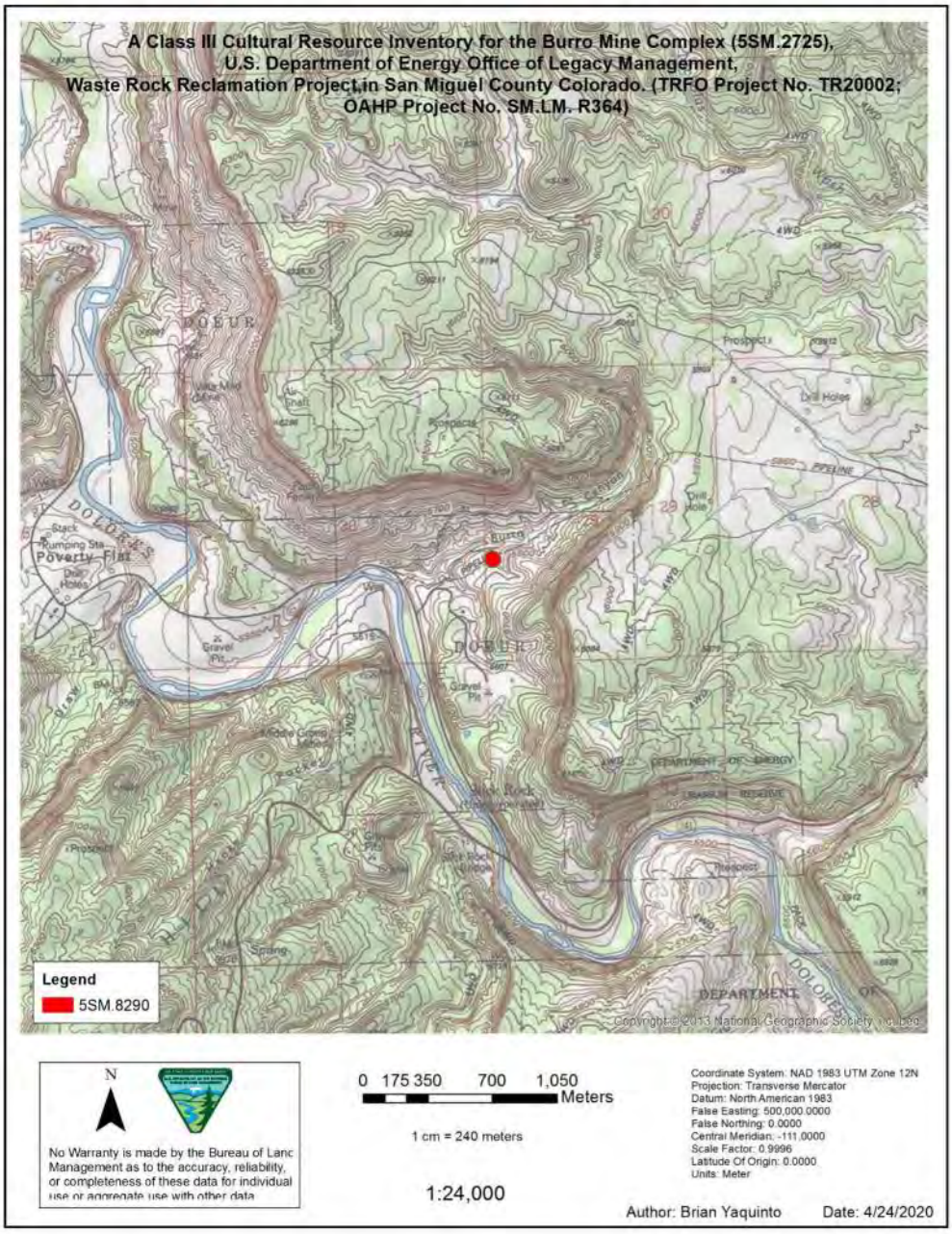
Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Management Data Form

Resource Number: 5SM.8290 **Temporary Resource Number**:



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Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

COLORADO CULTURAL RESOURCE SURVEY OAHP1401
Prehistoric Archaeological Component Form Rev. 11/10

Use this form in conjunction with the Management Data Form. One of these forms should be completed for each cultural resource with a prehistoric component.

1. **Resource Number**: 5SM.8290 2. **Temporary Resource Number**:

3. **Site Type**: Open Lithic

4. **General Component Description**: 5SM.8290 is located on the south side of the Burro Canyon wash, opposite from the Burro Mine complex, and is situated on a terrace just above the main wash. The site is 3.5 acres in size and most lithic debitage noted on the site was found in Feature 1. Feature 1 exhibits the highest concentration lithic debitage in the entire site (approximately 50 flakes) primarily resulting from late stage lithic reduction. No formal tools or features were noted on the surface in Feature 1, but a few expedient retouched flakes and one large kdb chert scraper were identified. Outside of Feature 1, along the north facing exposed cobbly terrace, just above Burro wash, there is evidence for opportunistic lithic quarrying of naturally occurring lithic material eroding out of the hillslope. There are 100's of pieces of unworked natural pieces of material mixed in with worked material of which approximately 35 pieces of raw lithic material displayed tangible evidence for lithic testing/reduction including a chalcedony biface fragment.

In and across the central portion of the site a large buried pipeline exist which has disturbed approximately .6 acres of the central portion of the site. In addition to the pipeline, much of the site is impacted by sheetwash and erosion. The disturbance combined with lack of diagnostic artifacts, formal tools, or features suggest the site was used as a short-term habitation site that contains limited research potential.

5. **Non-Architectural** Prehistoric Features (note dimensions in centimeters or meters)

Map Reference	Description	Construction Material	Dimensions
Feature 1	Lithic Concentration		40x35 meters

6. **Architectural** Prehistoric Features (note dimensions in centimeters or meters)

Map Reference	Description	Construction Material	Dimensions

7. **Artifact classes** (flake, uniface, mano, scraper, etc.)

Description	Material	Quantity
Kdb Shatter	Quartzite	2
Kdb Tertiary	Quartzite	4
Bipolar, cobble	Chalcedony	1
Kdb scraper	Chert	1

The above artifact quantities reflect (check one)
☐ total quantity of artifacts observed at the site ☐ only those artifacts that were collected
☐ extrapolated quantities based on a sample of the remains ☒ other, specify: Random sample

8. **Chronology** (List all prehistoric components present. Attach continuation sheet if necessary)

A. Cultural Affiliation: Unknown Date:

Page 1 of 2

Barr, D.L., DOE, Consultation Correspondence Item #3, Enclosure 2 (Cont.)

Prehistoric Archaeological Component Form

Resource Number: 5SM.8290 **Temporary Resource Number**:

Dating Criteria:

9. **Depth of Cultural Deposits**: Greater than 25 cm

Based on: ☐ cutbank ☐ auger ☐ shovel/trowel test ☐ road cut

☒ Other, explain: Series of pin flag probes

10. **Activities inferred from the remains**: Lithic quarrying, short term camp

11. **Is this site likely to yield information important in prehistory?** ☐ Yes ☒ No ☐ Unknown

If yes or unknown, describe below. Identify research domains and supporting data.

Potential Within	Describe
a. Subsurface deposits within a feature	No
b. Subsurface deposits outside a feature	No
c. Midden	No
d. Other	None

12. **Recorder(s)**: Brian Yaquinto **Date**: 12/20/2019

Marques, M., Colorado SHPO, Consultation Correspondence Item #4

From: Marques - HC, Matthew <matthew.marques@state.co.us>
Sent: Wednesday, July 29, 2020 1:09 PM
To: Trnka, Joe (CONTR) <Joe.Trnka@lm.doe.gov>; Barr, Deborah <deborah.barr@lm.doe.gov>
Cc: Brian Yaquinto <byaquinto@blm.gov>
Subject: [EXTERNAL] Re: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock - Sent on Behalf of Debbie Barr

Dear Ms. Barr,

Thank you for your correspondence and associated documentation. We note that your correspondence makes an argument to not record a lithic quarry and associated artifacts that sit within 10 meters of 5SM.8290. The correspondence argues that the lithic quarry is not a site and should not be recorded. The lithic quarry, however, sits in close proximity to 5SM.8290 and could remain associated with the activities at 5SM.8290. Further, two artifacts were recorded as part of 5SM.8290, but sit outside the defined boundary of the site in the lithic quarry. Is there a reason that the lithic quarry was not recorded as a part of the site? Why was 5SM.8290's boundary not extended to encompass artifacts that are recorded as part of the site?

The correspondence also argues that the lithic quarry could comprise a part of a lithic landscape and suggests that documenting such resources is meaningless. Lithic landscapes can be considered properties eligible for the National Register of Historic Places (NRHP). Further, components of lithic landscapes that individually remain ineligible for the NRHP might cumulatively be eligible for the NRHP or contribute to a property that is eligible for the NRHP. The correspondence also argues that it is impossible to effectively record the boundary of lithic quarries. The documentation provided, however, shows a distinct boundary for the lithic quarry.

While your agency may feel that the resource is not significant, consulting parties may not agree. Not providing documentation of the resource for our office to review and consult upon, precludes our office's ability to consult and provide a statement on the eligibility of the resource for the NRHP as required by 36 CFR 800.4(c)(2). Further, this precludes our ability to assess the undertaking's effects (36 CFR 800.5). Considering that the resource would be directly affected by the proposed undertaking according to the provided documentation, we request the documentation of the resource and the submittal of the documentation to our office for review.

Please let me know if you have additional questions or would like to discuss this further.

Thank you,
--
Matthew Marques
Section 106 Compliance Manager
History Colorado | Office of Archaeology and Historic Preservation
303.866.4678 | **matthew.marques@state.co.us**
History Colorado Center | 1200 Broadway | Denver, Colorado 80203 | HistoryColorado.org

Barr, D.L., DOE, Consultation Correspondence Item #5

From: Barr, Deborah
Sent: Monday, August 17, 2020 11:54 AM
To: 'Marques - HC, Matthew' <matthew.marques@state.co.us>; Trnka, Joe (CONTR) <Joe.Trnka@lm.doe.gov>
Cc: 'Brian Yaquinto' <byaquinto@blm.gov>; Glascock, Jay <jay.glascock@lm.doe.gov>; 'Mark Tobias (mark.tobias@state.co.us)' <mark.tobias@state.co.us>
Subject: Re: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock

Hello Matthew,

Thank you for discussing the proposed reclamation of the Burro Mines complex with us on August 4th. This email provides the LM/BLM response to your questions on the archaeological site 5SM.8290, detailed information on the proposed action, and the draft reclamation design drawings that we are preparing for review by San Miguel County. Attached to this email are the draft reclamation design drawings and the updated archaeological site form for 5SM.8290.

We'd like to suggest a follow-on call with your office to address any questions or concerns you have on this topic. Please let me know when you might be prepared to support such a call.

We expect that your agency's input on our proposed reclamation plans will facilitate their final review and approval by all parties. Our continued intention is that the reclamation work would have no adverse effects on the qualities and attributes that make the Burro Mines complex (5SM.2725) eligible for listing on the National Register of Historic Places. Our formal submittal of reclamation plans for review, to both your agency and to San Miguel County, will be made sometime in September. At that time, we will also provide our formal determination of effect on the proposed undertaking for your review and comment.

BLM Response to SHPO Comments on Archaeological Site 5SM.8290

Thank you for your comments on 5SM.8290. We have consolidated the quarrying activity with 5SM.8290 to form one large site. Please reference the updated form for 5SM.8290 (attached) which will reflect this change. Given the lack of features, diagnostic artifacts, evidence for subsurface deposits, and widespread disturbances from sheetwash, erosion, and pipeline construction 5SM.8290 is still recommended not eligible for listing on the NRHP. relocation

In response to the rest of your correspondence from July 29, 2020, you made the assertion that "lithic quarry could comprise a part of a lithic landscape and suggests that documenting such resources is meaningless". It further stated "Lithic landscapes can be considered properties eligible for the National Register of Historic Places (NRHP). Further, components of lithic landscapes that individually remain ineligible for the NRHP might cumulatively be eligible for the NRHP or contribute to a property that is eligible for the NRHP".

To address your above concerns, we respectfully disagree with your understanding of lithic landscapes and how they should be evaluated and managed. "Lithic landscape" is strictly an academic term used in the broadest sense to describe the availability and physical distribution of different raw materials in a region. With this understanding and based on the documentation we have provided your office it is unclear how 5SM.8290 would contribute to a property that is eligible for the NRHP. 5SM.8290 is not part of an archaeological district. Furthermore, the use of lithic landscape or referring to the

Barr, D.L., DOE, Consultation Correspondence Item #5 (Cont.)

region as a lithic landscape should not be confused or used interchangeably with a cultural landscape which is legally defined by the National Park Service as a geographic area (including both cultural and natural resources, and the wildlife or domestic animals therein) associated with a historic event, activity, or person, or that exhibit other cultural or aesthetic values.

While cultural resources that are associated with a lithic landscape such as a quarry could contribute to an archaeological district or cultural landscape, in southwest Colorado it is more appropriate to view the abundance of ubiquitous raw material sources eroding from nearly every canyon side slope, terrace, or bench, and the subsequent working of that material merely as the byproduct of 12,000 years of continued land use by a multitude of people. Most of these quarries cannot be tied to a specific time period and many of these small quarries with few artifacts, no subsurface deposits, and no diagnostic artifacts or features, such as 5SM.8290, have little potential to yield significant information important to prehistory. Only larger more pronounced lithic quarrying activities that retain substantial artifacts, features, and the ability to provide important data to prehistory should be considered eligible for listing on the NRHP.

In the region surrounding 5SM.8290, countless years of tribal consultation and archaeological research has not revealed any such district or cultural landscape to which 5SM.8290 would contribute. The current tribal consultation conducted for the Burro Mines Complex reclamation project further supports this understanding and no tribes to-date have disagreed with our eligibility or effect determinations for 5SM.8290. As an agency, we do not find such speculation appropriate for managing and evaluating these resources and instead must base our recommendations on the evidence available to us at the time of inventory and assessment. Given these considerations, we recommend 5SM.8290 as not eligible for listing on the NRHP under any Criterion nor does it contribute to a property that is eligible.

Details of the Proposed Reclamation Activity: Burro Mines Complex

The following details on the proposed project scope represents information excerpted from the Draft Environmental Assessment (EA) for Reclamation of the Burro Mines Complex in San Miguel County, Colorado.

The preferred alternative would prevent runoff associated with significant storm events from eroding additional waste rock into, and increasing the sediment load within, the Dolores River. This alternative involves removal of the entire waste rock pile located at the Burro Tunnel Mine site and the crown portions of the waste rock piles at Burro mines No. 3 and No. 5. The waste rock removed would be relocated to a former gravel pit located approximately 2,500 ft (762 m) south and slightly east of the existing Burro Tunnel Mine site, as shown on Figure 1). Reclamation activities would also include obtaining access and ROWs, grading to create landforms conforming to the surrounding area, and application of surface soil materials, and seeding.

The crown portions removed from Burro No. 3 and No. 5 would include the upper and outer portion of the pile where the flat area at the top of the pile meets the outer slope of the pile. The amount removed would be based on DRMS requirements and engineering designs to achieve final stable slopes reflecting original topography or a slope of at least 3:1 depending on the area (with select areas achieving a 2:1 slope due to current topography).

Barr, D.L., DOE, Consultation Correspondence Item #5 (Cont.)

Once the waste rock piles have been relocated, the Burro Tunnel Mine site would remain a permitted mine site, complete with a functional infrastructure in accordance with the lessee's plan of operation. The remaining portion of the of the waste rock piles at the Burro No. 3 and No. 5 mine sites would be recontoured and reclaimed in-place. Historically significant features associated with the mine complex would not be disturbed.

The former gravel pit is located on Lease Tract C-SR-13. This gravel pit, henceforth referred to as the "relocation site" is the preferred relocation site because it is an existing topographic depression located in an area that is more than 1,100 ft (335 m) away from and 200 ft (61 m) higher than the Dolores River and does not affect the visual aesthetics or views from the river or CR S8. The relocation site would be excavated to enlarge the capacity of the pit. The approximately 10,000 yd^3 (7,646 m^3) of surface soil materials excavated would be stockpiled to use as cover for the recontoured waste rock piles at the Burro Mines Complex. The relocation site would be reclaimed consisting of a soil cover, surface roughening, and revegetation.

Relocation activities would follow designated existing haul routes. Haul routes would originate at the waste rock piles and proceed along CR S8 or across a proposed low water crossing at the Burro Canyon drainage that would connect with CR 10S and lead to the relocation site. All haul roads would remain in place unless BLM requires DOE to abandon and reclaim the road between Burro No. 3 and Burro No. 5 that is located north of the lease tract on BLM land. Restoration of up to six existing stormwater catchment basins below the mine sites would be conducted, as needed. Some catchment basins would remain in place and final reclamation would be the responsibility of the lessee and would occur when their mining operations are complete.

As shown on Table 1, the activities of the preferred alternative that are on either DOE or BLM managed land surfaces as follows: (1) waste rock volumes removed from the three mine sites at the Burro Mines Complex, (2) the linear feet of haul roads to be improved and/or constructed, and (3) the acreage of land disturbed.

Barr, D.L., DOE, Consultation Correspondence Item #5 (Cont.)

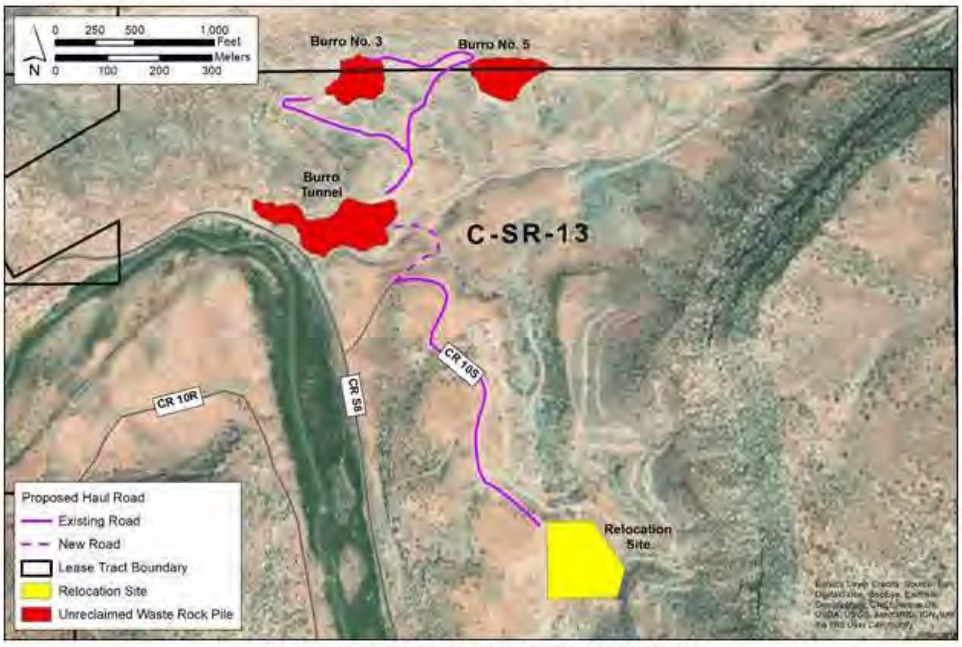


FIGURE 1 Proposed Waste Rock Relocation Site

TABLE 1 Waste Rock Volume, Road Improvements, and Acreage Disturbed

Activity	On DOE Land Surface	On BLM Land Surface
Waste Rock Volume Removed (yd^3) Total = 120,000 yd^3	70,000 (Burro Tunnel Mine) 16,000 (Burro No. 3) 24,000 (Burro No.5)	0 (Burro Tunnel Mine) 4,000 (Burro No. 3) 6,000 (Burro No. 5)
Roads to be improved and/or constructed (linear feet) Total =7,050[a]	6,100	950
Acreage of Land Disturbed (ac) Total = 28.7 ac	3.9 (Burro Tunnel Mine) 1.1 (Burro No.3) 1.0 (Burro No.5) 4.6 (relocation site) 5.6 (roads) 9.6 (staging areas, erosion control, alternative access)	0.0 (Burro Tunnel Mine) 0.3 (Burro No.3) 0.5 (Burro No. 5) 0.0 (relocation site 0.4 (roads) 1.7 (staging areas, erosion control, alternative access)

[a] A total of 7,050 linear feet based on the following activities: (1) widening of approximately 2,450 linear feet of existing unpaved roadways leading from the Burro Tunnel Mine site up the hill northward to the Burro No. 5 mine site and then extending westward to the Burro No. 3 mine site; (2) widening of approximately 2,200 linear feet of the existing unpaved CR 10S to the relocation site; and (3) construction of approximately 400 linear feet of new 20-ft wide unpaved haul road including a low-water crossing across a drainage. The new road will connect the Burro Tunnel Mine site to the existing unpaved CR 10S haul road to the relocation site.

Barr, D.L., DOE, Consultation Correspondence Item #5 (Cont.)

Surface roughening (i.e., pocking or scarification) and seeding would be conducted for a total area of approximately 28.7 ac (11.6 ha) disturbed by project activities (includes areas at the Burro Mines Complex and at the relocation site). A native seed mix identified through coordination with cooperating agencies would be utilized. Satisfactory reclamation would involve stabilization of soil erosion and the successful establishment of perennial and desirable native species. The reclaimed areas would be monitored until vegetation establishment was determined to be successful.

We hope to have a call with you in the near future to resolve any remaining questions or concerns you have on this topic.

Debbie

Deborah Barr, PG
Program Manager
Department of Energy
Office of Legacy Management
11035 Dover St., Suite 600
Westminster, CO 80021
720-880-4352 (office)
970-623-4546 (cell)

Norton, H.K., Colorado SHPO, Consultation Correspondence Item #6

HISTORY Colorado

Deborah L. Barr
Uranium Leasing Program Manager
U.S. Department of Energy
Office of Legacy Management
11035 Dover Street, Suite 600
Westminster, CO 80021-5587

RE: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County (HC# 77950)

Dear Ms. Barr,

Thank you for your email received by our office on August 17, 2020 continuing consultation for the above referenced undertaking under Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations 36 CFR 800. We understand that the Office of Legacy Management in the U.S. Department of Energy is the lead agency involved under Section 106 of NHPA. The August 2020 email continues consultation regarding the subject undertaking initiated in June 2020 and in response to our June 18, 2020 letter requesting additional information.

We thank you for the updated documentation for 5SM.8290 and additional documentation regarding the undertaking that you have provided. After reviewing the updated resource forms, we concur with your determination that 5SM.8290 is not eligible for the National Register of Historic Places (NRHP) under any criteria. We previously concurred with your determination that 5SM.2725 is eligible for the NRHP under Criteria A and C as well as under Criteria Consideration G. The provided documentation notes that you plan to conduct additional consultations with our office for the proposed undertaking once plans for the undertaking have been finalized. We look forward to additional consultation under 36 CFR 800.4 to 36 CFR 800.6 for the subject undertaking.

We request being involved in the consultation process with the local government and other consulting parties, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If you have any questions, please contact Matthew Marques, Section 106 Compliance Manager, at (303) 866-4678, or matthew.marques@state.co.us.

Sincerely,

Dr. Holly K Norton

Digitally signed by Dr. Holly K Norton
Date: 2020.08.21 12:18:12 -06'00'

Steve Turner, AIA
State Historic Preservation Officer

www.HistoryColorado.org
HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

Barr, D.L., DOE, Consultation Correspondence Item #7

Department of Energy
Washington, DC 20585

October 1, 2020

Mr. Steve Turner
State Historic Preservation Officer
Colorado State Historic Preservation Office
History Colorado
1200 Broadway
Denver, CO 80203

Subject: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County (HC# 77950)

Dear Mr. Turner:

Enclosed for your review and comment is the 60% engineering design for the U.S. Department of Energy Office of Legacy Management (LM) and U.S. Bureau of Land Management (BLM) plans to conduct the reclamation of the waste rock associated with the historic Burro Mines complex in Burro Canyon, San Miguel County, Colorado. As previously discussed, the waste rock piles contribute to the overall setting, feeling, and association of the more historically significant buildings and structures associated with this historic uranium mine. However, the current location and slope of the waste rock piles has the potential to deposit sediment into the adjacent Dolores River. Therefore, LM and BLM are planning a reclamation project to mitigate the risk of this occurring in the future

It is our opinion the reclamation design plans are now sufficiently developed to demonstrate our proposed undertaking includes avoidance of the individually eligible historic buildings and structures at this location. The proposed project minimizes the amount of waste rock being removed to no more than necessary to provide for the long-term stability of that portion of the waste rock that has the potential to threaten the Dolores River. It should be noted a properly reclaimed waste rock pile is a normal part of the progression of a historic hard rock mine in Colorado. The reclaimed waste rock piles will still contribute to the setting, feeling, and association of the historic Burro Mine complex, as demonstrated by the reclaimed waste rock piles at Burro Mine #7, the previously reclaimed portion of this complex.

Therefore, LM has determined the proposed undertaking will have no adverse effects on the historic nature of the Burro Mines complex due to the avoidance and minimization measures incorporated into the enclosed design. Please review the enclosed material and respond at your earliest convenience if you have substantive comments or suggestions regarding our proposed undertaking.

Barr, D.L., DOE, Consultation Correspondence Item #7 (Cont.)

We intend to continue consultation with your office as this project moves forward.

Should you wish to discuss this finding or the methods used to mitigate the potential to have an adverse effect on historic property, please contact me at (720) 880-4352 or via email at Deborah.Barr@lm.doe.gov. Please address any correspondence to:

U.S. Department of Energy
Office of Legacy Management
11035 Dover St., Ste. 600
Westminster, CO 80021-5587

Sincerely,

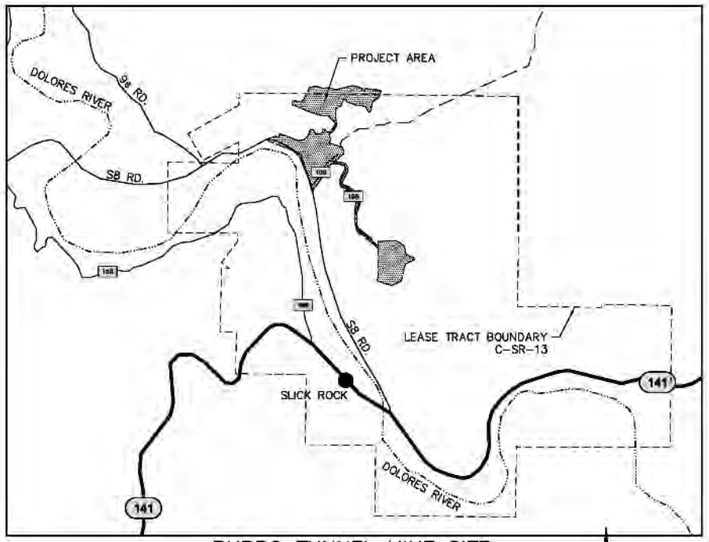
Digitally signed by Deborah L. Barr
Date: 2020.10.01 12:24:30 -06'00'

Deborah L. Barr, P.G.
Uranium Leasing Program Manager

Enclosure:

cc w/enclosure via email:
Brian Yaquinto, BLM Tres Rios
Padraic Benson, DOE-LM
Jay Glascock, DOE-LM
Tracy Ribeiro, DOE-LM
Ed Cotter, Navarro
Jim Denier, Navarro
Miquette Gerber, Navarro
Sam Marutzky, Navarro
Jennifer O'Brien, Navarro
Scott Osborn, Navarro
Joe Trnka, Navarro
DOE Read File
File: E/20/2733 F/20/903

Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1



UNITED STATES DEPARTMENT OF ENERGY

OFFICE OF LEGACY MANAGEMENT

RECLAMATION OF BURRO MINES COMPLEX
BURRO MINES COMPLEX
SAN MIGUEL COUNTY, COLORADO

INDEX OF DRAWINGS

SHEET	TITLE	DRAWING NO
1	Title Sheet	Y00422-RAB-T01-D
2	Site Plan	Y00423-RAB-C01-D
3	Drainage Plan	Y00424-RAB-C02-D
4	Grading Plan – Burro Tunnel Portal Waste Rock Pile	Y00425-RAB-C03-D
5	Grading Plan – Burro Tunnel Waste Rock Pile	Y00426-RAB-C04-D
6	Sections – Burro Tunnel Waste Rock Pile	Y00427-RAB-C05-D
7	Grading Plan – Burro No. 3 Waste Rock Pile	Y00428-RAB-C06-D
8	Sections – Burro No. 3 Waste Rock Pile	Y00429-RAB-C07-D
9	Grading Plan – Burro No. 5	Y00430-RAB-C08-D
10	Sections – Burro No. 5 Waste Rock Pile	Y00431-RAB-C09-D
11	Relocation Site – Excavation Plan	Y00432-RAB-C10-D
12	Relocation Site – Fill Plan	Y00435-RAB-C11-D
13	Relocation Site – Fill Sections	Y00436-RAB-C12-D
14	Site Access and Haul Route Plan	Y00437-RAB-C13-D
15	Existing Mine Road STA 0+00–STA 10+00	Y00438-RAB-P01-D
16	Existing Mine Road STA 10+00–STA 20+00	Y00439-RAB-P02-D
17	Existing Mine Road STA 20+00–STA 30+00	Y00440-RAB-P03-D
18	Existing Mine Road – Side Road	Y00441-RAB-P04-D
18	County Road 10S STA 0+00–STA 10+00	Y00442-RAB-P05-D
20	County Road 10S STA 10+00–STA 20+00	Y00443-RAB-P06-D
21	County Road 10S STA 20+00–STA 30+00	Y00444-RAB-P07-D
22	New Haul Road STA 0+00–STA 8+00	Y00488-RAB-C14-D
23	New Haul Road STA 8+00–STA15+00	Y00489-RAB-C15-D
24	Erosion Control Plan	Y00490-RAB-C16-D
25	Revegetation Plan	Y00491-RAB-C17-D
26	Typical Details	Y00492-RAB-C18-D

60% DESIGN

BURRO MINES COMPLEX, SAN MIGUEL COUNTY, COLORADO

APPROVALS

C. OLIVER	09/23/2020
C. OLIVER	09/23/2020
M. MADRIL	
M. GERBER	
E. COTTER	

ENERGY Legacy Management
GRAND JUNCTION, COLORADO

RECLAMATION OF BURRO MINES COMPLEX

TITLE SHEET

ULM-505-0001-16-001
Y00422-RAB-T01-D
SHT 1 OF 26

DETAIL SYMBOL

1 — DETAIL NUMBER/SECTION LETTER
2 — SHEET ON WHICH DETAIL/SECTION IS TAKEN FROM
3 — SHEET ON WHICH DETAIL/SECTION IS DRAWN

DRAWING LEGEND

NOTE: EXISTING FEATURES ARE SHADED

ABBREVIATIONS

APPROX.	APPROXIMATE	GA	GAUGE	OD	OUTSIDE DIAMETER
BOTT.	BOTTOM	GALV.	GALVANIZED	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
℄	CENTER LINE	GPM	GALLONS PER MINUTE	PVC	POLYVINYL CHLORIDE
CLR	CLEAR	HDPE	HIGH DENSITY POLYETHYLENE	R.O.W.	RIGHT-OF-WAY
CONC.	CONCRETE	HORIZ.	HORIZONTAL	SCH	SCHEDULE
CONT.	CONTINUATION	INV	INVERT	SDR	STRENGTH TO DIAMETER RATIO
DIA. OR ⌀	DIAMETER	MAX.	MAXIMUM	SHT	SHEET
DOE	DEPARTMENT OF ENERGY	MIN.	MINIMUM	STA.	STATION
EA.	EACH	N	NORTHING	THK.	THICK
E	EASTING	NA	NOT APPLICABLE	TYP	TYPICAL
EL. OR ELEV.	ELEVATION	NO.	NUMBER	UG	UNDERGROUND
EQUA.	EQUATION	NOM	NOMINAL	VERT.	VERTICAL
EX.	EXISTING	NTS	NOT TO SCALE		
		OC	ON CENTER		

PLAN

- LEASE TRACT
- PROPERTY LINE
- OHE — OVERHEAD ELECTRICAL LINE
- T — BURIED – TELEPHONE/OPTICAL/WATER
- E — BURIED – ELECTRICAL/GAS LINES/ IRRIGATION PIPE
- PLASTIC FABRIC/ROPE FENCE W/ T-POST
- DRAINAGE DITCH/WATER LINE LIMITS
- ASPHALT ROAD/PARKING LOT
- UNIMPROVED DIRT ROAD
- 191 — HIGHWAY
- SLOPE
- SURVEY CONTROL POINT
- FLOW ARROW
- UTILITY POLE
- UNDERGROUND DRAINAGE CULVERT
- EXISTING CONTOUR
- 5210 — NEW CONTOUR

SECTION

- BEDROCK
- COMPACTED SOIL
- UNDISTURBED SOIL
- WASTE ROCK
- SAND OR BEDDING MATERIAL
- RIPRAP
- WATER LEVEL

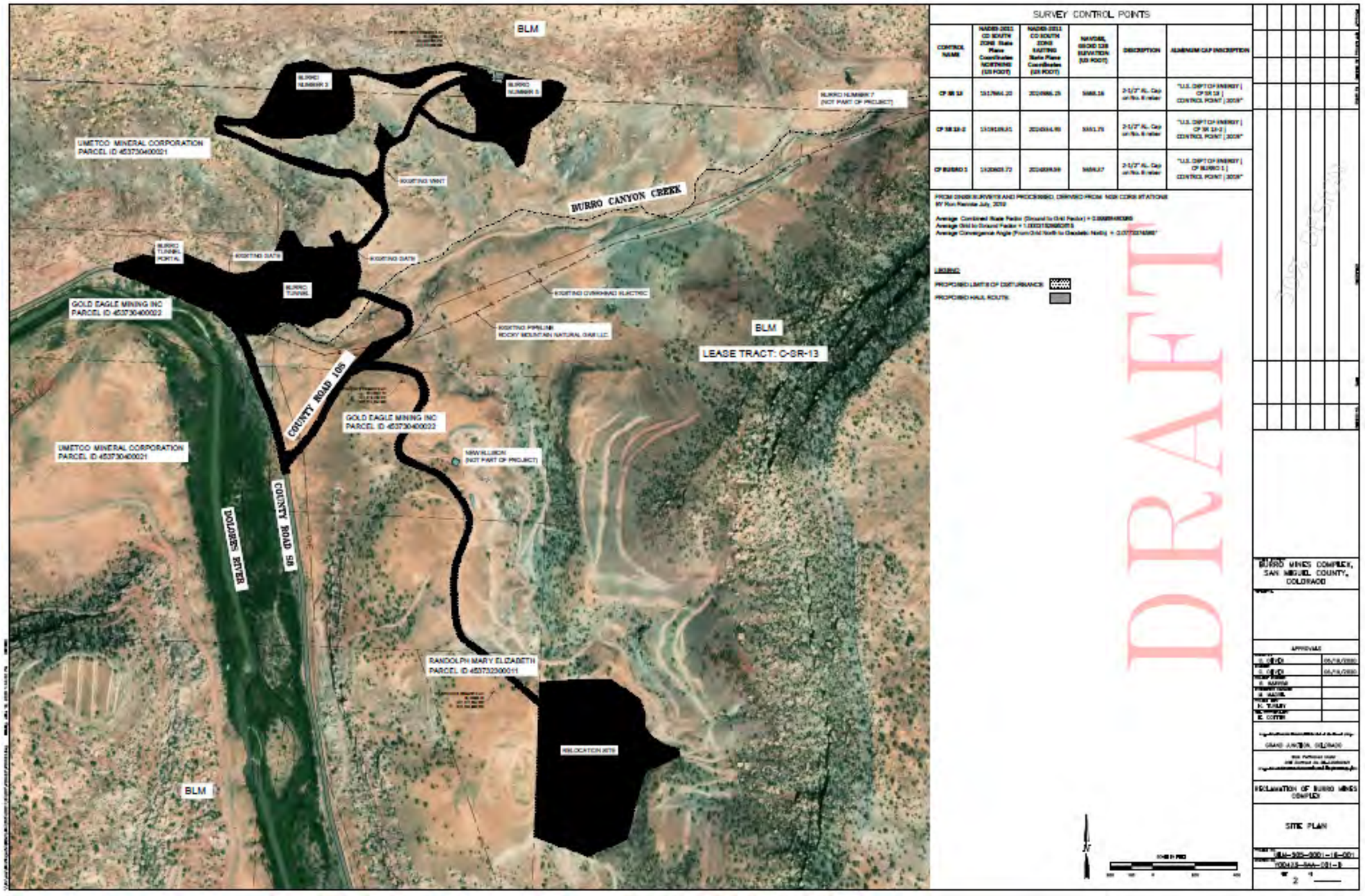
DRAWING SIZES OTHER THAN 22"x34" NOT APPROVED FOR CONSTRUCTION

GENERAL PROJECT NOTES:

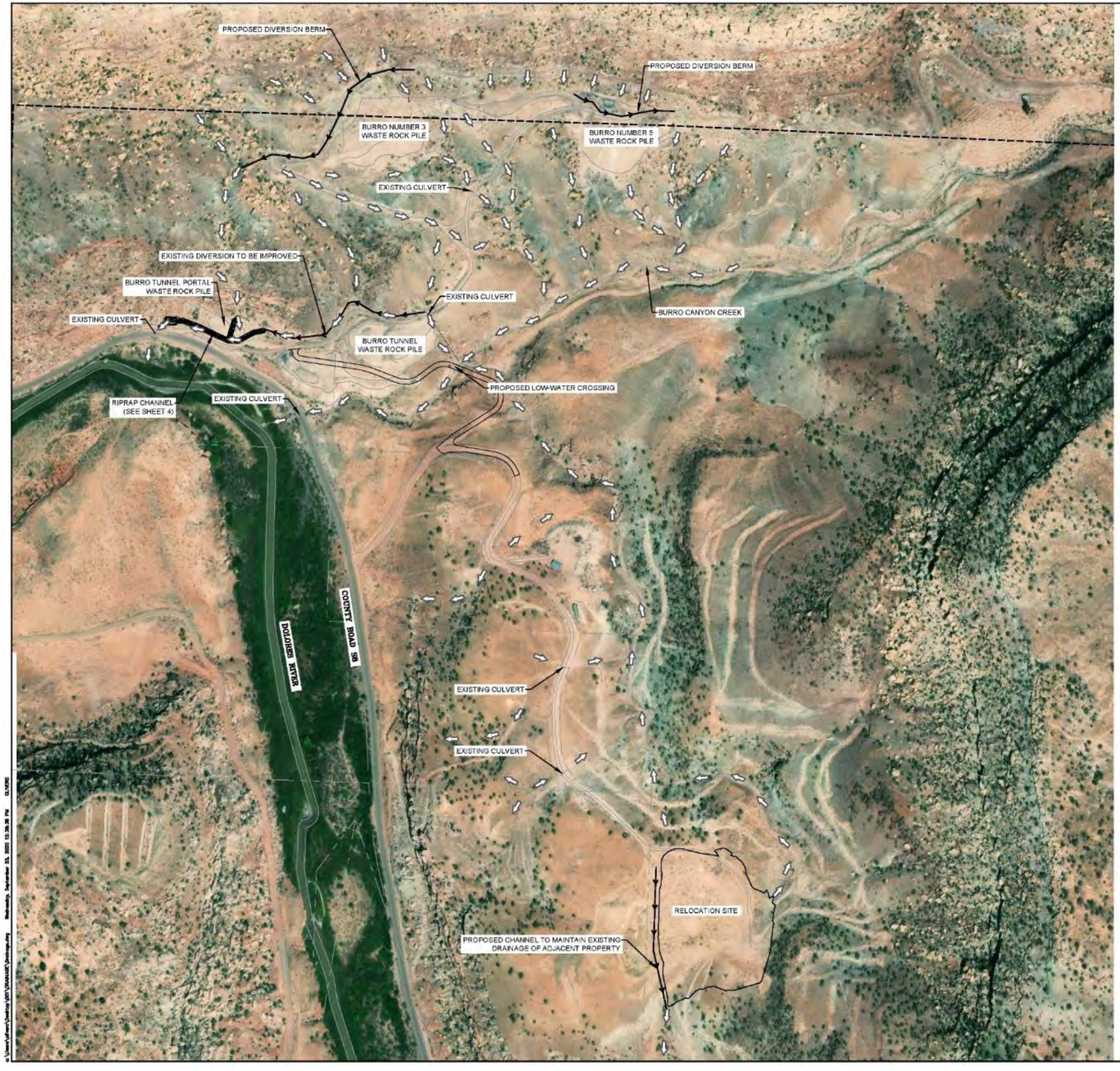
1. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND THE ATTACHED STATEMENT OF WORK AND SPECIFICATIONS, DOCUMENT NO Y00421.
2. PLOTTING OR PRINTING OF THESE DRAWINGS TO ANY SHEET SIZE OTHER THAN 22 X 34 OR BY USING FORMATS OTHER THAN AutoCAD PDF FILES WILL RESULT IN INCORRECT SCALES AND HATCH PATTERN DISTORTIONS. THE USER IS CAUTIONED AND SHOULD OBTAIN A HARD COPY PRINT-OUT FROM THE CONTRACTOR.
3. INDEPENDENT LINE LOCATIONS, "BLIND SEARCHES" SHALL BE PERFORMED IN ALL AREAS PRIOR TO ANY INTRUSIVE WORK BEING PERFORMED. EXEMPTION TO LINE LOCATION REQUIREMENTS WILL BE PROVIDED IN WRITING BY THE CONTRACTOR.

DESIGN CHANGES SHALL NOT BE MADE WITHOUT WRITTEN CONSENT OF THE PROJECT ENGINEER

Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



LEGEND

EXISTING FLOW ⇨ ⇨

PROPOSED DIVERSION →

NOTES:

1. NO EXCESS RUNOFF IS PREDICTED TO BE GENERATED BY THIS WORK.
2. THE CALCULATED FLOW FOR BURRO CANYON CREEK IS:
   Q2: 95 CFS
   Q10: 280 CFS
   Q100: 730 CFS
3. THE CALCULATED FLOW FOR THE DRAINAGE THROUGH THE BURRO TUNNEL PORTAL AREA IS:
   Q2: 15 CFS
   Q10: 40 CFS
   Q100: 80 CFS

N

SCALE IN FEET

200 100 0 200 400

60% DESIGN

BURRO MINES COMPLEX, SAN MIGUEL COUNTY, COLORADO

\\lm\gis\Sites_Dev\Sites\CO\SlickRockEastProcessing\Orig\20200728-Slick Rock-Burro Mine Additional Topo\Burro-30july20 topo RR.dwg

APPROVALS

C. OLIVER	09/23/2020
C. OLIVER	09/23/2020
M. MADRIL	
M. GERBER	
E. COTTER	

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

Work Performed Under DOE Contract No. DE-LM0000427
NAVARRO Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

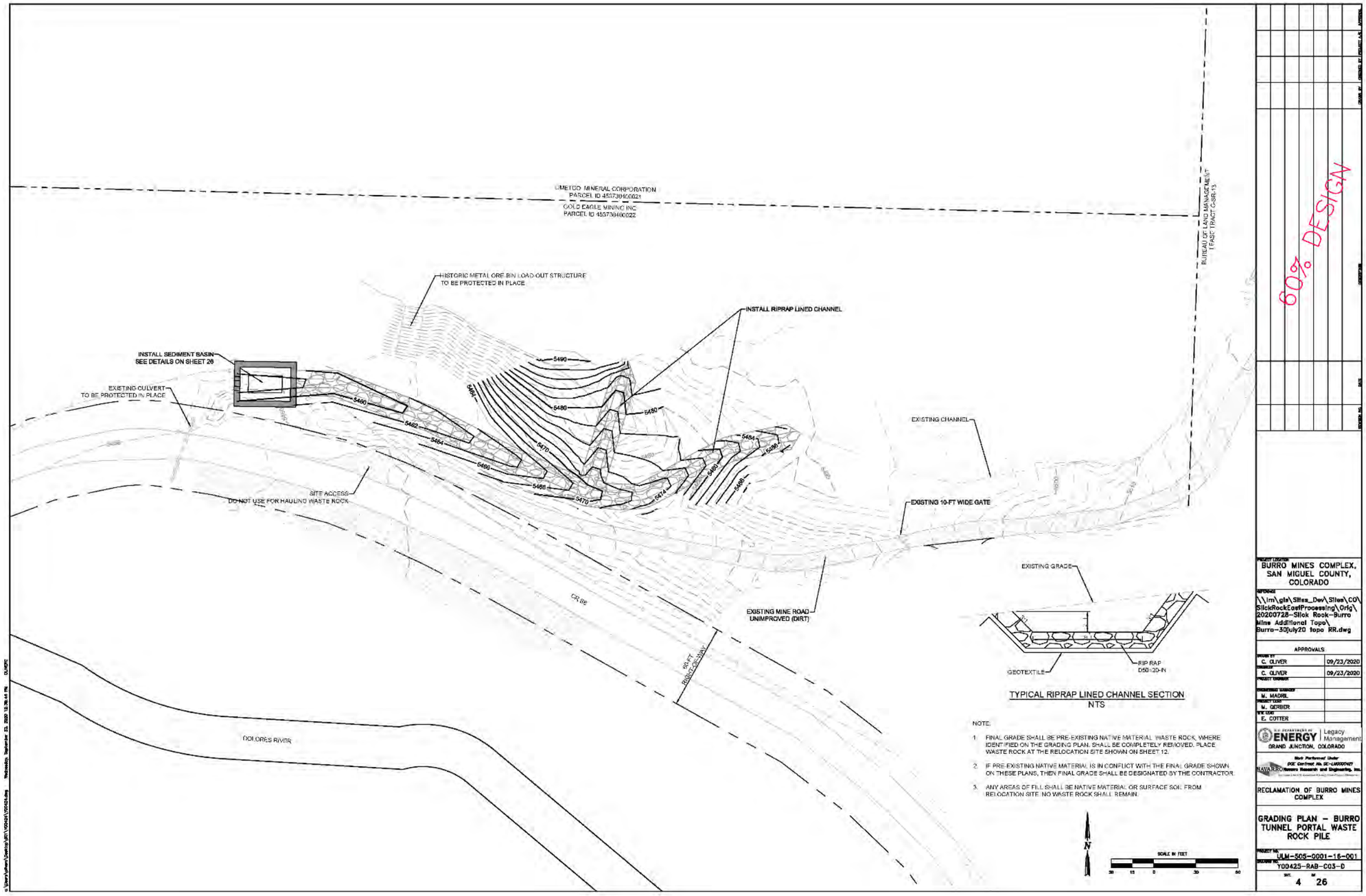
DRAINAGE PLAN

LM-505-0001-16-001

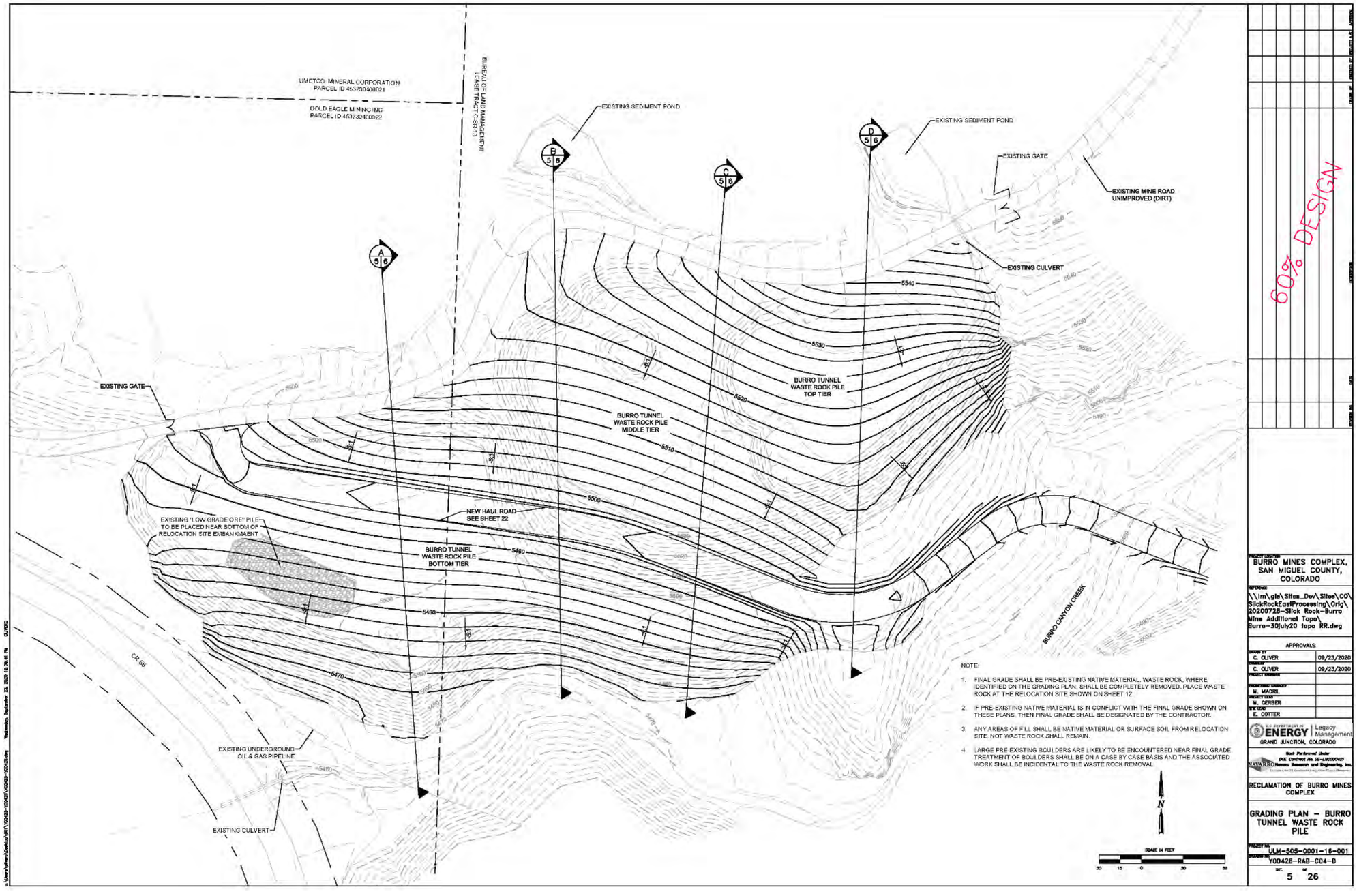
Y00424-RAB-C02-D

SHT. 3 OF 26

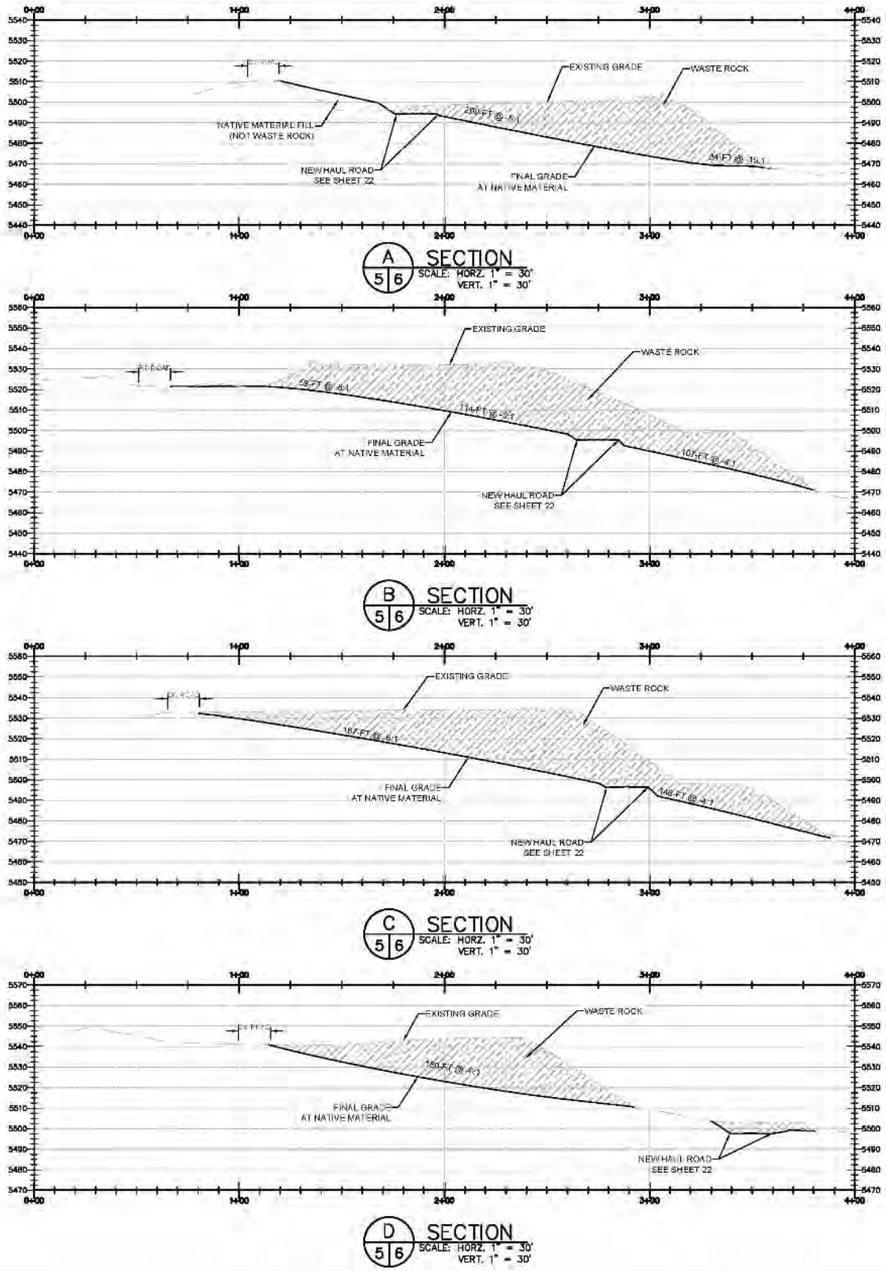
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



NOTE:

1. DEPTH OF WASTE ROCK IS UNKNOWN. THE DEPTH OF WASTE ROCK SHOWN IN THESE SECTIONS IS ESTIMATED BASED ON SURROUNDING TOPOGRAPHY FOR ILLUSTRATION PURPOSES ONLY.
2. FINAL GRADE SHALL BE PRE-EXISTING NATIVE MATERIAL. WASTE ROCK, WHERE IDENTIFIED ON THE GRADING PLAN, SHALL BE COMPLETELY REMOVED. PLACE WASTE ROCK AT THE RELOCATION SITE SHOWN ON SHEET 12.
3. IF PRE-EXISTING NATIVE MATERIAL IS IN CONFLICT WITH THE FINAL GRADE SHOWN ON THESE PLANS, THEN FINAL GRADE SHALL BE DESIGNATED BY THE CONTRACTOR.
4. ANY AREAS OF FILL SHALL BE NATIVE MATERIAL OR SURFACE SOIL FROM RELOCATION SITE. NOT WASTE ROCK SHALL REMAIN.
5. LARGE PRE-EXISTING BOULDERS ARE LIKELY TO BE ENCOUNTERED NEAR FINAL GRADE. TREATMENT OF BOULDERS SHALL BE ON A CASE BY CASE BASIS AND THE ASSOCIATED WORK SHALL BE INCIDENTAL TO THE WASTE ROCK REMOVAL.

60% DESIGN

PROJECT LOCATION
BURRO MINES COMPLEX, SAN MIGUEL COUNTY, COLORADO

REFERENCE
\\lm\gis\Sites_Dev\Sites\CO\SlickRockEvalProcessing\Orig\20200728-Slick Rock-Burro Mine Additional Topo\Burro-30july20 topo RR.dwg

APPROVALS

DRAWN BY: C. OLIVER	09/23/2020
PROJECT ENGINEER: C. OLIVER	09/23/2020
ENGINEERING MANAGER: M. MADRIL	
PROJECT LEAD: W. GERBER	
QA/QC: E. COTTER	

U.S. Department of Energy Legacy Management
GRAND JUNCTION, COLORADO

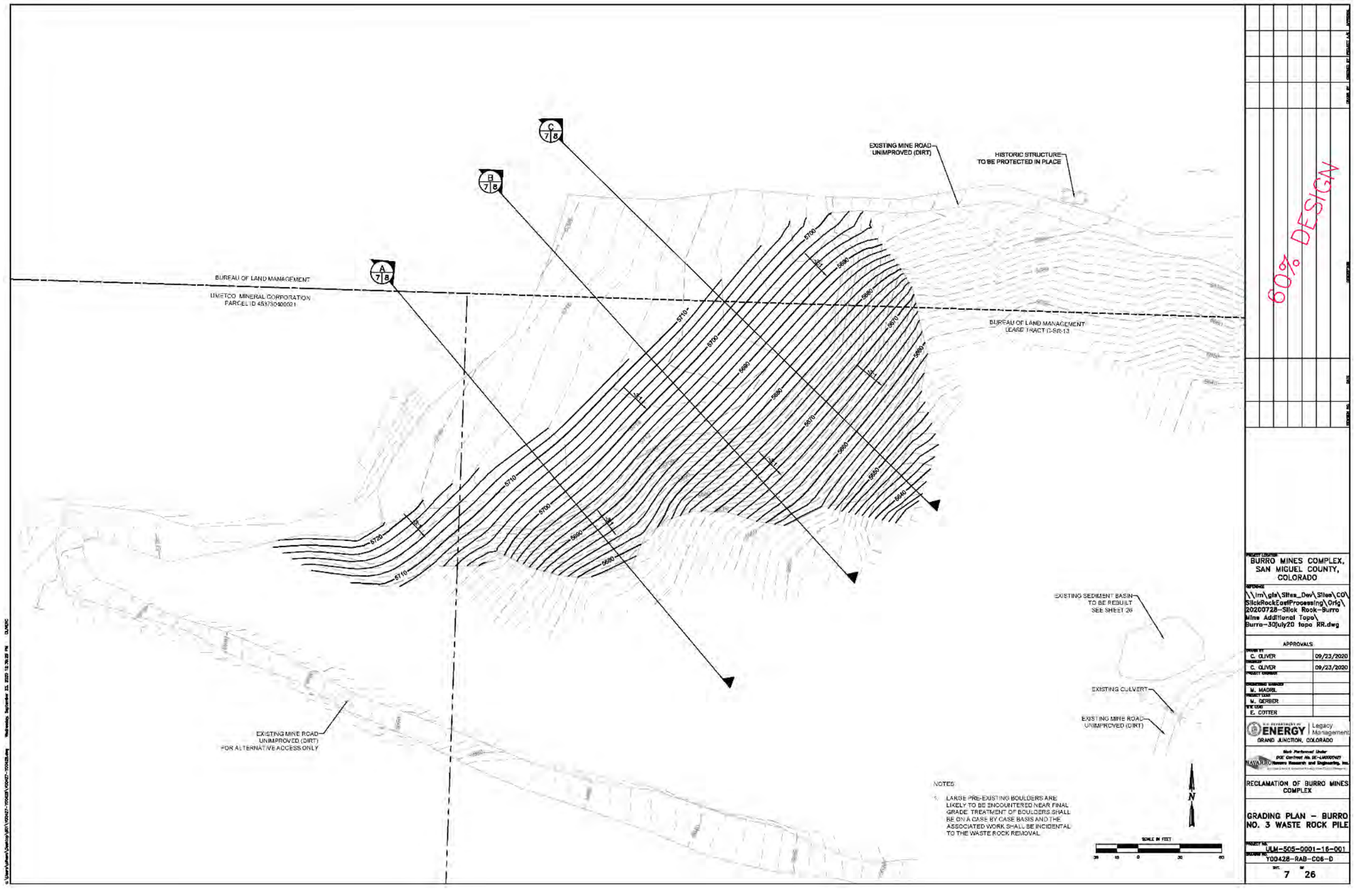
Work Performed Under DOE Contract No. DE-LM0007427
NAVARRO Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

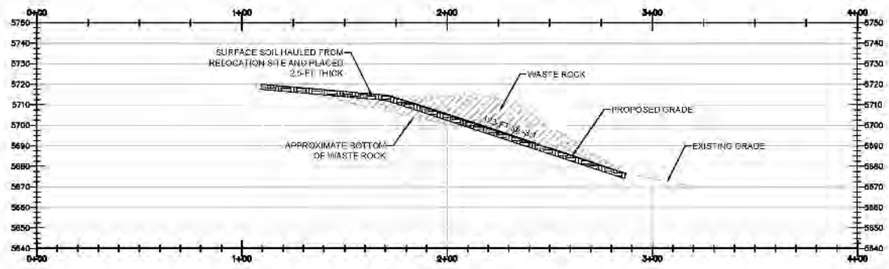
SECTIONS – BURRO TUNNEL WASTE ROCK PILE

PROJECT NO. ULM-505-0001-18-001
DRAWING NO. Y00427-RAB-C05-D
SHT. 6 OF 26

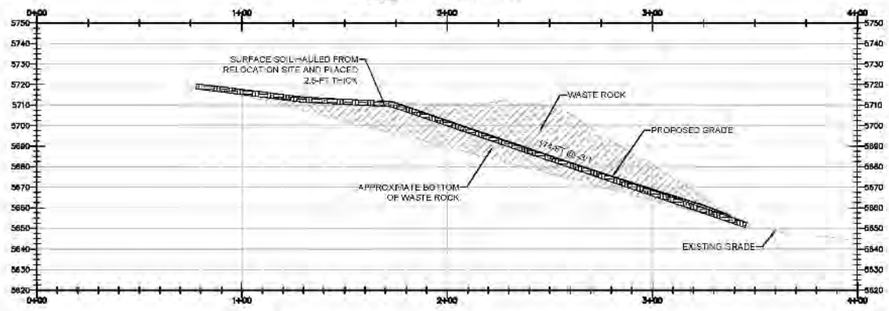
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



A/7|8 SECTION
SCALE: HORZ. 1" = 30'
VERT. 1" = 30'



B/7|8 SECTION
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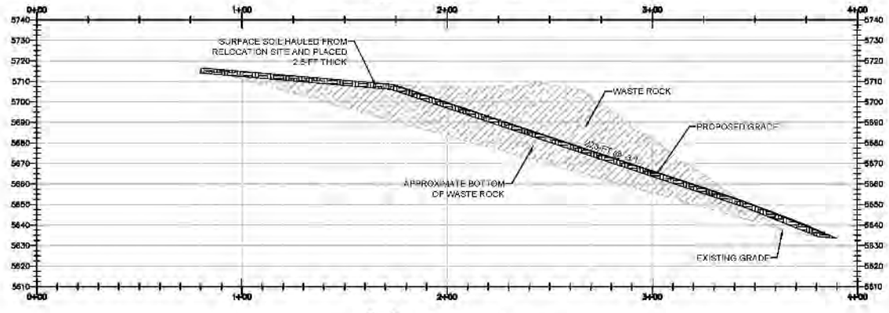
VERT. 1" = 30'



C/7|8 SECTION
SCALE: HORZ. 1" = 30'
VERT. 1" = 30'

NOTES:

1. DEPTH OF WASTE ROCK IS UNKNOWN. THE DEPTH OF WASTE ROCK SHOWN IN THESE SECTIONS IS ESTIMATED BASED ON SURROUNDING TOPOGRAPHY FOR ILLUSTRATION PURPOSES ONLY.
2. LARGE PRE EXISTING BOULDERS ARE LIKELY TO BE ENCOUNTERED NEAR FINAL GRADE. TREATMENT OF BOULDERS SHALL BE ON A CASE BY CASE BASIS AND THE ASSOCIATED WORK SHALL BE INCIDENTAL TO THE WASTE ROCK REMOVAL.

60% DESIGN

BURRO MINES COMPLEX, SAN MIGUEL COUNTY, COLORADO

\\lm\gis\Sites_Dev\Sites\CO\SlickRockEastProcessing\Orig\20200728-Slick Rock-Burro Mine Additional Topo\Burro-30July20 topo RR.dwg

APPROVALS

C. OLIVER	09/23/2020
C. OLIVER	09/23/2020
M. MADRIL	
M. GERBER	
E. COTTER	

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

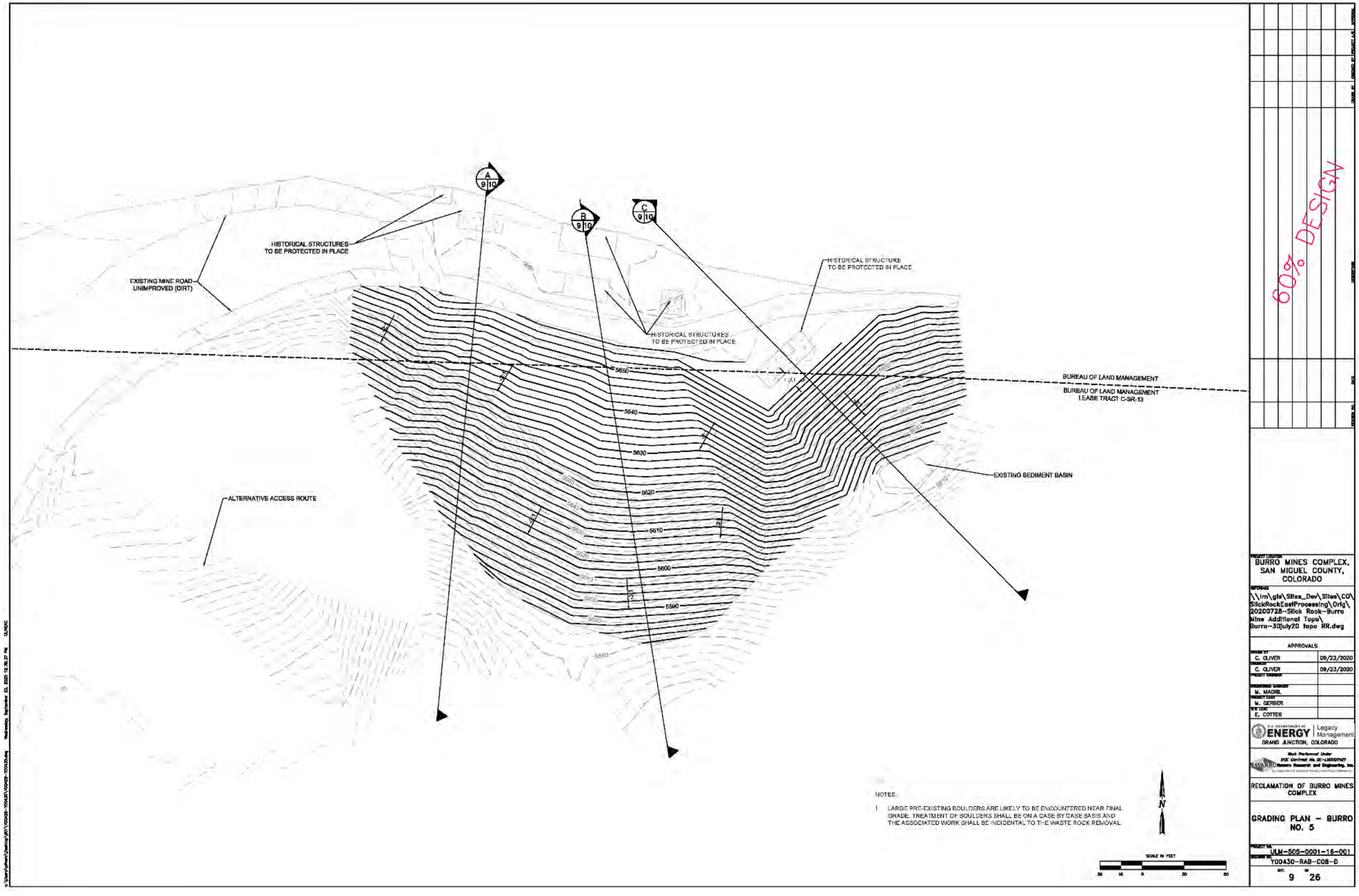
Work Performed Under DOE Contract No. DE-LM0000427
NAVARRO Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

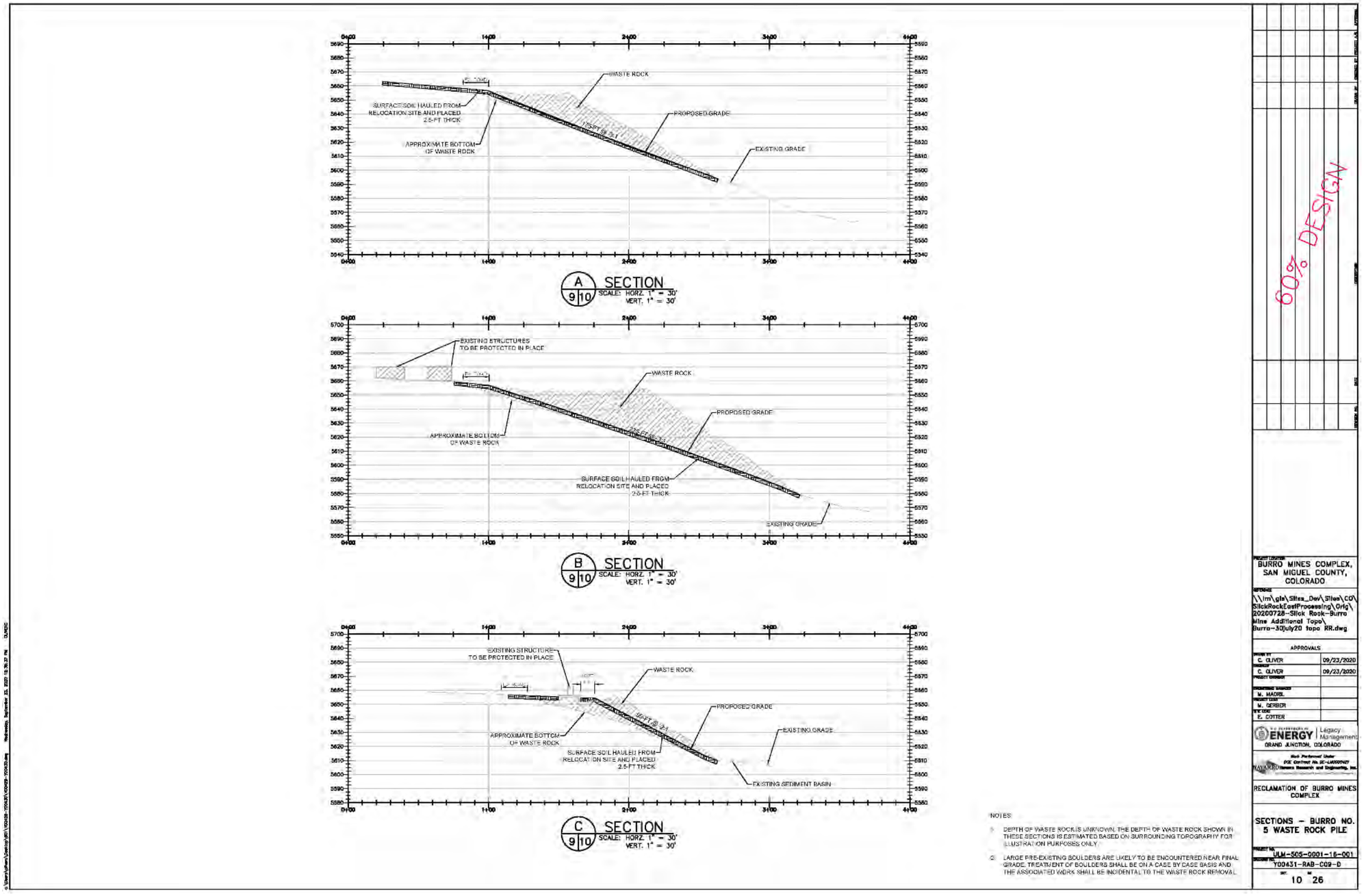
SECTIONS – BURRO NO. 3 WASTE ROCK PILE

PROJECT NO. ULM-505-0001-15-001
DRAWING NO. Y00429-RAB-C07-D
SHT. 8 OF 26

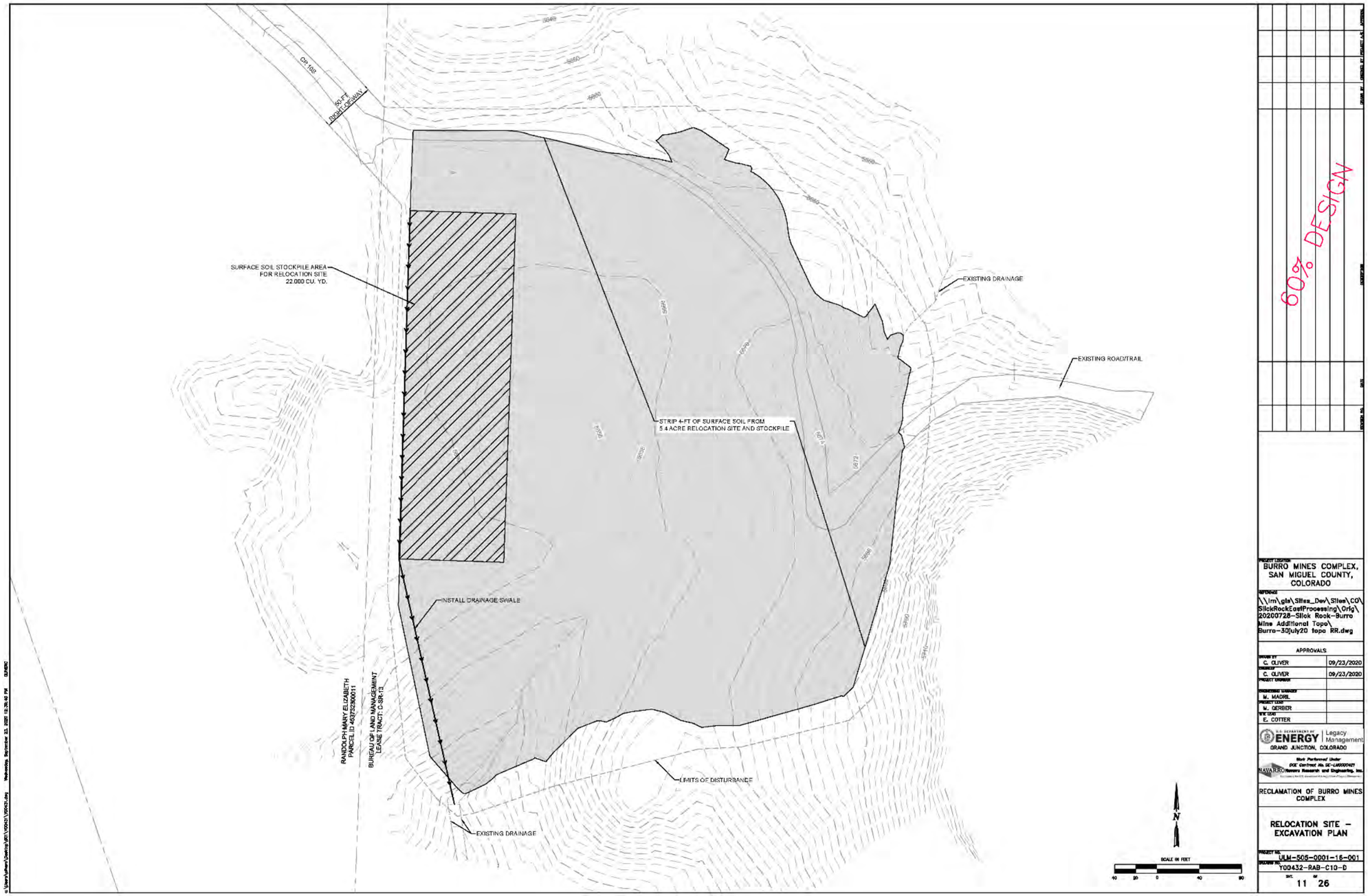
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



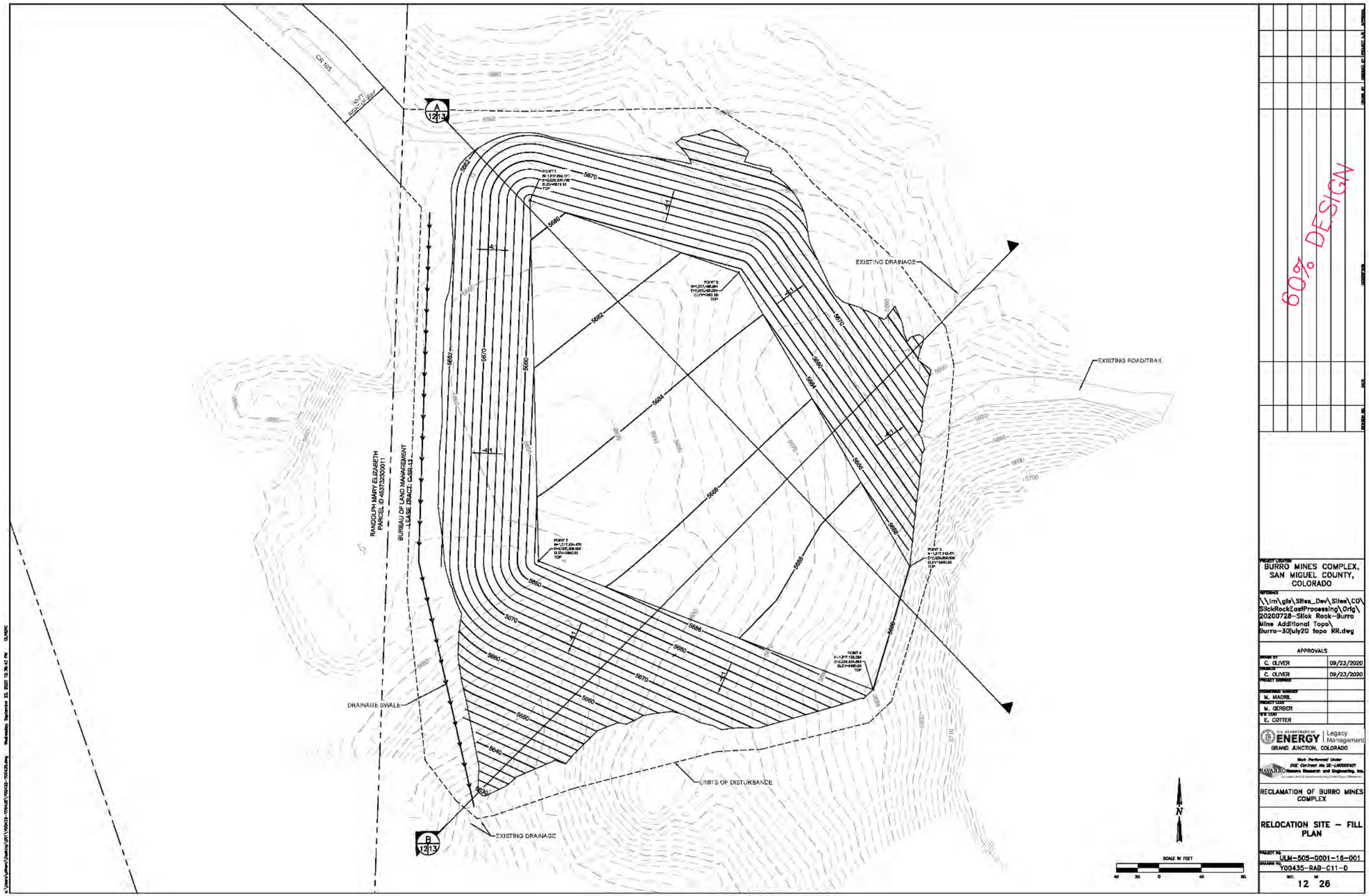
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



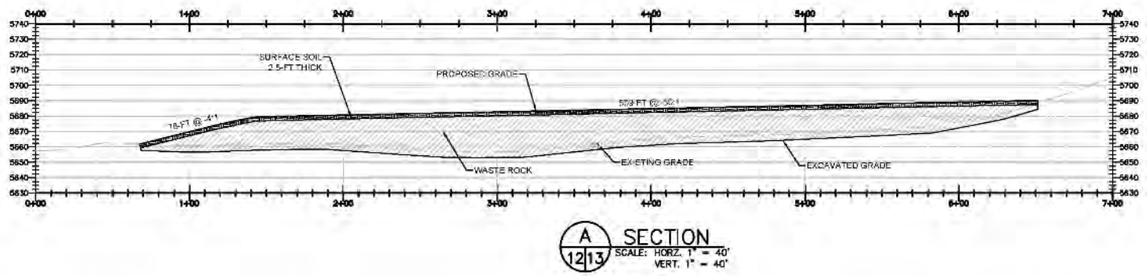
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



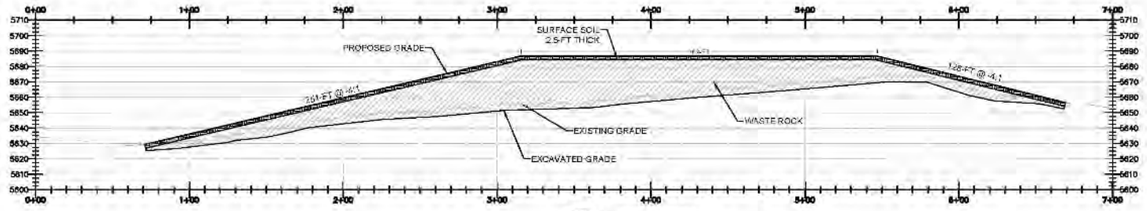
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



A 12|13 SECTION
SCALE: HORZ. 1" = 40'
VERT. 1" = 40'



B 12|13 SECTION
SCALE: HORZ. 1" = 40'
VERT. 1" = 40'

60% DESIGN

BURRO MINES COMPLEX, SAN MIGUEL COUNTY, COLORADO

\\lm\gis\Sites_Dev\Sites\CO\SlickRockEastProcessing\Orig\20200728-Slick Rock-Burro Mine Additional Topo\Burro-30July20 topo RR.dwg

APPROVALS

C. OLIVER	09/23/2020
C. OLIVER	09/23/2020
M. MADRIL	
M. GERBER	
E. COTTER	

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

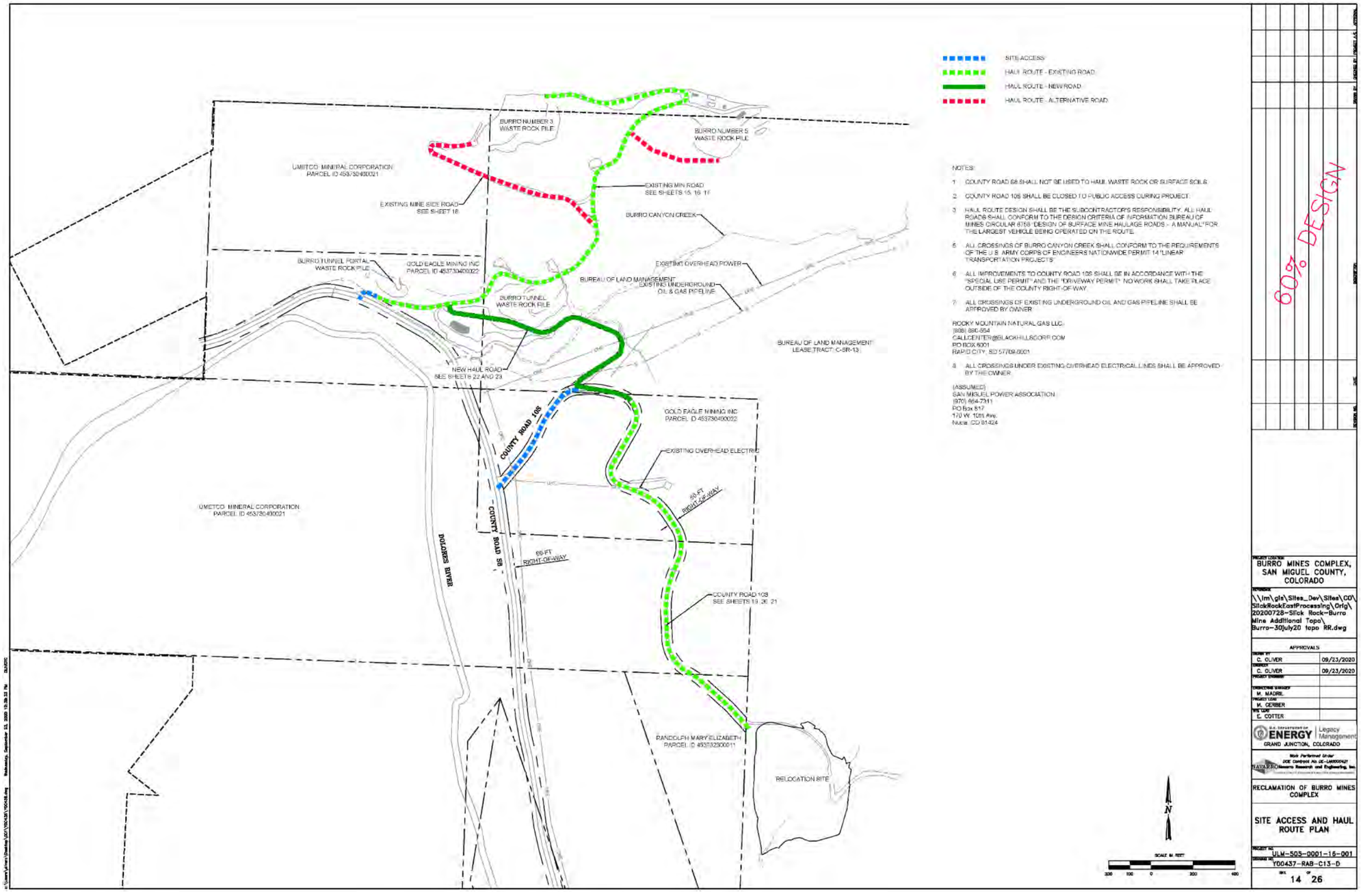
Work Performed Under DOE Contract No. DE-LM0000427
Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

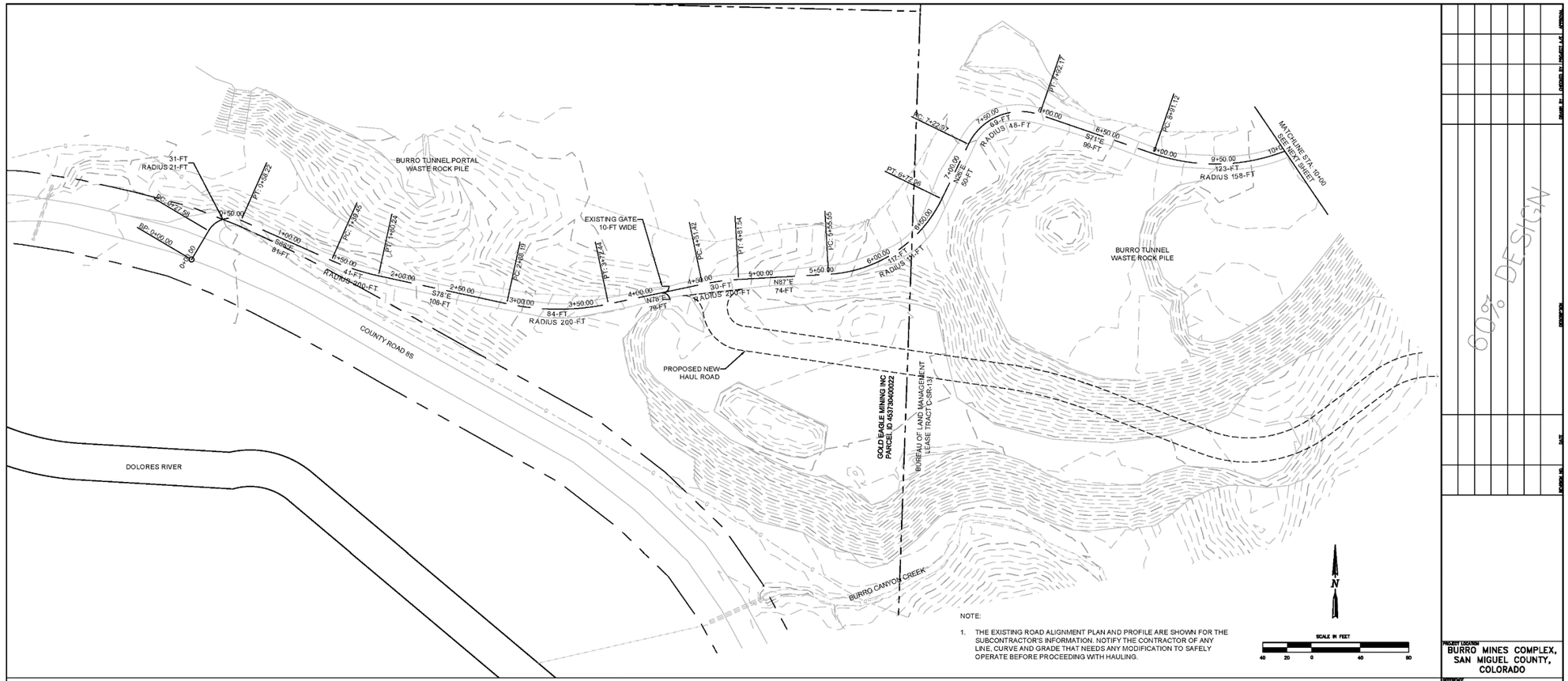
RELOCATION SITE – FILL SECTIONS

ULM-505-0001-15-001
Y00436-RAB-C12-D
SHT. 13 OF 26

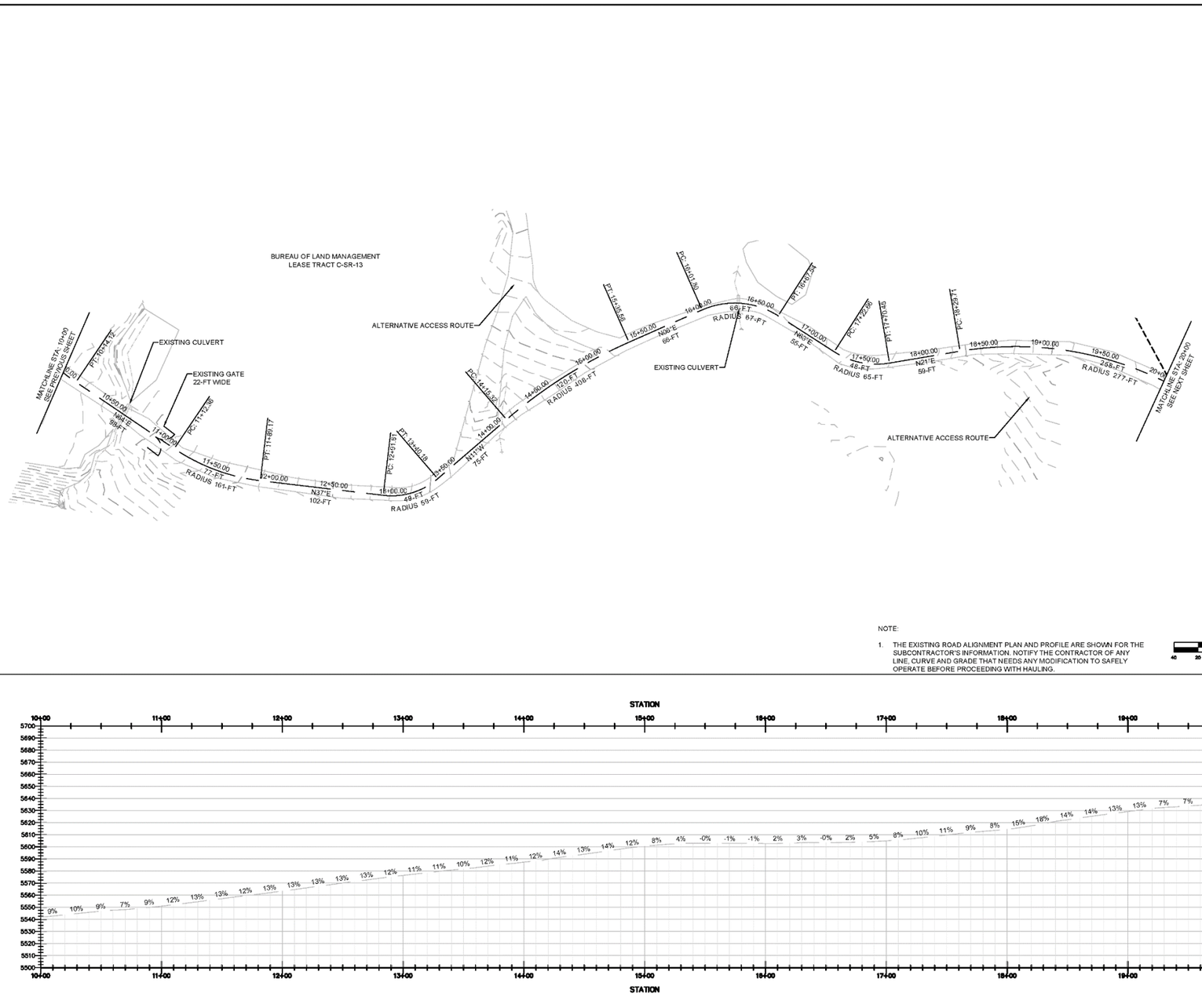
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



NOTE:

1. THE EXISTING ROAD ALIGNMENT PLAN AND PROFILE ARE SHOWN FOR THE SUBCONTRACTOR'S INFORMATION. NOTIFY THE CONTRACTOR OF ANY LINE, CURVE AND GRADE THAT NEEDS ANY MODIFICATION TO SAFELY OPERATE BEFORE PROCEEDING WITH HAULING.

60% DESIGN

PROJECT LOCATION
BURRO MINES COMPLEX,
SAN MIGUEL COUNTY,
COLORADO

REFERENCE

APPROVALS

DRAWN BY C. OLIVER	09/23/2020
ENGINEER C. OLIVER	09/23/2020
PROJECT MANAGER C. SAPPUS	
CONSTRUCTION MANAGER M. MADRIL	
PROJECT LEAD M. GERBER	
SITE MANAGER/LEAD E. COTTER	

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

Work Performed Under
DOE Contract No. DE-LM0000421
NAVARRO Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

EXISTING MINE ROAD STA 10+00–STA 20+00

PROJECT NO. ULM-505-0001-18-001
DRAWING NO. Y00439-RAB-P02-D
SHT. 16 OF 26

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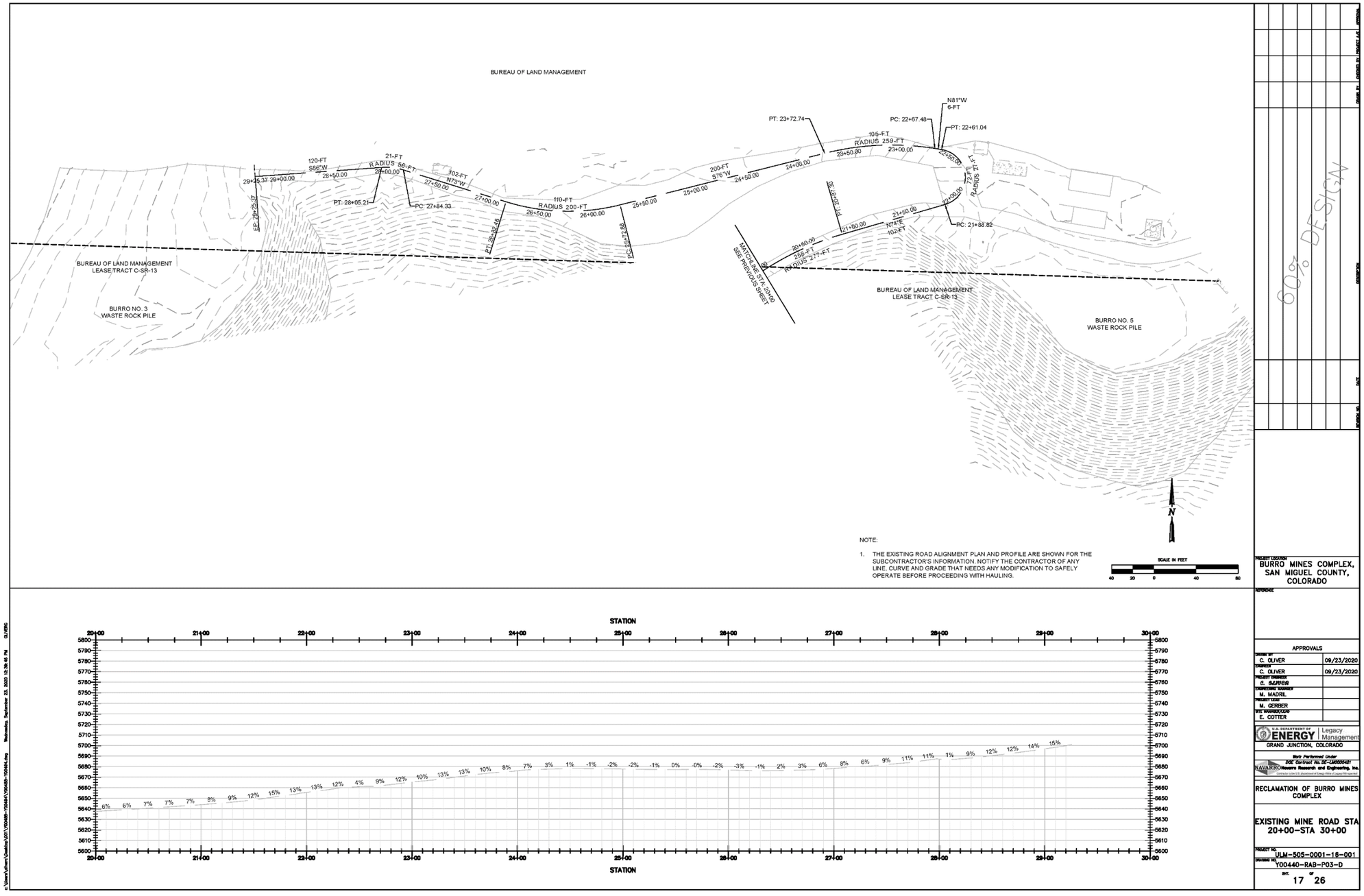
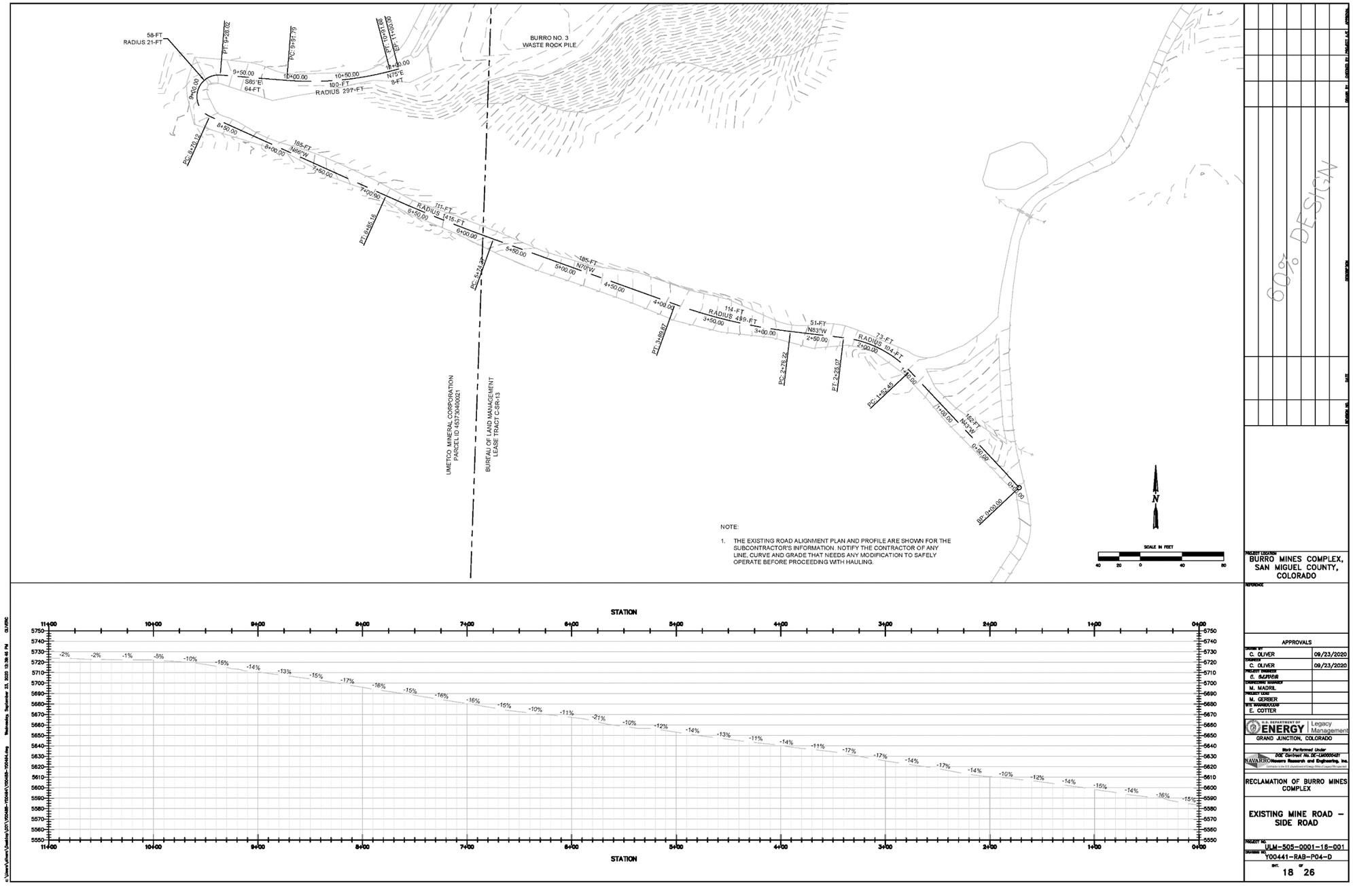
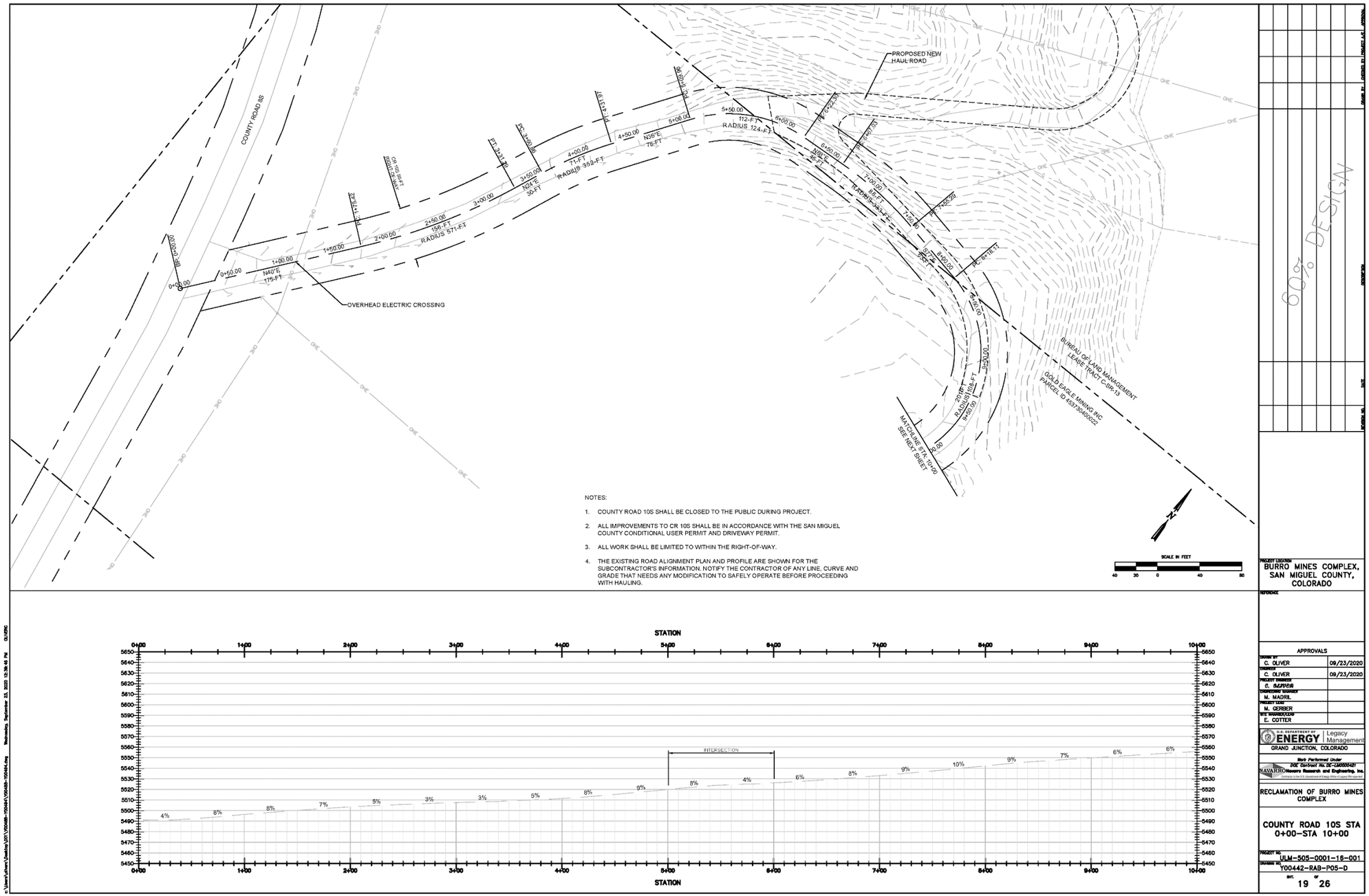
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



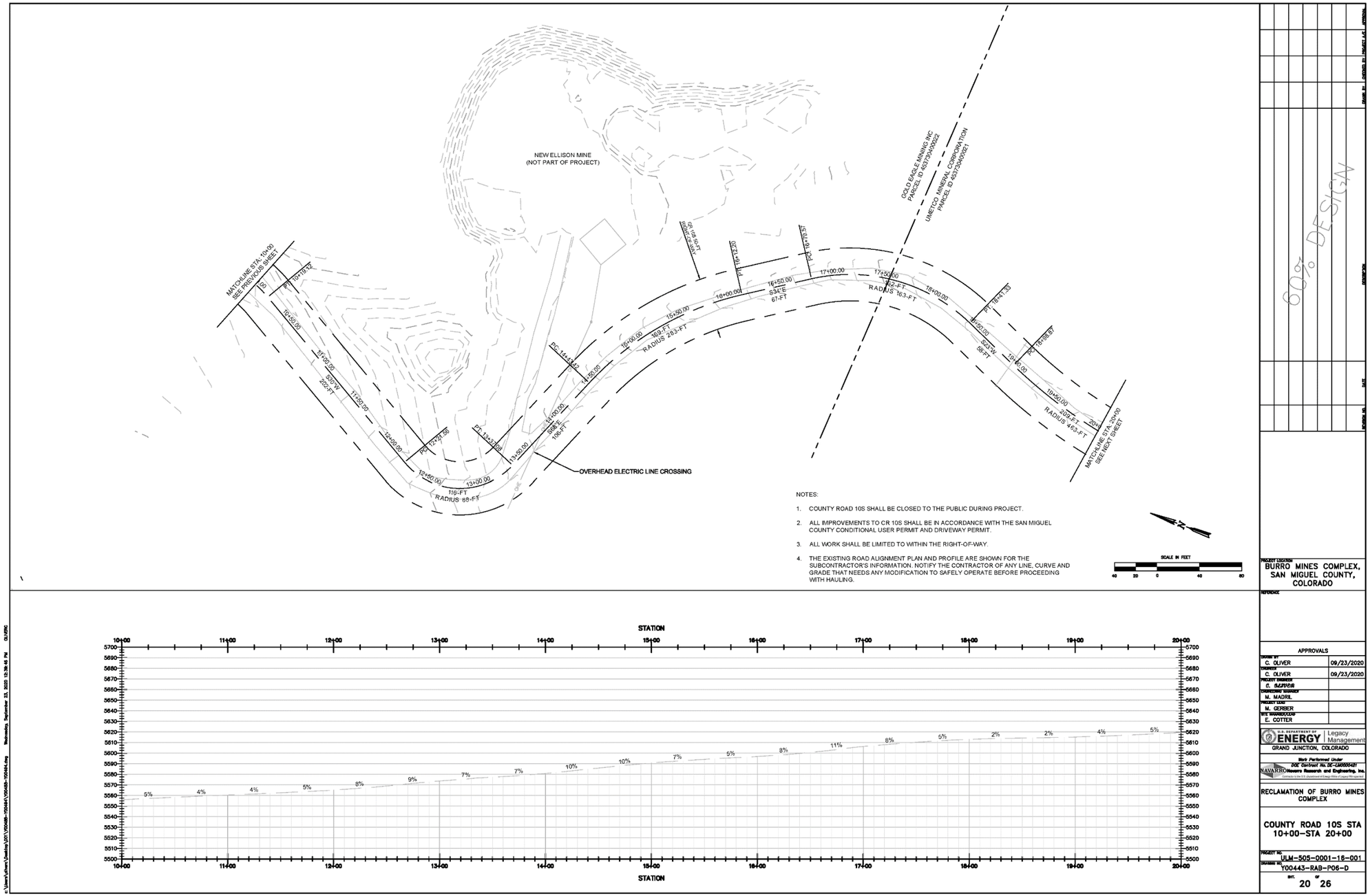
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



NOTES:

1. COUNTY ROAD 10S SHALL BE CLOSED TO THE PUBLIC DURING PROJECT.
2. ALL IMPROVEMENTS TO CR 10S SHALL BE IN ACCORDANCE WITH THE SAN MIGUEL COUNTY CONDITIONAL USER PERMIT AND DRIVEWAY PERMIT.
3. ALL WORK SHALL BE LIMITED TO WITHIN THE RIGHT-OF-WAY.
4. THE EXISTING ROAD ALIGNMENT PLAN AND PROFILE ARE SHOWN FOR THE SUBCONTRACTOR'S INFORMATION. NOTIFY THE CONTRACTOR OF ANY LINE, CURVE AND GRADE THAT NEEDS ANY MODIFICATION TO SAFELY OPERATE BEFORE PROCEEDING WITH HAULING.

60% DESIGN

PROJECT LOCATION
BURRO MINES COMPLEX, SAN MIGUEL COUNTY, COLORADO

REFERENCE

APPROVALS

DRAWN BY C. OLIVER	09/23/2020
CHECKED C. OLIVER	09/23/2020
PROJECT ENGINEER C. SUPPER	
CONSTRUCTION MANAGER M. MADRIL	
PROJECT LEAD M. GERBER	
SITE SUPERVISOR E. COTTER	

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

Work Performed Under DOE Contract No. DE-LM0000421
NAVARRO Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

COUNTY ROAD 10S STA 10+00–STA 20+00

PROJECT NO. ULM-505-0001-16-001
DRAWING NO. Y00443-RAB-P06-D
SHT. 20 OF 26

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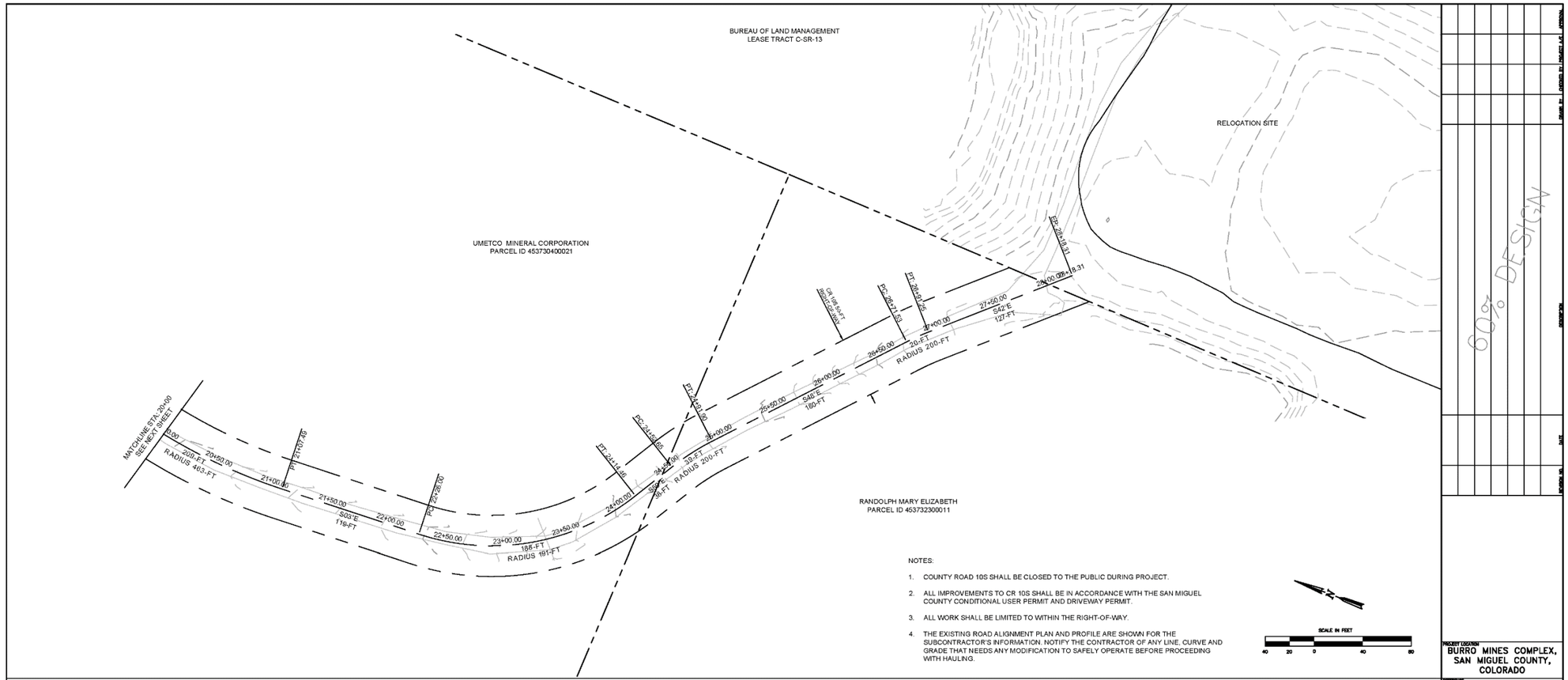
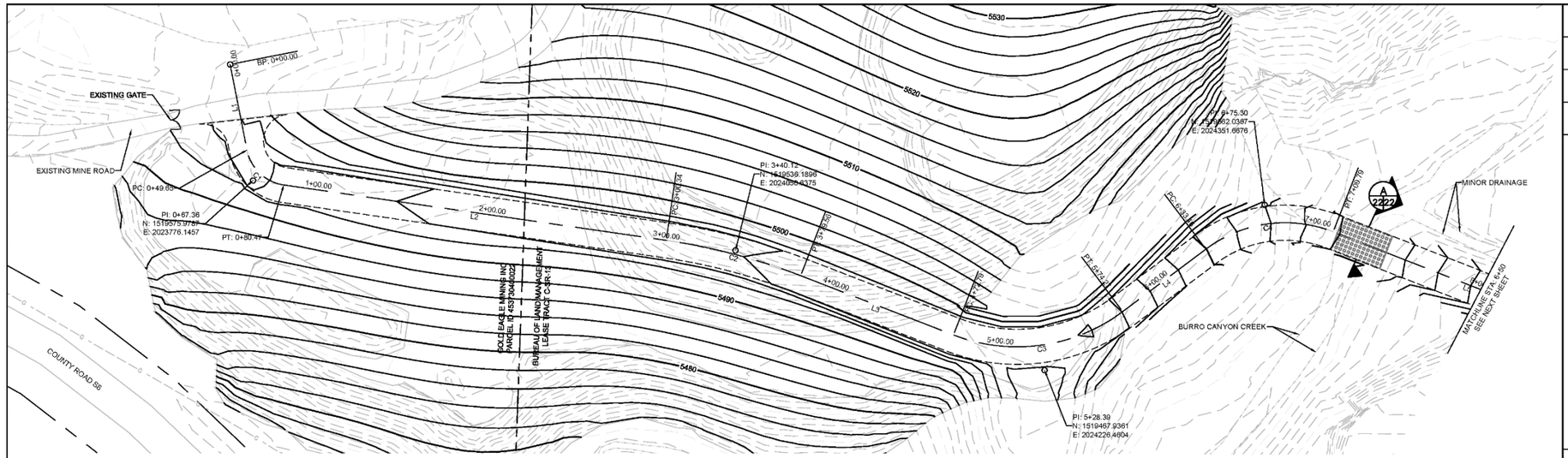
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)

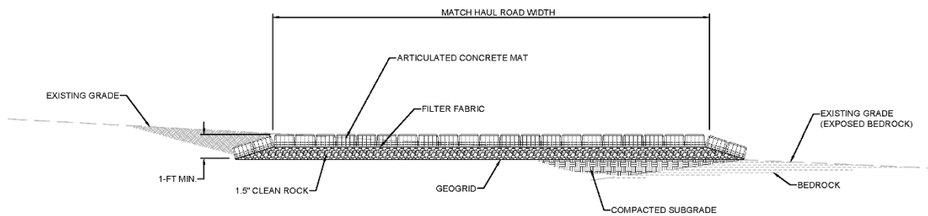


Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)

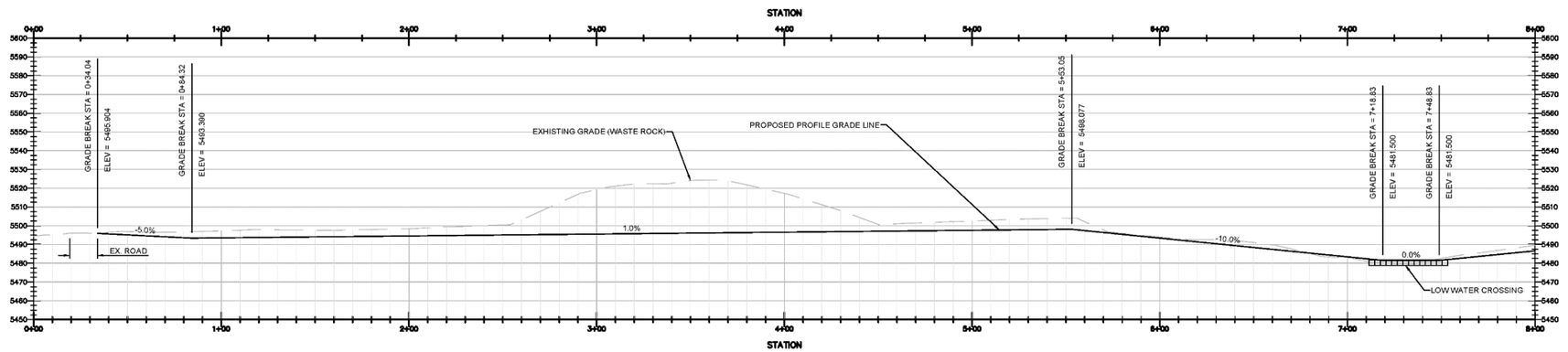


Line Table: Alignments				
Line #	Length	Direction	Start Point	End Point
L1	49.654	S11° 07' 46.19"E	(2023763.1428,1519642.0745)	(2023772.7275,1519593.3540)
L2	219.874	S81° 45' 07.63"E	(2023793.6709,1519573.4383)	(2024011.2703,1519541.8961)
L3	93.233	S68° 47' 02.61"E	(2024087.7201,1519521.7944)	(2024174.6343,1519488.0547)
L4	59.191	N53° 04' 22.64"E	(2024270.9025,1519501.3369)	(2024318.2201,1519536.8990)
L5	165.650	S68° 36' 53.68"E	(2024390.6275,1519546.7802)	(2024544.8728,1519486.3784)

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C1	25.000	30.815	S46° 26' 26.91"E	(2023772.7275,1519593.3540)	(2023793.6709,1519573.4383)
C2	350.000	79.217	S75° 16' 05.12"E	(2024011.2703,1519541.8961)	(2024087.7201,1519521.7944)
C3	100.000	101.479	N82° 08' 40.01"E	(2024174.6343,1519488.0547)	(2024270.9025,1519501.3369)
C4	75.000	76.330	N82° 13' 44.48"E	(2024318.2201,1519536.8990)	(2024390.6275,1519546.7802)



A 2222 TYPICAL SECTION – LOW-WATER CROSSING
N.T.S.



60% DESIGN

PROJECT LOCATION
BURRO MINES COMPLEX,
SAN MIGUEL COUNTY,
COLORADO

REFERENCE

APPROVALS

DESIGN BY C. OLIVER	09/23/2020
DRAWN BY C. OLIVER	09/23/2020
PROJECT ENGINEER C. SUPPES	
CONSTRUCTION MANAGER M. MADRIL	
PROJECT LEAD M. GERBER	
SITE MANAGER/LEAD E. COTTER	

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

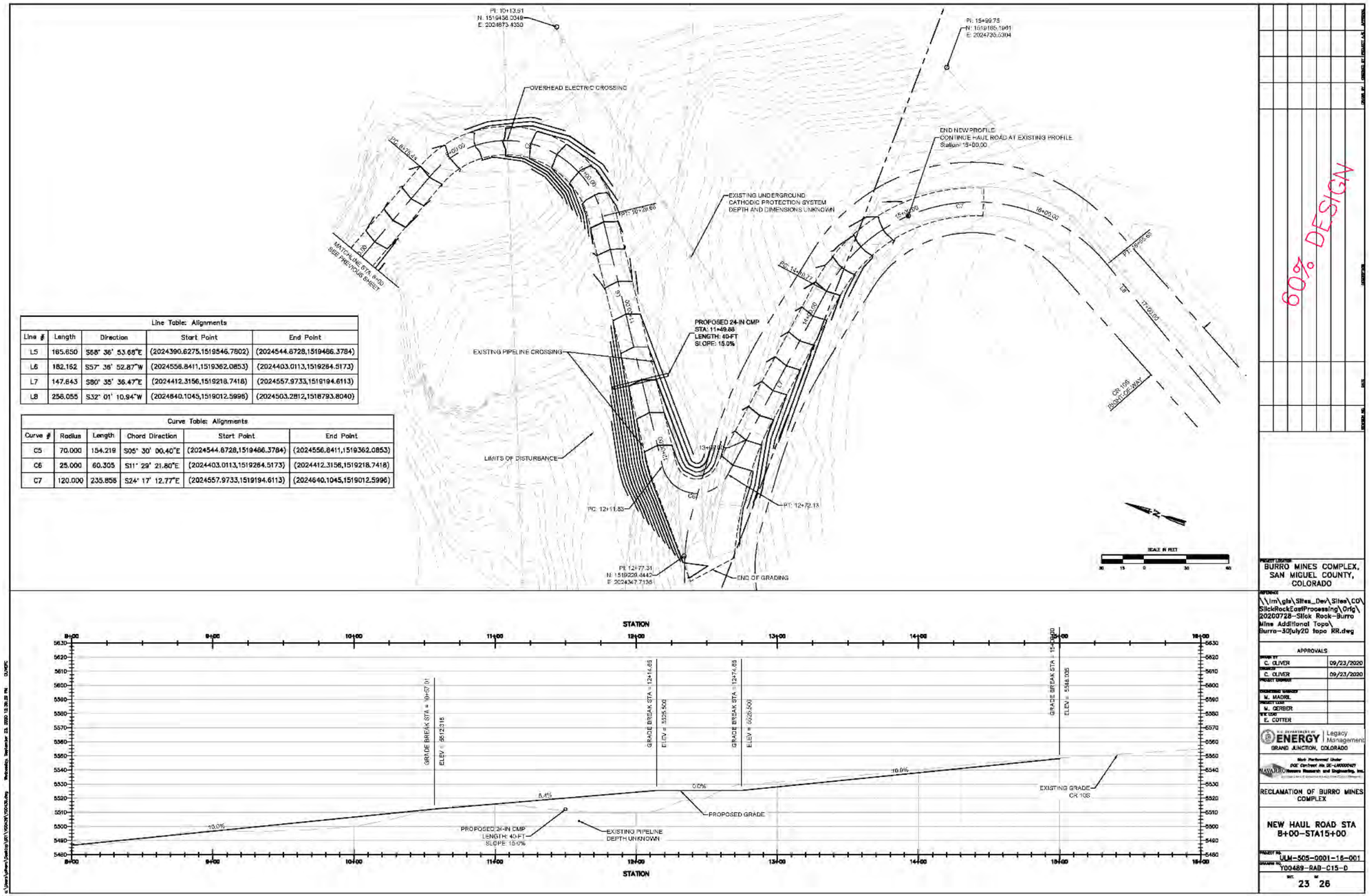
Work Performed Under DOE Contract No. DE-LM0000421
NAVARRO Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

NEW HAUL ROAD STA 0+00–STA 8+00

PROJECT NO. ULM-505-0001-18-001
DRAWING NO. Y00488-RAB-C14-D
SHT. 22 OF 26

Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



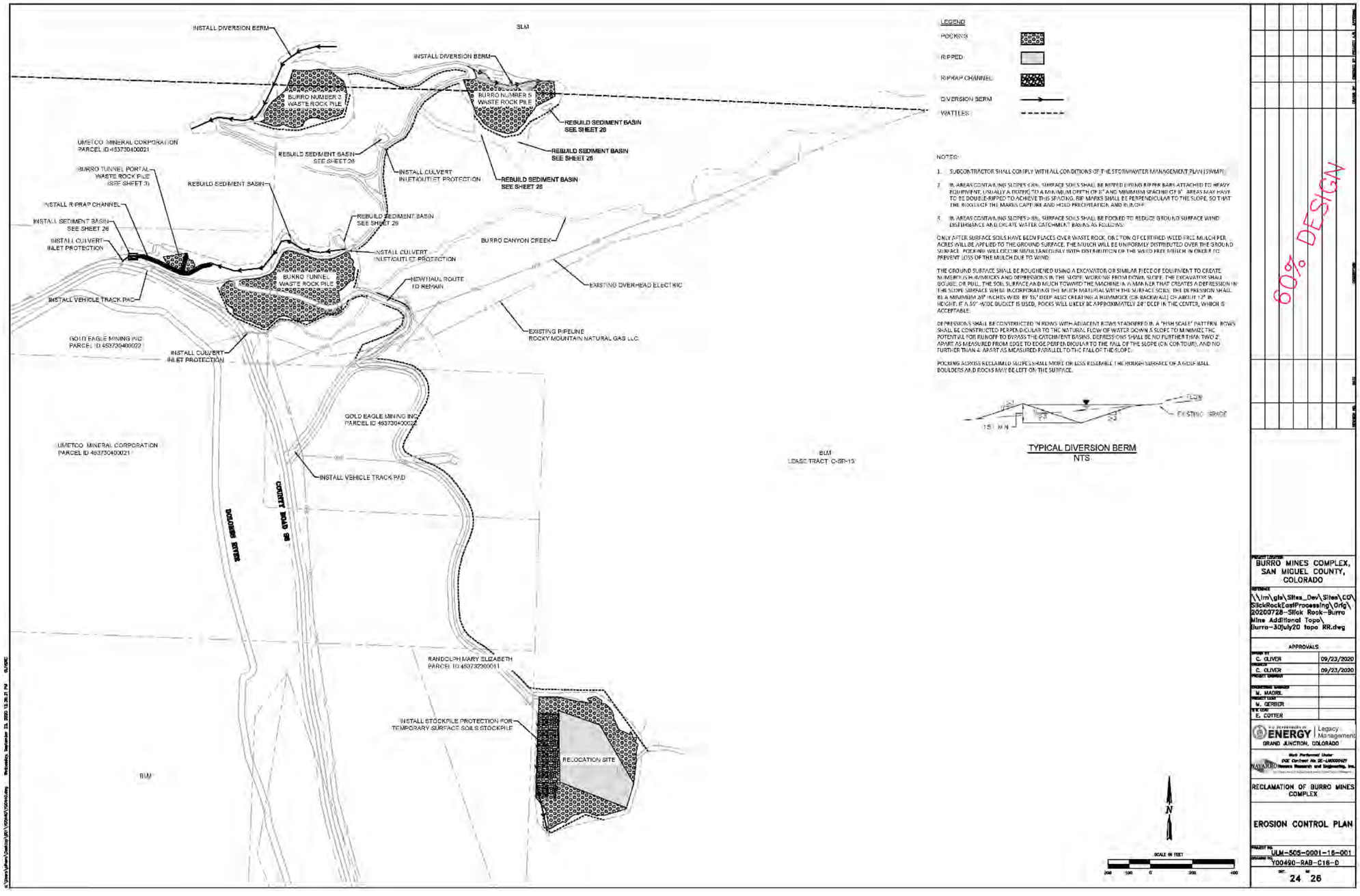
Line Table: Alignments

Line #	Length	Direction	Start Point	End Point
L5	165.650	S58° 36' 53.68"E	(2024390.6275,1519546.7802)	(2024544.8728,1519486.3784)
L6	182.162	S57° 36' 52.87"W	(2024558.8411,1519362.0853)	(2024403.0113,1519284.5173)
L7	147.843	S80° 35' 36.47"E	(2024412.3156,1519218.7418)	(2024557.9733,1519194.6113)
L8	256.055	S32° 01' 10.94"W	(2024840.1045,1519012.5996)	(2024503.2812,1518793.8040)

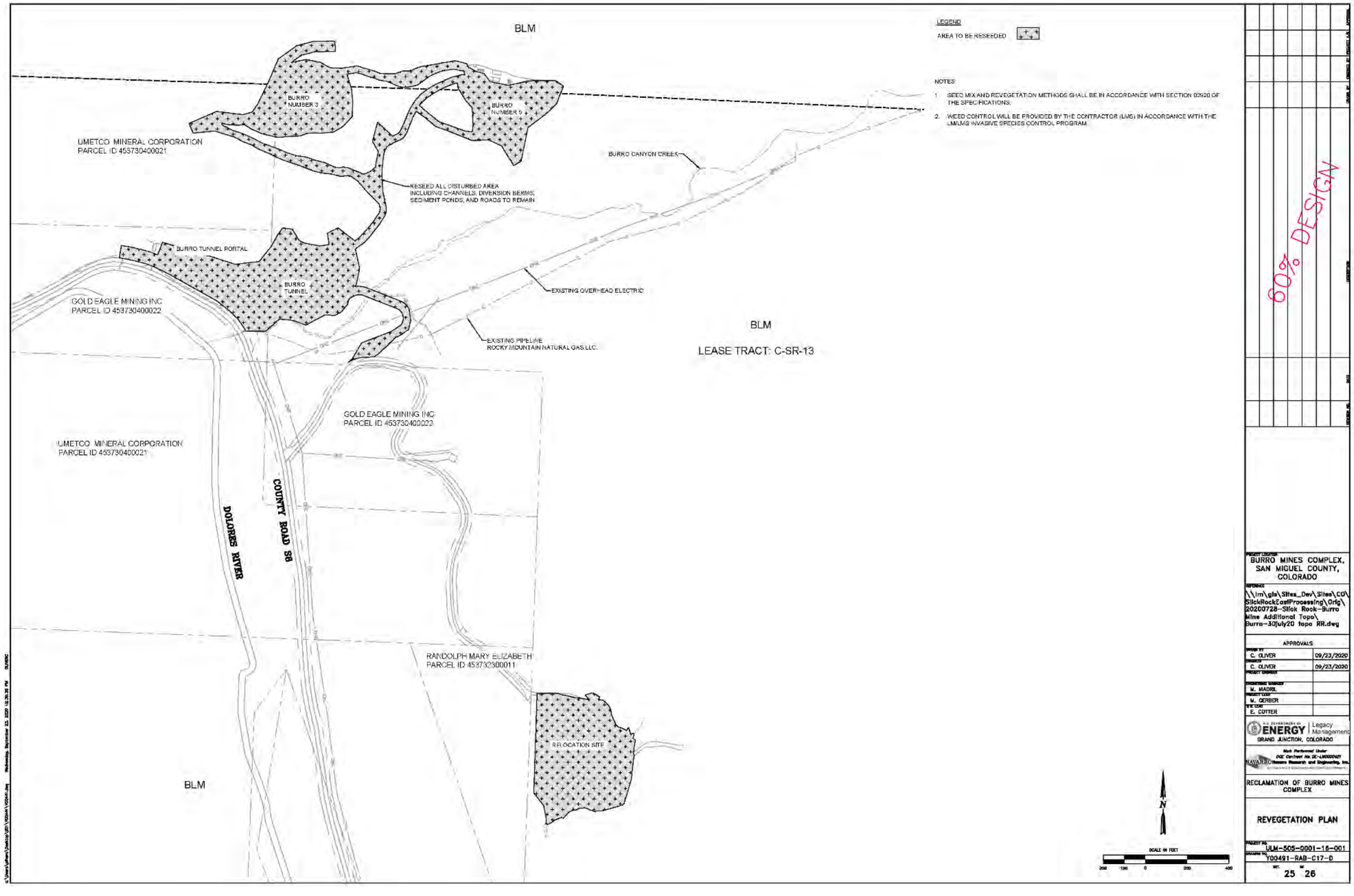
Curve Table: Alignments

Curve #	Radius	Length	Chord Direction	Start Point	End Point
C5	70.000	154.219	S05° 30' 00.40"E	(2024544.8728,1519486.3784)	(2024558.8411,1519362.0853)
C6	25.000	60.305	S11° 29' 21.80"E	(2024403.0113,1519284.5173)	(2024412.3156,1519218.7418)
C7	120.000	235.858	S24° 17' 12.77"E	(2024557.9733,1519194.6113)	(2024640.1045,1519012.5996)

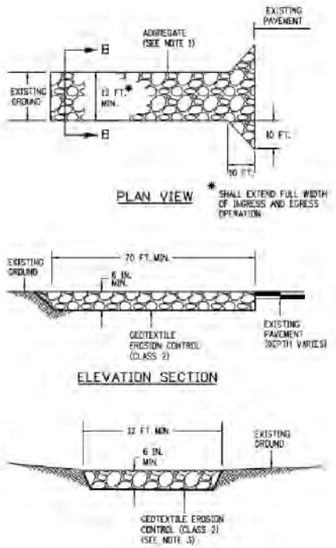
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



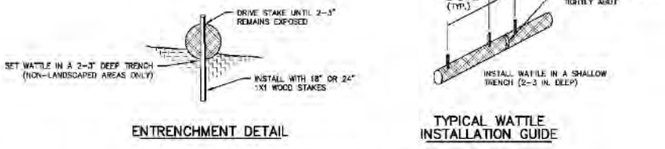
Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



Barr, D.L., DOE, Consultation Correspondence Item #7, Enclosure 1 (Cont.)



TYPICAL TRACKING PAD DETAIL
N.T.S.



ENTRENCHMENT DETAIL

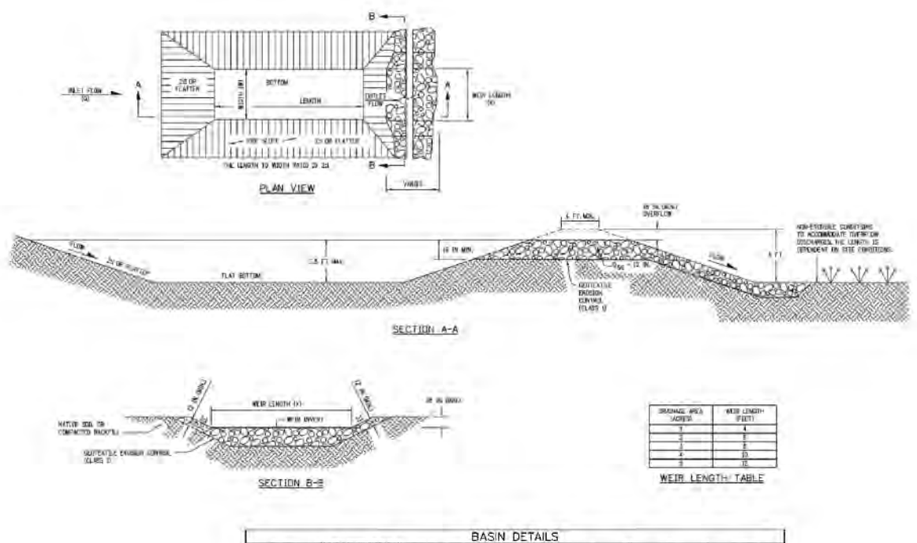
TYPICAL WATTLE INSTALLATION GUIDE

1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UP-SLOPE FROM THE ANCHOR TRENCH.

2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.

3. SECURE THE WATTLE WITH 18"-24" STAKES EVERY 2-3' AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2-3" OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO SLOPE FACE.

TYPICAL WATTLE DETAIL
N.T.S.



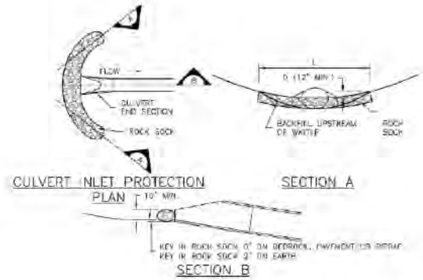
DRAINAGE AREA (ACRES)	WEIR LENGTH (FEET)
1	4
2	5
3	6
4	7
5	8

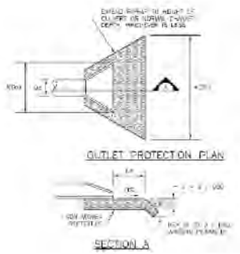
WEIR LENGTH TABLE

BASIN DETAILS

BASIN	CONTRIBUTING DISTURBED AREA	DESIGN AREA	STORAGE	A	B	DEPTH
NEW BASIN	1.00 ACRES	1 ACRE	1,800 CU. FT.			
BASIN 1	0.70 ACRES	1 ACRE	1,800 CU. FT.			
BASIN 2	0.50 ACRES	1 ACRE	1,800 CU. FT.			
BASIN 3	1.85 ACRES	2 ACRES	3,600 CU. FT.			
BASIN 4	1.00 ACRES	1 ACRE	1,800 CU. FT.			
BASIN 5	0.80 ACRES	1 ACRE	1,800 CU. FT.			
BASIN 6	0.40 ACRES	1 ACRE	1,800 CU. FT.			

TYPICAL SEDIMENT BASIN DETAIL
N.T.S.





PIPE DIAMETER (IN INCHES)	DISCHARGE (CFS)	WIDTH (FEET)	RIPRAP SIZE D50 DIAMETER (IN INCHES)
8	0.5	5	4
	1	10	8
12	1	7.5	6
	2	15	9
18	2	10	9
	3.5	20	12
	5	15	12
	7	30	18
24	4	15	9
	7	30	12
	10	20	18
	14	40	24

TYPICAL CULVERT INLET/OUTLET PROTECTION DETAIL
N.T.S.

60% DESIGN

PROJECT LOCATION
BURRO MINES COMPLEX, SAN MIGUEL COUNTY, COLORADO

REFERENCE
Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3

APPROVALS	
DESIGNED BY	
E. OLIVER	09/23/2020
CHECKED BY	
E. OLIVER	09/23/2020
PROJECT ENGINEER	
PROJECT MANAGER	
M. MOORE	
PROJECT LEAD	
M. GERBER	
FIELD LEAD	
E. COTTER	

U.S. DEPARTMENT OF ENERGY | Legacy Management
GRAND JUNCTION, COLORADO

Work Performed Under DOE Contract No. DE-LM0000421
NAVARRO Navarro Research and Engineering, Inc.

RECLAMATION OF BURRO MINES COMPLEX

TYPICAL DETAILS

PROJECT NO. ULM-505-0001-18-001
DRAWING NO. Y00492-RAB-C18-D
SHT 26 OF 26

Norton, H.K., Colorado SHPO, Consultation Correspondence Item #8

HISTORY Colorado

Deborah L. Barr
Uranium Leasing Program Manager
U.S. Department of Energy
Office of Legacy Management
11035 Dover Street, Suite 600
Westminster, CO 80021-5587

RE: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County (HC# 77950)

Dear Ms. Barr,

Thank you for your correspondence dated October 1, 2020 and received by our office on October 6, 2020 continuing consultation for the above referenced undertaking under Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations 36 CFR 800. We understand that the Office of Legacy Management in the U.S. Department of Energy is the lead agency involved under Section 106 of NHPA. The October 2020 email continues consultation regarding the subject undertaking initiated in June 2020.

We thank you for the additional documentation regarding the undertaking that you have provided. In order to complete our review, we request that you define the area of potential effects (APE) for the proposed undertaking according to 36 CFR 800.16(d). The APE should include areas directly, indirectly, and cumulatively affected by the proposed undertaking.

While a previously provided report discusses an APE, the report was completed prior to the development of the current scope of work. Changes to the scope of work for the proposed undertaking may result in changes to the APE. Further, the size of the APE discussed in the report differs substantially from the area proposed for ground disturbance in the recently provided drawings. Additional information provided will help us understand the extent of potential effects for the undertaking.

The provided documentation notes that a historic property, 5SM.2725 (Burro Mine), will be affected by the proposed undertaking. The provided documentation states that the undertaking proposes removing the entirety of the waste rock piles from the historic property as well as installing drainage features, constructing roads, enhancing roads, and revegetating areas in 5SM.2725. Your October 2020 correspondence recommends that the proposed undertaking will result in no adverse effects [36 CFR 800.5(d)(1)] to historic properties.

Based on the documentation provided, we do not agree with this assessment. The undertaking proposes substantial alterations to the landscape in 5SM.2725. In particular, the undertaking proposes removing the entirety of the waste rock piles from the resource. As stated in your May 21, 2020 letter regarding the undertaking, the proposed undertaking would remove character defining features (the waste rock).

Your May 2020 letter states "this waste rock constitutes a contributing element" and that it is your "conclusion the loss of integrity of location, setting, feeling, and association with the reclamation waste rock piles could have an adverse effect" on 5SM.2725. We agree with this earlier assessment that the proposed removal of the waste rock pile would pose an adverse effect to the resource. The regulations according to 36 CFR 800.5(2)(i) state that "physical destruction of or damage to all or part of the property" constitutes an adverse effect. As a result, we request further consultation regarding the undertaking according to 36 CFR 800.5 and 36 CFR 800.6 in addition to our request for additional information on the APE.

www.HistoryColorado.org
HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

Norton, H.K., Colorado SHPO, Consultation Correspondence Item #8 (Cont.)

Besides our requests and comments above, we note that your May 2020 correspondence states that "we intend to continue consultation with your office as this project moves forward." This statement suggests that the undertaking will proceed prior to the completion of the Section 106 process. We request clarification on this statement.

We look forward to continued consultation for the subject undertaking. We also request being involved in the consultation process with the local government and other consulting parties, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If you have any questions, please contact Matthew Marques, Section 106 Compliance Manager, at (303) 866-4678, or matthew.marques@state.co.us.

Sincerely,

Dr. Holly Kathryn Norton Digitally signed by Dr. Holly Kathryn Norton
Date: 2020.10.20 10:12:55 -06'00'

Steve Turner, AIA
State Historic Preservation Officer

We are now accepting electronic consultation through our secure file transfer system, MoveIT. Directions for digital submission and registration for MoveIT are available at https://www.historycolorado.org/submitting-your-data-preservation-programs

www.historycolorado.org
HISTORY COLORADO CENTER 1200 BROADWAY DENVER CO 80203

Barr, D.L., DOE, Consultation Correspondence Item #9

Department of Energy
Washington, DC 20585
December 22, 2020

Mr. Steve Turner
State Historic Preservation Officer
Colorado State Historic Preservation Office
History Colorado
1200 Broadway
Denver, CO 80203

Subject: Continuation of Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County (HC# 77950)

Dear Mr. Turner:

This letter serves as continued coordination under Section 106 of the National Historic Preservation Act for a proposal by the U.S. Department of Energy (DOE) Office of Legacy Management (LM) to reclaim waste rock associated with the historic Burro Mines complex in Burro Canyon, San Miguel County, Colorado. As previously described in correspondence with your office since May 2020, the waste rock piles at Burro Tunnel Mine and Burro Mines No. 3 and No. 5 contribute to the overall setting, feeling, and association of the more historically significant buildings and structures at the Burro Mines complex. However, the current location and slope of the waste rock piles has the potential to deposit sediment into the adjacent Dolores River. Therefore, LM is proposing this reclamation project to prevent runoff associated with major storm events from eroding additional waste material into, and increasing the sediment load within, the Dolores River. Per your request, we have prepared a revised map of the area of potential effect (APE) depicting the reduced footprint of the revised reclamation design (Enclosure 1).

The 70% engineering design (Enclosure 2) has been revised based on input from your office during previous communications as part of the Section 106 consultation process. The 70% engineering design is supplemented by an additional evaluation prepared by Mr. Eric Twitty, a subject matter expert (SME) on historic uranium mines. In his capacity as a SME you recommended DOE-LM coordinate with Mr. Twitty for his professional opinion on the proposed project. A site visit was held with Mr. Twitty on November 18, 2020 to discuss the changes necessary to the reclamation design in order to protect the historical integrity of the Burro Mines complex. During the site visit, Mr. Twitty collected data necessary to prepare a report documenting the historic nature of the waste rock piles themselves (Enclosure 3), supplementing the reports previously submitted to your office in May 2020.

The revised design avoids both direct and indirect impact of the waste rock piles at Burro Mines No. 3 and No. 5, two of the three historic waste rock piles comprising this proposed reclamation project. Work on the waste rock pile at the Burro Tunnel Mine has been substantially reduced to focus on the removal of nonhistoric, post-1970s waste rock from

Barr, D.L., DOE, Consultation Correspondence Item #9 (Cont.)

the tunnel pile (Enclosure 4), which is closest to the river. The historic waste rock (i.e., 1970s-era) at the tunnel pile would be left in place and stabilized by reducing the slope and installing riprap at the toe to mitigate further erosion. This stabilization would include a sediment basin between the Burro Mines tunnel portal and the adjacent Dolores River. As a result of these changes, the preferred alternative was updated in the Environmental Assessment (Enclosure 5).

Existing sediment basins below the Burro Mines No. 3 and No. 5 waste rock piles would be reengineered as shown on the enclosed design to reduce downstream sedimentation from these locations. Work would be conducted in such a manner that none of the historic buildings and structures at Burro Mine No. 5 would be physically touched or altered. The historic Burro Mine No. 7 is outside of the direct APE for this proposed undertaking; Burro Mine No. 7 would not be adversely effected by the changes proposed for the remainder of the Burro Mine complex.

Based on the design changes resulting from Mr. Twitty's recommendations, DOE-LM has determined the proposed reclamation project would have *no adverse effect* on the historic nature of the Burro Mines complex. Please review the enclosed material and respond at your earliest convenience if you concur with our determination, or if you have substantive comments or further suggestions regarding our proposed undertaking.

Please contact me directly if you would like to discuss this finding or the methods used to mitigate the potential to have an adverse effect on historic property. I can be reached at (720) 880-4352 or via email at Deborah.Barr@lm.doe.gov. Please send any correspondence to:

U.S. Department of Energy
Office of Legacy Management
11035 Dover St., Ste. 600
Westminster, CO 80021-5587

Sincerely,

Deborah L. Barr
Digitally signed by Deborah L. Barr
Date: 2020.12.22 09:40:34 -07'00'

Deborah L. Barr, P.G.
Uranium Leasing Program Manager

Enclosures

Barr, D.L., DOE, Consultation Correspondence Item #9 (Cont.)

cc via email w/enclosures:
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Padraic Benson, DOE-LM
Jay Glascock, DOE-LM
Tracy Ribeiro, DOE-LM
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Miquette Gerber, Navarro
Thomas Johnson, Navarro
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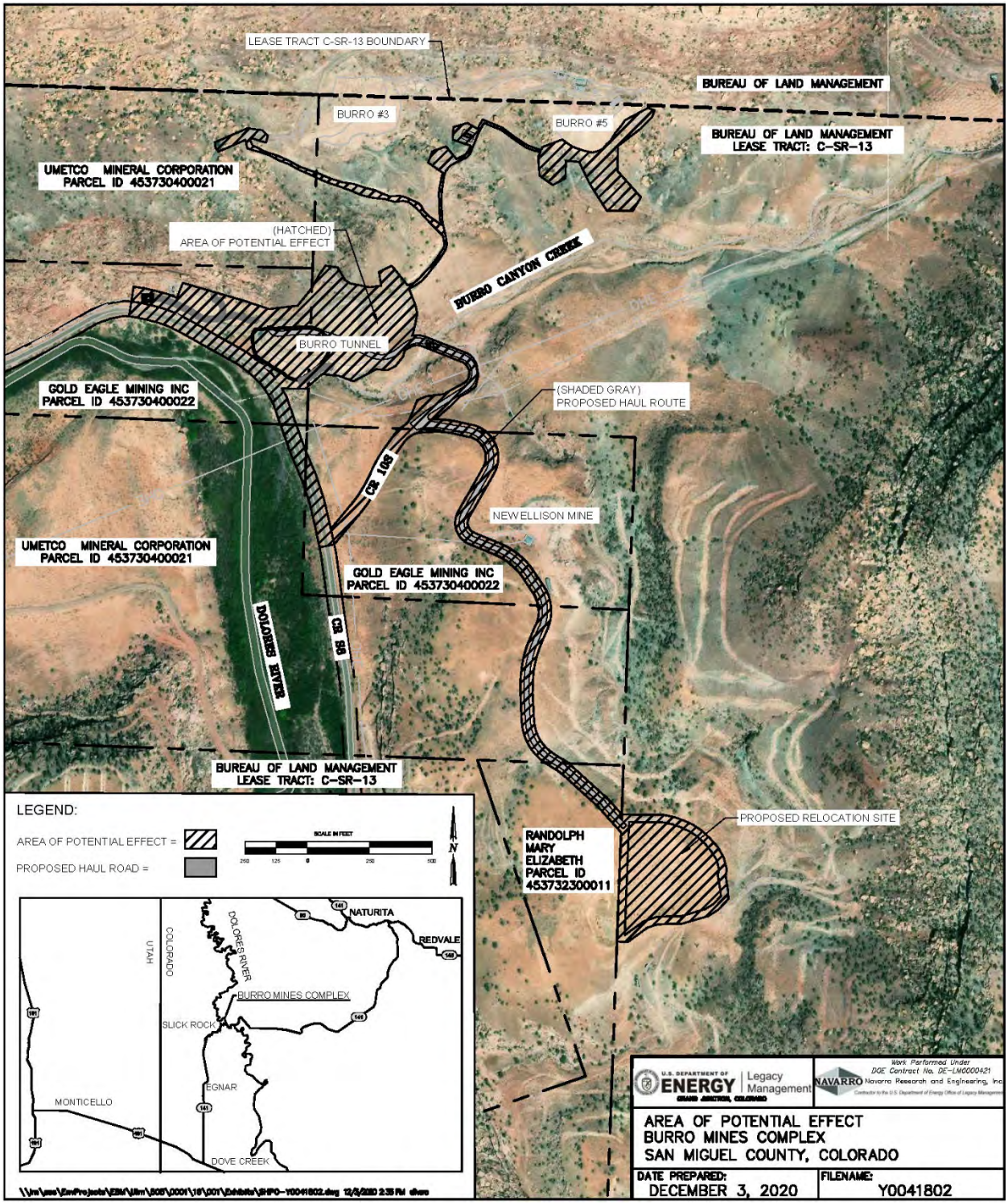
Jennifer O'Brien, Navarro
Scott Osborn, Navarro
Jason Storey, Navarro
Joe Trnka, Navarro
DOE Read File
File: E/20/2733 F/20/903

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 1



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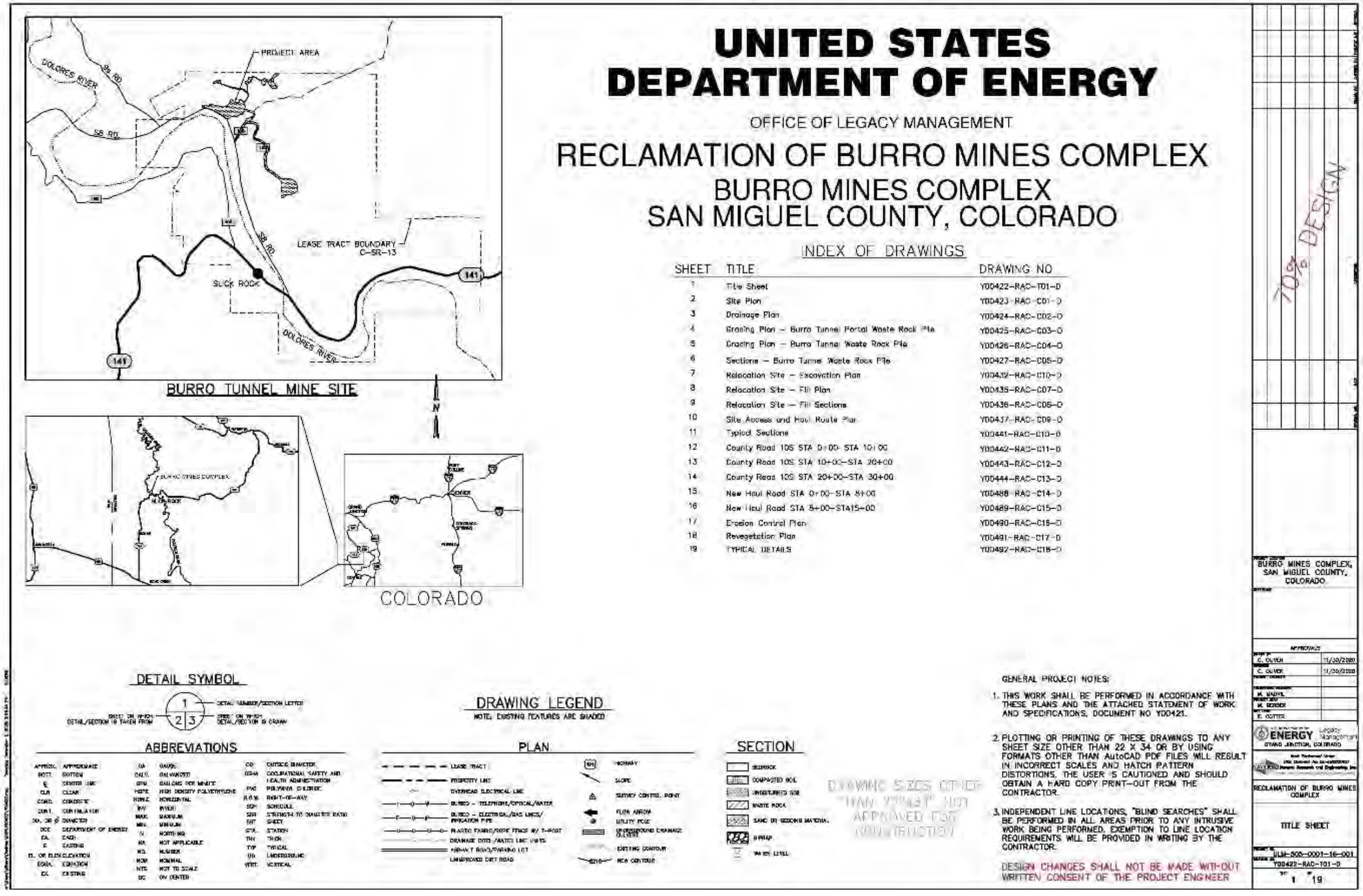

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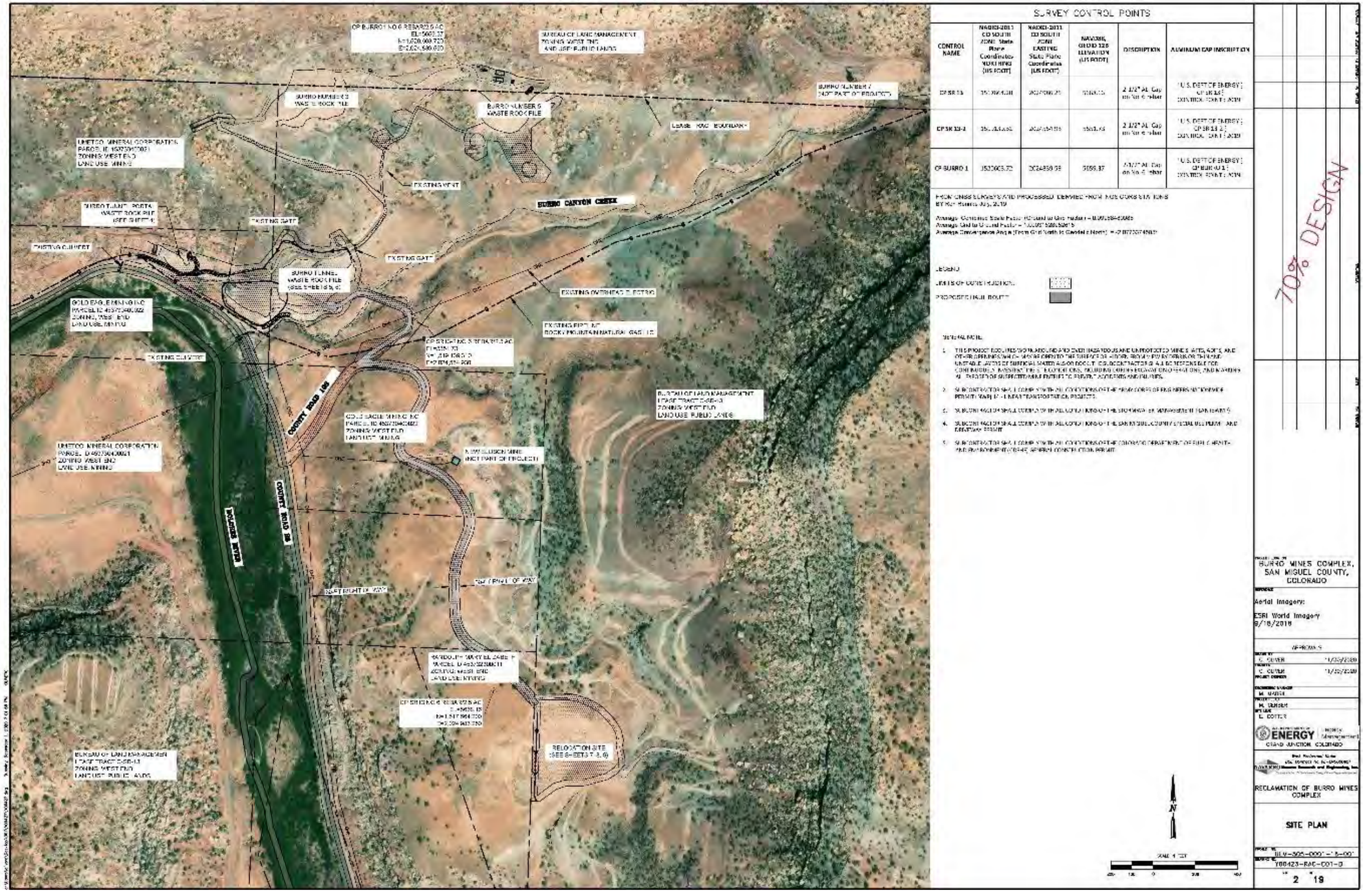

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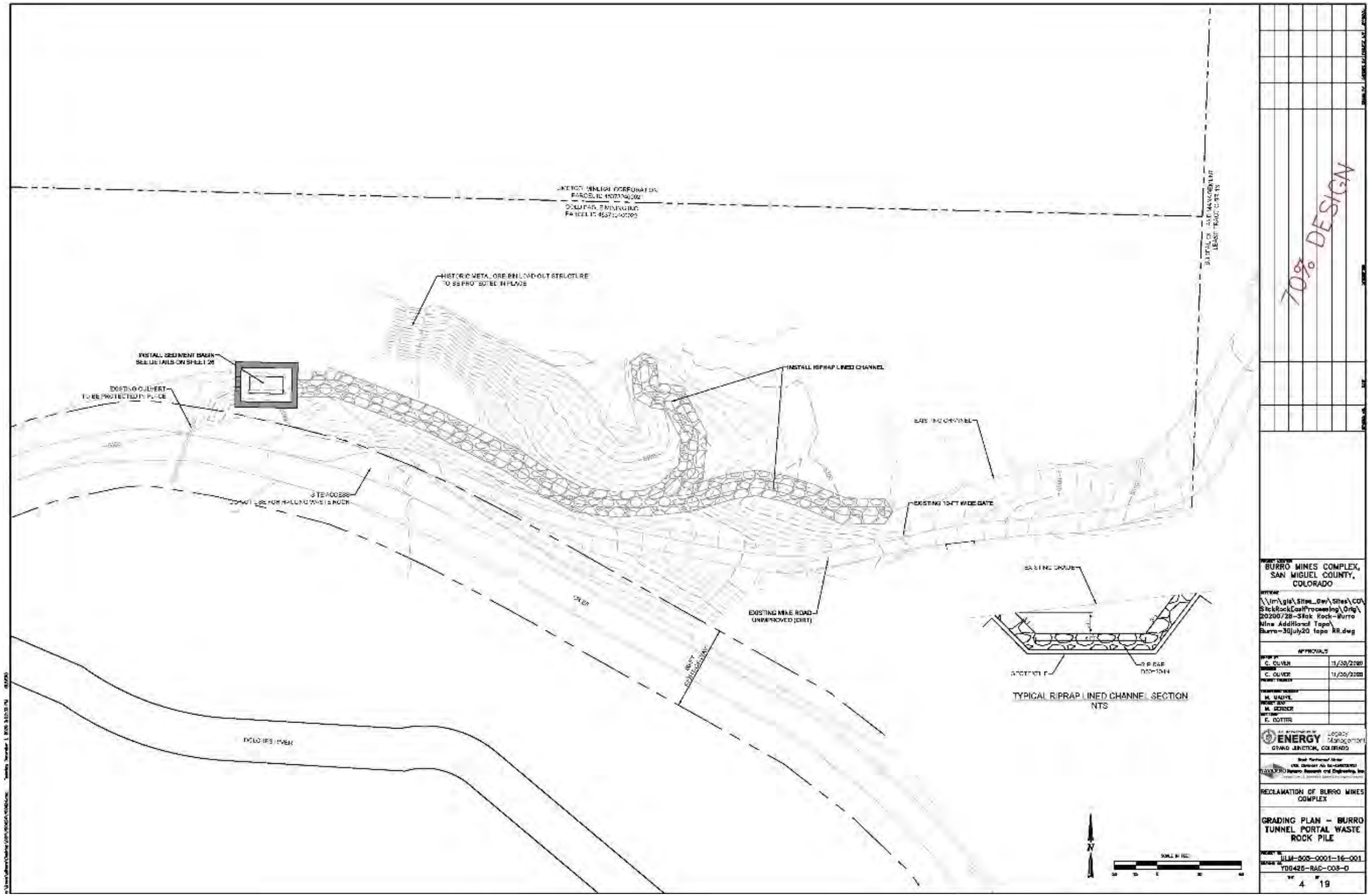

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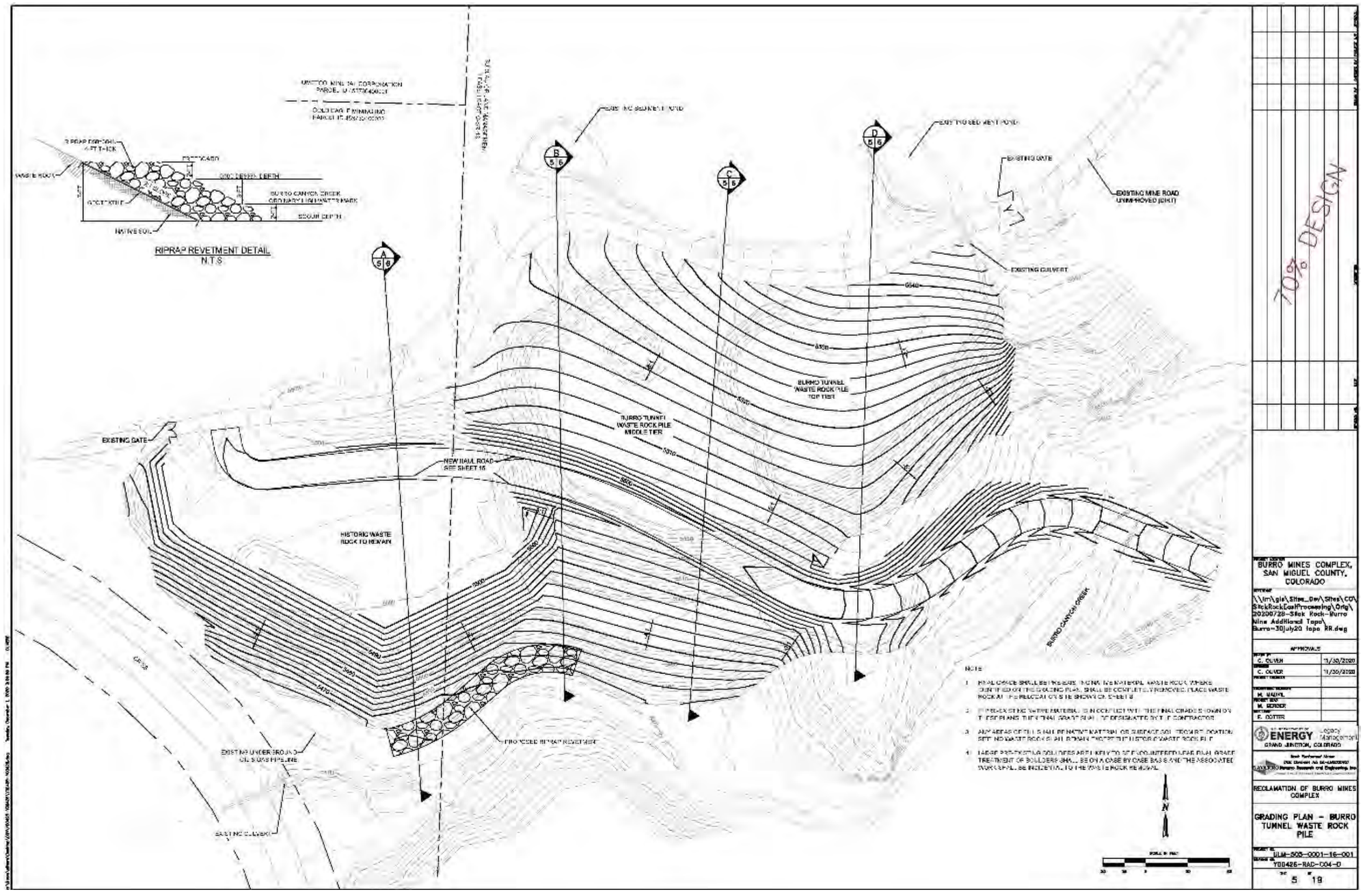

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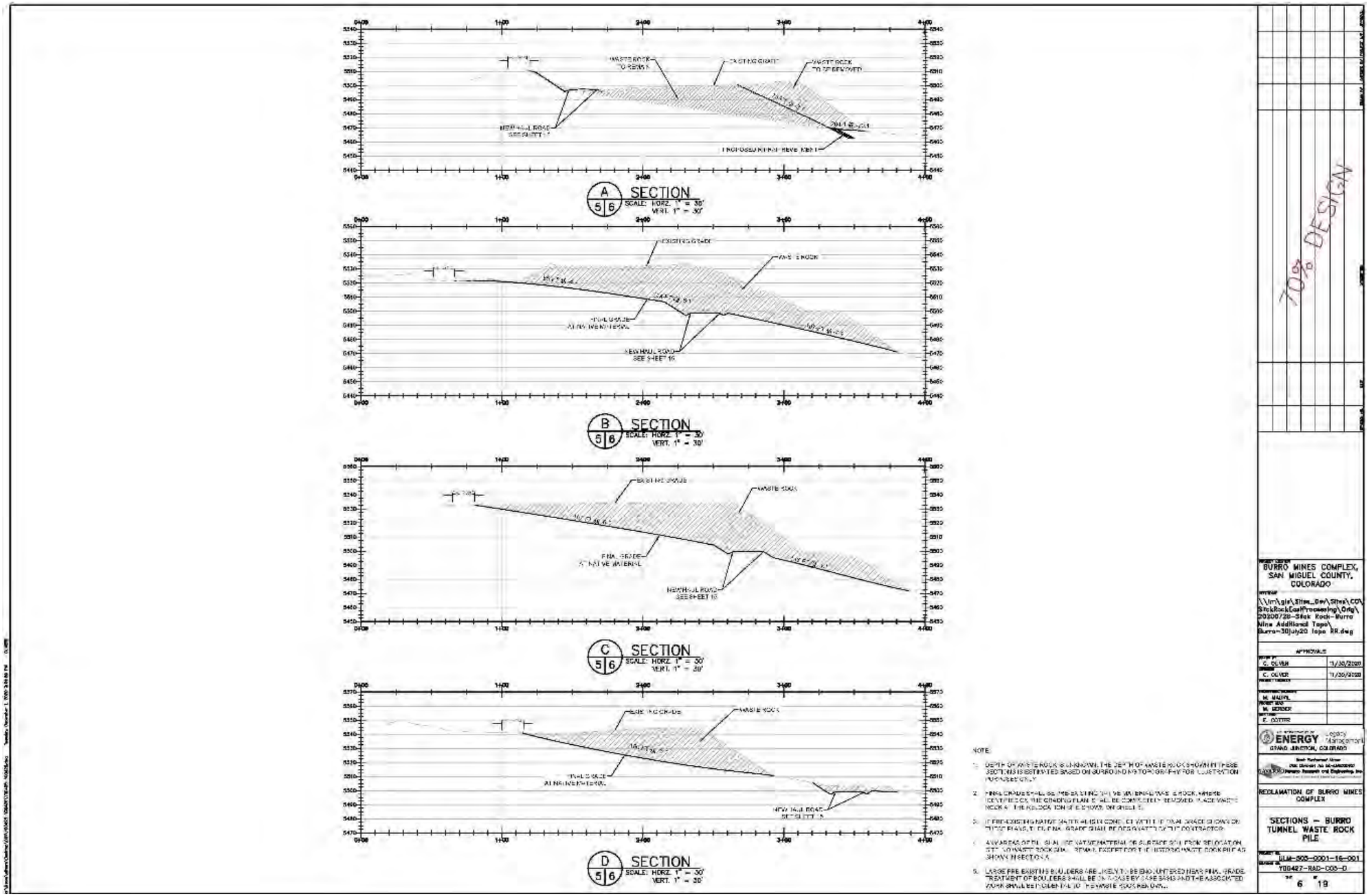

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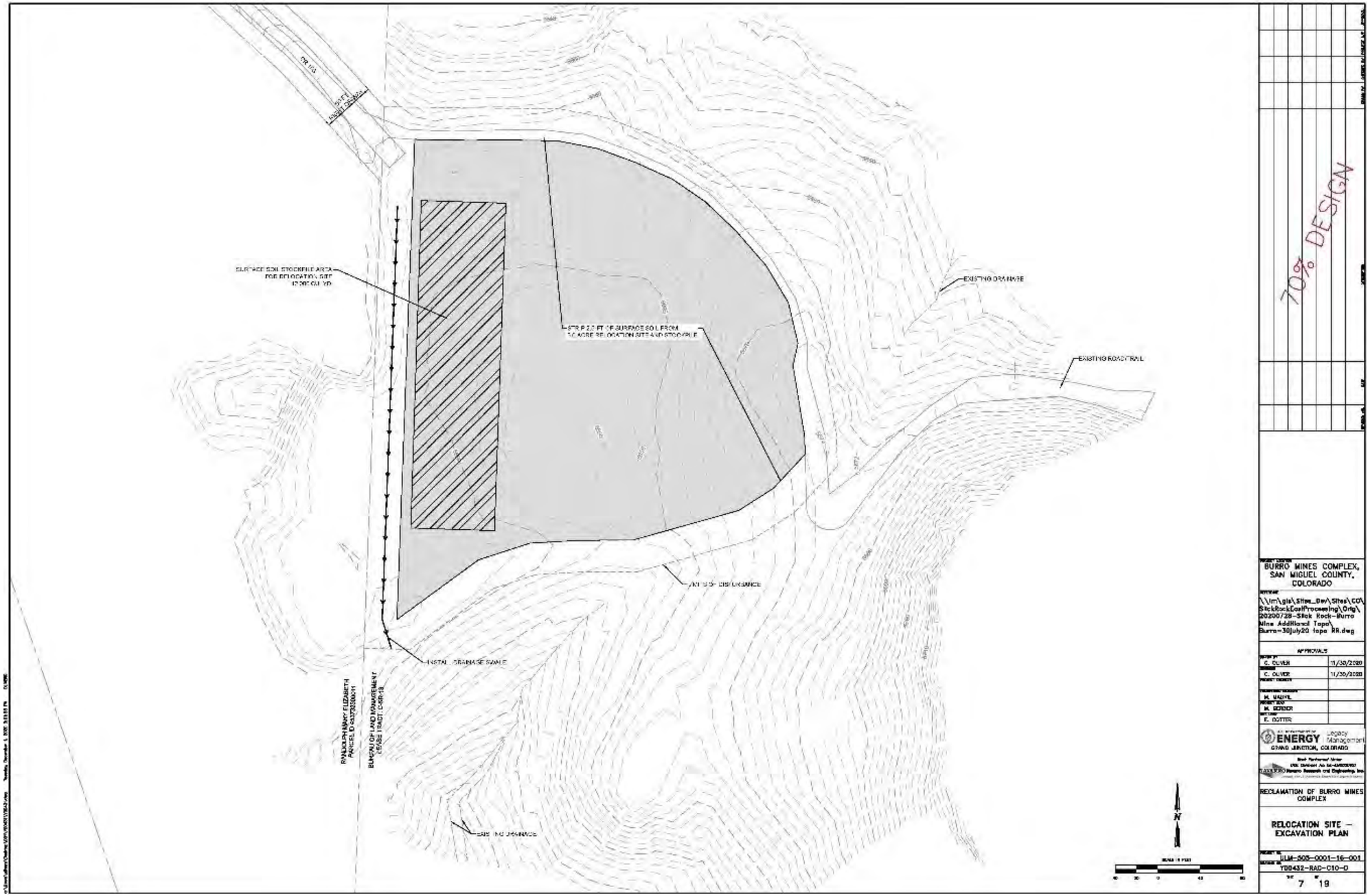

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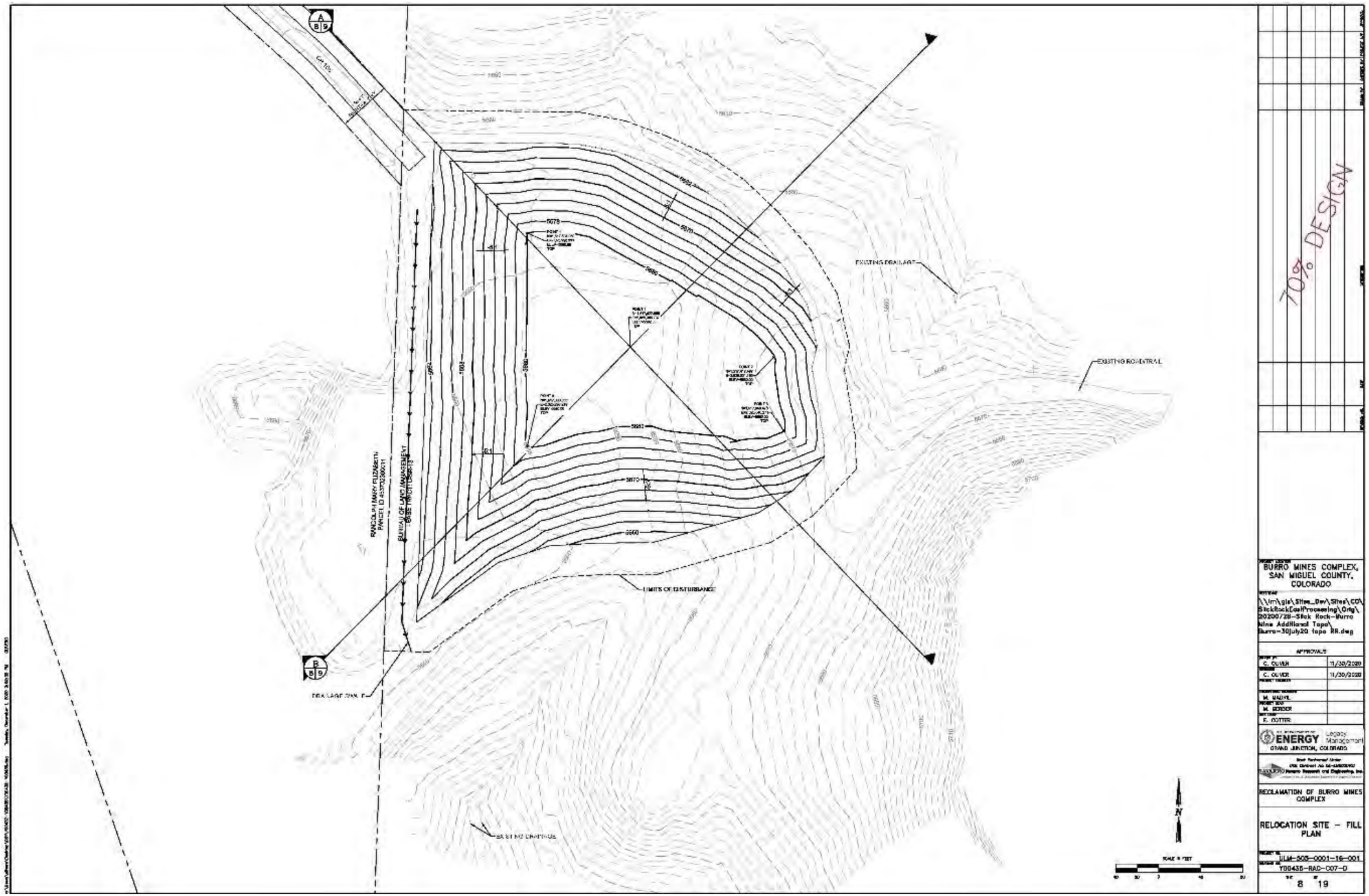

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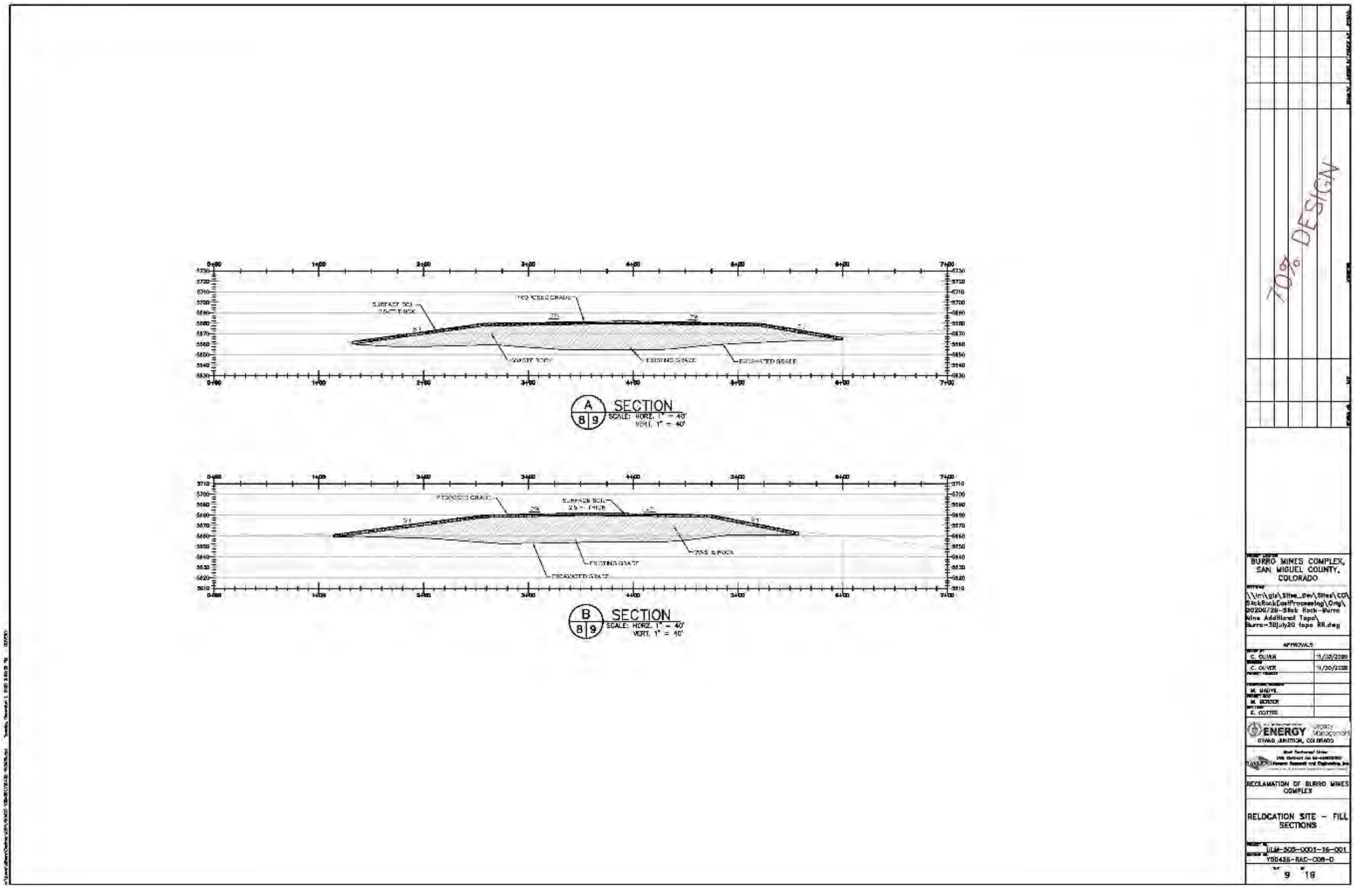

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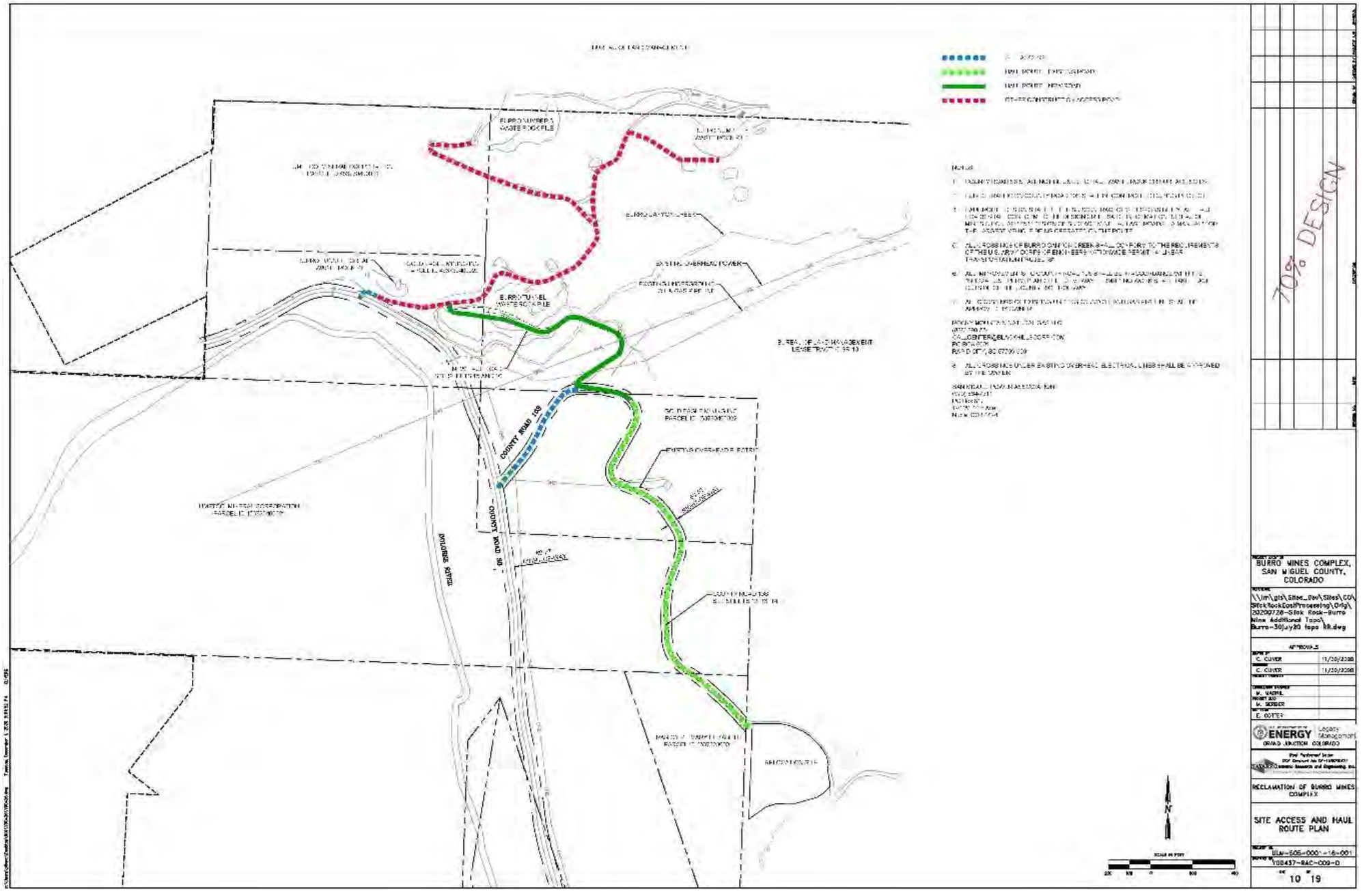

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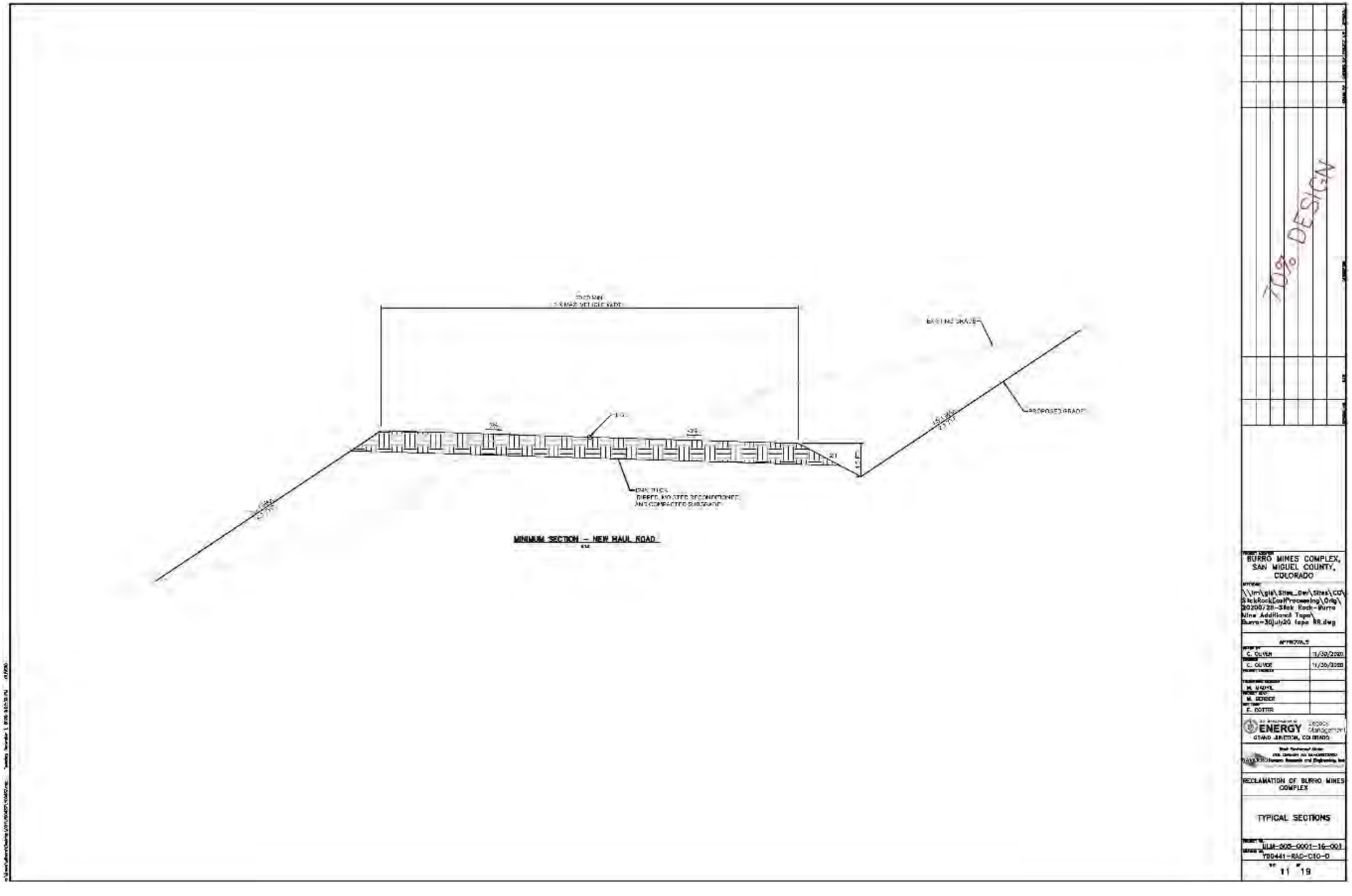

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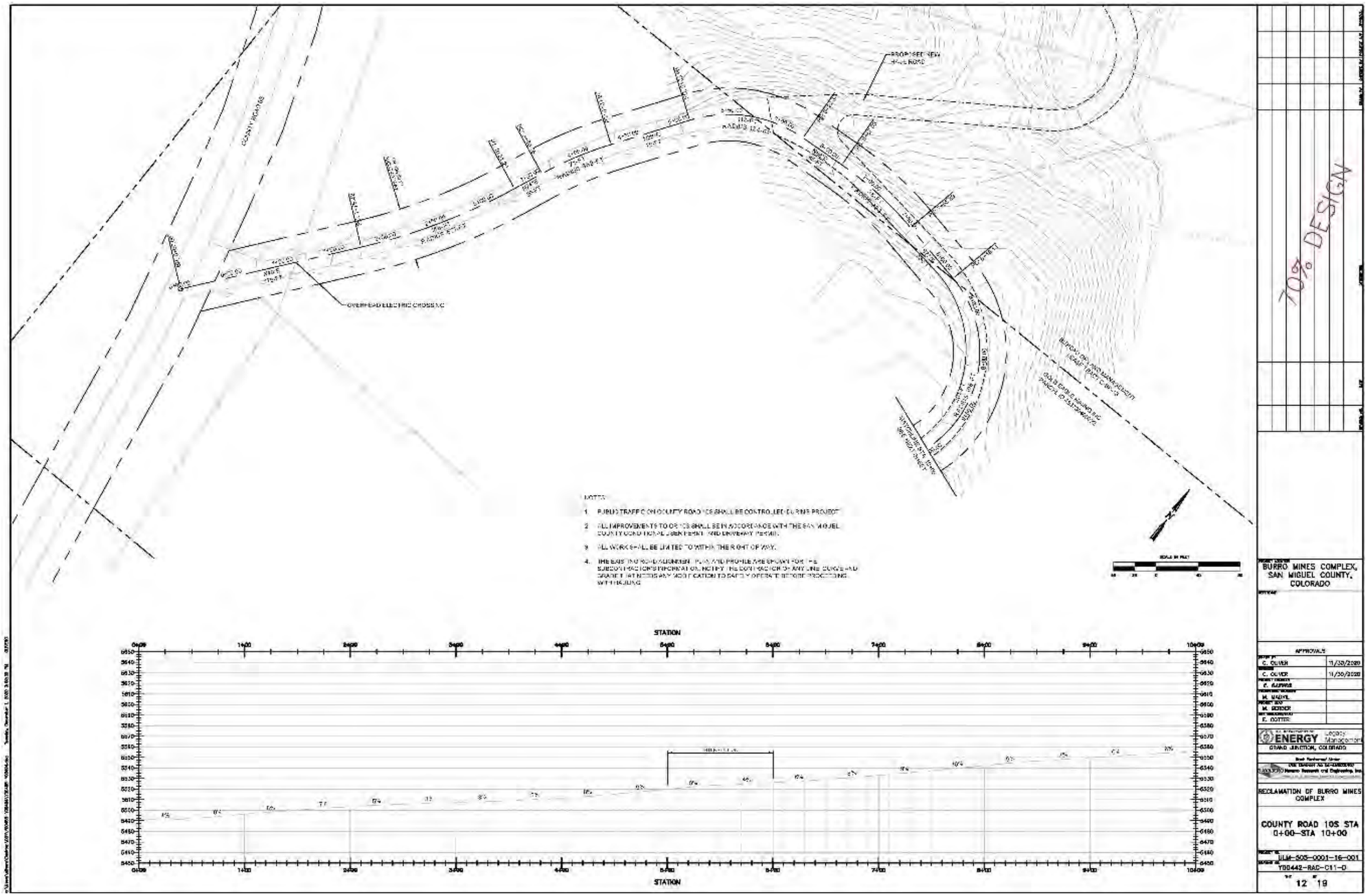

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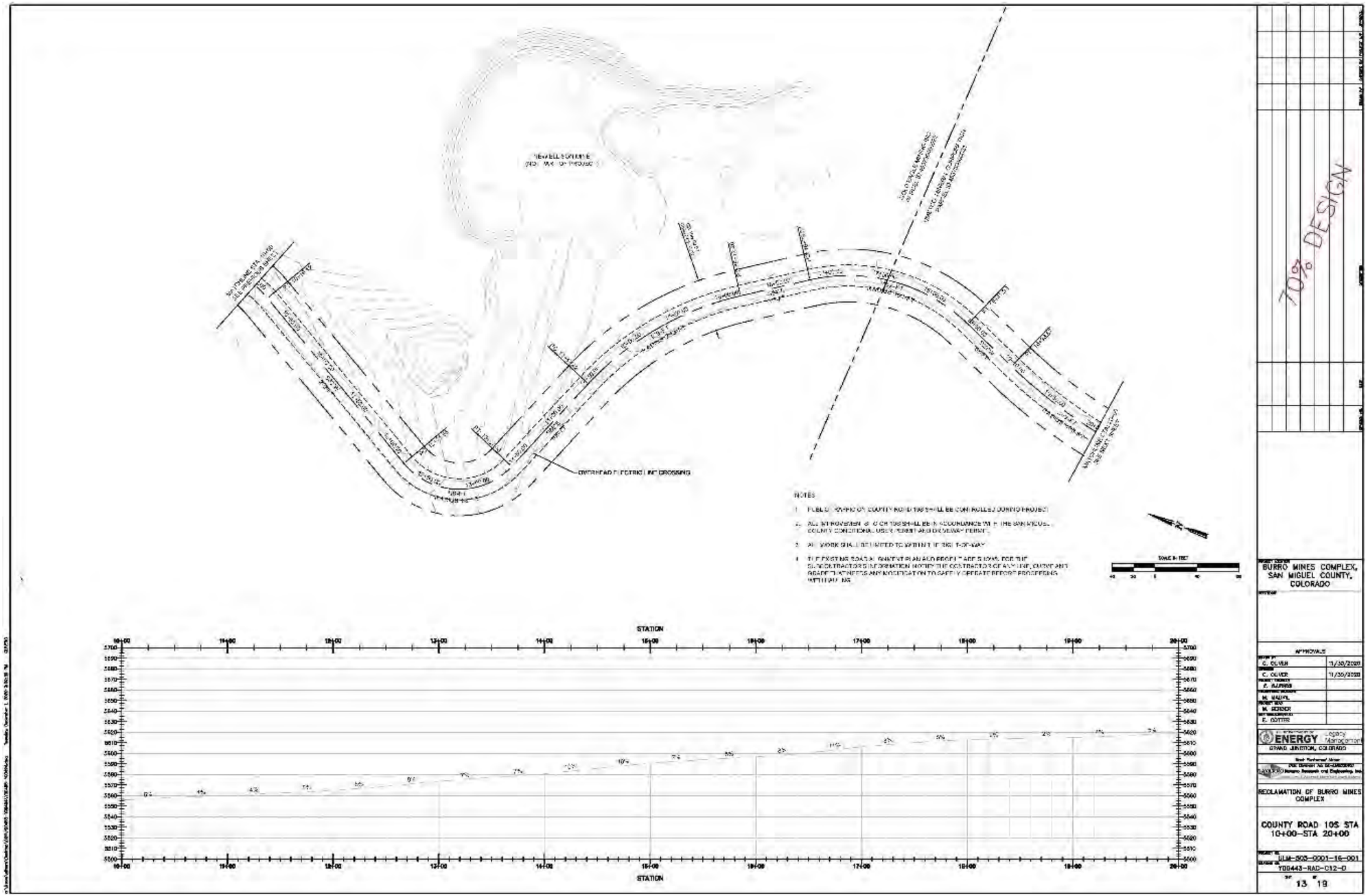

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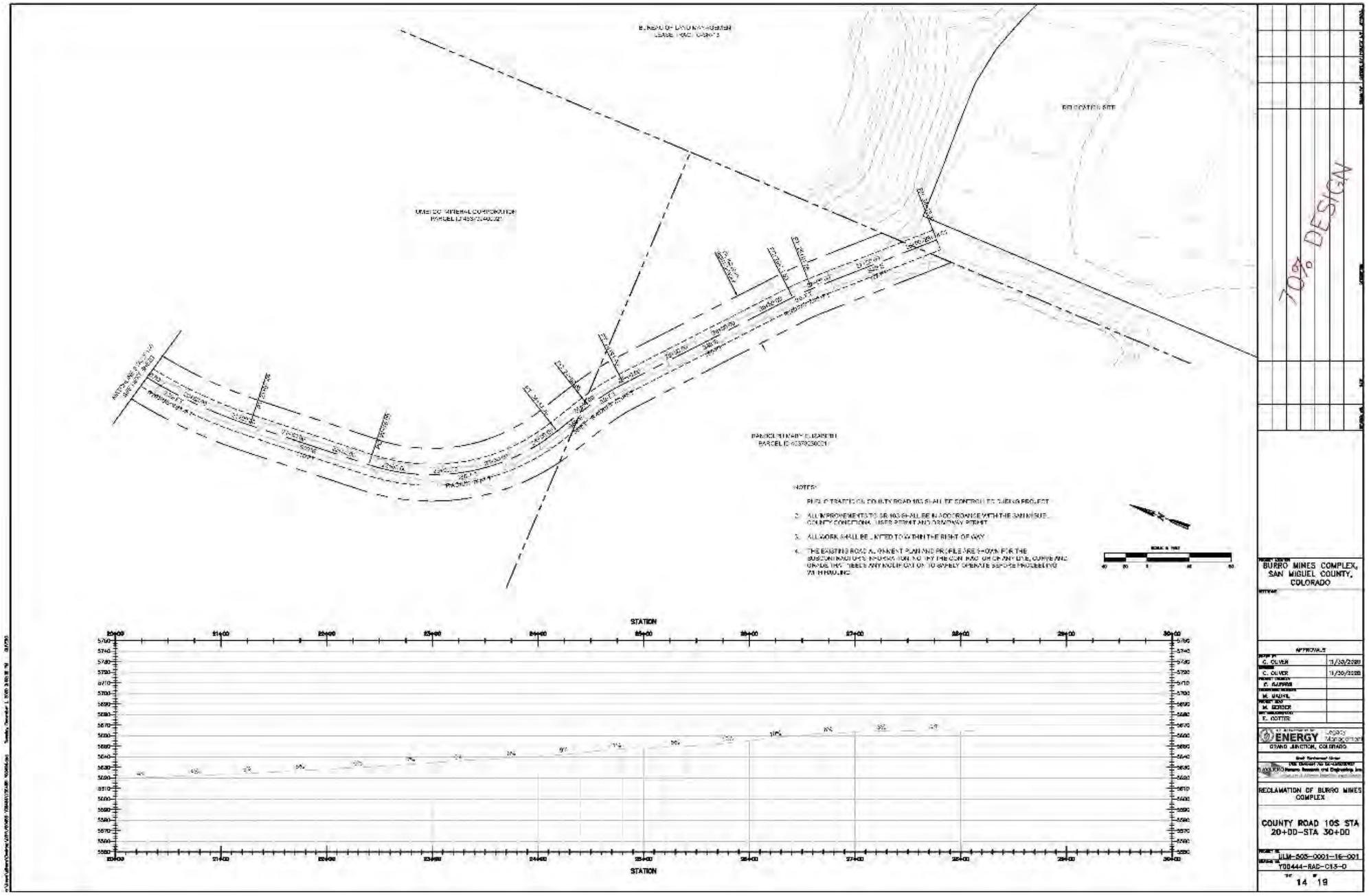

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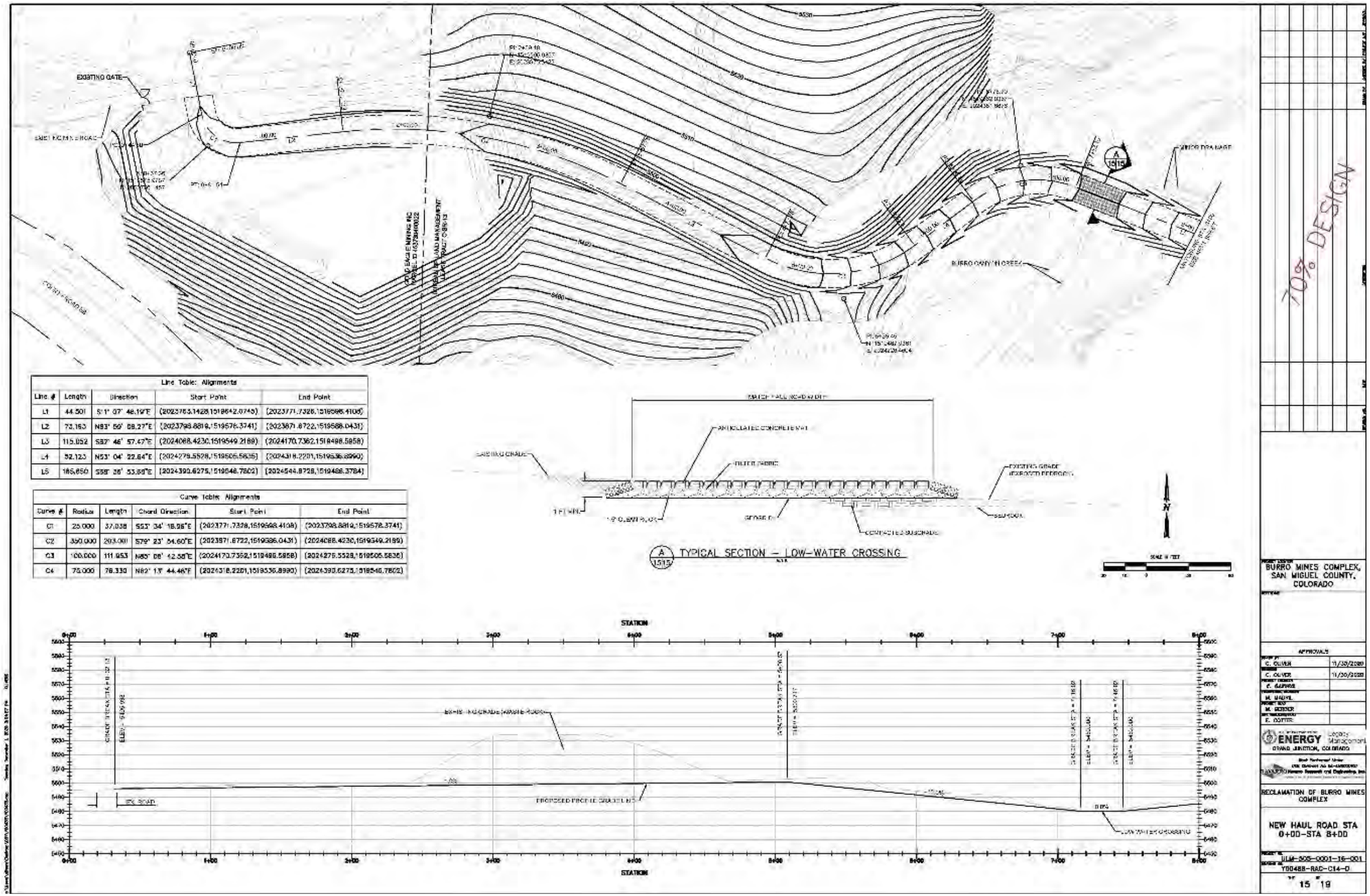

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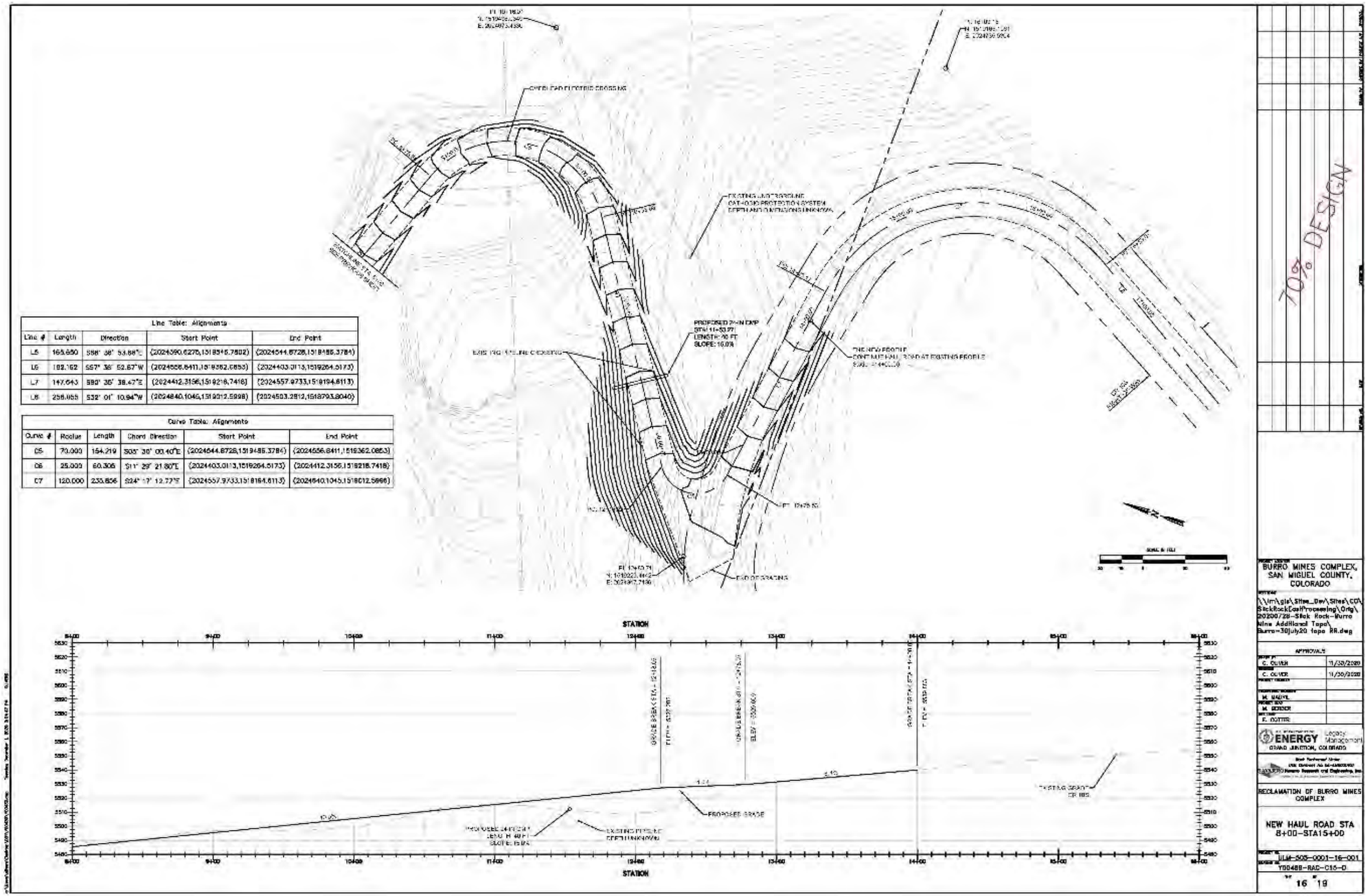

Line Table: Alignments

Line #	Length	Direction	Start Point	End Point
L5	165.650	S88° 38' 53.68"E	(2024090.6275,1518546.7502)	(2024544.8728,1518486.3784)
L6	182.152	S57° 38' 52.67"W	(2024556.8411,1518362.0853)	(2024403.0113,1518284.5173)
L7	147.643	S89° 35' 38.47"E	(2024412.3156,1518218.7418)	(2024557.9733,1518184.6113)
L8	256.055	S32° 01' 10.94"W	(2024640.1045,1518012.5966)	(2024503.2812,1518793.8040)

Curve Table: Alignments

Curve #	Radius	Length	Chord Direction	Start Point	End Point
C5	70.000	154.219	S35° 39' 00.40"E	(2024644.8728,1518486.3784)	(2024556.8411,1518362.0853)
C6	25.000	60.306	S11° 29' 21.80"E	(2024403.0113,1518284.5173)	(2024412.3156,1518218.7418)
C7	120.000	233.856	S24° 17' 12.73"E	(2024557.9733,1518184.6113)	(2024640.1045,1518012.5966)

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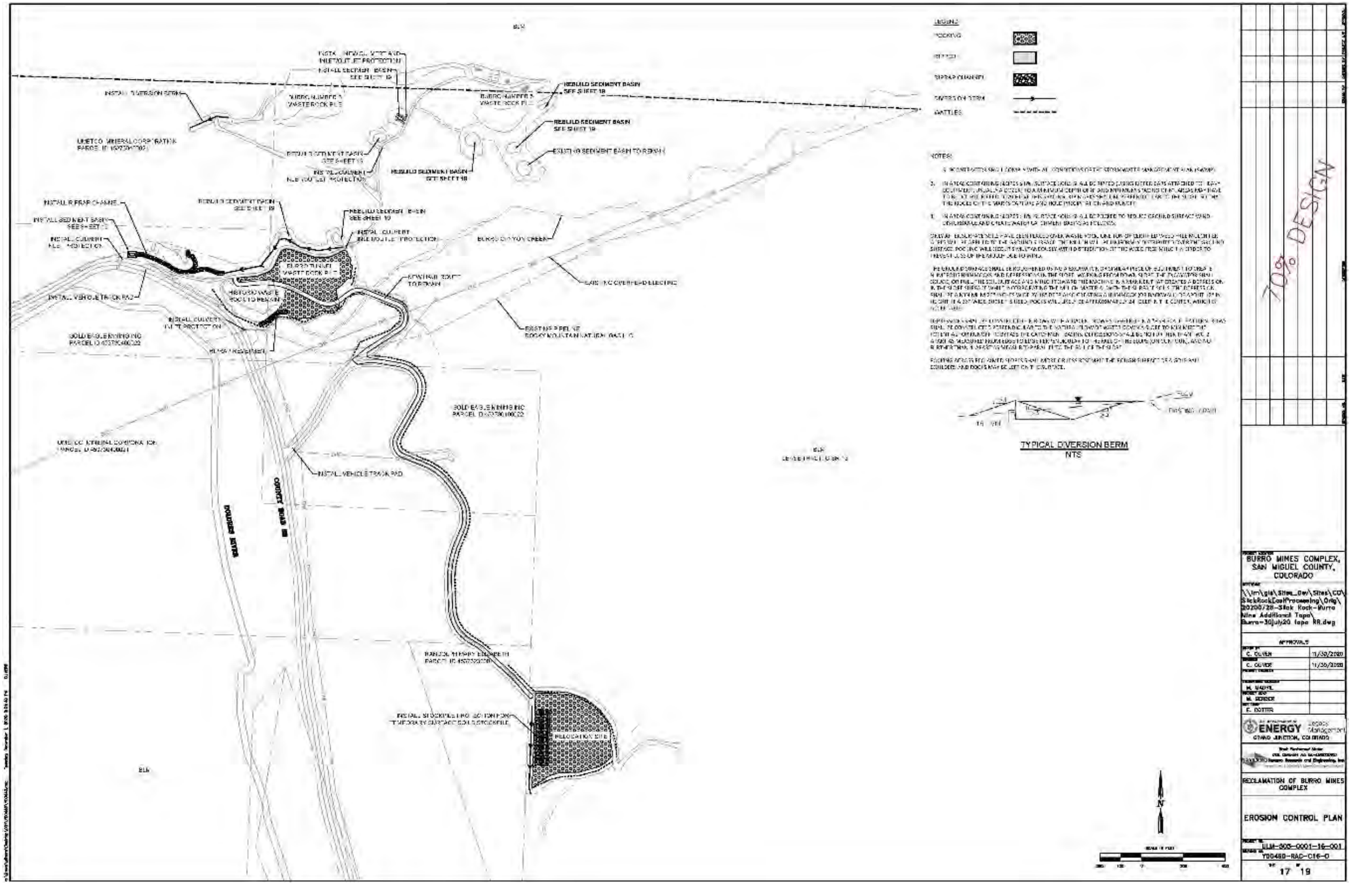

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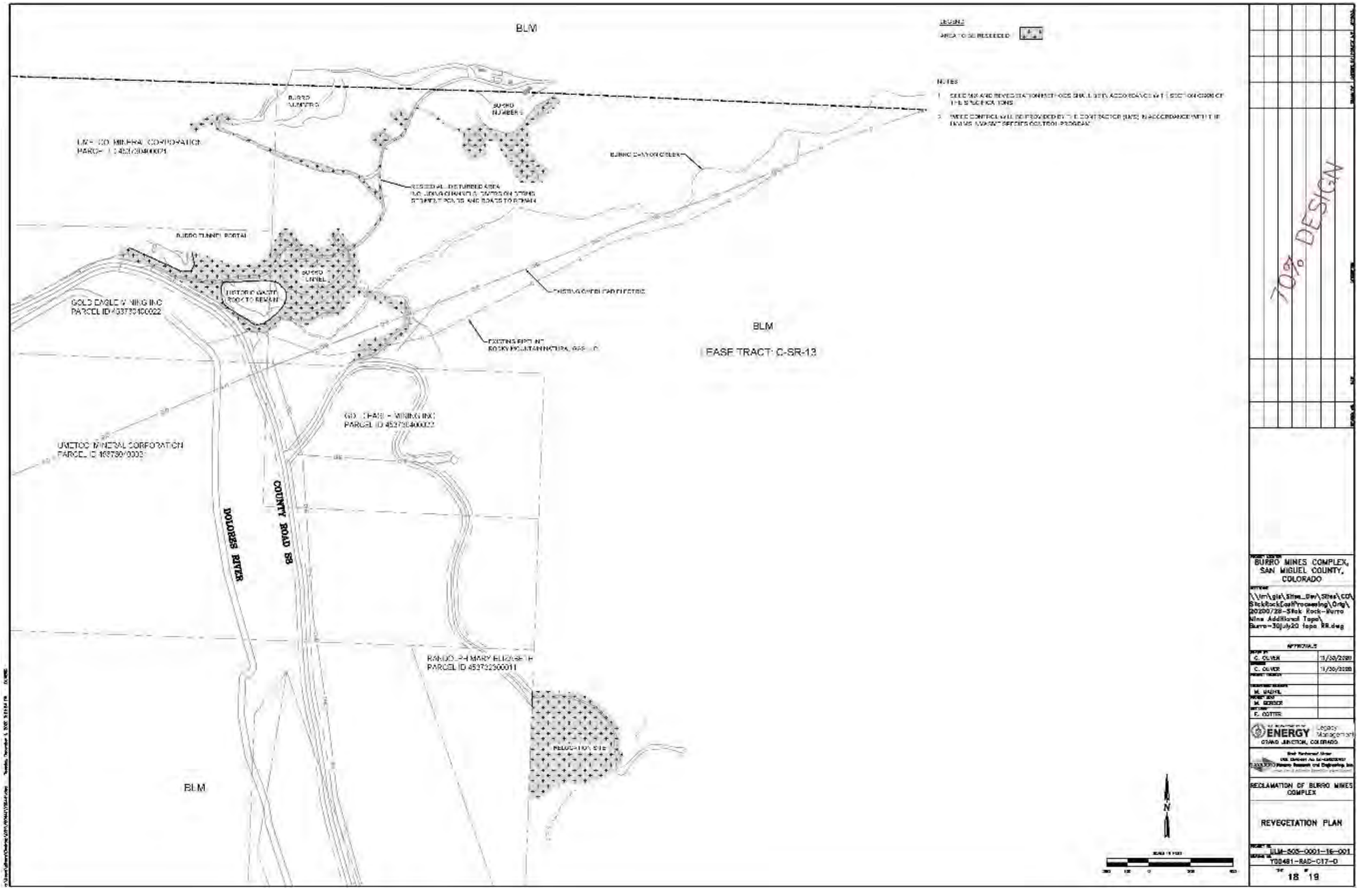

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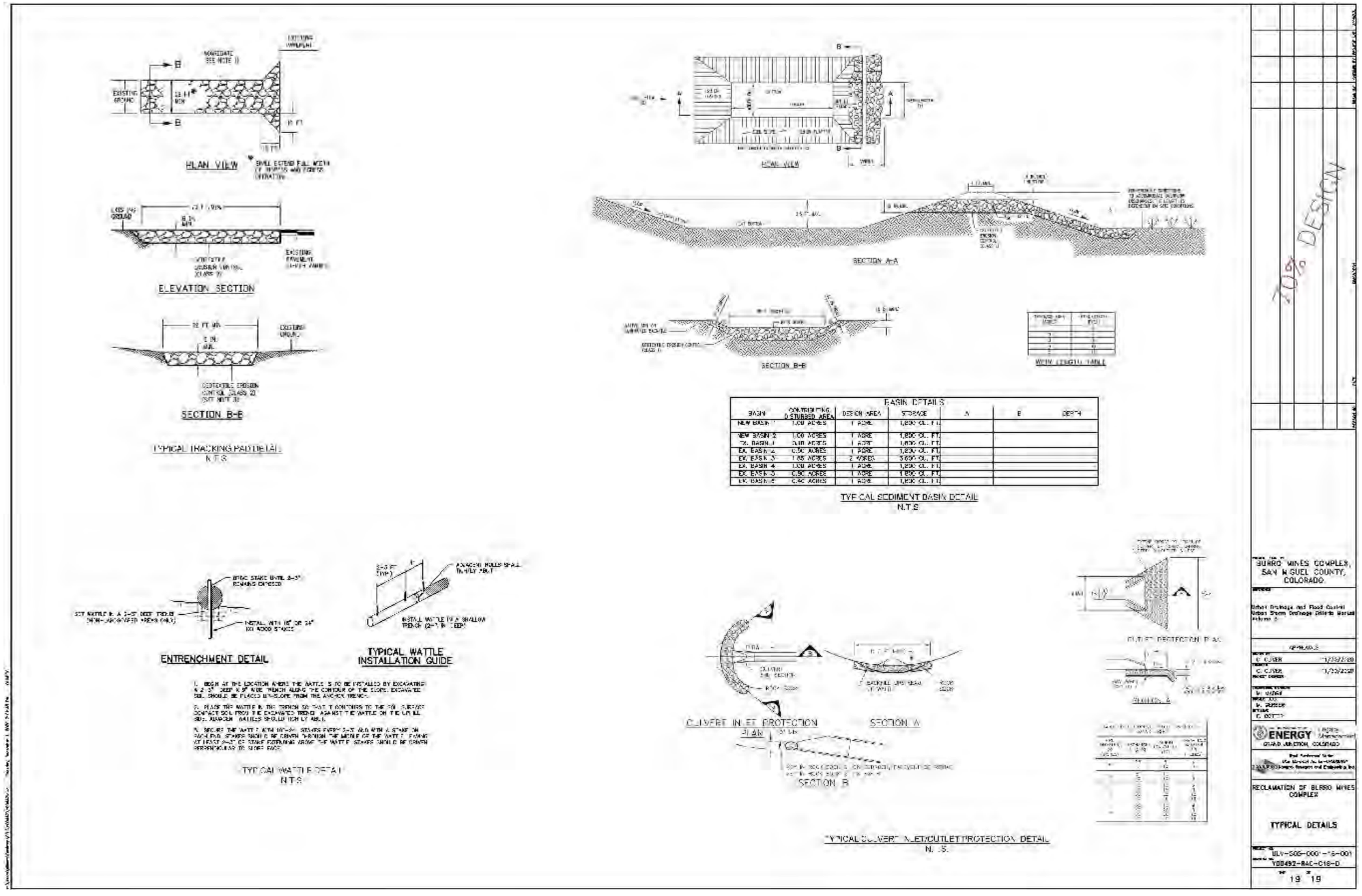

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3

ASSESSMENT OF SEDIMENT CONTROL PROJECT EFFECTS

BURRO MINE COMPLEX
Site 5SM.2725

SAN MIGUEL COUNTY, COLORADO

December, 2020

Prepared for:
U.S. Department of Energy, Office of Legacy Management
2597 Legacy Way
Grand Junction, CO, 81503

Prepared By
Mountain States Historical

Eric Twitty
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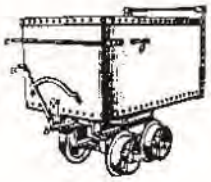

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INTRODUCTION AND PREVIOUS WORK

Introduction

The Burro Mine was a large and historically important uranium operation in the Dolores River gorge, within the Slick Rock Mining District of western San Miguel County. The gorge meanders northwesterly past the western end of Disappointment Valley and widens where the river completes a broad S-bend. Burro Gulch descends from the east; the Burro Mine lies on the northern side of the confluence while the historic mining and milling site of Slick Rock is to the west.

A sprawling resource, the Burro Mine includes three shafts connected by a tunnel, all in a series approximately 3,500' long and oriented roughly northeast-southwest. Stairstep sandstone cliffs, ledges, and steep slopes rise 500' north and above the site, topping out as the rim of a mesa 6,100' in elevation. The constricted floor of Burro Gulch, with its ephemeral braided channel, is below and south of the mine. Relatively undisturbed, the environment is typical of the canyonlands that form the characteristic setting for uranium mining in western Colorado.

The Burro Mine was initially developed in 1952; within a short time, it featured three deep shafts named after individual claims. Each shaft was probably an independent operation at first with its own mechanized surface plant. The western-most shaft was Burro No.3, roughly 1,500' from the river. Next was Burro No.5, 1,000' east of Burro No.3. Last was Burro No.7, 1,500' east of Burro No.5. Haul roads for servicing the shafts and shipping ore to the mill at Slick Rock connected the shafts together.

Probably during the 1960s, the entire operation was consolidated, and the Burro Tunnel was driven horizontally to connect the shafts at depth. The tunnel was sited just above the river, approximately 1,000' southwest of Burro No.3. With this consolidation, the shafts and the tunnel assumed roles in what became a greater mining operation. The tunnel became a principal conduit for ore produced throughout the complex because it was the lowest outlet, had an ore bin adjacent to the county road, and was large enough to accommodate self-propelled haul vehicles instead of more limited ore cars.

The shaft at Burro No.3 accessed deep ore beds at the complex's western end. Burro No.5 was adapted for central services. The surface plant already had an office and shop, and the shaft was refitted with a high-capacity ventilation blower, and no longer used for hoisting. Around this time or before, a compressed air station was installed near the shaft, and air mains were laid across the mesa flank east and west to the other entries. Burro No.7 continued its duty reaching deep ore beds underneath the complex's eastern end and was a point of production. After the consolidation and its adaptations, the overall mine generated ore regularly into 1984 and ceased.

When the mine shut down, some facilities and buildings were dismantled, while much remained intact. Because of access restrictions, the remaining facilities were never stripped of their period artifacts or small-scale details, ordinarily missing from nearly all other uranium mines in the region. As was common for uranium mines, an immense volume of waste rock came from the tunnel and the shafts. Each opening thus features its own large pad, and the one at the tunnel is especially voluminous with two benches representing different periods of deposition. As a historic resource, the Burro Mine is an outstanding example of a combination shaft and tunnel mine, and qualifies as a mixed archaeological, engineered, and architectural site.

An east-west jurisdiction boundary divides the site. The shafts lie to the north on land managed by the Bureau of Land Management (BLM). Their waste rock dumps are south on land

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

managed by the Department of Energy, while the Burro Tunnel and its 1970 waste rock pad are on a small tract of private land. (See Figure A.1 in the appendix for the site's general location).

The Department of Energy's Legacy Management program (LM) and Navarro Research and Engineering (their support contractor) maintain the records and personnel necessary for the management of proposed uranium mining, and the reclamation of former uranium mines located within the BLM lands that were withdrawn for uranium production on behalf of the former Atomic Energy Commission. These lands are currently managed under the Uranium Leasing Program (ULP). Future ULP uranium production is covered by existing NEPA and Section 106 agreement documents between LM, the Colorado SHPO, and the other consulting parties. Reclamation of former uranium mines not previously associated with the ULP requires separate NEPA evaluation and Section 106 consultation, independent from ULP.

In 2009, limited reclamation work was conducted at Burro No.7, consisting of partially reclaiming the waste rock piles, which were dished and divoted to encourage revegetation. The shaft was sealed and the site was stabilized for safety and then vintage ore trucks were placed on the dump in a passive interpretive manner. The engineering work was completed at the time under the supervision of the claimant, Umetco Minerals Corporation working directly with BLM. Umetco also constructed the sediment catchment basins downslope of Burro No.5 sometime in the past, likely prior to 2010 as part of their ongoing permitted action.

In 2016, LM developed proposals for a deeper reclamation plan for Burro Mine, and accepted a final version in 2018. LM then initiated the required NEPA evaluation of the proposed reclamation, which began in 2019 and is being conducted by LM with support from the DOE's Argonne National Laboratory and Navarro.

Formal Section 106 consultation was initiated in 2020 and is being conducted by LM, with BLM being informed during the process. BLM contributed substantial information at the beginning of the evaluation that was important for the consultation process.

The DOE draft Environmental Assessment (EA) has been reviewed by the public, it contained information on the status of the Section 106 consultation process that was current for the time the document was published. A final EA is being prepared by DOE; a Finding of No Significant Impact is anticipated.

Previous Cultural Resource Work

In preparation for LM's latest sediment control project, the Burro Mine was recorded and evaluated for significance in 2019 as a joint effort. Archaeologists Brian Yaquinto and Bruce Bourcy of the BLM documented the entire complex as a historic landscape and archaeological site (5SM.2725). Architectural Historian Joe Trnka of Navarro Research and Engineering recorded the site as an engineered, architecturally important historic property. Both entities concluded that the historic mine is eligible for the National Register of Historic Places (NRHP) for similar reasons, and with a few differences. Both entities also generally agree on management recommendations, but detailed assessments of the reclamation project effects could not be reached because plans had not yet been finalized. Firm plans became available in early December 2020 that allow for the complete evaluation of the potential for project effects for a site as complex as Burro Mine.

For its work, the BLM clearly distinguished the three shafts and tunnel as complexes and inventoried the mine's principal features. Glossing over details of the site's buildings and structures, the BLM emphasized archaeological features such as foundations, the road network

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

tying the complexes together, and the compressed air mains extending to the complexes. Yaquinto and Bourcy produced their results as site forms and the report *A Class III Cultural Resource Inventory for the Burro Mine Complex (5SM.2725), U.S. Department of Energy Office of Legacy Management, Waste Rock Remediation Project in San Miguel County, Colorado (BLM TR20002; OAHP SM.LM.R364)*. The forms and report were submitted to OAHP in 2020.

BLM determined the site eligible for the NRHP for several reasons. Regarding *Criterion A*, BLM concluded that the Burro Mine was historically important because it produced uranium for Cold War nuclear weapons programs and also nuclear power. In terms of *Criterion C*, BLM argued that the site strongly conveys the design and feeling of large uranium operations. Supplementary, BLM also inserted that the site qualifies under Criterion C as a historic landscape, and specifically called out the features making up the Burro Tunnel, Burro No.5, and Burro No.7 as contributing elements. The report also noted that although Burro No.3 had been reclaimed, it too contributed, as did the roads, compressed air main, and powerlines tying the complexes together as a functioning unit.

In addition to the above, BLM determined that the mine qualified under *Criterion Consideration G* as a major source of uranium ore for nuclear power, which became an important energy source during the 1970s.

The BLM concluded its report with a simple list of management recommendations that addressed the general thrust of sediment control work still in formation. The report and site forms spell out that the waste rock dumps are defining features of the site and landscape, and that their removal could affect integrity. The sediment control project must consider cultural values, and it can pose an adverse effect if it compromises the integrity of the site and landscape. Although not mentioned, an adverse effect initiates the cultural resource mitigation process.

Navarro's work was intended to complement and even slightly overlap BLM's recording, while adding a different perspective. Like BLM, Navarro divided the site into its four tunnel and shaft complexes, but in converse to BLM, emphasized the site's engineered and architectural elements. Most of the site information was presented as a well-narrated photo essay, relying on the site plan view in BLM's report for identifying and locating individual features. Navarro sent their report to SHPO as *Historic Property Survey, Burro Mines Complex, San Miguel County, Colorado.*

Similar to BLM, Navarro recommended the site eligible for the NRHP, but only under Criteria A and C. Regarding *Criterion A*, Navarro simply stated that the site qualifies for its contributions to history. For *Criterion C*, the report indirectly suggests that the mine is a good example of its type, through integrity of its buildings and structures. Borrowing from National Register language, the report also recommends the site eligible as a historic district, and that most features are contributing elements, some more so than others such as the roads and waste rock dumps. But in the end, the report intones that most features are contributing.

Navarro's management recommendations address the cultural resource process, requesting that DoE provide a report copy to OAHP for consultation, followed by on-going management of the site as a historic property. The report also suggested that the site be nominated to the National Register.

It should be observed here that the two reports are mentioned throughout this statement because their findings are key in assessing the effects of proposed work at the Burro Mine. In addition to referring to report content, some of their maps have been reproduced in this statement as well, in support of discussions.

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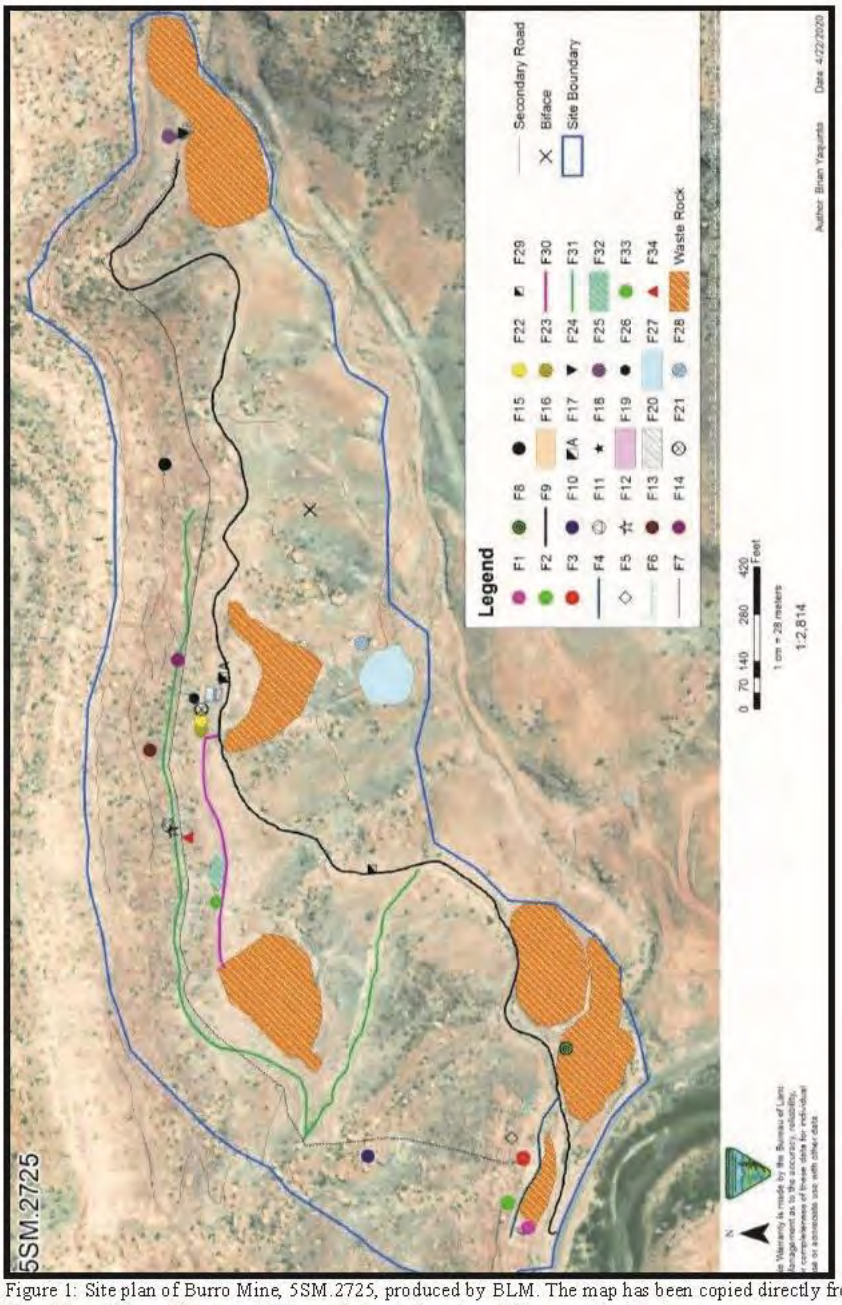

Figure 1: Site plan of Burro Mine, 5SM.2725, produced by BLM. The map has been copied directly from Brian Yaquinto and Bruce Bourcy's 2020 report. For feature descriptions, see the site forms.

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Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

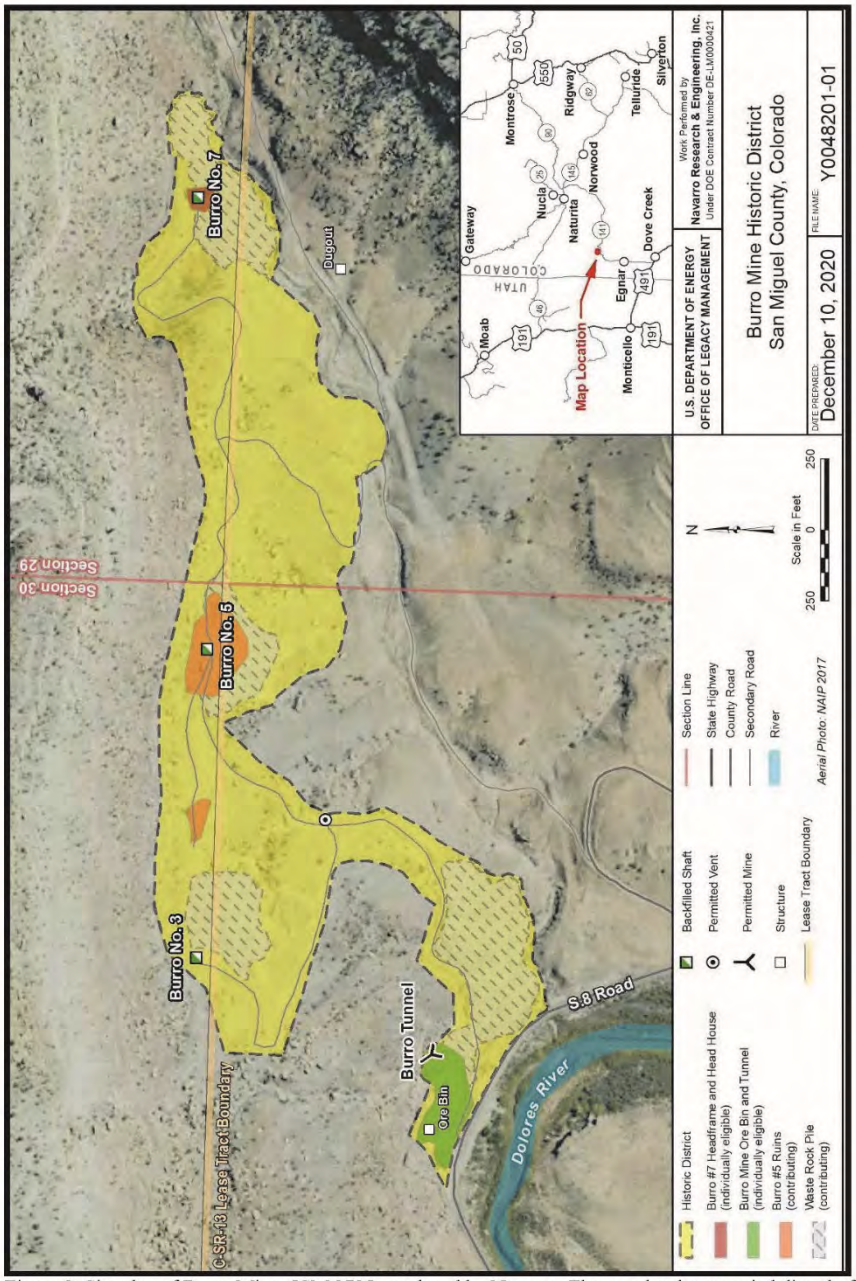

Figure 2: Site plan of Burro Mine, 5SM.2725, produced by Navarro. The map has been copied directly from Joe Trnka's 2020 report.

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

Proposed Sediment Control Project

In the interest of managing the portion of the Burro Mine site within its jurisdiction, DoE proposed environmental sediment control in 2018. Finalized during December of 2020, the sediment control approximated seven general steps intended to prevent storm runoff from carrying sediment and fine waste rock southwest into the Dolores River. Described in a very cursory manner, the steps were:

Remove all of the Burro Tunnel's waste rock dumps to a former gravel mine nearby and revegetate the footprint.
Improve and armor gullies cutting through the tunnel area.
Remove most of Burro No.3's dump, and revegetate the remainder.
Improve sediment catchment basins below the dump.
Remove most of Burro No.5's dump, and revegetate the remainder.
Improve sediment catchment basins below the dump.
Reclaim and revegetate eroded road sections connecting the tunnel and shafts.

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

REVISED SEDIMENT CONTROL PROJECT

In the fall of 2020, DoE sent the BLM and Navarro reports to OAHP for consultation, with the general proposal that the Burro Mine's waste rock dumps faced alteration and partial removal. Both reports noted that the dumps were contributing elements, as were most of the site's other features, and the BLM report in particular suggested that removal might constitute an adverse effect. Because the sediment control plans were not finalized when the reports were produced, neither report was able to itemize the project specifics, their effects to the site, and whether or not the net result was an adverse effect. Given this, OAHP sought clarity and refinement, and recommended that DoE seek assistance from Mountain States Historical (MSH). The reason was that MSH has a methodology of parsing mine sites out into contributing vs. non-contributing features regarding sediment control projects and has recorded and evaluated hundreds of uranium sites.

To apply this method and move DoE's project forward, MSH conducted a site inspection with Navarro engineers and project managers in November, 2020. MSH also consulted with Brian Yaquinto and Joe Trnka about the BLM and Navarro reports and their findings. DoE, Navarro, and MSH then revised the sediment control project to meet several intertwined goals. First was to limit work to non-contributing features and maintain the site's integrity, meeting the second goal of moving the project forward with no adverse effect. The third goal was to avoid cultural resource mitigation and its delays. The fourth goal was to reduce sediment and waste rock carried into the Dolores River by storm runoff. It must be emphasized that the revised sediment control project stringently limits work to non-contributing areas and features. A determination of no adverse effect offers DoE and Navarro a strong incentive to preserve the rest of the Burro Mine. However, if the current work as proposed is found to pose an adverse effect, then the preservation incentive is lost. The original, more aggressive project will be reinstituted with no further protections for the site, now and by future sediment control projects. Given the Burro Mine's significance and rarity, this statement urges a finding of no adverse effect.

Historic Landscape and District Recommendations

As noted above, both BLM and Navarro determined that the Burro Mine meets NRHP Criteria A and C. BLM also made a justification under Criterion Consideration G for the mine's historic importance within the last fifty years. BLM further specified that entire site is significant as a historic landscape, while Navarro offered a parallel statement regarding the site as a historic district. MSH fully concurs with the arguments.

In general, a historic mining landscape is a collection of resources reflecting related land use patterns, culture, industry, and important events and trends. A historic landscape should feature distinct elements that are characteristic of the landscape's dominant history, as well as a natural setting that experienced little change. In terms of the Burro Mine, the landscape should clearly convey mining 1952-1984, and include character-defining features clearly contributing to the integrity. Regarding uranium mines, character-defining features include but are not limited to mine openings, waste rock dumps, structures, buildings, archaeological remnants thereof, claim monuments, primitive roads, and disbursed artifacts.

A historic district is a cohesive body of resources unified by place, time, theme, and historical trends. Further, that body must be historically significant. The area within the historic district cannot have been disrupted by major modern intrusions, and the district should convey a

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

sense of the past. To contribute to a historic district, individual resources must be sufficiently preserved on an archaeological level or better. Further, most but not all the resources within the district must be contributing elements. Regarding mines such as the Burro, historic districts are often based on landscapes because they share many of the same requirements.

MSH concurs that the Burro Mine is a historically significant landscape meeting the requirements for designation as a historic district. As demonstrated by the BLM and Navarro reports, the site is extensive, has a concise and important history, has high integrity on archaeological, engineering, and architectural levels, and lies within an undisturbed setting characteristic of uranium mining. Further, the tunnel, shafts, and isolated facilities clearly make up a greater whole.

Figure 3: North overview of the Burro Mine as a landscape. The Burro Tunnel and its series of waste rock pads is at left, Burro No.3 complex is marked by a long waste rock pad at center, and Burro No.5 is denoted by a large waste rock pad at right. Burro No.7 complex is out of view farther right.

Contributing and Non-Contributing Elements

One of the main factors behind the Burro Mine's high integrity is that most features are contributing elements. In general, a feature contributes when it is fairly intact on an archaeological level or better, was a component of the mining operation during its Period of Significance (1952-1984), and helps convey the aspects of design, feeling, materials, and workmanship. A contributing feature also supports the general understanding and interpretation of the site. When features have been too damaged or are too deteriorated to do so, they become non-contributing.

However, large landscape features such as waste rock dumps can be subdivided into contributing vs non-contributing portions or areas. Ideally, a waste rock dump should exhibit its original footprint, profile, general shape, and surfaces. However, a waste rock dump can still contribute to a landscape even if portions have been disturbed, provided that its overall appearance is very similar to the original formation. For example, if the top-surface has been

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changed, the dump can contribute when the footprint, profile, and general shape are mostly the same. Or, if a small section has been removed, a waste rock dump can contribute when the remaining portion is otherwise original. In any case, the altered portion would become non-contributing because it is no longer in the same configuration as when it was created.

Both the BLM and Navarro reports note that most of the Burro Mine's features are contributing elements. The BLM report further specifies that the mine's four principal waste rock dumps are contributing elements of the landscape. In addition, the report mentions that although Burro No.7 was subjected to reclamation in 2009 by Umetco, its waste rock dump remains a contributing element. The Navarro report makes a similar case for the partially reclaimed surface of the waste rock dump at Burro No.3.

Whereas waste rock dumps are dominant features of any mining landscape, all four at the Burro Mine can be considered to be important for this reason. The dumps are also important because they provide an immediate setting for directly associated feature complexes, such as the buildings, ventilation blower, and compressor station at Burro No.5, and the headframe, hoist house, and ore bins at Burro No.7. The site has numerous other contributing features besides the waste rock dumps but listing them is beyond the scope of this statement. Instead, this statement focuses on the waste rock dumps because they are at the center of proposed sediment control plans.

Following is a review of the Burro Mine's four principal waste rock dumps, their integrity, and status as contributing vs non-contributing elements.

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Figure 4: Northwest overview of Burro No.3 complex, marked by a large waste rock pad. The top-surface was reclaimed decades ago, but the pad still exhibits its original footprint and profile. In a broad sense, the pad is a contributing element of the landscape because from afar, it appears very similar to the original waste rock formation. However, the top-surface is a non-contributing portion because of disruption from reclamation. Relative to the size of the pad and broad scale of the landscape, the reclamation is minor but imposes some cumulative effects. Overall, the pad is a major landscape feature, and will be avoided by the current sediment control project.

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Figure 5: View southwest across Burro No.3's waste rock pad. The top-surface was divoted for reclamation decades ago and is a non-contributing portion due to loss of originality. But overall, the pad is a contributing element of the landscape because it retains its original footprint and profile, and from afar, appears similar to how it did when the mine operated.

Figure 6: View east at Burro No.5, and its surface plant on a well-formed pad of waste rock. The pad exhibits its original footprint, profile, and surfaces, while the surface plant offers a mix of engineered, architectural, and archaeological features, many with important small-scale details. The entire Burro No.5 complex is contributing and will be avoided by the current sediment control project.

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Figure 7: North overview of Burro No.5, including its surface plant on an original pad of waste rock. The pad is a major landscape feature, and the entire complex is contributing.

Figure 8: East overview of Burro No.7, with well-preserved headframe, hoist house, and ore bins. The waste rock dump has been partially reclaimed with divots but approximates its original footprint and profile. The entire complex, including the dump, is contributing, and will be avoided by the current sediment control project.

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Figure 9: North overview of the Burro Tunnel. The tunnel portal and its ore bin are at far lower left and are largely original. The waste rock bench extending to the right from the ore bin, in the photo's lower left quarter, predates 1970, and retains its original footprint, profile, and surfaces. The tunnel, ore bin, and pre-1970 bench are contributing, and among the most visible elements from public vantage points. The large waste rock bench extending to the right from photo-center post-dates 1970 and was bulldozed after deposition. It remains uncertain how much of the right bench is original and undisturbed. It can be observed that the flanks appear different in character from all the site's other waste rock dumps. The flanks of the site's other dumps consist of fine material deposited by underground haul vehicles, and later furrowed by erosion. In contrast, the flanks of the right bench are a mix of course cobbles and boulders deposited by large construction equipment, rarely used at period mines. Given the uncertainty of origin, difference in content and appearance, and recent age (less than fifty years), the right bench is non-contributing and is proposed for removal in the current sediment control project. All other features fifty years and older at the Burro Tunnel will be left intact.

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Figure 10: Northwest overview of the Burro Tunnel. The tunnel portal and ore bin are visible at center-left. The waste rock bench also at center-left predates 1970 and is original and contributing. The waste rock bench extending across photo-center post-dates 1970 and is uncertain in origin, possibly reworked with heavy equipment. Note that the flanks are different from the mine's other waste rock dumps, consisting of cobbles and boulders too large for the haul vehicles used when the mine operated. The bench is non-contributing and proposed for removal in the current sediment control project. Note that the left toe of the pre-1970 bench fronts the floor of Burro Gulch, where erosion incised a channel. Storm runoff has calved off portions of the toe, which are to be armored with riprap boulders buried with waste rock for an original appearance.

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

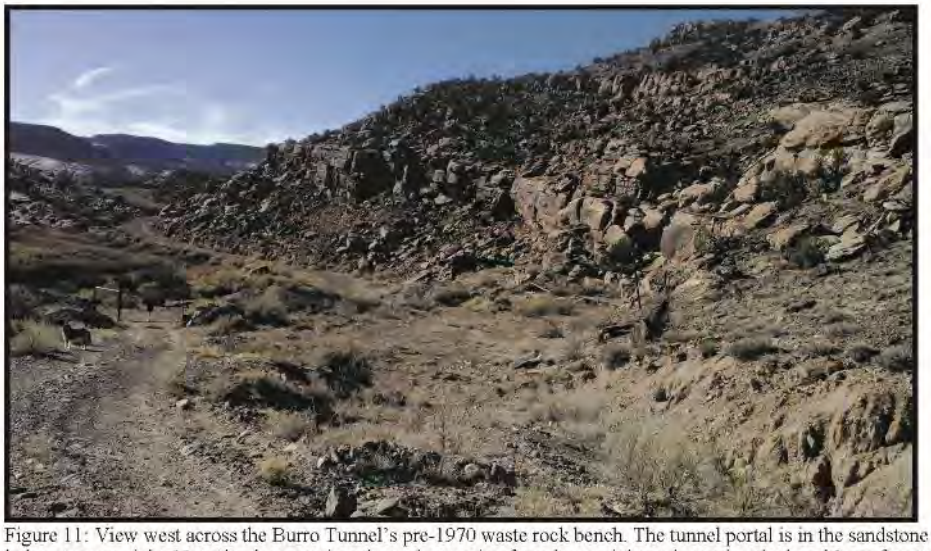

Figure 11: View west across the Burro Tunnel's pre-1970 waste rock bench. The tunnel portal is in the sandstone ledge at upper right. Note the deep erosion channel emerging from lower right and crossing the bench's surface to photo-center, where it drops over the bench shoulder. Not only has heavy erosion incised gullies, but also washed away much of the original top-surface. Given the damage and lack of originality, the top-surface is a non-contributing portion of the bench. For the sediment control project, the gully is to be lined with riprap boulders submerged in fine waste rock for stability. Most of the riprap will appear similar to the existing channel walls, while storm runoff might expose boulder faces in the gully floor.

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

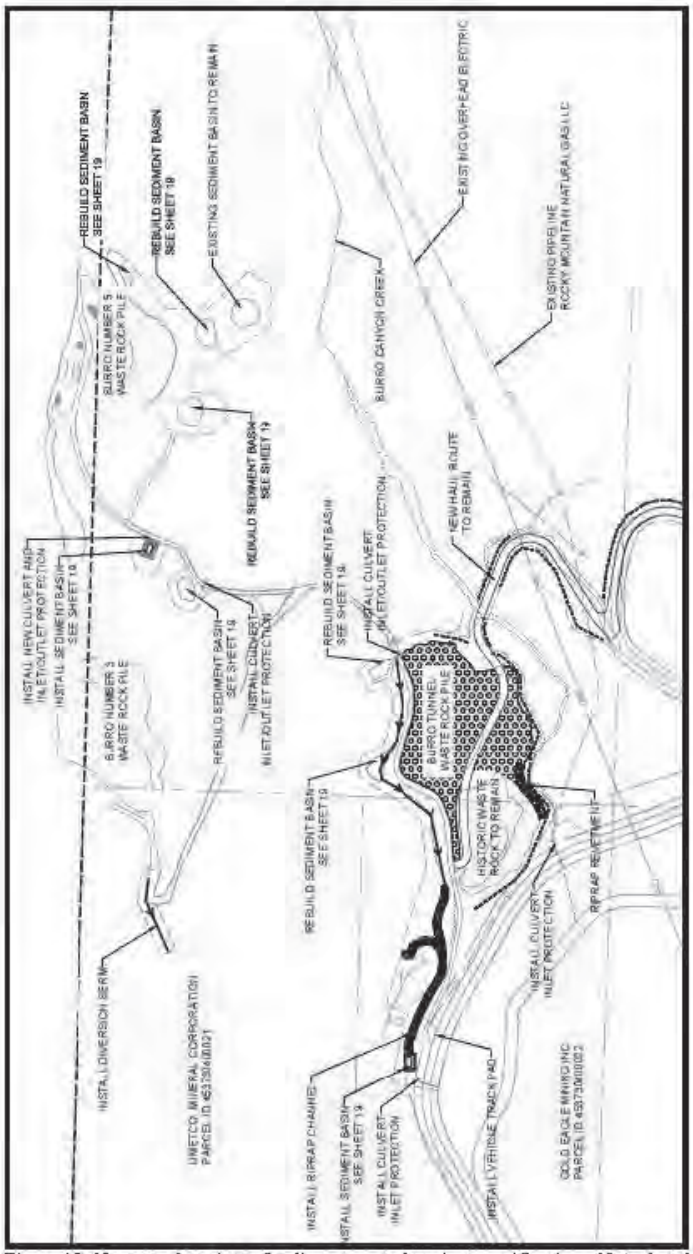

Figure 12: Navarro plan view of sediment control project specifications. Note that the map differentiates between the Burro Tunnel's pre-1970 "historic waste rock to remain" and the post-1970 "Burro Tunnel Waste Rock Pile" to be removed. Courtesy of Navarro Research and Engineering.

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Revised Sediment Control Project

While conducting a site review in the field, MSH, and Navarro engineers and project managers, revised the original sediment control plans specifically to preserve the site's contributing features and avoid an adverse effect, leading to cultural resource mitigation. As a compromise, most of the original specifications were dropped in favor of work at the Burro Tunnel. Disturbance will be restricted to non-contributing features and areas, and institute erosion controls preventing flashfloods from destroying the tunnel's historic waste rock dump.

1. Entirely remove the post-1970 waste rock bench east and above the tunnel portal, and east of the pre-1970 waste rock bench. The bench is a problem because it is a source of sediment washing into the Dolores River.

The post-1970 bench is recommended non-contributing for several reasons. First, the bench appears to have been reworked with heavy equipment, and so its originality remains uncertain. Although the bench does have steep flanks, crisp shoulders, and a flattened top-surface like historic dumps, other characteristics throw doubt on its originality. In particular, the mine's historic dumps consist of fine material handled underground by loaders and haul vehicles with limited capacities. Unable to shuttle large boulders, the haul vehicles brought the fine material out and poured it over the other dumps' shoulders. In contrast, the post-1970 waste rock bench consists of large cobbles and boulders more typical of material handled by heavy equipment. In addition, the top-surface of the post-1970 bench was intentionally paved with gravel for a smooth surface unknown in function. The textures of the bench thus differ from those of the mine's other dumps. The bench is also recommended non-contributing because it post-dates 1970 and is therefore less than fifty years old. Two sediment basins excavated sometime prior to 2010 along the bench's northern corners are to be cleaned out.

2. Armor the toe of the pre-1970 waste rock bench with riprap cobbles and boulders similar in color, hue, and grain as local stone for an original appearance. Relax the dump's flank to a 2:1 angle for erosion reduction, while maintaining a crisp shoulder.

A contributing element, the pre-1970 bench currently fronts the floor of Burro Gulch, where storm runoff has incised a deep gully. Storm flows are calving off portions of the toe, which is destabilizing the flank above. Over time, future erosion and storm events will severely damage the flank and change its appearance from a historic surface to one of slump scars. The entire bench is a problem as a source of sediment, but because it is contributing to the site, the bench is to remain in place with an approximate 1970 appearance. As a compromise in favor of site preservation, the sediment control plan specifies armoring the bench toe and relaxing the flank pitch to a 2:1 ratio instead of removing the bench altogether. Armoring involves embedding and recessing riprap boulders and cobblein native material outside the bench toe. For minimal visual presence, the boulders will be similar in color, hue, and grain as local sandstone. For greater stability and resistance to erosion, the bench's flank will be pulled back for a 2:1 slope ratio, approximating the flank's historic appearance.

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3. Armor two deep erosional gullies that storm events incised in the pre-1970 waste rock bench, thus preventing gradual washout. Use riprap cobbles and boulders submerged in waste rock for an original appearance.

Storm runoff has cut two deep erosion gullies through the western top-surface of the pre-1970 waste rock bench. One gully begins on the bench's northeastern, upslope margin where storm runoff coalesces into a single stream. From the margin, the stream incised a ragged channel westerly through the top-surface, and northwesterly down the bench flank. The other gully begins as a basin adjacent to and east of the tunnel portal, where storm runoff pours over a gap in the sandstone cliff above. Flows have scoured out the basin and carved a channel southwest to the first gully described above. Flashfloods, enlargement of the gullies, and especially heavy erosion at the confluence is washing away the western top-surface and carrying sediment to the Dolores River. The problem is to be addressed with riprap installed in the same manner as above. The channels are to be cleared out and the riprap installed and buried with waste rock. Excess material leftover from excavation will be used to restore the flat surface around the gully confluence and erosion basin next to the tunnel.

A collection channel, constructed with the same methods and materials, will carry runoff southwest down the bench's flank to the toe, and then west to a small catchment basin. The channel follows erosional runnels already created by storm events.

Future erosion will undoubtedly expose the faces of riprap boulders within all the channels, but the riprap will prevent storm runoff from damaging the bench more than it has. In addition, missing portions of the bench's top-surface will be restored with exhumed waste rock, held in place by the riprap. When finished, the channels will be roughly 18' wide and 2' deep, with waste rock surrounding the rims. It can be assumed that the existing gullies and storm runnels are non-contributing portions of the bench, and their alteration imposes no net loss.

4. Improve sediment catchment basins previously excavated at the toes of Burro No.3 and Burro No.5 dumps. The basins will then be periodically maintained.

During previous sediment control work at the site years ago, one sediment basin was excavated from the floor of an erosional channel several hundred feet below and southeast of Burro No.3's waste rock dump. The basin, approximately 100' x 150' in area, was dug out of unaltered ground on the upslope side of an access road. Four similar basins were also excavated below Burro No.5's dump. In exchange for avoiding the dumps themselves, the basins are to be cleaned out and slightly enlarged, thus enhancing their ability to capture sediment. Because the basins are not historic features and were never associated with the mining operation, they are non-contributing, and their alteration will impose no loss to the site.

A second basin will be dug out next to the existing one below Burro No.3, and an overflow culvert countersunk through the adjacent road. The new basin will be like the first, in unaltered ground, and the road restored over the culvert, for no net damage to the site.

5. Excavate runoff control ditch at switchback in road connecting Burro Tunnel and Burro No.3.

A historic haul road ascends northeast from the Burro Tunnel complex and reaches a Y intersection. The right branch contours northeast to Burro No.5, and the left branch ascends

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

northwest and then northeast to Burro No.3. Currently, storm runoff flows down the road from No.3 for much of length and has already incised a gully approximately 12' wide and 6' deep. The erosion will eventually destroy the road. To control erosion and sediment mobilization, a short runoff control ditch is to be excavated across the road's switchback, capturing storm flow and routing it to the west. In the past, a ditch was previously excavated along the road's upslope margin probably to control erosion, and has since mostly filled in. The new ditch would be a short continuation. The new ditch will not cross the road nor damage its surface and will preserve the road by preventing further erosion. The ditch will appear like other excavations scattered throughout the site and impose no net loss.

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

SITE PRESERVATION AND PROJECT EFFECTS

Pulling together the above sections of this report, the Burro Mine is an important resource. Not only is the mine significant for its history, but also it is an outstanding example of a combination shaft and tunnel uranium mine. In addition, the site is more complete than most other uranium mines in the region and fulfills the requirements for recognition as a mining landscape with potential for designation as a historic district. The reason for the above is that most of the site's features are contributing elements, including all four waste rock dumps. A recently proposed environmental sediment control project had great potential to compromise integrity through loss of contributing features, mostly waste rock dumps and the road network.

Interested parties adapted the project in an effort to preserve the site, accomplish sediment reductions, and move the project forward with a determination of no adverse effect. The project adaptations limit disturbance to non-contributing features primarily at the Burro Tunnel, and avoids the mine's other complexes, most of which are contributing. A finding of no adverse effect allows the project to continue without cultural resource mitigation, which is a strong incentive to preserve the site. In the interest of restricting disturbance and preserving the Burro Mine, this statement urges a finding of no adverse effect.

If the current adaptation is determined to be an adverse effect, then there is no incentive to limit work to non-contributing features. A sediment control project will still carry on, instead in a more aggressive form likely to destroy key portions of the site.

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 3 (Cont.)

Appendix: Site Location Maps

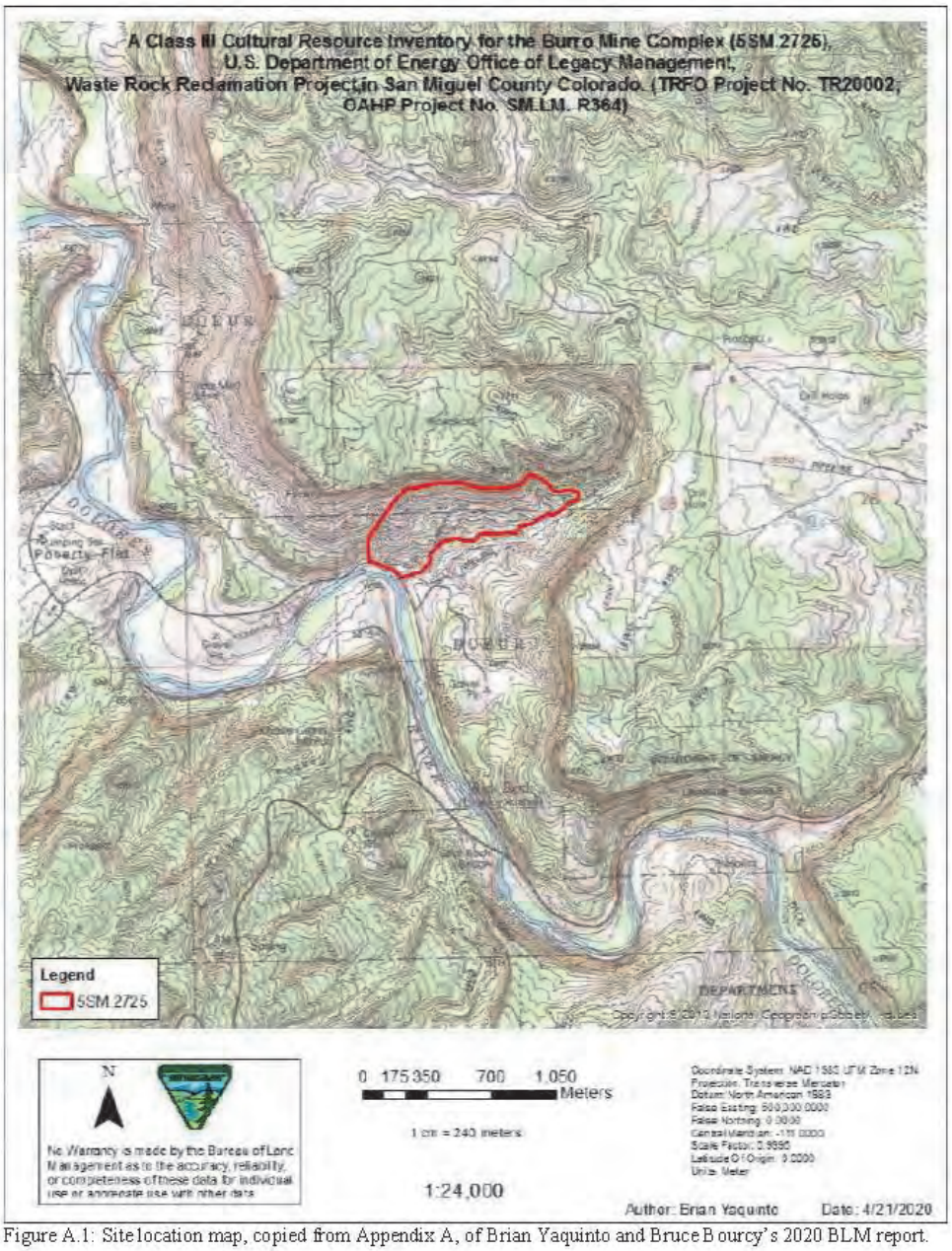
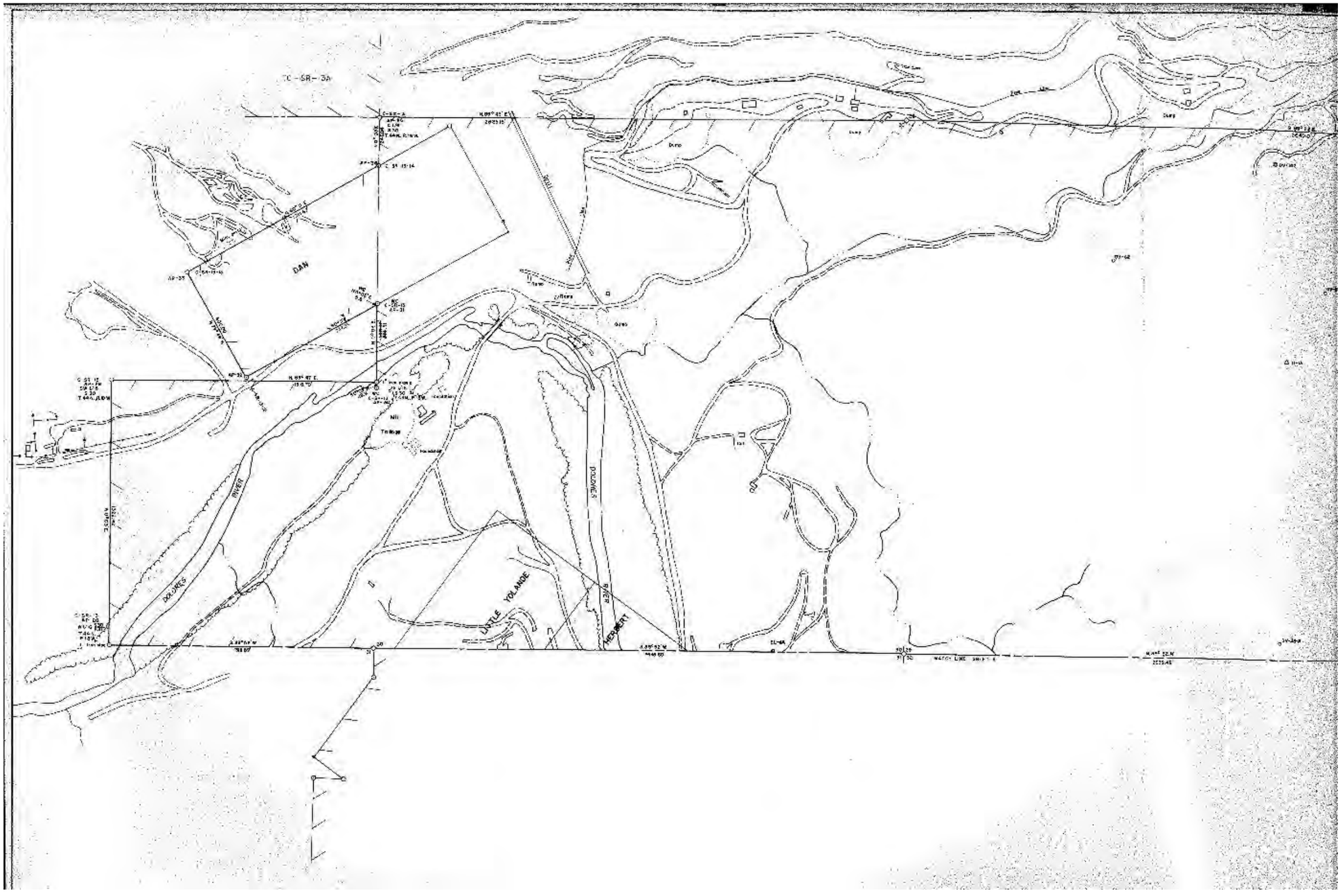


Figure A.1: Site location map, copied from Appendix A, of Brian Yaquinto and Bruce Bourcy's 2020 BLM report.

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 4



Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 5

1.1 ALTERNATIVE 2: RECLAMATION OF THE BURRO MINES COMPLEX

The preferred alternative would prevent runoff associated with major storm events from eroding additional waste rock into, and increasing the sediment load within, the Dolores River. This alternative involves removing the upper levels of the waste rock pile at the Burro Tunnel Mine site and improving sediment basins below the waste rock piles at Burro mines No. 3 and No. 5. The waste rock removed would be relocated to a former gravel pit located approximately 2,500 ft (762 m) south and slightly east of the existing Burro Tunnel Mine site (Figure 2-1). The waste rock remaining at the Tunnel Mine site would mimic the 1970s era waste rock pile identified by historical information and would include armoring to protect against a 100-year flood event in the Burro Canyon. The 1970s era waste rock that remains would support the historical integrity of this historic mining district as requested by SHPO.

The reclamation is expected to involve 10 workers and take approximately 16 weeks to complete. Reclamation activities would also include obtaining access and ROWs, grading the reclamation area to create landforms conforming to the surrounding area, and seeding.

Once the post-1970s era waste rock has been relocated, the Burro Tunnel Mine site would remain a permitted mine site, complete with a functional infrastructure in accordance with the lessee's plan of operation. Historically significant features associated with the mine complex would not be disturbed.

The former gravel pit is located on Lease Tract C-SR-13. This gravel pit, henceforth referred to as the "relocation site" is the preferred relocation site because it is an existing topographic depression located in an area that is more than 1,100 ft (335 m) away from and 200 ft (61 m) higher than the Dolores River and does not affect the visual aesthetics or views from the river or CR S8 (Figure 2-1). The relocation site would be excavated to enlarge the capacity of the pit. The approximately 12,000 yd^3 (9,175 m^3) of surface soil materials excavated would be stockpiled to use as cover for the relocated waste rock. The relocation site would be reclaimed consisting of a soil cover, surface roughening, and revegetation.

Relocation activities would follow designated existing haul routes. Haul routes would originate at the waste rock pile and proceed along CR S8 or across a new proposed low water crossing at the Burro Canyon drainage that would connect with CR 10S and lead to the relocation site. All haul roads would remain in place. Restoration of existing stormwater catchment basins and installation of new stormwater basins below the mine sites would be conducted, as needed. Some catchment basins would remain in place and final reclamation would be the responsibility of the lessee and would occur when their mining operations are complete. Table 2.2-1 summarizes the activities of the preferred alternative that are on DOE-managed land surfaces as follows: (1) waste rock volumes removed from the Tunnel mine sites at the Burro Mines Complex, (2) the linear feet of haul roads to be improved and/or constructed, and (3) the acreage of land disturbed.

Surface roughening (i.e., pocking or scarification) and seeding would be conducted for a total area of approximately 12.5 ac (5.0 ha) disturbed by project activities (includes areas at the Burro Mines Complex and at the relocation site). A native seed mix identified through coordination with cooperating and state agencies would be utilized. Satisfactory reclamation would involve stabilization of soil erosion and the successful establishment of perennial and desirable native species. The reclaimed areas would be monitored until vegetation establishment was determined to be successful. Follow-up activities might be required to correct deficiencies in community composition or cover. Table 2.2-2 presents a proposed seed mixture for use in reclamation. The list

Barr, D.L., DOE, Consultation Correspondence Item #9, Enclosure 5 (Cont.)

includes a proven seed mixture originally developed for the ULP lease tracts plus several pollinator species. Weed-free seed mixes, obtained from local sources would be used, where available.

[a] A total of 3,850 linear feet based on the following activities: (1) widening of approximately 650 linear feet of existing unpaved roadways lead to Burro Tunnel Mine site; (2) widening of approximately 2,200 linear feet of the existing unpaved CR 10S to the relocation site; and (3) construction of approximately 1,000 linear feet of new 20-ft wide unpaved haul road including a low-water crossing across a drainage. The new road would connect the Burro Tunnel Mine site to the existing unpaved CR 10S haul road to the relocation site.

TABLE 2.2-1 Waste Rock Volume, Road Improvements, and Acreage Disturbed

Activity	On DOE Land Surface	On BLM Land Surface
Waste Rock Volume Removed (yd^3) Total = 55,000 yd^3	55,000 (Burro Tunnel Mine) 0 (Burro No. 3) 0 (Burro No.5)	0 (Burro Tunnel Mine) 0 (Burro No. 3) 0 (Burro No. 5)
Roads to be improved and/or constructed (linear feet) Total =3,850[a]	3,850	0
Acreage of Land Disturbed (ac) Total = 19.0 ac	3.9 (Burro Tunnel Mine) 0.0 (Burro No.3) 0.0 (Burro No.5) 3.0 (relocation site) 2.6 (roads) 9.5 (staging areas, erosion control, alternative access)	0.0 (Burro Tunnel Mine) 0.0 (Burro No.3) 0.0 (Burro No. 5) 0.0 (relocation site 0.0 (roads) 0.0 (staging areas, erosion control, alternative access

Norton, H.K., Colorado SHPO, Consultation Correspondence Item #10

HISTORY COLORADO

Deborah L. Barr
Uranium Leasing Program Manager
U.S. Department of Energy
Office of Legacy Management
11035 Dover Street, Suite 600
Westminster, CO 80021-5587

RE: Section 106 Consultation Regarding Proposed Reclamation of Waste Rock, Burro Mines Complex, San Miguel County (HC# 77950)

Dear Ms. Barr,

Thank you for your correspondence dated and received by our office on December 22, 2020 continuing consultation for the above referenced undertaking under Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations 36 CFR 800. We understand that the Office of Legacy Management in the U.S. Department of Energy is the lead agency involved under Section 106 of NHPA. The December 2020 letter continues consultation regarding the subject undertaking initiated in June 2020.

After reviewing the provided documentation, we do not object to the area of potential effects (APE). 5SM.2725 and 5SM.8290 sit in the APE. SM.2725 was previously determined eligible for the National Register of Historic Places (NRHP) and 5SM.8290 was previously determined not eligible for the NRHP. Based on the documentation provided, we concur that your finding of no adverse effects [36 CFR 800.5(d)(1)] to historic properties is appropriate for the subject undertaking.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with our office pursuant to 36 CFR 800.13. Also, should the consulted-upon scope of the work change, please contact our office for continued consultation under Section 106 of the National Historic Preservation Act.

We request being involved in the consultation process with the local government and other consulting parties, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

Thank you for the opportunity to comment. If you have any questions, please contact Matthew Marques, Section 106 Compliance Manager, at (303) 866-4678, or matthew.marques@state.co.us.

Sincerely,

Dr. Holly Kathryn Norton

Digitally signed by Dr. Holly Kathryn Norton
Date: 2020.12.29 18:01:14 -07'00'

Steve Turner, AIA
State Historic Preservation Officer

We are now accepting electronic consultation through our secure file transfer system, MoveIT. Directions for digital submission and registration for MoveIT are available at https://www.historycolorado.org/submitting-your-data-preservation-programs

APPENDIX G:
LIST OF PREPARERS

Table G-1 lists the U.S. Department of Energy (DOE) managers for the Burro Mines Complex Environmental Assessment (EA); Table G-2 lists the EA preparers (all are at Argonne National Laboratory).

TABLE G-1 DOE Management Team

Name	Office	Title
U.S. Department of Energy		
Deborah L. Barr	DOE Office of Legacy Management	Program Manager
Tracy A. Ribeiro	DOE Office of Legacy Management	National Environmental Policy Act (NEPA) Compliance Officer

TABLE G-2 Burro Mines Complex EA Preparers

Name	Contribution/Education
Jennifer Abplanalp	Cultural and visual resources/Anthropology
Bruce Biwer	Transportation/Chemistry
Young-Soo Chang	Air quality and noise/Chemical Engineering
Jing-Jy Cheng	Human health and safety/Polymer Science and Engineering
Terri Patton	Geology and land use/Geology
Mary Picel	Project and document manager, human health, and waste management/Environmental Chemistry and Health Sciences
William S. Vinikour	Ecological resources and cumulative impacts/Biology with environmental emphasis
Leroy J. Walston, Jr.	Ecological resources/Biology
Ellen White	Socioeconomics and environmental justice/Environmental Studies
Eugene Yan	Water resources/Hydrogeology
Emily A. Zvolanek	GIS/Environmental Science

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