



2. Exhibits for DRMS 112c Reclamation Permit Application

2.1 Exhibit A. Legal Description

Primarily in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 21, T36N R1W, (New Mexico PM) with small portions in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 22 and SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 15, and SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 16.

Metes and Bounds Description

Beginning at a point bearing N along the W section line of Sec 15, T36N R1W, 10th (NM) PM, Archuleta County Colorado a distance TO BE CALCULATED

UTM Coordinates of Boundary

TO BE CALCULATED

Oblique view of site looking to the Northwest.

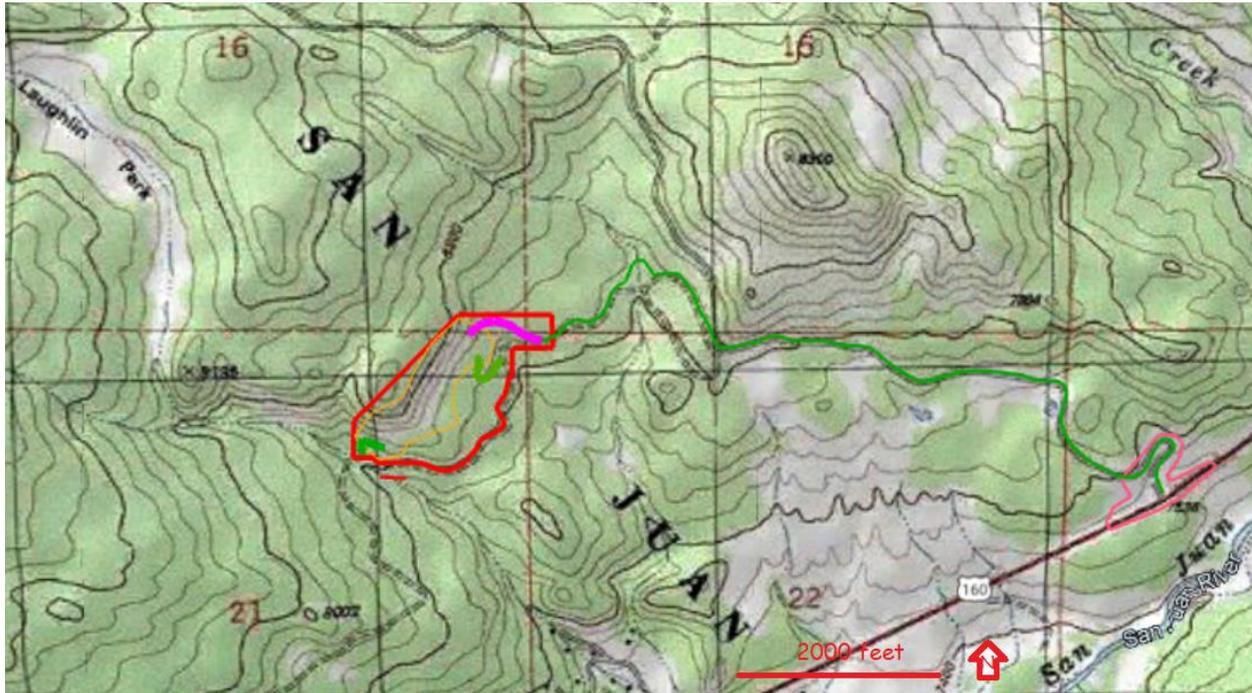


Red: permit boundary and edge of slightly affected area. Yellow: edge of expected minor affected land.
White: areas to be excavated.



2.2 Exhibit B. Index Map

From USGS Jackson Mountain 7.5-minute quadrangle map



From Google Earth (See Exhibits C & F for detailed info inside permit boundary.)



Geology in the vicinity (detailed mapping is not available)



2.3 Exhibit C. Pre-Mining and Mining Plan Maps

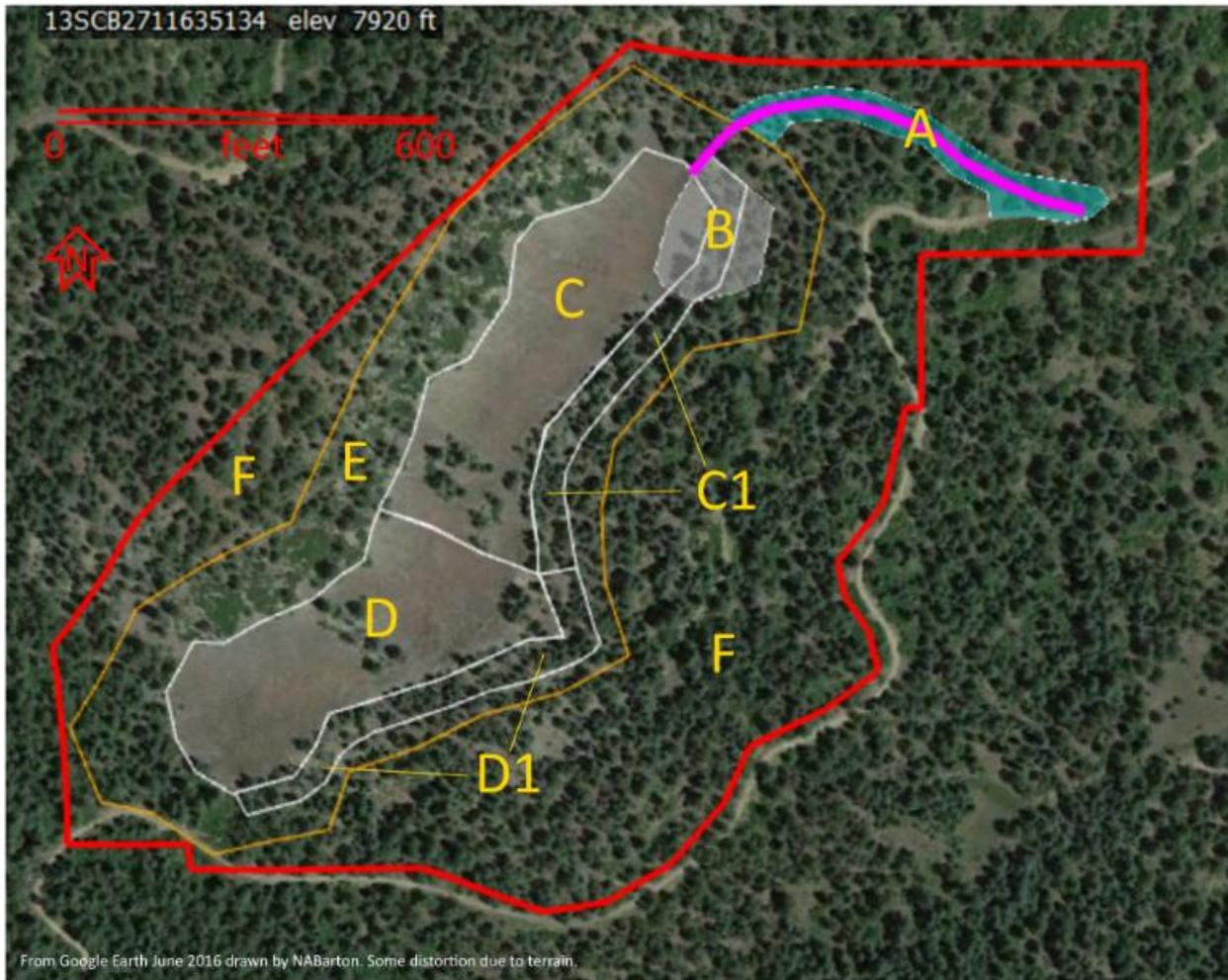
2.3.1 Index

Notes:

1. Photography from 2016, no significant observed changes to area since then.
2. Existing Forest Service Road (738 and 037) vary significantly in width, grade, and conditions, and will continue to be maintained by USFS and ACR&BD or contractors of those entities in accordance with established procedures and policies.
3. All land for at least 1320 feet in all directions is National Forest System land.
4. As the final mining plan is subject to change as a result of the NEPA Environmental Assessment, and presumed FONSI (Finding of No Significant Impact) and ROD (Record of Decision) by the US Forest Service Piedra Ranger District, the final maps with 10- or 20-foot contours at a scale not smaller than 1"=600' shall be prepared. These maps (based on the satellite photos) are temporary.
5. There are no recorded easements on the property within the permit boundary.
6. Information on geology is shown on Map B-2 in Exhibit B. Information on soils is shown on Map in Exhibit I.
7. Information on vegetation is shown on Map in Exhibit J.
8. The only adjoining surface owners of record is the USFS; See Map in Exhibit O.
9. Information on permanent or man-made structures would normally be shown in Table in Exhibit S. However, there are no permanent significant man-made structures within 200 feet of proposed affected land.



Sheet C-1 (Entire Site)



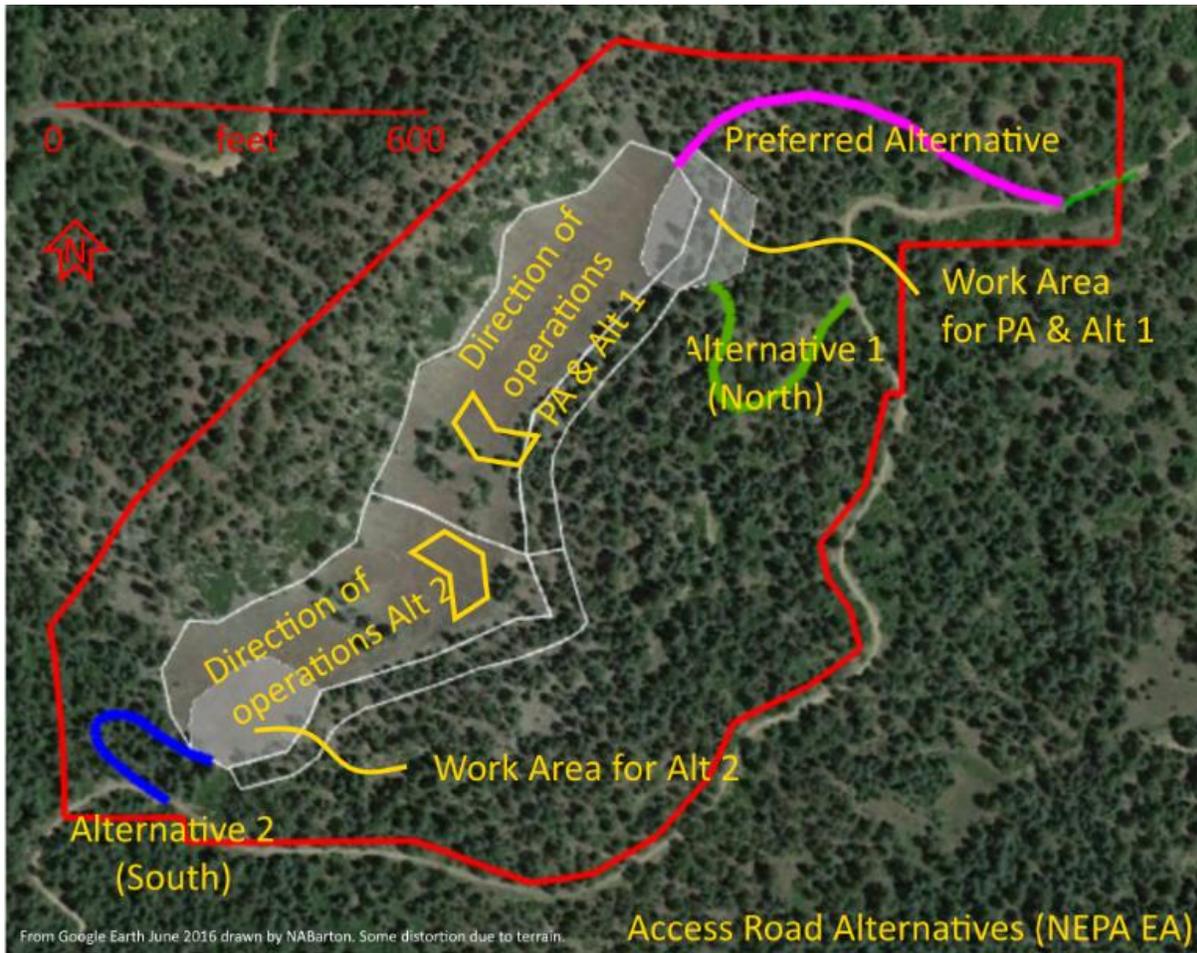
Scale 1 inch = 300 feet (8.5x11 paper)

Areas labelled above:

- A. Access Road Affected Area (0.9 acres)
- B. Work Area (0.8-0.10 acres)
- C. Phase 1 (4-5 years) exposed talus (3.5 acres)
- C1. Forested area (1.0 acres)
- D. Phase 2 (4-5 years) exposed talus (3.4 acres)
- D1. Forested area (1.0 acres)
- E. Area anticipated to be affected (limited tree removal, sloping, grading, etc.) (8.0 acres)
- F. Areas not to be significantly affected (19.2 acres)



Sheet C-2 (Alternatives for Access Roads)



A map showing existing contours (20-foot contour interval) will be added. See also Exhibit F.



2.4 Exhibit D. Mining Plan

2.4.1 SUMMARY (PROJECT NARRATIVE)

Archuleta County Road and Bridge Department (ACRD) will operate the proposed pit in coordination with the United States Forest Service (USFS) to produce roadbase and gravel for construction, maintenance, and repair of County and USFS Roads (FSR). There will be no sale or giving of construction materials to any private entity. A natural talus deposit (also called scree) of material (of volcanic origin) and immediately adjacent areas will be excavated and the pitrun material will be crushed and screened on-site, then hauled using existing FSR to SH-160 at MP 151.05L approximately 7.5 miles north of Pagosa Springs center, except for a small amount of material needed on FSR in the immediate vicinity. Mining will begin with clearance and construction of an 800-foot access road within the permit boundary to the North end of the talus.¹ That will be followed by clearing of a small area of forest and grading of a lower portion of the talus to construct a work area. Mining of the talus will begin at that point and move to the southwest in two phases, estimated at three to five years duration each. Portions of the flatter forest at the toe of the talus will be mined both for the volcanic material and for fines (clay).

During each phase, approximately 100,000-120,000 tons of pitrun produced (an average of 20-24,000 tons/year) will be processed, stored on site and shipped on demand. Reclamation will begin on portions of the talus after the first one-two years of mining. Actual mining and processing will likely be done only every two or three years, to produce stockpiles of material to be hauled over a longer period. In addition to the major disturbance to the talus and immediately downslope, there may be minor disturbance on the remainder of the permitted area. If possible, above the upper slope (Northwestern edge) of the exposed talus, mining will be done in a manner which leaves an exposed talus slope similar in appearance to the original face, or left with little or no disturbance to reduce visual impact.

2.4.2 PAST ACTIVITIES AND CURRENT CONDITIONS

There has been very little human activity or modification to the site. There are several trails (jeep, horse, livestock) into or near the talus itself, and a maintained FSR is located within 300 feet of the northern end and 150 feet of the southern end of the talus slope. The road swings South and West around the perimeter of the proposed permit area and is the basis of that section of the permit boundary. Several foot trails lead from that road to the toe of the talus. There are several springs along that road, believed to be fed by precipitation which enters groundwater through the talus.

The talus is on the Southeastern slope of a flatter area with a 10% slope, extending at least a mile to the Northwest from the site, defined by Laughlin Park on the west and an unnamed intermittent stream on the Northeast, which rises to near 8300 feet elevation about 6/10 miles away. This is likely the top of the eroded volcanic intrusion in this area.

The head and toe of the exposed (mostly unvegetated) talus slope has very thin soil (see Exhibit I) established by wind deposition and colonization of that area by the Ponderosa pine, covering the talus. The exposed talus itself is approximately 1,400 feet long, with an irregular centerline from NE to WSW. Elevation of the top of the tee (the Northwest edge) ranges from 7980 to 8010 feet. Elevation of the toe (the SSE and Southeast edge) ranges from 7850 to 7910 feet. Height varies from 100 to 150 feet. The

¹ This is the preferred alternative for USFS National Environmental Protection (NEPA) environmental assessment (EA). Two alternative access locations and one alternative work area are shown on all maps in case there are significant environmental impacts of this preferred alternative that deny its use.



width of the deposit (NW to SE) varies from 150 to 350 feet. The natural slope varies from 30 to 40% (roughly 3H:1V to 2H:1V). The exposed talus is approximately 7 acres in size, and total minable area may be 16.6 acres.

The exposed talus holds about 30 large Ponderosa pine, in two clusters. Smaller plants (forbs and grasses) are found throughout in small clumps where enough soil accumulates to allow root. The upslope (top) above the talus has a sparse forest growth of Ponderosa and a few other species (juniper and pinyon). The slope below the toe of the talus (approximately 100 feet wide and with a slope of approximately 10%. This lower slope is more densely forested than the top of the talus but with similar vegetation. The talus (broken rock fragments or scree) is believed to extend into this lower slope but to have been buried by fine soil and rock particles providing rooting for trees and then naturally modified by organic matter. However, site conditions require very small amounts of stripping of soil and overburden.

The entire site is within National Forest System lands, administered by the USFS. The nearest recorded private land is approximately 1,500 feet to the South-Southwest from the proposed permit boundary and approximately 2,200 feet to the South-Southwest from the center of the talus.² It is approximately 250 feet lower in elevation than the talus and direct view of the actual working area is screened by relatively dense forest. There are no known unpatented mining claims in the vicinity, and no privately-owned manmade structures within ¼-mile (1320 feet) of the permit boundary.

For geology and soils data, see map in Exhibit A and discussion in Exhibit I

For water data (surface and ground) see Exhibit G

For vegetation data see Exhibit J

For wildlife data see Exhibit H

For climate data see Exhibit K

For hazmat and related issues data see Exhibit M and S (if applicable)

For access and road-related data see Exhibit M

General Mining Conditions: The talus is large rock fragments of Tertiary igneous intrusive stocks and dikes, and rests on the Lewis shale. It is part of a large Jackson Mountain laccolith, a field of igneous (volcanic) deposits which forced its way through the Lewis shale and cooled. While there is some potential for the Lewis shale to have been baked at the base of the igneous rock, most likely this talus is the result of a dike around which the shale eroded away, and then through a process of freeze-thaw, cracks in the cooled volcanic deposits fractured into the large cobble and boulder scree. The bedrock above the talus appears to be more igneous material of the laccolith, and the bedrock below the visible toe of the talus appears to be Lewis shale. There is potential for the Lewis shale to contain thin beds of sandstone. The size of the rock fragments varies from very small (1-inch diameter or less) to large (largest dimension of greater than 3 feet). No blasting is necessary.

² In the SW ¼ of Section 22.



2.4.3 GENERAL CONCEPT

Mine on the Southeast-facing slope of the talus, minimizing removing soil and trees at the toe of the slope (to obtain fines and additional rocks). Remove material so that there continues to be a stable slope of rock fragments, to reduce visual impacts. Use dense existing stands of trees on the top of the ridge (to the West, Northwest, and Northwest) and on similar and lower elevations to the Southeast to reduce visual, dust, and noise impacts (together with the distance to nearer occupied dwellings and SH-160). Periodically observe sound and visual (including dust) impacts from nearby FS roads, SH-160, and nearest subdivision roads. (See Exhibit J.)

1. TASKS

Task: Construct access road from existing USFS road to north end of exposed talus (deposit)

Conditions: Assuming no significant negative environmental impacts exist for the preferred alternative, in relatively dense forest with good to fair existing slopes

Standards: 800 feet in length, 24-foot width, 2% crown, average grade, average affected area width of 33 feet, ensuring horizontal and vertical curves are suitable for semi-tractor/trailer and tandem truck w/pup, plus support vehicles, including semi-trucks hauling processing equipment; salvage wood, preserve and stockpile soil, fines, and vegetative matter, control drainage, erosion, and sedimentation.

Performance Measures: TO BE ADDED

Task: Prepare work area at end of access road

Conditions: relatively flat (slope less than 1V in 10H), partially exposed talus and partially forested

Standards: provide 0.8 to 1.1 acres with grade of 2-5%, provide sufficient room for crushing and screening plant, gen set, equipment parking, truck scale (if used), turnaround for haul trucks and emergency response vehicles, and stockpiles (capacity at least 50,000 tons of processed construction materials). Ensure area has a durable driving/working surface, good drainage (allowing infiltration into unlaying talus as much as possible³), and with designed and designated swales and basins for infiltration and evaporation of precipitation). Recover and preserve any soil, fines, and vegetative matter in stockpiles.

Performance Measures: TO BE ADDED

Task: Prepare areas for excavation (mining) of talus

Conditions: Given little or NO overburden or soil above the talus to be excavated, except at the toe of the talus slope, slopes varying from 1V:10H to 1H:1H with some relatively flat areas (less than 10% grade), sizes from 1-inch to 48-inches, most exposed, with few trees and limited other vegetation.

Standards: Clearly define limits of activity, identify and remove all safety hazards, ensure that drainage and potential for erosion that might be carried and deposited as sediment downhill is in place and functional, then remove and salvage any trees and other vegetation (as feasible) for other use, remove any soil and overburden and stockpile for future use, while minimizing generation of dust and preventing any disturbance to land outside limits.

³ Except for areas with water-priority chemicals (which must have secondary containment).



Performance Measures: TO BE ADDED

Task: Excavate and process talus (rock fragments)

Conditions: Given area of 1 acre has been prepared by removing any vegetation and soil/overburden present, with adequate stripping above the proposed working face to remove potential hazards, and with processing equipment ready for operating on-site,

Standards: In accordance with MSHA regulations and guidelines, and good engineering practice, excavate rock fragments using front-end loader and move directly to crushing and screening plant to produce material meeting CDOT, USFS, and any special County specifications; convey the produced materials to stockpiles sorted by specification. Carefully observe stability of upslope rock while excavating. Control dust from all activities to prevent visual opacity from exceeding 10% at permit boundaries. Keep noise levels to 55 dBA at permit boundaries. Prevent erosion and sedimentation of small particles (dust, sand), by controlling drainage and handling of material. During processing (screening and crushing) recover and conserve fine materials and organic matter in stockpiles.

Performance Measures: TO BE ADDED

Task: Haul processed construction materials from site

Conditions: Given stockpiles of processed materials at the work area within the permitted area, and front-end loaders, semi-tractor/trailer (25-ton capacity), tandem trucks (15-ton capacity), and tandem trucks with pups (20-30 ton capacity), not during inclement weather (not during winter).

Standards: Using new 800-foot access road, existing FS Roads 738 and 037 (1.65 miles) to SH-160 near MM 151.2L (existing intersection and access) in accordance with CDOT access permit (if required), operating safely without creating problems for other traffic, adhering to speed limits (maximum speed 25 mph, average speed 15 mph for large vehicles, with no haul of significant quantities of construction materials by small vehicles (less than 10 tons loaded).

Performance Measures: TO BE ADDED

Phases: Although shown in several phases for purposes of calculations and environmental assessment, these are subject to change and it is viewed as a continuous process.

Since the actual depth of the fractured rock/talus deposit is unknown (and being estimated as averaging 20 feet), it is not possible to accurately and confidently calculate the volume of material in each acre. In addition, the nature of the talus means that there are significantly larger amounts of voids in the deposit as compared to more common alluvial and colluvial deposits, or hard rock deposits.

Phase 0: Initial Preparation anticipated to impact 0.8 acres for access road, and 0.8 to 1.2 acres for work area, total up to 2.0 acres.

Phase 1: Years 1-5: Approximately 0.8 to 1.0 acre/year: total 4.5 acres (3.5 exposed talus, 1.0 forest at toe). North half of deposit. Additional land inside the permit area may be mildly impacted by disturbance to install stormwater controls, ensure infiltration of water, and possible changes to ensure long-term stability of the uphill talus slope to the Northwest of areas being mind.

Phase 2: Years 6-10: Identical to Phase 1, but in the South half of the deposit.



Total land with significant affects years 0-10 (all three phases): up to 11.0 acres.

During these phases, perform some reclamation: primarily stabilizing uphill slopes and protecting downhill area and replacing soil as possible to revegetate. See Exhibit E for more information.

Areas NOT to be mined, but which may be affected to support mining operations: As described above, potentially the entire permit area of 37.2 acres (the above 11.0 acres and an additional 27.2 acres)

2.4.4 ASSUMPTIONS

1. Annual production will be variable. For planning purposes to produce and ship 30,000 tons per year, it is assumed that excavation of up to 50,000 CY per year (cypy) may be required. Actual amount produced and hauled from the operation will be based on demand, not ability to produce.
2. Screenings (fines and rejects) will be used for backfill and attaining final grade.
3. Most of the site (7 of the 9 acres proposed for actual excavation) has NO soil, and the remaining 2 acres has minimal soil in and around the fractured rock of the talus. Peripheral areas which may be affected due to need to establish stable slopes have minimal soil. As much soil as possible will be salvaged and used or stored for use in reclamation as work progresses. (This will be accomplished by stripping and screening of larger particles, then stockpiling before use either for producing product or reclamation.)
4. The depth of the talus being mined is estimated to be at least twenty feet, but may be much deeper on the northwestern side of the deposit (estimated to be 50 feet or more). There is no known overburden and fines, particularly clay, varies significantly, but is needed to meet the specifications of the construction materials to be produced. These fines are lower in the deposit being mined, due to the large number of voids typical of talus, and there are more filling voids between the rock fragments near the toe of the exposed slope, due to natural washing of talus fines and windborne deposits.
5. The basement rock (Lewis shale) is generally distinct from the deposit being mined and may not be exposed due to limits on maximum excavation size and grades. Excavation into the shale will be avoided except as necessary to provide drainage and suitable terrain for reclamation.
6. In some portions of the project, the talus may be very thin above the shale, but this cannot be quantified until stripping and excavation is done, or test pits are dug after permitted operations begin.
7. All excavation will be above the water table. Storm water is not expected to pond due to the nature of the talus, and assuming that the shale dips to the southeast and south throughout the site (based on estimates of pre-eruption terrain. Water will infiltrate and flow through undisturbed talus to the southeast and south to and past springs along FSR-738. Some grading and swales and basins may be necessary to prevent muddy operating conditions and to speed evaporation to meet the 72-hour State Engineer requirement for retaining precipitation. There will be no surface discharge with less than a 100-year storm event (prevention sediment runoff, with infiltration to ground water and through unmined alluvial materials (above shale) to the watershed of Dutton Creek. There will be no surface discharge with a 100-year-frequency or less precipitation (3.7 inches in 24 hours), and very unlikely for greater events.
8. Slopes in the talus for pit edges will be no greater than 2H:1V and cut as mining progresses, in preference to reducing highwalls to use that material for the final slope. Based on natural angle of repose and pre-existing natural slopes, remaining talus (or talus placed on completely working faces) is stable at slopes as steep as 1H:1V, and with careful placement at slopes as steep of 1/2H:1V, but may require evaluation by a professional engineer to confirm at time of mining and reclamation.
9. Pit floor will generally slope to the southeast and no surface discharge or retention basin (impoundment) is planned. prevention sediment runoff, with infiltration to ground water and through unmined talus and alluvium (above Lewis shale) to the watershed of Laughlin Creek.



2.4.5 ROADS

TASK: Build an access road (800-foot long, 24-foot crowned (2%) driving surface, grade of 8% or less), and internal roads for operating.

CONDITIONS: Given need to have good, safe access from FSR-738 to the exposed talus within the permit boundary, and no existing access, and exposed talus which prevents safe and dependable wheeled (and most tracked) vehicle use.

STANDARDS: Meet County, contractor, and USFS requirements for emergency access, reclamation, and inspection, and ensure safe and effective access to work area, areas being stripped, and areas being excavated.

PERFORMANCE MEASURES:

1. Maintain according to Archuleta County, MSHA, USFS and contractor requirements
2. As necessary, treat with mag-water or other dust control agents IAW dust control plans. Please refer to Exhibit M.
3. Within the actual area to be mined (affected), construct a road along the downhill side of the area of excavation, either at one time (to allow timber cutting on that two acres) or as excavation area during mining. Estimated length approximately 1700 feet: minimum width 22 feet. Surfacing may require geofabric or membrane to contain fine roadbase materials and prevent filtering into voids in talus.

NOTES:

1. The USFS will maintain the remaining FSR-738 and FSR-037 (1.65 miles) to SH-160 in accordance with the Forest Management Plan.
2. The roads may be left in place permanently as required to monitor reclamation and in accordance with USFS instructions, at the completion of mining.
3. Unless the South alternative for access (shown in Map C-2) is needed, there will be no use of FSR-738 along the East and South boundaries of the permit area for mining operations, and that road will not be maintained by the County or contractors during the life of the mine.

2.4.6 MISCELLANEOUS ACTIVITIES

Plants other than processing plants (trains): No other temporary, portable plants and facilities (such as ready-mixed concrete and hot-mixed asphalt) are proposed.

Dealing with oversize materials: Due to the nature of the deposit, there is potential for oversize materials (cobbles or boulders). These either will be crushed for aggregate, used as-is (riprap/etc.) or used as backfill. Explosives will not be used but pneumatic hammers or breakers may be used in exceptional conditions.

Materials from off-site: No off-site materials such as clean construction and demolition materials will be accepted from either the County or USFS except with prior USFS approval and in accordance with CDRMS and CDPHE requirements. Clean debris (earth, rock, concrete rubble, asphalt pavement) may be classified (characterized), determined to be safe for use in accordance with USFS, County, CDRMS and CDPHE requirements, and brought to the site for processing similar to excavated material for recycling as construction materials, or for use as backfill for reclamation (see Exhibit F for detailed information).

Hazardous materials, including fuels and lubricants: Fuel tanks necessary for equipment and plants may be located on-site (in the plant area or adjacent/integral to temporary facilities), in adequate secondary containment and documentation/registration to meet USFS, US EPA, CDRMS, CDPHE, and CDLE



requirements. Some essential/critical maintenance of rolling stock may be performed in the permit area. Other chemicals necessary for maintenance, including cleaning, of equipment and rolling stock, may be stored and used on site (only during operating periods), and will be kept in suitable containers and secondary containment. No such materials will be left on-site during seasonal closure. Some specific chemicals will be transported, stored and used in accordance with MSHA-compliant training and operations, good engineering practice, and other regulatory requirements. This may include (but are not limited to) pesticides, herbicides, dust-control chemicals, road salt (ice control materials, including that added to sand produced at the operation), fertilizer and cleaning products. Hazardous materials improperly brought to the operation will be characterized, segregated, documented, reported, and removed from site in accordance with applicable federal (RCRA), state and local regulations including MSHA HazCom and RCRA requirements. This includes both illegally dumped material, found material, and things accidentally brought on site as well as hazardous wastes generated on site.

Plant Site additional information: The plant site will be graded to post-mining (reclamation) contours but will not be fully reclaimed, if there is a significant chance that the area will be used in the next year. Plant sites (or portions) will be reclaimed within 12 months after an area is determined to no longer be needed for plant, stockpile, and traffic use, but some of the area may continue to be used for ranch support activities and therefore not be reclaimed immediately. Exposed areas with fine particles (1/2-inch minus) will use alternative dust- and erosion control measures. No fencing will be used, but signs and/or other markings will be used to prevent problems with traffic and other activities in such areas.

Water: See Exhibit G. Water for dust control and other uses associated with mining will be trucked into the site and may be stored in above ground containers or lined, in-ground basins until used. These will be located and maintained in such a way as to prevent surface discharge outside the affected area, and to prevent or minimize water erosion, weed infestations, and other detrimental impacts. Other affected but not yet reclaimed areas may be used for temporary storage of equipment for use on or off-site.

2.4.7 SITE DEVELOPMENT AND ACCOMODATIONS

No permanent structures or buildings shall be constructed in conjunction with mining and reclamation, except for:

- a. Culverts and related drainage structures related to roadways which may remain after mining.
- b. Discharge structures if necessary for good engineering and environmental practice for swales, ditches, berms, retention (or detention), or related water management structures (not for offsite surface discharge).

Temporary structures and devices may be located on site in conjunction with mining activities, including but not limited to storm water/process water management controls, storage/shipping containers, secondary containment for hazardous materials such as fuels, truck scale, scalehouse, maintenance shop, and office, and poured or precast concrete or wooden footings for equipment. If used, these generally will be located in the plant area, which will include parking for private vehicles of miners and visitors, and haul trucks.

Although no fencing is proposed, it may be necessary based on USFS requirements for portions of the permit may be fenced off by temporary fencing, such as three- or four-strand barbed wire or stock panels to control access. Areas undergoing reclamation will be marked off with temporary fencing or line (wire or mesh, metal or plastic) to protect those areas from disturbance.

2.4.8 STOCKPILE CONSTRUCTION

TASK 1: Stockpile soil immediately after removal (unless moved directly to an area being reclaimed).



CONDITIONS: Given very little soil anticipated on-site, including virtually none on exposed talus, and very thin layers mostly of decomposed vegetation (pine needles and other organic debris) on the upper 1-5 inches of forested area, all mixed with large rock fragments (the volcanic material being mined).

STANDARDS: Preserve as much soil and fines as possible, after providing fines (clay) needed for production of construction materials to specification, and use around fringes of mined area to allow recolonization of these areas by forbs and grasses.

PERFORMANCE MEASURES:

1. Treat decomposed organic matter as soil.
2. Shred and chip slash from tree removal and add to soil stockpiles, rather than burning or disposal elsewhere.
3. Build stockpiles with a maximum slope of 1H:1V and stabilize against erosion as necessary as they are completed.
4. Do not vegetate stockpiles to be in place for less than 12 months will NOT be vegetated
5. Do vegetate stockpiles to be in place for more than 12 months: seed with/without mulch), generally in the fall, as recommended by NRCS and required by USFS
6. Employ other erosion control measures as recommended by NRCS to prevent soil loss, including application of erosion/dust control chemicals (lignan sulfate or other approved material) and stormwater control measures, particularly silt-fencing to capture and retain sediment to preserve.
7. Construct 1-2 stockpiles adjacent to 800-foot access road, on suitable locations identified during construction of the road.
8. Construct 1 stockpile near entrance of access road onto work area, for any material salvaged from road and work area.
9. Construct berms along the downhill side of the areas being excavated to store soil.

TASK 2: Stockpile raw materials (pitrun) and finished construction materials as little as possible

CONDITIONS: Given nature of material mined (rock fragments) and terrain

STANDARDS: Minimize impact, by doing little or no stockpiling of raw materials.

PERFORMANCE MEASURES:

1. When feasible, excavate pitrun material only while a processing plant is on-site, and do any stripping immediately before such a deployment.
2. Generally, move freshly excavated material directly to the plant hoppers and load trucks directly from outfeed conveyor stockpiles to haul offsite.
3. Use portable plants on the site for limited periods of time (the processing season). As demand for material is expected for only a portion of the year (hauling season), store processed material in stockpiles (ready for loading/haul off-site) if needed.
4. Locate such stockpiles on or adjacent to the work area. Do not place material stockpiles directly on un-stripped/undisturbed or fully reclaimed land.
5. As much as possible, place stockpiles where the material will be easily available for reclamation and loading with minimal movement and re-handling.
6. Avoid using silt-fence at the toe of stockpiles as much as possible, and control sediment with shallow swales at the toe. (These will retain runoff to allow infiltration and prevent any surface runoff and mud.)

SURFACE WATER MANAGEMENT:

See Exhibit G.



2.5 Exhibit E. Reclamation Plan

2.5.1 GENERAL CONCEPT

Objective: to reclaim land affected by excavation “as you go” and as much as possible, to create a stable topography and biological community to sustain the proposed post-mining use of the land and protect downstream water quality and quantity.

Future use: scenic resource, wildlife habitat and outdoor recreation (National Forest System lands). Reclamation alternatives are very limited due to the pre-mining conditions at the site. At least seven acres of the site is virtually without significant vegetation, as it is an exposed talus consisting of large rock fragments.

Reclamation will seek to provide a stable Southwest-South facing exposed talus slope similar in appearance to the pre-mining conditions, while providing a stable pit floor and perimeter below that slope with areas of sufficient rooting-zone material to allow local, native vegetation to colonize the affected area relatively quickly. As necessary, bare soil areas not protected from wind and water erosion by talus (rock fragments) remaining after mining will be seeded with native grasses and mulched to protect the soil.

The access road and road along the Southwest-South toe of the area being mined (downhill) will remain as a permanent feature, as authorized by the USFS to allow access for monitoring of site conditions and potentially other uses. There will be no planting of trees or forbs as part of reclamation. Once the reclaimed land is released, the USFS may use the site for various purposes, some of which may involve reforestation or planting of other species for wildlife and recreational purposes, in accordance with the Forest Management Plan.

2.5.2 SPECIFIC ITEMS OF CONCERN

2. Reclaim concurrently with mining, with a one- to two-year lag, except for the work area.
3. Do not irrigate.
4. Preserve (as much as feasible) soil, including decayed organic material in the upper 1-4 inches of areas which were not originally exposed rock fragments, to be used for reclamation.
5. Place soil for reclamation either in pockets or in layers at least six inches deep over materials with few enough voids to avoid loss of soil into those voids, or place small areas of geofabric or geomembrane to form pockets to keep fine materials in soil from infiltrating into the talus.
6. The site and all surrounding property is zoned by Archuleta County as “Agricultural Forestry.”
7. As much as possible as they are mined or exposed, or screened out, stockpile soil and excess fines and move directly to their permanent locations as part of the reclamation.
8. Some affected land (plant area, roads, stockpile areas) will not be reclaimed until the end of a phase or end of the project. Roads are designed to be located and constructed properly both for mining and future post-mining use as access to portions of the site (and possibly areas off-site.)
9. Post-mining, permanent roads are to meet all USFS and County standards.



2.5.3 COMPARISON OF LAND USE (6.4.5.(2)b.)

The proposed post-mining use conforms to present and planned land use for the area. The official zoning classification by the County for the site (Agricultural Forestry, AF) will continue after mining is finished. There are no state or tribal land use plans, to our knowledge.



ARCHULETA COUNTY ZONING MAP (Extract, 18APR2022)

2.5.4 COMPLIANCE WITH RECLAMATION STANDARDS (6.4.5.(2)c.)

COMPLIANCE WITH RECLAMATION STANDARDS (6.4.5.(2)c.)

The following is provided in demonstration of compliance with state standards (Rule 3.1). Please refer to Exhibit F. The Applicant intends to comply with ALL reclamation standards, except for the specific exemptions discussed below due to site conditions. Items are worded as tasks to be accomplished.

Grading (3.1.5(1)) and Backfilling (3.1.5(2))

Task: Backfill and grade affected land after mining.

Conditions: Given: The existing natural slopes are as steep as 1H:1V, in which the talus has interlocked to form stable (or mostly stable) slopes. Assumptions: the estimated average depth of extraction will be 20 feet, with no overburden and very little or no soil (including decomposed plant material) on and around large rock particles (talus) which will NOT be mined all the way to the underlying shale.

Standards: Lower surface elevations by 20 feet or more from preexisting surface elevations. Backfill only as necessary (using talus) to buttress and stabilize slopes on the northwest edge of the pit. Actual depth of backfill, slope widths and heights will vary from area to area based on total depth of mining accomplished.

Performance Measures:

1. Do not place soil on slopes greater than 1V:1H unless material on slope consists of finer-grained material (that is, not on exposed talus).
2. Place soil in selected areas, on the Southwest/South side of the pit, in pockets or to at least six-inch depth, on finer-grained material which will not allow soil to fall or be washed into voids and lost.



3. Determine locations for placing soil as mining is completed in a given area (generally at the end of each year's operations), document and coordinate with USFS for placing soil in the next operating season. (The exact configuration cannot be selected until mining is completed in an area.
4. As much as possible for safety, avoid vertical mining faces, especially near the edges of the total mining extraction area.
5. Do not attempt to remove soil at the head of the working face (top of the naturally exposed talus, on the Northwest edge of the excavated area. This is due to the difficulty in traversing the talus slope, with safety considerations and efficacy of work.
6. Remove trees outside the primary affected area (area being excavated) as needed for safety depending on their roots and the stability of the talus upslope (both exposed and with soil/vegetation).
7. Place all backfill as engineered fill and compact to approximately 75% Proctor density or better, as field determined.
8. As much as possible (based on success of tapering the working face), cut and leave the Southwest/South exterior (perimeter) of the pit downhill at 2H:1V slope or flatter, OR where adjacent natural slopes are steeper than 2H:1V, to match adjacent slopes within 20% +/-.
9. Where necessary, reduce highwall (exposed talus) only on the Southwest/South exterior by pulling talus from top of working face back into excavation.
10. Ensure that downhill talus is exposed sufficiently (no cover of soil) to ensure that surface water infiltrates into undisturbed permeable material (the talus) and has no surface discharge with less than 100-year-frequency storm events.
11. Provide a slope matching adjacent undisturbed terrain (exposed talus) on the Northwestern (uphill) edge of the pit. This will be close to the steepest portions of the pre-mining slope of the talus.
12. Leave all talus possible exposed, for visual mitigation as per USFS requirements, especially on the Northwest face. Note: There are some areas which may be left at a permanent steeper slope of 1V:1H or steeper, based on the freshly exposed talus and basement rock conditions as evaluated by an engineer at the time of mining, and stabilized as necessary. See cross-sections in Exhibit F.

Grading to control erosion, siltation and prevent damage (3.1.5(3))

Task: Grade the surface

Conditions: Given that excavation is done on an area and that materials necessary for reclamation are available, with no further disturbance planned

Standards: Control erosion and sediment so that there is no damage to unaffected land.

Performance measures:

1. Eliminate all highwalls (mining faces) except as noted above.
2. Where highwalls of 1V:1H or steeper are left, use temporary and permanent storm water management and erosion control features on the uphill side as part of stabilization and reclamation.
3. Ensure any slopes steeper than 2H:1V at least 50 feet from all exterior permit boundaries and a horizontal distance equal to or greater than the height of the cut slope and any natural change in elevation between the back of the cut slope and the permit boundary. Note: Uncertainty about subsurface conditions is a primary reason for having a large permit area and zones in which relatively little (and minimal) impact will be made to the surface, surrounding the actual area of extraction.)
4. Prevent off-property damage due to slope failure and prevent potential slides or other damage on affected lands or outside the permit boundary.
5. Inspect all completed slopes after at least one full winter season to evaluate stability before requesting release.



6. Reinforce/repair, and further stabilize any completed slopes which show any evidence of instability after one full winter season, and delay request for release accordingly.
7. Employ detention basins, outfall armoring, and other techniques to prevent discharge of sediment and siltation off-site, and recover sediment for reclamation use, if unanticipated conditions determine that surface discharge of water is necessary,

NOTE: No mining, disturbance, or reclamation is planned within delineated wetlands or floodplains. No surface discharge is planned; all precipitation infiltrates (with limited or no evaporation).

Performance as soon as feasible (3.1.5(4))

Task: Reclaim mined areas as soon as feasible.

Conditions: Assuming no further disturbance is proposed, and area is not needed for traffic or other support (such as stockpiles), and that in general, excavation has resulted in close to final grade.

Standards: As per USFS and DRMS requirements, begin and complete all reclamation activities within one year of mining being completed in each area, and generally not more than two years after initial disturbance, and justify any delay in such a schedule.

Performance Measures:

1. Do not reclaim the work area with plant site and stockpiles until all planned excavation, processing, and shipment of materials is completed, at the end of the project
2. Identify areas where the time needed to meet reclamation standards may be longer.
3. Accomplish as much reclamation (including backfilling and grading as needed) within one year of completion of extraction of construction materials in each area.
4. Where soil is placed, seed as soon as possible based on recommendations, seasons, and weather conditions (See Exhibit J), preferably the same year as grading.

NOTE: At least 8 acres of the site will not have soil placed as part of reclamation to leave this exposed talus, especially the upper slope, clear. Some areas used for storm water controls may not be immediately reclaimed until the need is no longer present.

Refuse and acid-forming or toxic producing materials (3.1.5(5))

There is no reason to believe that toxic or acid-forming, or toxic producing materials are found or will be brought on site. Therefore, no special action is necessary to prevent leaching, protect the drainage system, or prevent unauthorized release of pollutants to surface water or groundwater, beyond that necessary for erosion control and prevention and control of spills and leaks from vehicles and equipment. Fines will be almost immediately moved to final locations for final reclamation surfaces and slopes. Normal municipal solid waste generated during operations will be hauled off-site for disposal at permitted solid waste facilities and will not be buried or burned on-site. There will be some use of various wastes, including wood waste (sawdust, bark, similar materials) for reclamation, mulches, sediment control, and other beneficial purposes. (This is primarily anticipated to be due to timbering and grubbing of the site itself. Therefore, materials of this kind will be placed in stockpiles in locations designated during various phases of mining.) No construction debris (such as materials from clearing and grubbing, asphaltic concrete rubble, Portland cement concrete rubble, and excavated soil and rock) will be brought to or used on-site. Any soils/rock contaminated (potential or actual) by hazardous materials (including water-priority chemicals) shall be treated or removed during reclamation, in accordance with standard procedures and government requirements for handling, transport, and disposal. This includes fuel, lubricants, road salts, dust control materials, cleaning products, pesticides, and unused fertilizers.

Holes, etc. (3.1.5(6))

There are no drill holes, auger holes, adits or shafts to reclaim.



Maximum slopes (3.1.5(7))

Northwest side of pit: Steep, bare talus slopes approaching the angle of repose of the talus, will be left if at all possible, as required by USFS. This requires a request for variations from normal reclamation standards, which is hereby requested.

Southwest/South side of pit: As much as possible, reclaimed excavated areas and the roadway (to be left permanently) will be graded to match unaffected slopes within the permit area, while leaving exposed talus for flow of water into the ground.

Wherever possible, and in compliance with USFS requirements, final slopes of 2H:1V or less are proposed, as compatible with surrounding conditions. No obviously manmade retaining structures or reinforcing structures will be used except immediately associated with culverts and other drainage features.

Note that the average natural existing slopes range from 5% to vertical, with the natural exposed talus slope ranging from 2:1 to near vertical.

Precise locations of very steep slopes cannot be shown in the reclamation plans due to their location being dependent on currently unknown subsurface conditions (including the contact between deposit to be mined and basement rock (shale, etc.) talus characteristics, and presence of fine materials in voids. Potentially, some technical revision with accompanying engineering stability analysis may be required during actual mining and reclamation.

Use of farm equipment (3.1.5(8))

There is no intent to use farm equipment. Access roads will be usable by standard ranching and forestry vehicles and equipment. Haul roads and access roads will be suitable for use by fire service vehicles used for wildland fire fighting.

Notice of other backfill (3.1.5(9))

Other backfill is NOT anticipated. However, the Applicant will comply with this requirement to notify the Division if other backfill is used with approval of USFS. Use of clean construction debris, such as soil, subsoil, waste rock, overburden, clean Portland or asphaltic cement concrete rubble, for backfill, to be covered by soil as appropriate for intended post-mining use, is proposed. No acid bearing materials, tailings, or other toxic or potentially toxic materials shall be used. When in doubt, standard characterization methods shall be used to evaluate the suitability of such materials for use on site. If this is done, records of off-site sources of backfill material shall be maintained for the life of the operation, in accordance with CDRMS requirements, including notarized certification statements as needed.

Prevention of unauthorized release of pollutants to surface water (3.1.5(10))

Task: Handle chemicals, equipment, materials, and mined material

Conditions: Generated and left on site, to be disposed of if not able to recycle

Standards: prevent unauthorized release of pollutants to water and comply with this requirement.

Prevention of unauthorized release of pollutants to groundwater (3.1.5(11))

Task: Handle chemicals, equipment, materials, and mined material

Conditions: Generated and left on site, to be disposed of if not able to recycle

Standards: prevent unauthorized release of pollutants to water and comply with this requirement.

General water hydrology and water quality (3.1.6(1))

Task: protect water resources quantity and quality, and avoid disturbance of hydrology in area



Conditions: Give there are no known water features/resources in the permit area, but Laughlin Creek is located near the permit area to the South, and springs along FSR-738 are believed to be fed by water flowing through the talus to be mined.

Standards: Prevent contamination, including sediment, and ensure that water flowing through the talus is not diverted or blocked: do not pond or detain water for more than 72 hours.

Performance measures:

1. Do not discharge water on the surface into waters of the State or United States.
2. Comply with applicable water and water rights and quality laws and regulations.
3. Do not dredge or fill waters of the State or United States.
4. Do not place temporary or permanent large-scale siltation structures except as required by permits and regulations.
5. Remove temporary siltation structures promptly in accordance with permits.
6. Do not generate or dispose of process water except by retention and evaporation on-site.
7. Do not retain storm water (including snow melt) for longer than 72 hours.

Note: Hydrology and water quality issues are addressed at length in Exhibit G.

Earth dams (3.1.6.(2))

Do mining only in areas which will not present potential for negative impact on the stability of any off-site earth dams. (None identified.) Do not construct earth or other dams except for potential storm water control systems. Although not anticipated to be required, for the most part, incise all water features (such as storm water detention and retention basins and perimeter swales). Construct no berms and basins able to hold 1.0 acre-foot or more of water at any time, including immediately following 24-hour, 25-year storm events, except as approved by the Colorado Division of Water Resources and are not planned to contain more than 10.0 acre-feet of water. (None proposed.) Mining is expected to remain above the normal ground water table. No permanent ponds are planned.

Erosion control (3.1.6.(3))

Stabilize all surfaces and protect to control erosion or will be made of materials (talus) less susceptible to water and wind erosion. Protect stockpiles against erosion, traffic, and weed invasion; either by seeding (temporary seed mix) or applying dust-control and crusting agents (such as lignin sulfate, mag-water, polymers or other soil treatments), wind or silt fencing. (See below and Exhibit J for seeding data, Exhibit D for additional stockpile information.)

Groundwater (3.1.7.)

The Applicant shall comply with all applicable statewide and classified standards, based on existing and reasonably potential future uses, and with new standards which may be applicable in the future. (See Exhibit G.)

The operation is designed to have no reasonable potential to adversely impact groundwater quality or quantity or cause any further lowering of quality. It is not anticipated that tributary water will be encountered in the mining. The Applicant will comply with any conditions as established by permits.

Wildlife safety and protection (3.1.8.(1))

Wildlife issues are addressed at length in Exhibit H. A buffer zone will exist between the pit and major features either on or off site. Since mining and reclamation will be done in annual steps, there will be no long-term, wide barrier to migration. The buffer zones, areas not yet mined, and reclaimed areas will provide space for wildlife to migrate around the pit operations. Weeds shall be controlled. The talus slope itself, and steeply sloped stockpiles/berms will assist in deterring wildlife and livestock from nearing the top of highwalls of greater height than steep slopes naturally occurring in the area. No



temporary fencing is proposed to reduce potential for livestock and wildlife to graze on areas being reclaimed.

Wildlife habitat management and creation (3.1.8.(2))

As the talus slope is not significant, functional wildlife habitat, and a minimal amount of forested land will be affected, no actions specifically to create or improve wildlife habitat in the permit area shall be undertaken. However, the Forest Management Plan shall be followed.

Topsoil (3.1.9.)

Task: Salvage, preserve, and reuse as much soil as possible.

Conditions: Given, soil existing on site appears to be completely inadequate in both quality and quantity to allow for reclamation according to usual DRMS standards. Including decomposed organic matter on the surface, not more than 4 inches of soil and overburden is anticipated on 7 acres (bare talus) and averages less than ½ inch, and between 4 and 42 inches in forested area (head and toe of exposed talus) on 2 acres (Southwest and South edges of pit) and appears to average (after removal of rock >1 inch) about 6 inches.

Standards: As much as possible, remove organic matter and soil prior to extraction, stockpile for protection, and place effectively to allow natural revegetation (colonization) by plant life from the surrounding area. (See discussion in Exhibits D, I and above.)

Performance measures:

1. Remove woody vegetation by timbering and grubbing prior to stripping. Save slash and smaller woody materials for use in reclamation, together with decomposed organic matter. Do not burn. (Refer to Exhibit I for detailed information on soil.)
2. Relocate soil (except that stored from road construction and preparation of work area) annually to the Southwest/South edge of the extraction area for reclamation as soon as possible.
3. If necessary, as material is available, and as authorized by USFS and DRMS, add materials to amend and improve salvaged soil. This may include fertilizers, commercial soil amendments, and non-toxic organic materials from on- or off-site (such as sawdust, fines from sediment basins, and mulch). Do this in accordance with standard forestry and agricultural practices and based on soil testing for suitability and benefit.
4. Do NOT place soil on exposed talus (large rock fragments with many voids). There are not expected to be any heavily textured backfill slopes which could have a potential for instability of soil placed on them as no soil will be placed on exposed talus.
5. Use clay and sand found under surface layers of decomposed organic material (which is relatively free of organic matter) to blend with crushed talus to meet specifications.
6. Use remaining loam and clay loam between the talus as bedding/rooting material in locations where soil is placed.
7. Place available soil (and organic material) at least six inches thick in any areas directly above shale bedrock, or where bedding material is able to fill voids sufficiently to prevent losing soil into the voids.
8. Leave bare talus as necessary. (Do not put soil in a thin layer above unmined talus with large voids.)

Revegetation (3.1.10.)

Task: Revegetate disturbed areas as much as possible and protect vegetation on the edges of the affected land.

Conditions: Given that most of the area to be mined had little or no vegetation except for specimens able to root and survive in small pockets of organic matter and soil deposited by wind.



Standards: Revegetate only areas which have soil placed, in accordance with USFS and NRCS/San Juan Conservation District, and Archuleta County Extension Agent guidance and approval. Limit revegetation to native grasses and do not attempt to revegetate bare talus per USFS requirements and assuming DRMS waiver is granted.

Performance Measures:

1. Leave existing woody and other vegetation on portions of the site not significantly affected in place to begin colonization of the areas with soil and the talus itself. Protect against damage.
2. Seed as soon as possible (weather and season permitting) areas after soil is place.
3. Seed by hand (broadcast or place and rake) areas where soil has been replaced. Do not attempt to seed bare talus, even if only a few feet between the surface of the talus and underlying shale.
4. Verify completed reclamation to DRMS with a statement prepared and signed by the USFS confirming that the site is acceptable.
5. Request waiver from DRMS standards for achieving 75% of pre-disturbance vegetative cover, particularly in those areas where talus was covered before mining and will be exposed after mining and reclamation.
6. Do not intentionally plant or transplant woody species, including trees.
7. Use weed control methods during reclamation, ONLY (Exhibit J) as approved by USFS, Conservation District and County officials and use ONLY on affected land with soil to prevent/control weed infestation.
8. Request final approval of reclamation be granted by the Colorado Department of Natural Resources after reporting, submitting the statement and verification of notifications in accordance with DNR-DRMS procedures, and inspection (including approval/acceptance by the County and USFS (landowner)).

ADD PROPOSED SEED MIX HERE - AS REQUIRED BY USFS/Environmental Assessment

SOIL, SPOIL, AND REVEGETATION (6.4.5.(2)d.)

Task: Stockpile and temporarily soil, spoil, and vegetative matter and use for revegetation.

Conditions: As discussed above, as much soil as possible is removed before and during mining and segregated in stockpiles then used for reclamation. Anticipated soil expected to be salvaged amounts to an estimated 300 CY/acre, or less than 1,000 CY total, a very small amount due to pre-existing conditions. Stockpiles for soil are located along the access road and on the Southeast/South edge of the pit, in berms along the haul road on the edge of the significantly affected area.

Standards: Protect soil and materials suitable for seeding zone use while stored. Minimize impact on undisturbed soil where stockpiles are placed. Be prepared to place soil and revegetate on access roads in USFS decides not to leave those roads in place.

Performance Measures:

1. Where soil was left at the time of building the stockpile (because soil was placed in the stockpile) and the area will not be mined for more than 12 months, the areas will be chiseled or ripped (scarified) after stored soil is moved, and the area reseeded. Soil will be replaced only on some areas which originally had soil over the talus, estimated at about 1.3 acres, to provide an average of six inch depth of soil.

Exhibit F includes cross-sections of various portions of the pit, showing a profile of the surface before and after mining, and after reclamation. Maps in Exhibit F shows scheduled reclamation by phase planned, approximate contours after mining and reclamation, and general drainage information, including probable location of various features on the exterior of the excavation area.



PLAN/SCHEDULE (6.4.5.(2)e.)

Task: Construct specific features and accomplish reclamation as listed

Conditions: during mining or reclamation

Standards: to be left in place as permanent post-reclamation features, or removed with all evidence gone on the surface, as approved by the USFS.

Performance Measures:

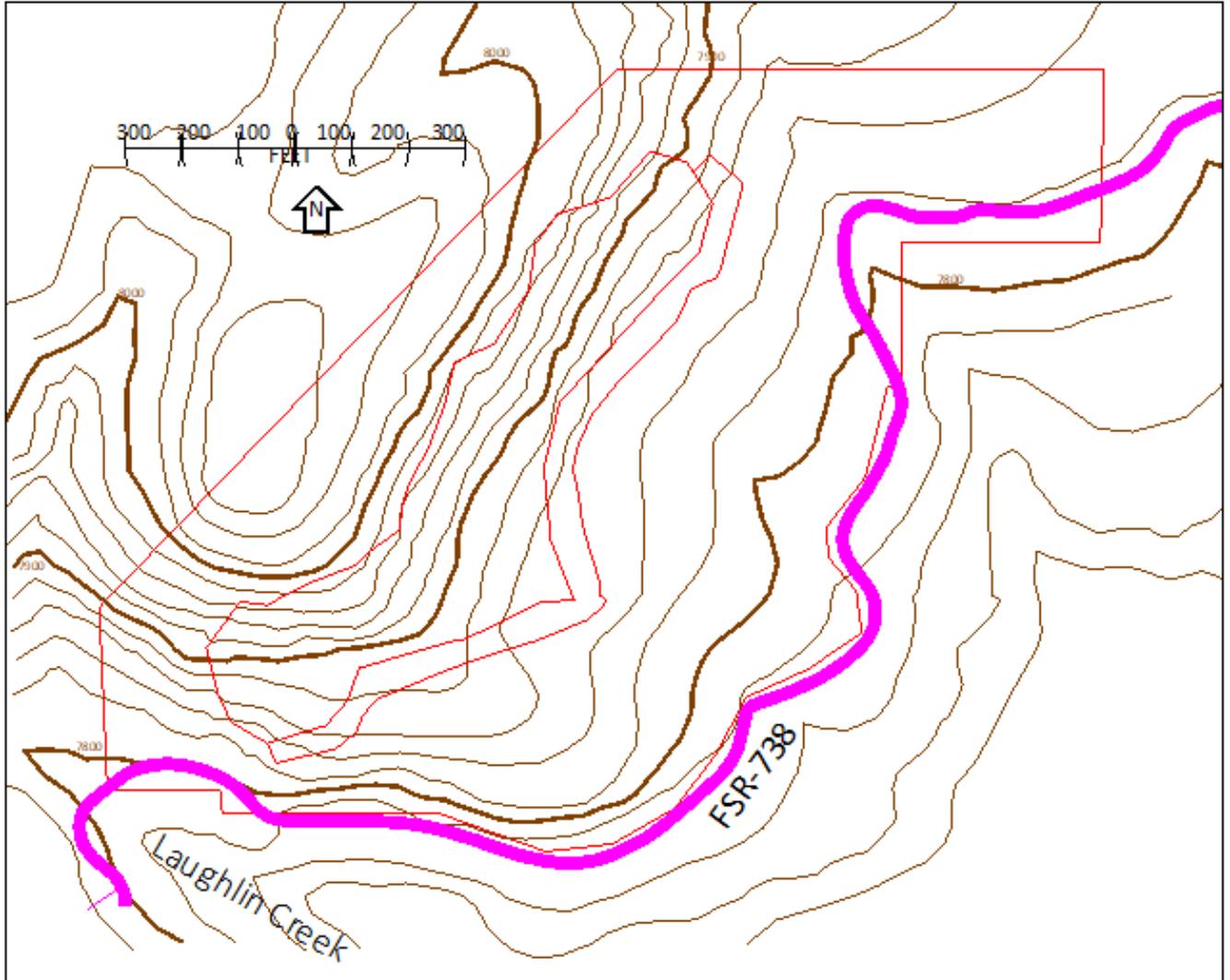
1. Build and maintain permanent access roads: approximately 2500 linear feet of 20- or 24-foot-wide County Standard roads, with possible culverts, berms, embankments, cuts, fills, and associated drainage features. Ensure that shoulder, cuts and fills are reclaimed during first year of mine operations.
2. Reclaim area initially affected during preliminary operations (in first year), at the end of the mining and last area to be reclaimed. (Work area)
3. Reclaim areas being excavated and adjacent areas with minor disturbance (for safety, water management, etc.) immediately following completion of excavation in that area once enough working room is available for continued mining adjacent to that area. (Generally 1+ acres.)
4. Mark areas that are in process of reclamation or have been reclaimed with signage, fencing, or other easily recognized methods to warn against entry and disturbance.
5. Inspect areas under reclamation quarterly for storm water, erosion, and other problems.
6. Reclaim area of first five year's phase of operations (approximately 4-5 acres) and ready for release by the second year of second phase of operation.
7. Reclaim entire site to USFS/DRMS standards not later than 2 years after mining (excavation and processing) and hauling of construction materials from the site is completed.

See Exhibit M for additional information.



2.6 Exhibit F. Reclamation Plan Maps

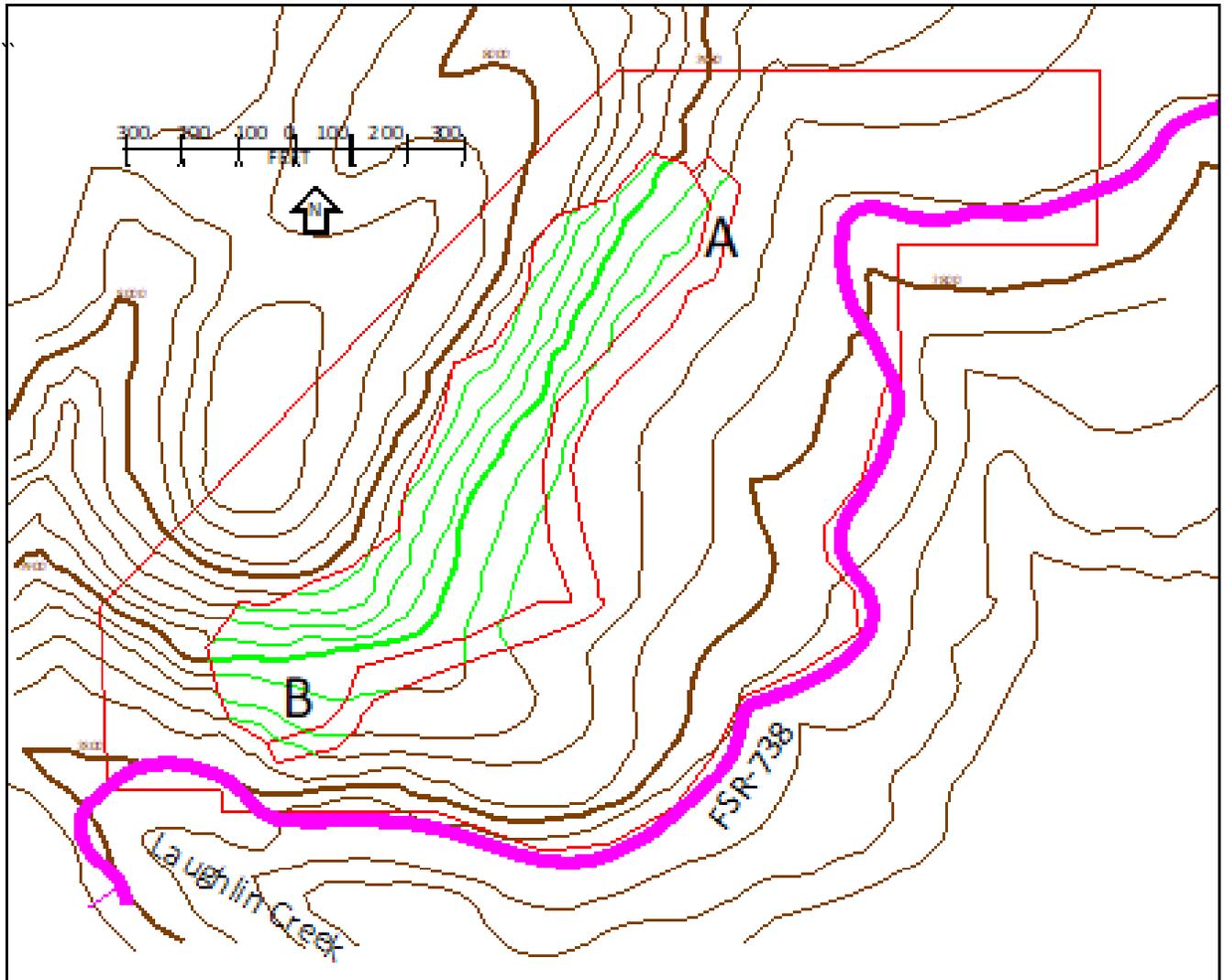
2.6.1 Pre-mining contours



Draft 1"= \sim 300 feet. Existing roads magenta; 20-foot contours (brown). Permit boundary red. Areas of maximum affect thin red lines.



2.6.2 Post-reclamation contours and features



Draft 1"=~300 feet. Existing roads magenta; new proposed permanent roads red; 20-foot contours (brown). Permit boundary red. Areas of maximum affect thin red lines. Note: 2 each 110-foot diameter level circular areas (A & B) for emergency responder use (turn-around and helipad) shown on new roads.