

Technical Memorandum


To:	Rob Zuber, P.E. Environmental Protection Specialist	From:	Jason Andrews, P.E.
Company:	Colorado Division of Reclamation Mining and Safety	Date:	July 25, 2024 Rev 1 – January 3, 2025
EA No.:	P111502		
Re:	Revision 1.1 to Exhibit E, Reclamation Plan to Mine Permit M-2015-006		
Cc:			

EXHIBIT E - RECLAMATION PLAN

Existing Conditions and Vegetation

As stated in the Construction Materials Regular (112) Operation Reclamation Permit (M-2015-006), Sprague Stone Quarry historic land use is designated as Rangeland land use. The current status of the mining operations is shown in the updated Exhibit F.1, which shows the current state of the Sprague Stone Quarry. Current topography of the mine site is provided on Exhibit F.2. Ongoing reclamation has been completed at the site in the area shown on Exhibit F.1. Areas included for final reclamation encompass the entire mine boundary (62.0 acres). The mining plan is to only activity mine up to 31.0 acres. Areas that are not being actively mined will be covered and re-graded until they are re-mined or topsoiled and seeded for final reclamation.

Common native vegetation at the quarry consists of big and little bluestem, blue grama and side-oats grama grasses with mountain mahogany and ponderosa pine. Existing vegetation will remain as is and will not be disturbed until clearing and grubbing to open new work areas (as described in the mine phasing and timetable portion of Exhibit D – Mining Plan Narrative). Present conditions consist of two open areas: a north and south pit having a total disturbed area of 6.1 acres. Reclamation has been started on 5.1 acres on the southeast side of the site. There is 5.8 acres of surface disturbance used for storage of mined material across the site. There are approximately 5.6 acres of surface disturbance used for roadways within the permit boundary. There are approximately 10.4 acres of surface disturbance that has been backfilled and graded. The total current disturbance, subtracting the areas that have begun reclamation, is approximately 27.9 acres.

The mining operator has installed tee posts with white PVC pipe over the top as physical markers at each corner of the permit boundary to prevent accidental disturbance. All overburden and topsoil will remain on site, in stockpile areas, and be used for reclamation upon closure.

Future total disturbance areas will be limited by agreement between the State of Colorado Division of Reclamation, Mining, and Safety and the Operator of the mine. This limitation will be set according to the area of disturbance that has been bonded by the operator of the mine. A map for future mining areas is provided as Exhibit F.3. Future active mining will be limited to 31.0 acres of active mining disturbance, storage areas, roadways. Areas more than 31.0 acres of active mining will be backfilled and re-graded and will not be considered part of the 31.0 acres of active mining.

When final reclamation has begun on a site the operator will notify the State of Colorado Division of Reclamation, Mining and Safety of this activity so that proper documentation and approval is continued.

Vegetation Restoration

Topsoil shall be removed and segregated from other soils during mining. Areas of topsoil replacement will be approximately 4 inches in depth. Topsoil will be stored in a designated area near the upper south side of the quarry. The location for topsoil storage has been chosen for the natural ability to protect the topsoil from erosion, it will also have a soil berm or silt fence in place around the perimeter. If the topsoil does not get used within a year of its placement, it will be seeded with the approved "High Plains/Foothills" grass mix. Noxious weed-free mulch will be mixed in with the topsoil prior to distribution.

Fertilizers:

The goal of the fertilizer is not to change site potential but restore it by:

- Restoring soil attributes lost during stripping, stockpiling, spreading, and cultivating.
- Facilitating germination and establishment of native plants.

The specific types of fertilizers used will depend on the time of year they are applied, and the amount of moisture found in the soil. After soils inspection, a specific fertilizer can then be recommended. We have assumed that fertilizer will need to be applied over the entire 62.0 acres at the time of final reclamation.

Seed Mix:

High Plains/Foothills Grass seed mix is designed for where no irrigation is present. It will grow on annual precipitation and will survive on a minimum of 10 inches of annual rainfall.

High Plains/Foothills Grass mix contains the following species:

15%	Western Wheatgrass	5%	Switchgrass
10%	Slender Wheatgrass	10%	Little Bluestem
4%	Big Bluestem	5%	Indian Grass
14%	Side Oats-Grama	1%	Sand Dropseed

10%	Blue Grama	3%	Prairie Dropseed
10%	Buffalograss	5%	Green Needle Grass
8%	Indian Ricegrass		

This is a specific blend for the foothill areas in the Rocky Mountain regions. A broadcasting method of planting will most likely be used. In the event the mining operator is unable to obtain the High Plains/Foothills grass mix at the time of reclamation, a technical revision will be submitted for the approval of a revised seed mix. We have consulted with Granite Seed and Erosion Control and they indicated an application rate of 16.0 pls/acre. The entire 62.0 acres will be reseeded for final reclamation.

Final Reclamation:

Concurrent reclamation to non-active mining areas will begin upon completion of the quarried areas more than the approved 31.0 acres of active mining. Specific mining techniques and practices used to strip, store, process and spread overburden on the reclamation area are as follows: The overburden that was stripped from the active mining area is currently spread over the working bench with an excavator. The native soil and ground surface is rocky with little to no topsoil. Thus, for final reclamation the site will be regraded with a minimum of 4 inches of overburden. As a result of the concurrent reclamation during operations only a maximum of 31.0 acres of area will require placement of overburden at the time of closure. A total maximum of 16,671 cy of overburden is to be placed for final reclamation of the site. Waste rock material is currently less than 18 inches in diameter and can be pushed with a dozer.

Due to the minimal amount of native topsoil for final regarding after mining will consist of placement of a minimum thickness of 4 inches of overburden/growth media. The growth media will consist of overburden with fertilizer. The storage areas and roadways shown on Exhibit F.1 require very little grading and minimal growth media placement due to the fact that the ground surface has been left close to pre-mining conditions. The topsoil placement will take place over all 62.0 acres will result in the need to grade 33,423 cubic yards of topsoil. All growth media needed for reclamation is located on site in stockpiles and will not need to be imported from another location.

The site is approximately 2,300 feet long by 1,300 feet wide. Thus, The longest haul distance will be less than 2,000 feet and on average the longest haul/push distance will be less than 1,000 feet. Given the steep natural slopes in the area, it is anticipated that final closure will be completed with a dozer. We have assumed that the entire 62.0 acres will need to be revegetated and fertilized.