

Technical Memorandum


To:	Rob Zuber, P.E. Environmental Protection Specialist	From:	Jason Andrews, P.E.
Company:	Colorado Division of Reclamation Mining and Safety	Date:	February 13, 2025
EA No.:	P111502		
Re:	Revision 1.1 to Exhibit D, Mining Plan Narrative Permit M-2015-006		
Cc:			

EXHIBIT D – MINING PLAN NARRITIVE

Mining Operations

The Sprague Stone Quarry has been operating for +50 years. Overburden has been leveled off to provide working decks/platforms as stone is excavated from the slopes. Areas proposed to be worked are stripped of overburden that is replaced when the working area is depleted of stone.

The stone is quarried by heavy equipment such as front-end loaders, as well as by hand with tools such as wedges and crowbars. Blasting does not take place at the Sprague Stone Quarry, and the material is processed according to its intended use.

1. Building stone and dimension stone are cut on a hydraulic stone cutter.
2. Flagstone is sorted as it is quarried.
3. Some waste stone is sold as rip-rap material.

After the active quarried area is depleted or the market demand for that material has diminished the overburden will be replaced, and the area will be rough graded.

Site Overburden and Underlying Strata

Site overburden mapped as being comprised of zero to five inches of loam, followed by up to 15 inches of very parachannery loam (USDA, 2003). However, during site visits there is little to no overburden was observed. The underlying minable material is comprised of Lyons Sandstone formation (Ply), a red and pink fine to very fine grained well-sorted cross bedded sandstone, Lykins formation (TrPI) a red siltstone and fine-grained sandstone overlying crinkled gypsum,

(USGS, 1970). This Lyons Sandstone and Lykins Formation dips to the east and is mapped to extend below the final depth of the mine.

Mining Operation

Current mining conditions are presented on Exhibits C.1 and C.2. There are five distinct uses of land that total 33.1 acres. The current 33.1 acres of disturbance consist of 4.1 acres being actively quarried, 5.6 acres used to store quarried product, 5.6 acres of roadway, 0.7 acres of topsoil storage, 12.0 acres of previously quarried area that has been backfilled and re-graded, and 5.1 acres subject to active reclamation.

Mining Roads

Roadways and access points change during the mining operation to accommodate new excavated areas. Roadways are constructed by rough grading the access path with onsite equipment such as front end loaders to an acceptable slope and constructing berms along the roads to manage surface water runoff. Roadway dimensions vary across the site and are determined to accommodate on-site equipment. The average roadway width is approximately 16 feet.

Mining Operation Phasing

The operator will complete active mining from a maximum of 31.0 acres at any given time within permitted 62.0 acres as shown on Figure C.3. Any areas of disturbance over the 31.0 acres will be backfilled with a minimum of 4 inches of overburden before new active areas of mining are commenced. When an active work area is backfilled and re-graded that acreage is not counted against the 31.0 acres of available active mining.

After the active mining are backfilled and re-graded, they are still considered “disturbed” and may be re-mined as dictated by economic conditions. All acreage used for storage, roadway, and backfilled re-graded work areas will be subject to final reclamation and seeding as discussed in the reclamation plan (Exhibit E). Reclamation activities for areas of regraded areas is limited to the spreading of growth media, and re-seeding. Specific mining information is noted below.

- A. No more than 31.0 acres of area can be actively mined at any one time.
- B. Once a work area is depleted, the operator will backfill and re-grade the work area with a minimum of 4 inches of on-site overburden material.
- C. All disturbed areas within the 62.0 acres of the permitted area is subject to growth media placement and re-seeding.
- D. There are no anticipated impacts to surface or groundwater during quarrying.

Estimated Mining Operation Timetable

Due to the uncertain nature of the market for stone, a traditional mining timetable is not applicable. It is assumed that mining will continue to follow historical trends.

Mining Operation Blasting Plan

At the present time, the operator/owner does not have a license to blast. If, at any time, the operator/owner intends to blast, the appropriate licenses will be acquired.

References

- Braddock, W.A., et al. (1970). Geologic Map of the Masonville Quadrangle, Larimer County, Colorado. United States Geological Survey, (USGS). National Geological Map Database. Retrieved January, 2025.
- United States Department of Agriculture. (USDA). (2003). 86 – Roberts ranch Rock Outcrop Kirtley Complex. Natural Resources Conservation Service, Web Soil Survey. Retrieved January 2025.