of Mine Workings Workings (Life of Mine)	Surface to 1,500' max	Surface to 2,300' max	Surface to 1,500' max

The anticipated number of total surface land acres to be affected (life of mines) is less than the combined total of the affected acreages for each of the three mines due to the overlapping of mining operations which is inherent to this multi-seam mining operation. The total surface acreage to be disturbed by surface facilities associated with underground mining is ~~122.31~~125.31 acres.

The following information was based on projection for the next five years (2012-2016).

	Mine No. 1	Mine No. 2	Mine No. 3
Extent of Horizontal Workings	240 acres	375 acres	1,400 acres
Extent of Vertical Workings	Surface to 1,250'	Surface to 2,250'	Surface to 2,125'

Permit Area

The construction/installation of surface facilities at the mine site, loading area, conveyor belt route, well houses, water tank pad, waste rock disposal site, and South Fork Breakout, and Winter Quarters Ventilation Facility comprise the Permit Area. The permit area acreage listed adequately accommodate areas of disturbance.

PERMIT AREAS TO BE RECLAIMED

AREA		ACREAGE
Loadout	13.86	
Portal Yard		42.55
Water tanks, water lines, and Well pads (water lines not reclaimed		0.60
Conveyor Bench	14.18	
Waste Rock Disposal Site and Road		32.48
South Fork Breakout		0.96
James Canyon Buried Power Line	0.30	
James Canyon Buried Pipeline		1.60
James Canyon Water Wells and Road		2.95
Winter Quarters Ventilation Facility		7.93
Winter Quarters Road (not reclaimed)		4.90
North of Graben (NOG) Shaft		3.00
TOTAL		~~122.31~~125.31

North of Graben (NOG)Bleeder Shaft

A detailed description of the soils associated with the NOG Bleeder Shaft is available in Appendix A-2, Volume 2, titled, "Order 2 Soil Survey of the North of Graben (NOG) Bleeder Shaft Area" (January 16, 2015). The survey conducted by Long Resources Consultants, Inc. provides a comprehensive assessment of the various soils within the area. The permit area encompasses approximately 3.0 acres. The soil type is represented by the McCadden Family, with shallow soil depths overlying shallow sandstone bedrock. It is considered to have good-to-fair available water capacity, and fair-to-good reclamation material with pH values ranging 6.2 - 7.0 and a saturation range of 44.1 - 72 percent. The soil pit (14SKY07) sampled at the site location identified a rich A-horizon of approximately 4-inches. The entire A-horizon will be salvaged. Where there is less than six-inches in the A horizon, up to 4-inches of the subsoil (Bw1 horizon) will be collected and stockpiled for reclamation. Quality control for the salvage of the topsoil will be primarily by color conducted under the guidance of trained personnel. To confirm the nutrient status of the topsoil, an analysis of the available nitrogen, phosphorus, and potassium will be conducted once the material is placed in the topsoil pile. At post-construction of the site, an as-built survey of the site will be conducted to confirm the amount of topsoil salvaged.

Topsoil to be removed from the North of Graben (NOG) Bleeder Shaft area will be collected from the disturbed area as construction advances. Based on the Order 2 Soil survey (See Appendix A-2, Long Resources Consultants, Inc.) the depth of suitable topsoil will be approximately 4-inches from the A-horizon and up to 4-inches of the B-horizon if necessary. Construction will take place predominantly on the south-facing slope (Soil Profile 14SKY07) dominated by quaking aspen, mountain big sagebrush and grasses. Brush and topsoil will be salvaged simultaneously and stored in the designated topsoil storage area. Larger trees will be placed in a brush pile within the disturbed area to be redistributed at reclamation. A small portion of the existing US Forest service road will be re-routed to utilize flat, previously disturbed areas adjacent to the road. The north slope is dominated by Englemann spruce, and other conifers.

The soils identified in the survey are classified as loam and sandy-loam. The slope is 41 percent. The taxonomic classification is McCadden family, lithic Haplocryolls loamy-skeletal, mixed superactive. At site 14SKY07, which is most representative of the site, the EC values range from 0.23-.037dS/m, Sodium Absorption Ration (SAR) 0.14-0.21, and an estimated Available Water Capacity range of 0.76-1.35 in/ft. - all acceptable ranges to use the available material. The topsoil stockpile is designed to store approximately 1,129 cu-yds of material, and an as-built survey of the pile and site will be conducted at post-construction to confirm the amount of material salvaged. The topsoil stockpile will be located at the west end of the disturbed area where the pad access road leaves the USFS road (See Plates 3.2.4-5A through -5C). Prior to re-distribution, a sampling of the nutrient content (N:P:K) will be conducted to determine the need for fertilizer application when compared to the baseline information. See Section 4.6.3 for Topsoil Protection measures.

4.6.2 Topsoil Stockpile

Topsoil is stored within areas of the permit boundary which will not be routinely disturbed (See Maps 3.2.1-1, 3.2.1-3, 3.2.4-3A, 3.2.8-2, 3.2.11-1, and Volume 5 Section 24). Four topsoil stockpile areas are utilized: the first at the portal area, the second at the loadout facility, the third at the South Fork Breakout area, the thirdfourth at

4.6.6 Winter Quarters Ventilation Facility Topsoil Redistribution

Topsoil redistribution will commence once removal of all facilities and modification of the pad site to achieve the approximate original contours (AOC) is completed. Distribution of the topsoil will take place immediately prior to re-vegetation activities to minimize erosion. Topsoil will be placed with a bulldozer or comparable machinery to approximate grade. Following topsoil placement to approximate grade, a trackhoe or comparable machinery will deep-gouge or roughen the surface prior to commencement of re-vegetation activities.

4.6.7 NOG Bleeder Shaft Topsoil Redistribution

The topsoil redistribution will start one-year after the shaft has been backfilled to allow for settling, any facilities have been removed, and the earthwork has regarded the road and pad to the approximate original contours (AOC). Re-vegetation activities will immediately follow the distribution of topsoil to minimize erosion. Topsoil will be placed with a bulldozer or comparable machinery to approximate grade, followed by deep-gouging of the surface. Mulch, matting or other best technology currently available (BTCA) will be used as a top-dressing once seed has been distributed.

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4.7.9 Winter Quarters Ventilation Facility (WQVF)

Refer to both Section 2.7 and the Mt. Nebo Vegetation report located in Appendix A-2, Volume 2 for a discussion of the vegetation for the WQVF. The interim and final revegetation seed mixes for the WQVF area are listed in Tables 4.7-8A through 4.7-8C. Reclamation success standards are based on the reference area(s) identified in the Mt. Nebo report. Noxious plants invading the WQVF permit area will be controlled by hand-grubbing, and/or approved herbicides. Surveillance will be monitored annually during the liability period.

4.7.10 NOG Bleeder Shaft

Refer to both Section 2.7 and the Mt. Nebo Vegetation report located in Appendix A-2 Volume 2 for a discussion of the vegetation of the NOG Bleeder Shaft site. Portions of the area were previously disturbed and re-vegetated, while other portions are undisturbed. Both the interim and final re-vegetation seed mixes are listed in Tables 4.7.-10A and -10B, with the areas seeded being top-dressed mulch, straw, or matting when the seed is distributed. Reclamation success standards are based on the reference areas identified in the Mt. Nebo report. Noxious weeds will be controlled during the liability period. Sediment control structures used during construction such as silt fencing and straw bales will remain in place for one year after construction and will be removed anytime thereafter. Erosion control blankets, wattles, or straw bales will be used to control erosion during interim vegetation establishment.