

## EXHIBIT E – RECLAMATION PLAN

### 1.0 INTRODUCTION

This Exhibit describes the plans and processes involved in reclaiming the site and transforming it to its ultimate post-mining use as rangeland with groundwater lakes as shown on Exhibit F, Sheet F-1. Reclamation will occur contemporaneously as portions of the permit area are mined. Final reclamation of the permit area will occur after the cessation of all mining activities. Current use of the permit area is that of fenced rangeland with a history of being overgrazed. Final use of the permit area is proposed to be rangeland with a groundwater lake for the benefit of local wildlife. Pursuant to Rule 6.4.5.2.(b), the applicant evaluated the proposed post-mining land use regarding adopted state and local land use plans for this area and land uses in the vicinity. The proposed post-mining use as rangeland with an open water pond is compatible and will fit into the general character of the area.

The affected area of this site is the same as the permit area of this site and contains 75.6 acres, not all of which will be disturbed and thus require reclamation. The table below provides a summary of intended end uses within the affected area upon completion of reclamation as proposed on Map F-1.

**Table E-1: Reclamation Areas**

Description	Area (Acres)
Permanent Gravel Access Road	1±
Areas Disturbed and Reclaimed to Rangeland and Other <sup>1</sup>	27±
Area Disturbed and Reclaimed to Groundwater Lakes	26±
Undisturbed Area within the Affected Area <sup>2</sup>	21.6±
<b>Total Affected Area</b>	<b>75.6</b>

### 2.0 GENERAL RECLAMATION PLAN

As detailed in Exhibit D, mining will occur in two phases. Reclamation is discussed below for both phases.

#### 2.1 Phase 1

Phase 1 is divided into Phase 1 North (area north of a drainage easement) and Phase 1 South (area south of the drainage easement). During Phase 1, the screening berms will be constructed on the site. The plan is for berms to remain on the site throughout the life of the mine and the berm on the south side that wraps around to the east edge to remain even after reclamation. Topsoil at the base of both berms will be placed in windrows at right angles to the slope for stormwater control and erosion protection. Phase 1 North and Phase 1 South will be mined to create broad bowls of 3H:1V slopes surrounding a flat area. As mining is completed in Phase 1 North, it will be reclaimed by covering the area with overburden followed by topsoil and seeded with the seed mix found in Table E-3, below. Final reclamation of Phase 1 North will involve the creation of rangeland vegetation on dry ground except for the lined augmentation pond that will be in the northwest corner of Phase 1 North and the area that is proposed to be mined as part of Phase 2. As mining is completed in Phase 1 South, overburden and topsoil will be placed on the 3H:1V slopes outside of the future Phase 2 mining area and the slopes will be revegetated with the seed mix found in Table E-3. The Phase 2 mining areas will not need to be reclaimed as it is anticipated that these areas will be mined out to become groundwater lakes.

<sup>1</sup> A 2.9± acre lined augmentation pond is also planned to be situated in this area.

<sup>2</sup> Undisturbed area includes wetlands, buffers, and incidental areas within the permit where no disturbance will occur.

The decreed irrigation water rights associated with the site will be used, as necessary, to establish vegetation. Efforts will be made to not strip any topsoil until it can be directly placed on areas ready for reclamation; however, when necessary, topsoil may be stored in a temporary stockpile area shown on Exhibit C, Sheet C-2A.

## 2.2 Phase 2 Reclamation Plan

Phase 2 involves wet mining the Phase 2 footprint (see Exhibit C, Sheet C-2B). Therefore, there will be no need for further contemporaneous reclamation during Phase 2 as the excavating in this phase will occur below the water table. All side-slopes leading down to the expected lake elevation will have been fully reclaimed during Phase 1. The Phase 2 mining areas are not being dewatered; instead they are being wet mined because the final end-use for the areas is groundwater lakes.

## 2.3 Topsoil and Overburden Handling

It is not anticipated that any topsoil will need to be imported for the reclamation process, even at the point of greatest disturbance. The scenario of peak simultaneous disturbance requiring reclamation occurs at the end of mining Phase 1 when the side slopes around the Phase 2 mining areas are disturbed prior to beginning the mining of Phase 2. Reclamation will only be necessary in these areas if Phase 2 mining is not pursued. Exhibit F, Sheet F-2 shows how the site will be reclaimed if Phase 2 mining does not occur. If Phase 2 is not mined and it needs to be reclaimed, the topsoil that will have been used to create screening berms on the north and west sides of the site will provide enough topsoil to reclaim the Phase 2 areas.

Overburden and topsoil stripped during mining will either be used to construct screening berms, stored in the temporary stockpile area in Phase 1 or will be directly placed as part of contemporaneous reclamation. Topsoil and overburden that is stockpiled will be kept in separate piles in the temporary stockpile area. All the overburden and topsoil will be used on the site for reclamation.

Tables E-2 a and b, below, outline the topsoil and overburden material balance calculations during reclamation and during the greatest disturbance area scenario. Any topsoil remaining in the topsoil stockpile at the end of Phase 2 mining will be used for reclamation. Excess overburden or topsoil generated during mining will be placed in reclaimed areas. Overburden will not be stripped from berm or road areas. To calculate the topsoil stripping and replacement volumes in the table below, a maximum topsoil depth of six inches was assumed.

**Table E-2a: Topsoil and Overburden Material Balances During Reclamation per Reclamation Plan F-1 (Phase 1 and Phase 2 mining complete)**

	Material Generated by Mining (CY) <sup>3</sup>	Material Used in South Berm (CY) <sup>4</sup>	Material Required for Reclamation (CY) <sup>5</sup>	Material Used for Reclamation (CY) <sup>6</sup>
Topsoil	43,560	1,540	21,780	42,020
Overburden	87,120	13,159	0	73,961

<sup>3</sup> Amount of topsoil and overburden stripped during mining based on soil survey assumed thicknesses.

<sup>4</sup> Amount of topsoil and overburden to be used to construct the permanent berm on the south side of the site.

<sup>5</sup> "Material Required for Reclamation" is the amount of material necessary to ensure the areas that need to be reclaimed will have about 6 inches of topsoil.

<sup>6</sup> "Material Used for Reclamation" reflects the amount of material that will be placed during reclamation in order to use all the excess material on site. It should be noted that even in the case of Phase 2 not being executed, there is more topsoil that will be used for reclamation compared to what is required because of the topsoil that was stripped to construct the permanent access road.

**Table E-2b: Topsoil and Overburden Material Balances During Reclamation per Reclamation Plan F-2 (Phase 1 mining complete, Phase 2 mining not executed)**

	Material Generated by Mining (CY) <sup>3</sup>	Material Used in South Berm (CY) <sup>4</sup>	Material Required for Reclamation (CY) <sup>5</sup>	Material Used for Reclamation (CY) <sup>6</sup>
Topsoil	43,560	1,540	41,213	42,020
Overburden	87,120	13,159	0	73,961

As demonstrated in Tables E-2a and E2b, topsoil generated by stripping will be more than enough to successfully reclaim all disturbed areas in either the full mining scenario (Phase 1 and Phase 2 mined) or the greatest disturbance area scenario (Phase 1 mined, Phase 2 mining not executed). In the case of full mining through the end of Phase 2, the presence of 26±-acres of groundwater lake will reduce the final topsoil requirements for reclamation. In the greatest disturbance area scenario where almost all of the ground in the mining cell area will be stripped, there is enough topsoil to cover the entire area with the exception of the site access road which will remain in place to provide a permanent access to the site from Highway 9.

## 2.4 Final Use

The total affected area on the site is 75.6 acres, the same as the permit area. Up to 54.0 acres will be disturbed due to mining activities. When the site is fully reclaimed, the final use of the affected area will be 26±-acres of groundwater lake (covered by a Water Court decreed plan of augmentation) surrounded by 48.6 acres of rangeland with a 1.0-acre access road into the site as depicted on Exhibit F, Sheet F-1. The post-mining land use will be compatible with the current existing land uses in the area.

## 3.0 TOPSOIL AND REVEGETATION PLAN

Throughout the reclamation process, the soil profile will be reconstructed using overburden as the sub soil followed by replacement of topsoil on the surface to create a new growth medium profile. Overburden and topsoil will be replaced on all disturbed areas except those areas that will become the groundwater lake and the permanent access road that will remain following reclamation. If Phase 2 is mined to create groundwater lakes, the topsoil screening berms that will be built on the north end of the site will remain. If the groundwater lakes are not developed, then the topsoil from these berms will be used to reclaim the 26±-acres in the Phase 2 area to be the same as all other rangeland areas (see Exhibit F, Sheet F-2). The depth of topsoil on the site following reclamation will be consistent with the amount of topsoil currently found on the site. No topsoil will be exported from or imported to the site.

The seed mix chosen for revegetation of the site was selected because it will provide forage for wildlife (as requested by Colorado Parks and Wildlife) and establish a diverse, effective, and long-lasting vegetative cover that is capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer, and it will provide equal or better coverage than the existing vegetation. Plantings will be limited to grasses, forbs, and trees that are well-suited to the property considering the soils and climate.

An on-site water truck or an installed on-site irrigation system will be used to irrigate the grasses and trees on the berms. The existing decreed irrigation water rights associated with the site may be used, as necessary, to assist with revegetation efforts. Irrigation will be tapered off during year two as the plants become established to acclimate the vegetation to a non-irrigated regime. The revegetation plan considers environmental factors such as seasonal patterns of precipitation; temperature and wind; soil texture and fertility; slope stability; and direction of slope faces to provide the greatest probability of success with plant establishment and vegetation development.

The applicant contacted the local NRCS office to obtain a recommendation for a seed mixture to be used during reclamation. The field office personnel directed the applicant to the Plant Materials Technical Note

No. 59 (revised)<sup>7</sup>. The seed mix listed in Table E-3, below, will be used to revegetate the disturbed areas to be reclaimed as rangeland; the seed mix will also be used for the screening berms.

The proposed permanent rangeland seed mix (Table E-3) was developed for the Peak Ranch Resource site with feedback from Colorado Parks and Wildlife (CPW). Note that the rates given in Table E-3 are for a drilled application rate and rates will be double for a broadcast application.

**Table E-3: Permanent Rangeland Seed Mix (revised December 2020 per CPW feedback)**

Species	Plant Type (Percentage of Grasses based on number of seeds)	Project Seed Mix Drill Rate (pounds PLS per acre)
<b>Grasses</b>		
Mountain brome	Bunchgrass (10%)	2.7
Prairie junegrass	Bunchgrass (10%)	0.1
Muttongrass	Bunchgrass (10%)	0.2
Bottlebrush squirreltail	Bunchgrass (10%)	0.9
Indian ricegrass	Bunchgrass (10%)	1.2
Thickspike wheatgrass (Critana)	Sodformer (25%)	2.8
Western wheatgrass (Arriba)	Sodformer (25%)	4.0
<b>Total for grass species</b>		<b>11.9</b>
<b>Forbs and Shrubs</b>		
Lewis flax	Forb – annual	0.8
Rocky Mountain penstemon	Forb – perennial	0.5
Mountain big sagebrush	Shrub	0.4
<b>Total for forb and shrub species</b>		<b>1.7</b>
<b>TOTAL SEED MIX – POUNDS PLS PER ACRE</b>		<b>13.6</b>

Seed Mix Notes:

1. PLS = Pure Live Seed
2. The seed mixture design process follows NRCS guidance in Plant Materials Technical Note No. 59 (revised), March 2012: (a) Native species are selected based on suitability within the NRCS MLRA E-48B and elevation range; (b) Species appropriate for range and/or pasture are included in the selected grasses (along with species identified on site); (c) Critical Area Planting rates for grasses are used for mined land conditions, with sodformers comprising a minimum of 50% of the grasses.
3. The seed mixture also incorporates input from Colorado Parks and Wildlife (CPW) on appropriate grass, forb, and shrub species.

If an area is ready for seeding outside the optimal times for permanent seeding, fast growing annual cover crops may be planted to reduce erosion and dust generation during the first summer. The proposed seed mix for the Annual Cover Crop is listed in Table E-4, below. In this event, the permanent seed crop will be planted in the fall of that year. Permanent seeding windows in this area are typically before May 15 in the spring and after October 1 in the fall.

<sup>7</sup> [https://www.nrc.usda.gov/Intranet/FSE\\_DOCUMENTS/nrcs144p2\\_061698.pdf](https://www.nrc.usda.gov/Intranet/FSE_DOCUMENTS/nrcs144p2_061698.pdf)

**Table E-4: Annual Cover Crop Seed Mix**

Species	Drill Seeded Rate (lbs PLS per acre)
Annual Oats	30
<b>OR</b>	
Sterile Triticale	30

To ensure the establishment of a diverse and long-lasting vegetative cover, the Operator will employ site preparation techniques and protection. The soil shall be mechanically conditioned using discs and rippers, mulch will be spread and crimped after seeding, and temporary irrigation may be employed to ensure germination of as many seedlings as possible. Drill seeding will be utilized throughout the site.

Certified weed free mulch will be crimped into the surface at 2000 lbs. per-acre. Furrows from disking will be left in the topsoil to provide moisture concentration and shade areas to promote better conditions for successful vegetation establishment. Seeding will occur in the first favorable season following the placement of topsoil.

The site will be prepared to provide the best chance of vegetation establishment by completing the following as recommended by the NRCS in the Plant materials Technical Note No. 59:

*“The seedbed should be well settled and firm but friable enough that seed can be drilled at the recommended depth. Soils that have been compacted by traffic or other equipment should be tilled (deep-chiseled or ripped if necessary) to break up restrictive or compacted layers and then harrowed*

*and rolled or packed to prepare the required firm seedbed. Avoid seedbed preparation when the soil is wet to prevent compaction of the seedbed. Planting depth less than 1-inch.”*

Forest planting is not the reclamation choice for this property; however, trees will be strategically placed in order to minimize the visual impacts of the operation from adjacent properties. The general locations of tree plantings are shown on Maps C-2A, C-2B, and F-1. Final locations and quantities will be field selected to maximize screening effectiveness. Table E-5 lists the trees that will be planted in the northwest and southwest corners of the site.

**Table E-5: Tree Plantings**

Species	Caliper/Height	Quantity (estimated)
Lanceleaf Cottonwood	3-inch caliper	5
Quaking Aspen	3-inch caliper	11
Colorado Blue Spruce	5-8 feet tall	4

## 4.0 RECLAMATION TIMING

Screening berms will be seeded within 90 days of their construction using the permanent rangeland grass mixture. These berms will be irrigated for two years using either the on-site water truck or an installed on-site irrigation system. Diversions under the decreed irrigation water rights associated with the site will be used, as necessary, to provide the irrigation water supply. The southern berm will be permanent. The berms on the north and west edges will only be removed if the topsoil from those berms are needed to reclaim the Phase 2 area if the Phase 2 area is not mined to create open water ponds. If Phase 2 mining occurs, the topsoil forming the berms on the north and west edges will not be needed for reclamation and therefore these berms would remain in place on the site following reclamation.

All reclamation will be completed within five years of the beginning of reclamation in a specific stage or phase and all reclamation will be complete within five years of the end of mining. Table E-6, below, summarizes the timing of reclamation throughout the life of the mine. The anticipated timing is based on a

10-15-year mine life, depending on market conditions. If the mine life is extended, the appropriate years will be added to the timeline to accommodate reclamation.

**Table E-6: Reclamation Timetable**

Years	Activity
1-2±	Phase 1 mining and contemporaneous reclamation within phase
2-3±	Phase 1 mining and contemporaneous reclamation of slopes above Phase 2 footprint
3-13±	Phase 2 mining, no required reclamation
13±	Removal of all portable equipment, fuel tanks, and pump set; reclamation of remaining disturbed areas
13-15±	Revegetation monitoring

## 5.0 POST-RECLAMATION SITE DRAINAGE

Exhibit F, Sheet F-1 shows arrows indicating the approximate direction of drainage throughout the site within the affected area. Runoff from the property located to the south of the site will continue to flow to the northwest, along the southern berm to the Blue River. Runoff from east of the project area will be conveyed under Colorado Highway 9 in culverts and then to the Blue River via the Town of Breckenridge drainage easement that bisects the site. Runoff that falls on the inside of the berms will drain into the reclaimed mining areas and the water will flow into the groundwater pond or infiltrate the underlying alluvium. Runoff that falls on the outside of the vegetated berms will ultimately flow into the Blue River.

## 6.0 WEED CONTROL

Vegetation management is a critical component of successful reclamation. Invasive species can have a deleterious effect on the successful establishment of desirable vegetation in a post-mining reclamation effort and on adjacent properties. Therefore, Peak Materials will implement the following plan to serve as guidance in managing invasive species on the Peak Ranch Resource property from pre-disturbance throughout mining and final reclamation. The plan is composed of three elements:

- Identification of Target Species,
- Strategies for Control Methods and Treatment Windows and
- Monitoring and Follow-up.

More details are provided below.

### 6.1 Identification of Target Species

A weed monitoring survey will be conducted at the site in the spring of each year when species can be most easily and clearly be identified. This will likely occur sometime between May and early June. The survey will concentrate on species listed in the Colorado Noxious Weed Act including the A, B and C Lists and the Watch List, with particular attention paid to the Summit County Weed Management Plan subset of these lists. Occurrences of any of the species included on these lists will be located on a map, monitored on a bi-annual basis, and included with the Annual Report.

Canadian thistle is an invasive species that is known to be on the Peak Ranch Resource site. Canadian thistle is considered a B List species according to the Colorado Noxious Weed Act.

## **6.2 Control Methods and Treatment Windows**

Peak will utilize an integrated management plan to treat all invasive species. This will likely include a combination of treatment methods such as mowing, tillage, grazing, biological controls, spraying, and hand pulling in order to achieve the most effective control.

## **6.3 Monitoring and Follow-up**

Peak will conduct follow-up monitoring each fall to determine the effectiveness of treatments that were utilized throughout the growing season. Spring survey maps will be updated as appropriate and results will be included in the Annual Report.

## **7.0 REVEGETATION SUCCESS CRITERIA**

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Revegetation will be deemed adequate when erosion is controlled, and vegetation is considered satisfactory according to Division standards. Reclamation is considered a success when a diverse and long-lasting vegetative cover is established, and the site is free of prohibited noxious weed species that seriously threaten the continued development of the desired vegetation. Monitoring the reclamation on an ongoing basis will ensure its success. If problems arise, Peak Materials will consult with the local NRCS office to get input regarding how to resolve the problem. If minor changes or modifications are suggested by the local NRCS office to the seeding or reclamation plan, revision plans will be submitted to the DRMS prior to their implementation. It is anticipated that the Division will provide both assistance and feedback in evaluating the success of the ongoing reclamation process. Information on all areas disturbed and reclaimed as well as any other important items regarding the reclamation will be submitted in the annual reports to the Division.