

EXHIBIT D – MINING PLAN

1.0 INTRODUCTION

The following is the mining plan for the proposed Peak Ranch Resource to be operated by permittee Kilgore Companies, LLC dba Peak Materials (“Peak Materials”). Peak Materials proposes to mine the Peak Ranch Resource gravel deposit and load the material into trucks for transportation to its currently permitted and operating Maryland Creek Ranch facility (M-1996-049). At the Maryland Creek Ranch facility, the gravel will be processed into construction products including sand, gravel, aggregate, fill, asphalt, concrete, and road base. No materials processing will occur at the Peak Ranch Resource facility. Peak Materials will pursue a Technical Revision to the Maryland Creek Ranch permit to allow for the importation of off-site materials prior to any import.

1.1 Pre-Mining and Topsoil Stripping

The site of the proposed Peak Ranch Resource is currently overgrazed rangeland with a few farm structures (see Exhibit C, Sheet C-1). The rangeland has historically been irrigated with decreed water rights associated with the “Hawk Hill Pump and Pipeline” water right. This right operates pursuant to a Water Court approved plan for augmentation water which provides for releases from Green Mountain Reservoir in Heeney, Colorado to replace out-of-priority depletions (decreed in Case No. 89CW167).

Prior to beginning activities on the site, the boundaries of the affected area will be clearly marked. Signs and markers will be posted at the mine entrance listing the name of the Operator, Peak Materials, and the operation name, “Peak Ranch Resource”; a statement that a reclamation permit for the operation has been issued by the Colorado Mined Land Reclamation Board; and the DRMS permit number. A 30-foot-wide gravel road will be constructed within the Permit Boundary (see Exhibit C, Sheet C-2A). Peak Materials will work with the Colorado Department of Transportation (CDOT) to complete road improvements to Colorado Highway 9 necessary to accommodate the transport of materials from Peak Ranch Resource to Maryland Creek Ranch. Peak Materials is in the process of acquiring an access permit from CDOT for access into the site. At the direction of CDOT, for safety reasons, the proposed access is proposed to be located directly across the from the intersection of Elk Run road and Colorado Highway 9. The traffic study calculations prepared in conjunction with the access permit application under review by CDOT indicate that a right turn acceleration lane on Colorado Highway 9 from the site is recommended, but not required. In the interests of safety, Peak Materials plans to construct this lane. In addition, the study indicates that a left turn deceleration lane on Colorado Highway 9 into the site will be required and it too is planned to be constructed. These road improvements will be completed prior to off-site transport of mined materials.

As shown on Exhibit C, Sheet C-2A, topsoil and overburden¹ will be stripped at Peak Ranch and used to construct 8 to 10-foot-tall privacy berms on the north, west and south sides of the site. These berms will be installed at the start of operations on the site. They will be vegetated promptly. Trees will be planted at key locations near the berms. Exhibit C, Sheets C-2A and C-2B show the approximate tree locations. The berm along the south side of the site that wraps around to the east edge will be permanent, meaning it will remain on the site following reclamation. This permanent berm will be constructed of overburden covered with topsoil. The berms to be built on the north (north refers to the berm on the north side that also wraps on the west and east edges) and west (located along the west side of the property in the south half of the site) edges will be constructed of only topsoil.

As described in Section 1.2 Mining Phases, Phase 1 is divided into Phase 1 North and Phase 1 South. Topsoil that is stripped from Phase 1 North, along with 60% to 70% of the overburden from this area, will be used for the construction of the privacy berms. Any topsoil or overburden not used in privacy berm construction will be immediately placed as part of contemporaneous reclamation or stockpiled on-site in a topsoil and overburden storage area for later use during reclamation. Temporary stockpiles of overburden or topsoil required for reclamation may be up to 20 feet in height. Temporary stockpiles will be in the designated

¹ For this project, overburden is defined as the thin layer of subsoil just below the topsoil and above the deposit.

area shown on Maps C-2A and C-2B. Because excavation will proceed to final mine slopes and grades (illustrated on Exhibit C, Sheet C-3), it is anticipated that minimal backfilling with overburden will occur during reclamation. Overburden present on site will be stripped during mining and either placed directly on mined out ground as part of reclamation, stored in the stockpile area, or used to build the core of the south/southeast berm (Exhibit C, Sheets C-2A and C-2B). Mining to final slopes and the direct placement of overburden onto reclamation slopes will reduce the need to stockpile overburden material and shorten the time that it will take to reclaim the mine. Once mining is completed, the overburden will be replaced, and these areas will be ready to receive topsoil. Details on topsoil and overburden quantities can be found in Table D-2: Topsoil and Overburden Material Balances During Mining and Table E-2: Topsoil and Overburden Material Balances During Reclamation.

1.2 Activity in Wetlands

Construction of the access into the site will need to occur as an initial step in preparing to mine the site. As mentioned above, Peak Materials took direction from CDOT and proposed to locate the access into the site so that it will align with the intersection of Elk Run Road and Colorado Highway 9. While this location is in the best interests of safety along Colorado Highway 9, locating it here will require Peak Materials to disturb an existing wetland located in the northeast corner of the Peak Ranch site.

Peak Materials has been in communication with the US Army Corps of Engineers (COE) about the wetlands on this site and a jurisdictional delineation (JD) determination will be requested. This determination has been delayed due to work by the Town of Breckenridge to maintain and repair a drainage ditch portion within the identified wetlands. Breckenridge has an easement through the wetlands to accommodate this drainage ditch.

The recent maintenance work by Breckenridge was documented in the wetlands delineation report prepared for the COE. It was important to document this maintenance work in the wetlands delineation report because it is believed that the wetlands exist on this site at least partially due to the Breckenridge ditch easement not functioning properly across the property in previous years. With the drainage ditch restored to proper function, the identified wetlands may see a reduction in their water source. The COE guided Peak Materials to thoroughly document the drainage ditch maintenance in the JD determination application.

Following the JD by the COE, Peak Materials will work with the COE to obtain the appropriate permit from the COE prior to any disturbance of the wetlands on the site. Peak Materials will also work with the COE on a mitigation plan, if needed. No mining is proposed by Peak Materials in the wetlands; the only disturbance proposed is to accommodate the access road into the site.

1.2 Mining Phases

The mining operation will be conducted in two phases. Phase 1 is divided into two sections, Phase 1 North (16.0 acres) and Phase 1 South (34.0 acres), as shown on Exhibit C, Sheet C-2A. This is due to a Town of Breckenridge drainage easement that bisects the site. The plan is to mine Phase 1 North prior to mining Phase 1 South. All of Phase 1 will be dry mined therefore Phase 1 mining will stop about two feet above the typical seasonal high-water table. The mine design assumes that the exposed water table in Phase 1 North will be approximately seven feet below existing grade and that it will be deeper in Phase 1 South. Exhibit G discusses groundwater in detail. If groundwater is encountered at a depth that is shallower than expected, the area will be backfilled to two feet above the discovered water table. The plan is to concurrently mine and reclaim Phase 1 North before mining Phase 1 South; however, activity is likely to occur in Phase 1 South prior to completion of Phase 1 North.

An approved Substitute Water Supply Plan (SWSP) will be in place prior to beginning Phase 1, to replace out-of-priority depletions associated with on-site water use needed for dust suppression. During Phase 1 operations, this is the only anticipated water demand. An augmentation pond will be constructed in Phase 1 North to meet the needs of the site during mining operations.

Phase 2 of the project will entail excavating below groundwater within both the north and south cells using wet mining techniques. Extraction of gravel is expected to occur to a final depth of roughly 46 feet below the

groundwater level in the north cell and 52 feet below the groundwater level in the south cell, as shown on Exhibit C, Sheet C-2B. This phase will be wet mined utilizing a dragline or similar pieces of equipment. No pumping of groundwater will take place during any phase of mining. As the material is removed, it will be placed in a temporary stockpile above the water table to allow it to drain before it is loaded onto trucks for shipping offsite. Extraction of the material is expected to begin in the north cell and then move to the south cell. Once the material has been removed from Phase 2, the result will be a pair of groundwater ponds as shown on Exhibit C, Sheet C-2B and on Exhibit F, Sheet F-1.

Prior to exposing ground water to evaporation in connection with Phase 2 mining and the open water ponds, a Water Court approved augmentation plan will be in place to cover all out-of-priority depletions (including post-mining), or the applicant will otherwise demonstrate to the DRMS that all out-of-priority depletions will be replaced to the stream system to prevent injury to other water rights through an acceptable approach. Approval of an augmentation plan is a multi-year process. Therefore, Peak Materials hereby commits to not exposing groundwater anywhere on the site prior to obtaining an approved permanent augmentation plan from the State Engineer's Office. In addition, Peak Materials understands that they will need to incorporate the approved augmentation plan into the 112 Reclamation Permit via a future Technical Revision submittal and approval by the DRMS. See Exhibit G for a more detailed discussion of water related matters.

At this time, we anticipate that the augmentation plan will involve the creation of a lined augmentation pond that would be on-site for the life of the approved augmentation plan. The anticipated location and size of this pond can be seen on Sheet C-2B. The pond will be designed in conjunction with the augmentation plan approval process. The technical revision incorporating the augmentation plan into the Peak Ranch Resource permit will include the augmentation pond design. This pond will be designed to be permanent with maximum slopes of 3H:1V. The liner will be installed from an offsite source. No material will be needed from Peak Ranch to line the pond.

In the unlikely event that it becomes infeasible for Peak Materials to obtain approval of an acceptable augmentation plan to support Phase 2 mining and the open water ponds, Peak Materials would simply reclaim the surface following completion of Phase 1 mining. Topsoil to reclaim this area would come from the screening berms that will be constructed on the north and west edges of the site. The area would be revegetated in the same manner as the side slopes of Phase 1 South.

Exhibit C, Sheet C-2C is provided to more clearly show and explain planned setbacks/buffers from the edge of mining to property lines, the river and wetlands, the stormwater control plan for the site, and groundwater details for clarity and ease of review. All activities will take place within an overall disturbance area of no more than 54 acres. This is comprised of Phase 1 North, Phase 1 South, the access road from Highway 9 into the site, and the areas being disturbed to construct the screening berms. The overall disturbance area reflects the extent of activity on site, not the peak of simultaneous disturbance. Since contemporaneous reclamation techniques will be followed, the overall disturbance area will never exist simultaneously. The peak simultaneous, or active, disturbance will be about 26 acres and would occur right before Peak Materials is ready to begin Phase 2 mining.

1.3 Equipment

Table D-1 shows the type of equipment that will be used for the operations of this site. Once operations are complete, all equipment will be removed from the site.

Table D-1: Typical On-Site Equipment

Equipment Type	Phase 1 Quantity	Phase 2 Quantity
Excavator	1	1
Bulldozer	1	1
Water Truck	1	1

Equipment Type	Phase 1 Quantity	Phase 2 Quantity
On-Highway Dump Truck	Varies with production	Varies with production
Road Grader	1 (occasionally)	1 (occasionally)
Loader	-	1
Dragline	-	1
Fuel Tank²	1	1
Mobile Pump	1	1

2.0 GENERAL MINING PLAN – METHOD OF MINING

The permit/affected area boundary will be surveyed and clearly delineated with fencing.

All Phase 1 mining will be conducted with loaders, dozers, and haul trucks above the water table. Phase 2 mining will utilize a dragline that will be moved around the site over the course of mining. As wet material is excavated during Phase 2, it will be placed into a temporary stockpile on the ground next to the dragline where it will drain into the pit before being hauled offsite.

The Pierre Shale will be protected from accidental exposure during mining in the same manner it is protected at Peak Materials' Maryland Creek Ranch facility. Dragline operators have found that the size of cobble in this resource dramatically increases within 4-6 feet of bedrock. When the cobble reaches such a size, the operator of the dragline can feel the change in the material. Peak Materials has been very successful at avoiding bedrock by using this system.

Peak Materials is also confident that they will be able to manage the creation of 2H:1V mining slopes because they are successfully doing this at their Maryland Creek Ranch facility. Once again, the operator of the dragline is in control of this. The operator places the bucket of the dragline into the water and then pulls the bucket toward the dragline to extract material. When the bucket gets to where the toe of the slope needs to be located for the final slope, the operator will move the dragline bucket at the appropriate angle to create the final slope.

Explosives will not be used at this site. No designated chemicals or acid-producing materials will be used or stored on-site.

Over the course of mining, surface and groundwater on and near the property will be monitored to ensure that the quality and quantity of water is not affected by the operation (see Exhibit G).

The overall life of the Peak Ranch Resource, including reclamation, is anticipated to be 10-15 years, depending on market conditions.

2.1 Phase 1 Mining Plan (depicted on Exhibit C, Sheet C-2A)

Phase 1 will commence with the removal of internal fences on the property. Perimeter fencing on the northern and southern property boundaries will remain. New fencing will be installed on the west of Phase 1 to ensure all activity remains inside the affected area boundary. On the east, new fencing will be installed 25' west of the delineated wetlands area in order to protect the wetlands. The one exception to this will be where the access road must cross the wetlands to enter the site. A permit will be acquired from the Corps of Engineers to make this crossing possible. Buildings on the site may be used by Peak Materials, therefore they will remain on sit until they need to be removed to allow access to the aggregate resource under them.

² An SPCC Plan will not be required for the fuel tank because of the small quantity of fuel (less than 1,000 gallons) proposed to be stored on-site. The fuel tank will double-sided steel tanks that can easily be moved to make sure they are out of the way of mining operations. For security reasons, outside of the mining season (mid-December through mid-March), the tank will be stored at Peak Materials' Maryland Creek Ranch facility.

Construction of internal access roads and the construction of any required off-site improvements to Highway 9 will occur prior to the initiation of any mining.

The topsoil and overburden removed from Phase 1 North and South will be used to construct the screening berms as shown on Exhibit C, Sheet C2-A. As described in Section 1.1, the berms on the north west edges of the site will be constructed of only topsoil. The berm on the south side of the site (it wraps to the southeast) is intended to be a permanent berm and so it will be constructed of overburden covered with a layer of topsoil. In addition, topsoil and overburden that is stripped from Phase 1 will also be used for contemporaneous reclamation of Phase 1 North and Phase 1 South. If necessary due to sequencing of operations, a temporary stockpile of topsoil and/or overburden will be maintained in Phase 1 South. Any stockpile that will remain in place for more than one mining season (early spring through late fall of any given year) will be seeded for stabilization purposes. See Exhibit E for a detailed discussion of the revegetation for this project.

All material mined from Phase 1 will be dry mined using loaders and dozers. The material mined from Phase 1 areas will be loaded onto haul trucks and taken to Maryland Creek Ranch. The excavation site will then be regraded in preparation for replacing the overburden and topsoil.

2.2 Phase 2 Mining Plan (depicted on Exhibit C, Sheet C-2B)

A dragline or similar piece of equipment will be used to wet mine Phase 2. Phase 2 will be mined as shown on Exhibit C, Sheet C-2B. Phase 2 will expose groundwater as it mines into the floor of both the north and south cells. As the dragline excavates the material, it will be placed on the bank of the groundwater lakes above the water table to drain prior to being loaded by the front-end loader into highway haul trucks for transportation to Maryland Creek Ranch. The material placed next to the dragline will remain in this location only for the time it takes to dewater. Operations will continue until the ultimate depth or final grade of the mine is reached; at which time all excavation will cease. The entire footprint of Phase 2 mining is entirely contained within the Phase 1 footprint. No new horizontal disturbance will be created by Phase 2.

2.3 Mining Buffers and Limitations

During both Phase 1 and Phase 2, the following criteria will apply to the operation:

- No disturbance will occur within the Federal Emergency Management Agency (FEMA) designated 100-year flood plain.
- There will be a minimum 300-foot buffer between the mining area and the Blue River. This buffer is in response to a request from Colorado Parks and Wildlife.
- There will be a 25-foot buffer between the mining area and the wetland located in the northeast quadrant of the permit area.
- A minimum of 100-foot setbacks will be maintained between the edge of mining and the permit boundary to the north and south.
- A minimum of a 50-foot buffer is being maintained between the edge of mining and the east and west permit boundaries.
- No mining will take place within the drainage easement that bisects the site.
- No blasting will be conducted.
- No processing will take place on-site.
- All out-of-priority water depletions will be replaced pursuant to an approved SWSP or augmentation plan.
- The site will not be dewatered; Phase 2 will be wet mined.
- All resource material extracted from the site will be loaded onto on-highway haul dump trucks and transported to the Maryland Creek Ranch facility for processing.
- No new buildings are proposed to be added to the on-site. Existing structures will be removed when they need to be in order to accommodate mining operations.

3.0 OVERBURDEN AND TOPSOIL HANDLING

Initial earthmoving will consist of stripping up to 6 inches of topsoil and 6-12 inches of overburden from areas to be disturbed. The three primary sources for understanding topsoil depth at the Peak Ranch Resource site are the NRCS soil survey data, ERC's field survey and the boring logs from exploration work on-site. The soil survey from NRCS indicates there is zero to six inches of gravelly loam atop 6-15 inches of gravelly sandy loam atop 15-60 inches of very cobbly sandy loam. Any visitor to the site would notice that alluvial cobble (rounded river rock) is readily present on the surface. Included in the revised version of Exhibit D is a photograph that demonstrates typical ground conditions on-site. Interspersed amongst this alluvial cobble are loam and sandy loam components that are host to the vegetation growing on-site. ERC's field survey essentially verifies the NRCS data indicating a thin surface horizon and a thicker sub surface horizon below that. According to the boring logs, there is a two-inch layer of topsoil. This would more properly be referred to as an O or AO horizon which is often used to describe the very thin surface layer of soil which usually contains more organic matter and therefore appears to be distinct from the rest of the upper horizon. However, texture and color are more appropriate descriptors to delineate the horizons in general and especially on this site. For this reason, the highly organic top layer is typically salvaged with the entire A horizon, or in this case, the H-1 horizon.



Figure D-1: Typical Soil On-Site

Considering the information available, there is clearly not a substantial depth of high-quality topsoil present at the Peak Ranch Resource site. Any "topsoil" that is available will be salvaged to retain soil components that are valuable to successful revegetation. Due to the type of construction equipment that will be used to mine the site, salvaging only two inches of material is not feasible. Therefore, a minimum topsoil stripping depth of six inches will be assumed; this ensures that whatever topsoil is present is salvaged for use in reclamation. The NRCS soil survey data shows the top horizon of soil ending at six inches, confirming that stripping beyond six inches would likely lead to a mixing of soil and subsoil material that would reduce the topsoil quality.

It is for the reason explained above that we are assuming a six-inch strip depth for all topsoil salvage calculations. The berm volumes and the topsoil replacement plan information which is explained below are based on this stripping depth. Topsoil to be used for reclamation will be segregated from overburden.

All earthmoving will be done using mining equipment suitable for this type operation including the following: front end loader, dozer, excavator, dragline, and water trucks. Topsoil and overburden will be direct placed, as much as possible, with stockpiling as needed in the designated stockpile area (Exhibit C, Sheet C-2A). Stockpiles to be in place longer than 90 days will be seeded with the permanent seed mix to prevent erosion (see Exhibit E for seed mix information). Table D-2 details a breakdown of the overall material balance of the project during mining. Topsoil stripping volumes are based on six-inch topsoil depth. Because there will be two groundwater lakes with a surface area of just under 26-acres at the conclusion of Phase 2 mining, overburden and topsoil will be replaced at approximately twice the salvage depth. Therefore, at the completion of reclamation, there will be a thicker soil profile than what currently exists on site. The table below outlines the anticipated topsoil and overburden material balances during mining.

Table D-2: Topsoil and Overburden Material Balances During Mining

Phase	Material Generated (CY)	South Berm (CY)	North Berm (CY)	West Berm (CY)	Available for Contemporaneous Reclamation (CY)
Phase 1 Topsoil ³	43,560	1,540	16,265	3,347	22,408
Phase 1 Overburden ⁴	87,120	13,159	0	0	73,961
Phase 2 Topsoil	0	0	0	0	0
Phase 2 Overburden	0	0	0	0	0

On the southern portion of the site, a permanent screening berm will be constructed using overburden which is top dressed in topsoil. The berms proposed for the north side of the site and the berm along the west edge of the site will be constructed entirely out of topsoil. All other topsoil and overburden stripped during Phase 1 North and South mining operations will be used in the contemporaneous reclamation of Phases 1 North and South. Since the topsoil salvaged for reclamation is stripped to a thickness based on the NRCS soil survey data and it will be either directly placed or stored in segregated stockpiles, no testing or amendments to the soil are proposed. However, if at the time of reclamation Peak Materials encounters problems with revegetation measures, they will utilize testing or amendments to help remedy the problem.

Additional details pertaining to reclamation can be found in Exhibit E.

4.0 STORMWATER

Stormwater generated within the mining extents and some limited areas outside the mining extents will be contained within the mined excavation where it will infiltrate or evaporate. It is the intention and the expectation that no stormwater from within the mining extents will be surface discharged from the site.

Stormwater runoff that is generated from within the affected area, but outside of the disturbed area, will discharge from the site to the river (except for a small amount of runoff that flows naturally into the excavation area). Peak Materials will apply for a Colorado Discharge Permit System (CDPS) permit issued by the Water Quality Control Division of the Colorado Department of Public Health and the Environment (CDPHE) in order to ensure that all stormwater discharges from the site are appropriately covered.

Stormwater from mining areas will be directed into the mined excavation. This stormwater will then infiltrate the underlying alluvium and recharge the groundwater underlying the mine. Exhibit C, Sheet C-2C shows a detail of the direction of flow of onsite drainage during mining. Stormwater will be able to infiltrate the alluvium that comprises the deposit once it collects in the mine cell. During Phase 2, stormwater from disturbed areas will drain directly into the exposed groundwater lakes or infiltrate into the ground. Surface water control is further discussed in Exhibit G.

5.0 MINING TIMETABLE

Over the life of the mine, a total of 4.0 million tons of material will be extracted at a rate of roughly 400,000 tons per year. This will result a mine life (mining through reclamation) of approximately 10-15 years, depending on market conditions. Snowfall limits the season in which sand and gravel extraction operations can be conducted in the area, and thus, the Peak Ranch Resource will only be operating when the weather is conducive and generally above freezing temperatures. Typically, mining will occur from early-spring through

³ Based on stripping six inches of topsoil from all disturbed areas during Phase 1, including the berm footprints and access road.

⁴ Based on stripping 12 inches of overburden from all mining areas during Phase 1. Berm footprint and access road not stripped of overburden.

late-fall, but this may be adjusted depending on weather conditions. Additionally, Peak Ranch Resource operations will be subject to the limitations or conditions of any other necessary approvals, such as the SWSP or augmentation plan.

An approximate maximum timetable for the mining operation is shown below in Table D-3. It assumes the maximum mine life of 15 years. The 15 years includes time for reclamation vegetation to become established and the site to be released.

Table D-3: Mining Timetable

Years	Activity
1 ±	Construct project access, augmentation pond, and required improvements to Colorado Highway 9
1-3 ±	Construct screening berms, mine sand and gravel from Phase 1 while at the same time, reclaiming land where possible
3-13 ±	Mine sand and gravel from Phase 2 and complete reclamation
13-15 ±	Final reclamation monitoring

6.0 DISTURBANCE AREA

The peak simultaneous disturbance area for this mining operation will be when Peak Materials has finished mining Phase 1 South and is about to begin mining Phase 2. The area requiring topsoil and vegetation at this stage of the operation will be 26 acres; this is the area in which Phase 2 mining will be conducted. This area will not have had overburden and topsoil applied and planted contemporaneously like other areas on-site because the plan is to continue mining this area for Phase 2. Phase 1 North and the edges of Phase 1 South that are outside of the Phase 2 footprint will have undergone contemporaneous reclamation at this point in the mine's life. However, if an augmentation plan is not obtained to allow for the mining of Phase 2, the surface of this Phase 2 area will need to be reclaimed. The topsoil used to build the west and north berms will be used to reclaim the 26 acres, as illustrated on Exhibit F, Sheet F-2. If mining proceeds as planned and Phase 2 becomes a lake, the topsoil screening berms on the north and west edges will remain as shown on Exhibit F, Sheet F-1.

Reclamation costs and bond calculations outlined in Exhibit L are conservative and are therefore assume Phase 2 will not be mined and it will need to be reclaimed.

7.0 DEPOSIT AND UNDERLYING STRATUM GEOLOGY

7.1 Mapped Geology

A soils report was generated using the United States Department of Agriculture's Natural Resources Conservation Services' (NRCS) Web Soil Survey (WSS)⁵ and is included with this permit application (Exhibit I Soil Report).

Two published United States Geological Survey maps exist in the vicinity of the proposed quarry. These maps, Tweto (1973)⁶ and Kellogg (2002)⁷, are consulted as part of the characterization of the deposit. The area of the Peak Ranch Resource was mapped by Tweto (1973) as consisting of unconsolidated Quaternary alluvium and stream gravels (Holocene and Pleistocene –Bull Lake and younger) underlain by Upper Cretaceous Pierre Shale. Kellogg (2002) mapped an area beginning approximately two miles upstream from the Peak Ranch Resource site, and describes units along Blue River to be as follows:

Qal Alluvium (Holocene)—Unconsolidated silt- to boulder-size, moderately sorted to well-sorted, stratified, clast-supported sediment in modern flood plains, including overbank deposits; larger clasts are moderately rounded to well rounded. Clasts are up to about 2 m in channel of Straight Creek and 1 m in channel of Blue

⁵ <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

⁶ https://www.ncrs.usda.gov/Internet/FSE_DOCUMENTS/ncrs144p2_061698.pdf

⁷ https://www.ncrs.usda.gov/Internet/FSE_DOCUMENTS/ncrs144p2_061698.pdf

River. Includes swamp deposits in and adjacent to beaver ponds in North and South Willow Creek valleys. Maximum height of unit above Blue River about 3 m. Maximum thickness unknown, but suspected to be greater than 10 m.

Qg Terrace gravel (Holocene to middle Pleistocene)—Moderately sorted sand and gravel adjacent to modern flood plain of Blue River and Straight Creek. Clasts as large as 1 m composed of Proterozoic gneiss and, in Blue River Valley, subordinately of Dakota Sandstone, Maroon(?) Formation, and Tertiary intrusive rocks. Clasts larger than about 1 cm are moderately rounded to well rounded. Includes deposits of lower terrace levels along Blue River that were part of active alluvial channel prior to completion of Dillon Dam, just south of quadrangle boundary, in 1962. Three terrace levels mapped by West (1978): a topographically lower Holocene terrace, an intermediate terrace of Pinedale age, and a high terrace of late Bull Lake age. The Pinedale terrace is about 10 m above river level; one colluvium-mantled Bull Lake terrace, about 45 m above river level, is preserved near center of Sec. 22, T. 4 S., R. 78 W. Thickness as great as about 15 m.

Kellogg (2002) mapped these units as being ubiquitous along the Blue River, and both units are valuable aggregate resources. Tweto (1973) mapped the Upper Cretaceous Pierre Shale as outcropping on both sides of the Blue River adjacent to the Peak Ranch Resource permit area. Kellogg (2002) described the Pierre Shale as follows:

Kp Pierre Shale, undivided (Upper Cretaceous)—Dark-gray, grayish-brown, and black fissile marine shale and mudstone in approximately lower 300 m; calcareous in lowest 10-20 m. Grades upward into a sequence of dark-gray and black silty shale and mostly thin, brown, clayey, commonly ripple-laminated, fine-grained to very fine grained sandstone. From top to bottom in quadrangle, divided into three informal members: shale and sandstone member, sandstone member, and lower shale member. Undivided Pierre Shale is mapped where exposures are too poor to determine stratigraphic position. Pierre Shale may have been as thick as about 2,600 m in region. Upper approximately 1,000 m removed by erosion (Izett and others, 1971).

7.2 Drill Hole Logs

Peak Materials submitted an exploration permit, #P2018-001, to the DRMS on March 22, 2018 and subsequently drilled exploration drill holes in April 2018. Logs of the four drill holes located on the corners of the property are provided in Table D-4, below. They properly characterize the geology of the property.

Table D-4: Exploration Drill Logs

Drill Hole	Drill Hole Log	Note
Drill Hole 1 (NW corner)	0-2" Topsoil 2"-1' Silty Clay 1'-2' Silty sand with gravel 2'-10' Sand and gravel with cobbles 10'-13' Cobble with gravel, sand 13' – 39' Sand and gravel with scattered cobbles 39' – 62' Dense cobbles with sand and gravel 62' – 67' Weathered shale	Completed on April 17, 2018
Drill Hole 2 (NE corner)	0-2" Topsoil 2" – 8" Silty Clay 8"-2' Sandy clay with gravel 2'-3' Sand and gravel 3'-10' Sand gravel with scattered cobbles 10' – 21' Cobbles with sand and gravel 21'-40' Sand and gravel with scattered cobbles 40' – 47' Dense cobbles with sand and gravel 47'-52' Weathered shale	Completed on April 17, 2018

Drill Hole	Drill Hole Log	Note
Drill Hole 7 (SW corner)	0-2" Topsoil 2" – 1' Silty Clay 1'-2' Silty gravel 4'-11' Cobbles with sand and gravels 11'-15' Sand and gravel with scattered cobbles 15'-24' Cobbles with sand and gravels 24'-47' Sand and gravel with cobbles 47'-58' Cobbles with sand and gravel 58'- 62' Weathered shale	Completion date note recorded
Drill Hole 9 (SE corner)	0-2" Topsoil 2" – 1' Silty and sandy Clay 1'-3' Silty sand with gravel 3'-10' Dense cobbles with sand and gravels 10'-12' Sand and gravels 12' – 14' Cobbles with sand and gravels 14' – 34' Sand and gravel with cobbles 34'-40' Cobbles with sand and gravels 40' – 41' Dense sand 40'-66' Cobbles with sand and gravels	Completion date note recorded

7.3 Geology and Resource Discussion

Analysis of the exploration drill hole logs and details of a Natural Resources Conservation Service (NRCS) site-specific soil report (Exhibit I) indicate that the deposit is approximately 50 to 60 feet deep with an overburden of 12-15 inches and 0-6 inches of topsoil in the area of the deposit. The total depth of material available to be stripped as topsoil and overburden for replacement during reclamation is approximately 18 inches. Material balances for reclamation purposes will be calculated using a topsoil depth of six inches. Overburden depth for material balances purposes is assumed to be 12 inches.

The gravel deposit is underlain by Cretaceous Pierre shale. These estimates are consistent with geologic mapping conducted in the area and the custom soil survey that was generated for the site using NRCS data agrees with historical data gleaned from operating the Maryland Creek Ranch site.

Due to the presence of Pierre Shale as the bedrock for the site, mining will not proceed to bedrock. It will stop at least two feet above the shale to prevent its exposure.

The combination of USGS geological mapping, NRCS data, on-site exploration drill holes, and experience gained at the currently operating Maryland Creek Ranch site (Maryland Creek Ranch contains a deposit similar to the alluvial deposit that will be mined at Peak Ranch Resource) give Peak Materials confidence that this deposit is well characterized and that it will be a sufficient resource to support the mining plan, as proposed.

8.0 PRIMARY AND SECONDARY COMMODITIES

The operation will produce raw materials including sand, gravel, and rock. These materials will all be transported offsite to Maryland Creek Ranch for processing. If any large boulders are found at the Peak Ranch Resource site, they will be direct shipped to customers using Peak Ranch Resource dump trucks. If any boulders that exceed 24 tons are found on the site (highly unlikely), they will not leave the site due to highway transportation weight limits.

No incidental products are being extracted from the Peak Ranch Resource site.