6.4.4 EXHIBIT D - Mining Plan

The mining plan shall supply the following information, correlated with the affected lands, map(s) and timetables:

(a) Description of the method(s) of mining to be employed in each stage of the operation as related to any surface disturbance on affected lands;

(b) Earthmoving;

(c) All water diversions and impoundments; and

(d) The size of area(s) to be worked at any one time;

(e) An approximate timetable to describe the mining operation. The timetable is for the purpose of establishing the relationship between mining and reclamation during the different phases of a mining operation. An Operator/Applicant shall not be required to meet specific dates for initiation, or completion of mining in a phase as may be identified in the timetable. This does not exempt an Operator/Applicant from complying with the performance standards of Section 3.1. If the operation is intended to be an intermittent operation as defined in Section 34-32.5-103(11)(b), C.R.S., the Applicant should include in this exhibit a statement that conforms to the provisions of Section 34-32.5-103(11)(b), C.R.S. Such timetable should include:

  (i) an estimate of the periods of time which will be required for the various stages or phases of the operation;

  (ii) a description of the size and location of each area to be worked during each phase; and

  (iii) outlining the sequence in which each stage or phase of the operation will be carried out. (Timetables need not be separate and distinct from the mining plan, but may be incorporated therein.)

(f) A map (in Exhibit C - Pre-Mining and Mining Plan Map(s) of Affected Lands, Subsection 6.4.3) may be used along with a narrative to present the following information:

  (i) nature, depth and thickness of the deposit to be mined and the thickness and type of overburden to be removed (may be marked "CONFIDENTIAL," pursuant to Paragraph 1.3(3)); and

  (ii) nature of the stratum immediately beneath the material to be mined in sedimentary deposits.

(g) Identify the primary and secondary commodities to be mined/extracted and describe the intended use; and

(h) Name and describe the intended use of all expected incidental products to be mined/extracted by the proposed operation.

(i) Specify if explosives will be used in conjunction with the mining (or reclamation). In consultation with the Office, the Applicant must demonstrate pursuant to Subsection 6.5(4), Geotechnical Stability Exhibit, that offsite areas will not be adversely affected by blasting.

Note: For additional information on features and areas described, please refer to Exhibit C-1: Existing Conditions Map and C-2: Extraction Map.

Of the 157.06± Acres of lands comprising the parcel boundary, 3.41± acres surrounding an existing residence and outbuildings are not included in the permit boundary, resulting in total permit area of 153.65± acres described as follows:

65.57±	Acres of Planned Extraction – Tract A – 05-15± years.
40.69±	Acres of Planned Extraction -Tract B – 10-20± years.
26.26±	Acres of Planned Extraction – Tract C – 01-25± years.
132.52±	Acres of Planned Extraction - TOTAL

Originally, as specified above, a 3.41 +/-acre residential area surrounding the existing residence and outbuildings was identified and not included within the permit boundary. However, when the property was platted in 2011, as Lot 1 of the Varra-Heintzelman Pit Subdivision, the lot included the residence, outbuildings and perimeter yard that totaled 3.23 +/- acres but did not follow precisely the shape of the permit boundary. A Partial Release modification, that is currently under review by the DRMS and an Amendment to the Varra-Heintzelman Pit Subdivision, will increase the size of the residential lot to 5.18 ac. and adjust the shape to a square. This will provide a clear delineation of the residential parcel.

Further, within Tract C, the areas north and east of the residential area, were designated as a placeholder for a potential plant and stockpile area, as well as for processing and support facilities. However, ultimately a plant was never built and the area was used primarily for borrow and stockpiles.

Of the 132.52± acres of planned extraction, the remaining 21.13± acres of the permit boundary comprise planned or existing permanent access roads, operational support use, or areas of minor to no disturbance. Lands not otherwise occupied will be later developed to the highest possible end-use, and will likely comprise a mixed use which may include other agricultural uses, as well as light residential, commercial, or industrial uses. As indicated in Exhibit E - Reclamation Plan; of the 132.52± acres of potential extraction, the resulting basin will function as a reservoir with a surface covering 105.44± acres of water, leaving a balance of 31.01± of affected land above the anticipated high water mark to be revegetated.

Tracts A and B comprise the northern and central portions of the parcel. While found within the upper terrace of the flood plain of St. Vrain Creek, the FEMA designated flood plain does not reach the site location since a rail road bed to the northwest intercepts and prevents flood waters of St. Vrain Creek from reaching the location. Soil and overburden vary over the location to a depth of 4.0± feet. Actual soil variations, depths and descriptions, including potential volumes to be extracted, are detailed in Exhibit I & J: Soils and Vegetation Information, and are shown on Exhibit I & J: Soil and Vegetation Map. Aggregate extends from the overburden to a depth of 49± feet from the surface until it reaches the unconsolidated layer of Pierre Shale. Surface elevation for these tracts is established by survey at the existing water monitoring well identified in Tract A. Elevation at the surface is 4798.45± feet, with groundwater at 6.80± feet below the surface, or elevation 4791.65, as determined by a water level meter (March 2006).

The upper terrace of the St. Vrain flood plain of Tracts A and B meet the escarpment and uplands of Tract C which comprises the balance of the parcel to the south. This location is influenced by Aeolian deposits up to 4.5± feet in depth. The soil and overburden extends to an approximate depth of 25.0± feet. Actual soil variations, depths and descriptions, including potential volumes to be extracted, are detailed in Exhibit I & J: Soils and Vegetation Information, and are shown on Exhibit I & J: Soil and Vegetation Map. Aggregate extends from the overburden to a depth of 49± feet from the surface until it reaches the unconsolidated layer of Pierre Shale. Surface elevation for these tracts is established by survey at the existing water monitoring well identified in Tract C. Elevation at the surface is 4834.58± feet, with groundwater at 28.00± feet below the surface, or elevation 4806.58, as determined by a water level meter (March 2006).

Initially, heavy equipment (typically, scrapers, dozers, or excavators operating alone or in combination) will extract soil, placing it along the basin perimeter in the construction of up to a five (5.0±) foot high visual berm. The berm will be variable in height and width, and may be comprised initially of soil, but may be combined separately with either overburden or clean fill. Outslopes of the berm will be 3H:1V or flatter to aid establishment of grasses over the finished berm utilizing the approved seed mixture. Where necessary to aid in access along the perimeter of the pit or completed reservoir, the berms may be increased in width to facilitate the access of vehicles or heavy equipment. The height and width of the berm will be field fit at the time of placement and will not go beyond permit limits. While the berm width will vary, it will fit within the ten (10.0±) buffer between the permit boundary and any planned extraction, and where wider, will extend into the basin area conforming to 3H:1V minimum outslopes. To the extent possible, the height of berms will near five (5.0±) feet along the perimeter where a residential structure is within 125.0± feet from active extraction operations. Soils and overburden volumes extracted in excess of that needed for reclamation may be temporarily stockpiled as part of the berms, elsewhere on-site, or relocated to the Kurtz Project, until sold as product.

To facilitate dry extraction of overburden and aggregate, groundwater will be discharged from the areas of active extraction into an existing seep ditch at the location shown on Exhibit C-2: Extraction Map. Discharge of waters will be conducted under an approved Colorado Dept. of Health discharge permit.

Subsequent to soil salvage, extraction of overburden and aggregate will commence. Extraction utilizes, but is not limited to, diverse heavy equipment; including, scrapers, excavators, dozers, backhoes, and related heavy equipment. The raw material will be transported by heavy equipment or haul trucks to on-site plant facilities, or to an established loading area where materials will be conveyed to on or off-site plant facilities.

As the basin floor is reached, final grading may commence once a minimum area of approximately four acres (or a distance of 400 linear feet square) is attained. Finished slopes will be established along the basin perimeter utilizing fill material taken from the basin bottom.

Extraction activities will remove aggregate to a mean depth of 49.0± feet from the surface. Anomalous depths greater than 49.0± feet may occur. While extracted slopes may be temporarily 1.25H:1V, all final basin (reservoir) slopes will be established concurrently with extraction and will conform to Rule 3.1.5(7), or flatter.

The general direction of extraction activities over the diverse Tracts is shown on Exhibit C-2 - Extraction Map. Extraction will occur to within 10.0± feet of the permit boundary, easements and right-of-ways, and non-residential structures, except that extraction activities will be limited to within 25.0± feet of well heads, and those same wellheads will be backfilled to create a 100 foot radius around the center of the well head to facilitate future oil and gas activities at that well head. The fill will occur concurrently with extraction around the well head, to the extent practical. At all time, safety will take precedent and over-ride as necessary any element of the permit to assure protection of life and property and compliance with federal safety regulations **(MSHA).** Changes resulting from a safety consideration that require a modification of the approved permit will be made after the fact respective of amendment or technical revision provisions of the Division of Reclamation Mining and Safety **(DRMS).**

Tracts A, B, and C may be extracted concurrently. All extraction will proceed in a manner to minimize visual and audible impacts to adjacent lands and properties. In Tract A, extraction will commence to facilitate removal of material from a nearby residence and gain time to vacate and relocate gas lines from the interior of the tract in cooperation with the oil and gas producer. As extraction passes by red stage line one (1) shown on Exhibit C-2: Extraction Map, a fill operation will create the means for relocating oil and gas line A, while lines B and C will be relocated along the existing seep access road. All gas line relocation will be coordinated with the current owners of the affected line.

An advancing 1600± foot extraction front will be comprised of side slopes nearly 400 linear feet at 1.25H:1V along each side of an 800 foot advancing wall. Concurrent reclamation will trail this front by approximately 400 foot increments.

This front is approximate for all active Tracts. At Tract C, when overburden creates a topography approximately level with the original ground of the adjacent irrigation ditch, and an extent to approximately red stage line two (2) shown on Exhibit C- 2, this ground will be given over to on-site plant, processing and support facilities, as previously described. At Tract C, when red stage line three (3) is reached; to facilitate the creation of up to a five (5.0±) foot high visual berm around all active Tracts to the extent practical commencing from the outer perimeters inward toward the east boundary of the permit, or where higher slopes cause the berm to terminate; extraction activity will shift in direction at Tract A-2. Tract B may be opened at any time if demand and equipment can afford it, however, it is not anticipated to commence until extraction is completed at Tract A. If Tract B opens prior to Tract A, as per Exhibit L - Warranty Costs, additional warranty will need to be added for the advancing extraction front as estimated for either Tract A or C.

Primary access utilizes an existing access at WCR 17 and the northwest comer of Tract C, where plant and processing facilities are designated, as shown on Exhibit C-2: Extraction Map. All other access points in existence prior to extraction will be retained for service access and occasional uses (e.g., employee, incidental, circumstantial, and emergencies). A grader and water truck maintain access as necessary throughout operations.

Conveyance of materials to the Kurtz Project plant facilities is planned principally along the 95± foot easement shown on Exhibit C-2: Extraction Map. Planned activities within the easement area are consistent with the terms of the existing lease agreement governing the easement.

A concrete batch plant, as well as wet processing plant will be located in the northern portion of Tract C, as shown on Exhibit C-2: Extraction Map; along with related support, including a scale-house/office. No on-site storage of fuels is planned as portable fuel (trucks) will service heavy equipment. Additionally, provisions for asphalt batch plants; recycling facilities and related operations; and periodic use of a portable aggregate dry plant are also necessary inclusions to operations under this permit.

While the on-set of reclamation is concurrent with extraction, the completion of reclamation may lag up to five (5.0±) years behind the onset of reclamation activities. Complete extraction of the permit area is expected to take approximately 25 years, depending upon market conditions, with an additional 5 years following completion of all extraction activities for ultimate completion of concurrent reclamation activities, placing the completion of all activities near 2039.

Because the permit area may be fully affected, phasing does not adequately describe the extraction and reclamation potential of the permit area. Tracts are used, since each Tract can be accessed concurrently with the other; and per Exhibit L - Reclamation Costs, accelerated extraction only serves to decrease the overall reclamation liability and accelerate final reclamation and site stabilization of the property as a whole. Therefore, any method that accelerates the above timetable, including concurrent reclamation ongoing within each Tract, will be utilized, based upon market conditions and the capacities of the operator. The ultimate extraction of soil, overburden and aggregate are shown on the volume tables at the back of this exhibit (Exhibit D - Table D-1: Material Volumes) and Exhibit I & J - Table I-1: Soil Volumes.