Table 25a Soil Test Parameters		
	Suitable	Deficient
Parameter		
Soil pH	5.5-8.5	
Soluble Salts (EC)	0-8 mmhos/cm	
Organic matter		<1%
Nitrogen (as Nitrate)	>12%	
Phosphorous	>5 ppm	<3.1 ppm
Potassium		<60 ppm
Zinc	Report	
Iron	Report	
Copper	Report	
Manganese	Report	
Lime	Report	
Soil Texture	Describe	

Table 25b Criteria to Establish Overburden Suitability (in potential root zone)			
Parameter	Suitable	Marginal	
pH	5.5-8.5	5.0-5.5	
Saturation Percentage	25-80	<25 >80	
SAR	0-10	10-12	
Selenium	<0.1 ppm	<0.1 ppm	
Boron	<5.0 ppm		
Molybdenum	<1.0 ppm	>1.0 ppm	
Acid/base potential	>5.0 CaCO3 Equiv. 1000 tons		
Arsenic	<2.0 ppm	>2.0 ppm	
Organic carbon	<10%		>10%

RDA Reclamation Plan

Any early reclamation of the RDA either by the permittee or others, requires different assumptions as compared to the approved plan of construction of the RDA to its full size. While the exact situation at the RDA cannot be predicted for any point in the future, a reasonable plan for early reclamation can be developed that would generally follow the steps and assumptions as discussed below. The permittee believes that in the event of early reclamation of the RDA, the following plan would be appropriate and result in successful mined land reclamation while also maintaining full compliance with the Rules for coal mining.

For this discussion, the following terms are described for clarification.

The term “cover” refers to the material placed directly on the exposed RDA surface, whether on a bench outslope or the flatter operational surface. Cover is not topsoil or considered a substitute for topsoil. Cover material will consist of any native material taken from where topsoil is either non-existent or has been previously removed and segregated as required by Rule 4.06. Cover is also native material lying insitu below the topsoil layer, where the topsoil material has not been removed and segregated. Final placement of cover material is required only where refuse is permanently placed on the actual refuse surface at the RDA.

The term “topsoil” refers to the material required to be harvested under Rule 4.06 and as specifically defined by Rule 4.06.2(2)(b) with regard to the removal of topsoil. Topsoil is present in varying amounts and thicknesses, depending primarily on slope and aspect, in the approved RDA disturbance area, and as described in detail in section 2.04 of the approved permit application.

The term “borrow area” describes the area both previously approved for disturbance and as approved in this plan to serve as a source area for both cover and topsoil that is within the RDA disturbance area and immediately adjacent to the RDA.

The term “early plan” is the plan for reclamation of the RDA at any point in the future before the RDA reaches its final design size. Reclamation costs are based on this worst-case reclamation exposure at the RDA.

The term “final plan” is the approved plan for construction of the RDA to completion to near the top of the valley and as discussed in the permit text, permit figures, and as presented in various portions of Exhibit 30.

<u>RDA reclamation operations for the “early plan”</u>

The following analysis supports the early plan for reclamation of the RDA and includes the necessary components to calculate an estimated cost for the work.

1. The area of refuse required to be reclaimed with the application of both cover and topsoil under any future early plan has been determined to be 19 acres as of June 2020. This represents a maximum exposure of the surface requiring reclamation should the early plan of reclamation be initiated at any point before the RDA reaches final plan size. Support for this assumption is shown on Figure 11 of the approved permit application, cross section A-A’. This cross section shows that at approximately the level of bench 4, the post-mining contours progressively step toward the existing contours at a slightly greater angle as the refuse pile grows in size. Therefore, the refuse exposure at about bench 4 would be at its greatest aerial extent and would slowly reduce in aerial extent as the pile increases in elevation. An additional 4 acres of ancillary areas would require topsoil, such as small benches, and other minor disturbances outside the RDA footprint. These ancillary areas are in addition to areas like the “zig zag road” which are included separately in the reclamation cost estimate.

2. At any point in the construction of the RDA, the current operational surface is at some partial point of construction of a new bench. In June 2020, four benches have been reclaimed completely and bench five is under construction. Twelve benches are planned for construction in the final plan. The design for bench construction is shown on figures 7, 8, 9 and 11 of the approved permit. If operations cease and early reclamation operations begin, the current operational bench will be graded to partial bench with a height of between 0-50 feet. For the construction of a partial bench, only the bench outslope height is affected and all other design details apply. As required by Rule 4.09.1(9), the remainder of the flatter surface of the RDA will be graded to a final post mining topography to minimize erosion and to direct overland flow of surface runoff to the perimeter ditches, either toward the sides or the back of the regrade RDA surface. Small depressions in the surface are allowed by Rule 4.09.1(8) but gentle undulation of the graded surface will be created to prompt drainage to the 100-year perimeter ditches through the use of drainage swales to minimize any ponding of water on the surface.

3. The 100-year perimeter ditches will be constructed at the immediate edge of the RDA (not in the refuse itself) as previously proposed and approved in the final plan and shown on Figures 6, 7 and 8. The current buffer area between the existing 100-year ditch and the edge of the RDA is available for selective topsoil harvest, if there is determined to be suitable topsoil present. Other subsoil and colluvial material will also be harvested within this area and used as cover material to be placed directly on the refuse surface once it is at final grade. Actual reclamation operations on the four benches completed sourced both cover and topsoil from the back wall of the RDA area. Approximately 3600 feet of ditch will be constructed and cover material will be simultaneously placed along the refuse edge of the ditch for a width of 50 feet as ditch construction progresses. This results in about 4 acres (3600 ft x 50 ft = 180000 ft2/43560 ft2/acre) of area where cover material is sourced from the back wall of the RDA, which is a reasonable estimate given past experience on the four benches already reclaimed.

4. As a source of cover material for the remaining 15 acres of refuse surface, a borrow area of approximately 5.2 acres will be established along the southwest perimeter of the RDA. Field investigations of this area indicate substantial quantities of both topsoil and cover material in volumes more than adequate to supplement additional topsoil and cover taken from the buffer area along the back slope above the RDA. All of this borrow area was already approved for disturbance under the final plan. In the final plan, most of this area would be harvested of topsoil and cover prior to being covered by refuse as shown on Figure 6 and Map 24 of the approved permit application. However, under the early plan of reclamation, the reclamation sequence and timing is altered and this area borrow area would be used as an immediate source of both topsoil and cover. The borrow area current topography as of June 2020 is shown on Figure 10. The borrow area is again shown in Figure 10a with an approximation of post-mining topography after the harvesting of topsoil and cover material. Three cross sections are included through the borrow area and are shown on Figures 10b, 10c, and 10d. Cover material volume calculations are presented in the two tables below. There is in excess of 76,000 LCY of cover material that can be sourced in this area and when supplemented with cover material from the back perimeter of the RDA, is more than what would be required to meet the required cover depth for the early plan of reclamation of the RDA.

5. Rule 4.10.4(5) allows for a variance in the requirement of four feet of total cover/topsoil on refuse disposal areas as long as that variance ensures reclamation results that will meet all required standards for revegetation in accordance with Rule 4.15. A lesser amount of cover material is justified for the early plan to reclaim the RDA based on the following rationale.

◦ The variance in the cover/topsoil requirement is only approved for the early plan to reclaim the RDA. The final plan to construct the RDA to its final design height and volume as currently approved does not include any variance of the refuse cover/topsoil requirement of four feet.

◦ The cover variance only applies to the early plan and within that early plan, the cover variance is approved only on those areas of gentle or flat slopes. Bench outslopes, where there is a greater potential for erosion, will require four feet of cover/topsoil, 3.25 feet and .75 feet respectively.

◦ The cover variance approval minimizes the disturbance in the adjacent borrow area. Minimization of the mining disturbance is required and encouraged by the Rules governing coal mining.

◦ The cover variance approval is justified in part based on reclamation success at the New Elk Mine on the Development Waste Pile (DWP), where less than four feet of cover and topsoil was approved. The DWP at the New Elk Mine was reclaimed as approved using a total of two feet of cover, 1.25 feet of cover and .75 feet of topsoil respectively. This approval was based on site-specific information from a study of reclamation completed at the New Elk mine under an abandoned mine lands (AML) project. Furthermore, since the DWP was completely covered, topsoiled and reseeded, anecdotal information from the permittee and DRMS inspection observations indicate that revegetation efforts do not appear to be impeded by using two feet of cover/topsoil.

◦ The cover variance approved at the RDA uses, at a minimum 2.75 feet of total cover/topsoil and uses the maximum requirement of four feet of cover/topsoil on steep outslopes. This exceeds the approved requirement at the DWP by 37.5% at a minimum for flat and gentle slopes of the RDA and by 100% for the steep slopes of the DWP.

◦ The variance will be performance based. Should vegetation sampling results planned to be completed in the near future at the DWP identify any significant concerns with regard to overall revegetation success, the permittee commits to re-evaluate and modify the “early plan” specific to the variance for reduced cover on the RDA flat and gentle slopes.

Based on the information as presented above, the variance of cover allowed under Rule 4.10.4(5) is approved only for the “early plan” of reclamation of the RDA. The cover/topsoil requirement for the early plan requires 2 feet of cover followed by .75 feet of topsoil on flat and gentle slope areas (approximately 14 acres maximum exposure) and 3.25 feet of cover and .75 feet of topsoil on fully or partially constructed bench outslopes (approximately 5 acres maximum exposure). No

variance in the cover requirement is approved for construction of the RDA under the "final plan" as previously approved and as shown on Figure 6, Map 24, and other approved permit materials.

Reclamation operations for the early plan and estimation of reclamation costs

Under the early plan for the RDA, the process would begin with grading of the operational surface to direct flow away from the bench face and toward the sides and the back of the exposed surface. Dozers and motor graders would be used for this work. Excavators would be used along the RDA perimeter to construct the 100-year ditch after a suitable final grade is established. The ditch grades will split the drainage in the 100-year ditches so that approximately 50 percent of the flow from the area is handled by each ditch. Reclamation of existing 100-year ditches and harvesting of topsoil and cover material would be accomplished using excavators, small dozers, and trucks, as needed. Similar operations would occur in the borrow area, where topsoil and cover would be separately harvested and trucked, or placed and dozed across the RDA final surface. Push and haul distances in this scenario would be approximately 820 feet for trucks and 400 feet for dozers.

Cost estimate volume/distance/details

An estimated 30,000 LCY of refuse may need to be graded using dozer operations on the final refuse surface.

An estimated 3600 feet of ditch construction is required at the RDA perimeter resulting in the movement of approximately 4000 LCY of material using an excavator.

Topsoil resources in the borrow area are estimated at 1613 LCY/acre (12 inch depth per acre). If five acres of the borrow area are needed for cover, 9274 LCY (8065 BCY) of topsoil would need to be stripped and placed live-haul on areas where cover has been placed or placed in the stockpile location as shown on Figure 10a if final cover areas are not available for live-haul placement.

Cover would be stripped from the borrow area. Fourteen (14) acres of flat or gentle refuse surface would require cover at a 2 foot depth resulting in the need for 45,173 LCY of cover material. Approximately 4 acres of the gently sloping surface would be covered with material taken from the back perimeter of the RDA, requiring 12,907 LCY to cover the 4 acres. This would leave 10 acres of the gentle surface remaining and require 32,267 LCY of cover material to be sourced from the borrow area. This material would be live-handled to its final location on the refuse surface.

An additional 5 acres of bench outslope would require 3.25 feet of cover, requiring 26,517 LCY of cover material. This material would also be live-handled from the borrow area to its final location.

Calculations estimate up to 76,301 LCY of cover material is available in the borrow area. The projected need for cover material to be sourced from the borrow area is 58,784 LCY at a minimum, leaving a projected excess of cover material at the borrow area if the back wall projections for available cover material would need to be supplemented.

The entirety of the borrow area will require nine inches of topsoil to be applied to the borrow area after the cover material is harvested. The required topsoil replacement volume is estimated at 6,292 LCY, assuming the entirety of the 5.2 acre borrow area is disturbed.

The borrow area would be reseeded with the approved seed mix for the RDA.

On the RDA surface, shrub clumps would be located and constructed as per the approved plan for revegetation and the entire area would be seeded using the approved seed mix. An "Arizona" crossing of the 100-year ditch with a two-track road will be required to facilitate shrub watering and other post-reclamation management activities.

Estimated direct cost to complete this reclamation work for the early plan to reclaim the RDA is approximately $275,485 using cost data as of 2019. Cost breakdown is as follows.

Regrading of approximately 30,000 LCY of refuse ($12,000)
Construction of 100-year ditches ($10,000)
Stripping of 5 acres of topsoil at borrow area ($12,100)
Strip and place 14 acres of cover at 2 feet depth ($135,520)
Strip and place 5 acres of cover at 3.25 feet depth ($73,205)
Topsoil the borrow area ($25,410)
Reseed the borrow area ($7,250)

Evaluation of the success of the reclamation practices for the DWP will determine whether NECC will submit a request for an alternative reclamation plan for the RDA.

(f) Revegetation

NECC has elected to utilize the reference area approach in evaluating revegetation success for cover, production, and species diversity over all areas, regardless of the post-mining land use (and as modified under discussion below regarding excluded areas). NECC has established one reference area for this purpose. This area is the rangeland reference area located near the former Golden Eagle Mine located on Colorado Parks and Wildlife lands of the Bosque del Oso State Wildlife Area. Correspondence in Exhibit 15 grants NECC the authorization to enter this area for