



TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.

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February 15, 2021

Mrs. Janet Binns
Environmental Protection Specialist
Colorado Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

RE: New Horizon Mine (Permit No. C-1981-008)
Minor Revision No. 117 (MR-117)
Topsoil Handling Plan

Dear Mrs. Binns:

Tri-State Generation and Transmission Association (Tri-State), is the parent company to Elk Ridge Mining and Reclamation, LLC (ERMR) New Horizon Mine. Therefore, Tri-State on the behalf of the ERMR is submitting MR-117 to Permit No. C-1981-008. MR-117 proposes an updated topsoil handling plan for New Horizon Mine.

Included with this minor revision is a change of index sheet to ease incorporation of this minor revision into the permit document. If you should have any additional questions or concerns, please feel free to contact Tony Tennyson at (970) 824-1232 or tennyson@tristategt.org.

Sincerely,

DocuSigned by:

Daniel Casiraro

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Daniel J. Casiraro

Senior Manager

Environmental Services

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Enclosures

cc: Frank Ferris (via email)
Chris Gilbreath (via email)
Tony Tennyson (via email)
File: G474-11.3(21)b-5



CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONSMine Company Name: **New Horizon Mine**Date: **February 11, 2021**Permit Number: **C-1981-008**Revision Description: **MR-117 Topsoil Movement**

| Volume Number | Page, Map or other Permit Entry to be | Page, Map or other Permit Entry to be | Description of Change |
|---------------|----------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| | REMOVED | ADDED | |
| 1 | | | No changes |
| 2 | | | No changes |
| 3 | | | No changes |
| 4 | | | No changes |
| 5 | | | No changes |
| 6 | | | No changes |
| 7 | | | No changes |
| 8 | Section 2.05.4(2)(d) Page 8 (1 page) | Section 2.05.4(2)(d) Page 8 (1 page) | Table 2.05.4(2)(d)-2 has been updated. |
| 8 | Section 2.05.4(2)(d) Pages 12 through 16 (5 pages) | Section 2.05.4(2)(d) Pages 12 through 16 (5 pages) | Section 9 - Narrative on topsoil balance North of BB Road/West of 2700 Road has been updated. The proposed changes caused a pagination shift. |
| 8 | Map 2.05.4-4 | Map 2.05.4-4 | Map 2.05.4-4 has been updated. |
| 9 | | | No changes |
| 10 | | | No changes |

Establishing vegetative cover will aid in overall stabilization and erosion control of stockpiles. Vegetative cover will aid in reducing runoff and raindrop impact and will increase moisture infiltration by maintaining the upper soil surfaces in a friable, non-crust condition. Organic matter, soil nitrogen, and microorganism activity will be maintained or enhanced by the seeding of deep rooted species or species with fibrous root systems.

The topsoil storage breakdown can be seen in Table 2.05.4(2)(d)-2 below. The topsoil stockpile locations are shown on Map 2.05.4-4.

Table 2.05.4(2)(d)-2 Topsoil Stockpile Inventory¹

| Topsoil Pile Name² | Type of Topsoil | Volume (CY) |
|--------------------------------------|-------------------------|--------------------|
| C | Lift B Topsoil | 3,705 |
| D | Mixed Topsoil | 3,242 |
| H | Lift A Topsoil | 2,363 |
| 12 | Mixed Topsoil | 169,570 |
| 13 | Lift A | 1,900 |
| 4 | Prime Farmland Topsoil | 13,266 |
| Sub Total | | 194,046 |
| 11A | Lift A Topsoil (Morgan) | 5,550 |
| 11B | Lift B Topsoil (Morgan) | 4,070 |
| Sub Total | | 9,620 |
| GRAND TOTAL | | 203,666 |

¹ The topsoil inventory above is a moment in time. This inventory is updated annually in the annual reclamation report.

² Please see Map 2.05.4-4 for topsoil stockpile locations.

Topsoil Storage Prime Farmland

An area near Pond 013 in the northwest corner of the ERMJ-Johnson property was determined to be Prime Farmland. The construction of the Pond 013 led to the disturbance of this area. The disturbance is a mix of Pond 013 itself, the prime farmland soil stockpile, and related disturbance. The prime farmland soils that were removed are now in Stockpile 4 near Pond 013. This stockpile can be seen on Map 2.05.4-4 with the corresponding volume of material provided on Table 2.05.4(2)(d)-2.

stockpiles to complete the topsoil redistribution plan. Since stockpiled soil had rock fragments removed during stripping, the recovery from stockpiles is treated as 100%. The basic calculation of the topsoil required in a given zone is:

$$\text{Topsoil Needed} = \frac{\text{Zone Area (ac)} * 43,560 \frac{\text{ft}^2}{\text{ac}} * \text{Soil Thickness (in)}}{12 \frac{\text{in}}{\text{ft}} * 27 \frac{\text{ft}^3}{\text{yd}^3}}$$

The size of the stockpiles is determined via detailed surveys conducted on site. All soil thicknesses are designed to the nearest inch, since this is the practical measurement limit for the scale of equipment used at the New Horizon Mine.

North of BB Road/West of 2700 Road

Several areas are remaining to be topsoiled north of BB Road and West of 2700 Road. One area will be reclaimed to Prime Farmland and the other areas will be reclaimed to dryland pasture. All areas will have approximately 24 inches of Bench 1 placed prior to topsoil replacement. Please see Map 2.05.4-4, which delineates currently reclaimed areas, unreclaimed areas, and the prime farmland area on the ERMR-Johnson Property. Table 2.05.4(2)(d)-4 below provides the overall topsoil balance for these remaining areas.

Table 2.05.4(2)(d)-4 Topsoil Balance North of BB & West of 2700 Road

| Area | Area (acres) | Available Thickness (inches) | Stockpiled Topsoil ¹ |
|-----------------------|--------------|------------------------------|---------------------------------|
| Dryland Pasture Areas | 83.80 | 15.3 | 171,470 |
| Prime Farmland Area | 2.83 | 34 | 13,266 |
| Total | | | 184,736 |

¹Stockpiled topsoil values are from Table 2.05.4(2)(d)-2 Topsoil Stockpile Inventory

Topsoil from Pile 12 will be used for differential settling on the ERMR-Lloyd and ERMR-Benson West irrigated pasture areas if necessary. Please see Section 12 below for further discussion on differential settling management plan.

Topsoil piles D and C south of the facilities area will remain post mine for use at the discretion of the surface landowner, or if deemed necessary used for differential settling mitigation on irrigate pasture reclamation areas within the permit boundary.

Topsoil pile H will be taken to an ERMR property outside of the permit boundary. New Horizon currently has an adequate amount of topsoil necessary to complete reclamation for the dryland

pasture areas on or directly adjacent to the ERMJ-Johnson property, and this extra topsoil is will be a long term benefit to an adjacent ERMJ property.

Please see Map 2.05.4-4 for locations of topsoil piles discussed in this section.

10. Topsoil Preparation Procedures Prior to Seeding

This discussion has been divided into each of the three main post-mine land uses: Dryland Pasture (DP), Irrigated Pasture (IP), and Irrigated Cropland (IC). Irrigated Cropland covers both prime and non-prime farmland areas. In general, topsoil will not be placed while saturated, and will be replaced along the contour, whenever feasible, to minimize potential erosion and topsoil/spoil interface slippage problems. This practice will be discontinued on steep slopes where the safety of the equipment operator is in jeopardy.

Irrigated Cropland Topsoil Preparation Procedures

Topsoil replacement operations may be carried out during most of the year, the exception being those periods when wet conditions would preclude handling of the topsoil materials.

- Deep ripping of topsoil - Upon successful completion of placing topsoil on the ripped Bench 1 the topsoil will be ripped to a depth of at least 2 inches greater than the depth of topsoil. This will alleviate compaction of the topsoil and assist in the removal of any boundaries between the ripped Bench 1 and topsoil.
- Land leveling - A blade pulled behind a farm tractor is used to level the topsoil surface and allow a smoother surface for seeding.
- Rock picking – Rock picking is done by a mechanical device that are pulled behind a tractor that windrows rocks and then another device that picks up large rocks over approximately 2.5 inches in diameter. Rocks up to approximately 24" diameter can be picked up by the device. Sandstone lenses that are identified in any topsoil or Bench 1 will be buried in lower Bench 1 overburden, at least eight feet below the topsoil level.
- Fertility testing - Three soil samples will be obtained in the field to be tested. The field is defined as that area that has recently been topsoiled. Samples will be taken and analyzed by a lab using the standard soil test for pH, salts, organic matter, nitrogen, potassium, and phosphorous. The lab will be informed that the desired crop is irrigated alfalfa and that the tonnage rate is 5.5 tons per acre. The reference area will be sampled separately.
- Disking - Prior to final seedbed preparation, soil conditioning and weed control tillage will be carried out through disking or other standard agricultural practice. Disking will be

used to condition soil, break up clods, and control weeds prior to seeding. If annual weeds are a problem, several tillage operations may be required to get adequate control.

- Final Seedbed Preparation - (For irrigated areas) Cultipacking prior to seeding will be conducted if land leveling did not provide a smooth soil surface for seeding. The best period for tillage in these areas may be in the early spring prior to the irrigation season. For flood irrigated areas - A standard marker will create furrows of approximately 4" to 6" depth on 30" centers, which is standard for the gated pipe used for the flood irrigation.
- Fertilizer Application - Based on the results of fertility testing, fertilizer of the designated type will be applied at the rate specified from the lab testing. Fertilizer applications may be delivered through the irrigation system, by tractor with a broadcast spreader, or alternate method. The fertilizer will be applied in the same year that the fertility testing is done. Ongoing fertility testing after initial seeding is described in Section 2.05.4(2)(e) Revegetation.

Irrigated Pastureland Topsoil Preparation Procedures

Topsoil replacement operations may be carried out during most of the year, the exception being those periods when wet conditions would preclude handling of the topsoil materials.

- Deep ripping of the subsurface - Upon successful completion of placing topsoil on the ripped Bench 1 the topsoil will be ripped to a depth of at least 2 inches greater than the depth of topsoil. This will alleviate compaction of the topsoil and assist in the removal of any boundaries between the ripped Bench 1 and topsoil.
- Deep ripping of topsoil - Upon successful completion of placing topsoil it will be ripped 2 inches or greater than the depth of topsoil. This will alleviate compaction of the topsoil and assist in the removal of any boundaries between the ripped subsoil and topsoil.
- Land leveling - A blade may be pulled behind a farm tractor to level the topsoil surface and allow a smoother surface for seeding.
- Rock picking - Rock picking is done by a mechanical device that are pulled behind a tractor that windrows rocks and then another device that picks up large rocks over approximately 2.5 inches in diameter. Rocks up to approximately 24" diameter can be picked up by the device. Sandstone lenses that are identified in any topsoil or Bench 1 will be buried in lower Bench 1 overburden, at least eight feet below the topsoil level.
- Fertility testing - Three soil samples will be obtained in the field to be tested. The field is

defined as that area that has recently been topsoiled. Samples will be taken and analyzed by a lab using the standard soil test for pH, salts, organic matter, nitrogen, potassium, and phosphorous. The lab will be informed that the vegetation is irrigated pastureland. The reference area will be sampled separately.

- Disking - Prior to final seedbed preparation, soil conditioning and weed control tillage will be carried out through disking or other standard agricultural practice. Disking will be used to condition soil, break up clods, and control weeds prior to seeding. If annual weeds are a problem, several tillage operations may be required to get adequate control.
- Final Seedbed Preparation - (For irrigated areas) Cultipacking prior to seeding will be conducted if land leveling did not provide a smooth soil surface for seeding. The best period for tillage in these areas may be in the early spring prior to the irrigation season. For flood irrigated areas - A standard marker will create furrows of approximately 4" to 6" depth on 30" centers, which is standard for the gated pipe used for the flood irrigation.
- Initial Fertilizer Application - Based on the results of the fertility testing, fertilizer of the designated type will be applied at the rate specified from the lab testing. Fertilizer applications may be delivered through the irrigation system, by tractor with a broadcast spreader, or alternate method. The fertilizer will be applied in the same year that the initial fertility testing is done. Ongoing fertility testing after initial seeding is described in Section 2.05.4(2)(e) Revegetation.

Dryland Pasture Seedbed Topsoil Preparation Procedures

For dryland pasture reclamation areas the following procedures will be observed during topsoil replacement.

- Ripping - Upon successful completion of placing topsoil on the ripped Bench 1 the topsoil will be ripped to a depth of at least 2 inches greater than the depth of topsoil. This will alleviate compaction of the topsoil and assist in the removal of any boundaries between the ripped Bench 1 and topsoil.
- Land leveling – New Horizon uses a blade pulled behind a farm tractor to level the topsoil surface and allow a smoother surface for seeding.
- Rock picking – For dryland pasture areas it will be at the operators discretion on whether rock picking will occur.
- Disking - Prior to final seedbed preparation, soil conditioning and weed control tillage

will be carried out through disking or other standard agricultural practice. Disking will be used to condition soil, break up clods, and control weeds prior to seeding. If annual weeds are a problem, several tillage operations may be required to get adequate control.

- Final Seedbed Preparation - Cultipacking prior to seeding will be conducted if land leveling did not provide a smooth soil surface for seeding. The best period for tillage in these areas will be immediately prior to seeding.

For areas greater than 15% slope, the following procedures will be followed:

- Scarification - The single lift topsoil will be scarified (ripped) to its placement depth using a motor grader with rippers which will operate perpendicular to the slope, creating rough surfaces to trap moisture and prevent soil erosion along this slope. An example of an area where this would be employed is the north edge of the Benson West, the ERMR-Lloyd and the ERMR-Johnson property, where there is a significant steeper slope in these areas.

11. Topsoil Sampling Plan

Prior to topsoil being seeded it will be sampled to ensure it has correct properties to ensure appropriate vegetative growth will occur. Table 2.05.4(2)(d)-5 below provides the topsoil sampling criteria that will be utilized.