TRI-STATE

March 24, 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. 118 (MR-118)
Irrigation Pipeline Installation

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-118 to Permit No. C-1981-008. MR-118 documents a private landowner installation of an irrigation pipeline on their property within the permit boundary.

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 ttennyson@tristategt.org.

Sincerely,

DocuSigned by:
Daniel Casiraro
B70D69F114324DE...

Daniel J. Casiraro
Senior Manager
Environmental Services

DJC:TT:der

Enclosures

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

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CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

Mine Company Name: **New Horizon Mine**

Permit Number: **C-1981-008**

Date: **March 23, 2021**

Revision Description: **MR-118 Irrigation Pipeline Installatoin**

Volume Number	Page, Map or other Permit Entry to be REMOVED	Page, Map or other Permit Entry to be ADDED	Description of Change
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)(e) Page 1 (1 page)	Section 2.05.4(2)(e) Page 1 (1 page)	Section 2.05.4(2)(e) Table of Contents has been updated.
8	Section 2.05.4(2)(e) Pages 23 through 30 (8 pages)	Section 2.05.4(2)(e) Pages 23 through 30 (8 pages)	Landowner project documentation has been inserted which caused a pagination shift.
9			No changes
10			No changes

Section 2.05.4(2)(e)

Revegetation

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first six years of the liability period. Interseeding will be conducted by use of a drill seeder capable of seeding into an unprepared seedbed or by use of a broadcast seeder in conjunction with use of a spring tooth harrow or similar locally available equipment, to provide for seed coverage with minimal disturbance to established vegetation. The practice will be used for the purpose of improving stand composition, typically to increase the legume components of a grass dominated stand, less commonly to increase the grass component of a legume dominated stands. Interseeding is not a substitute for full reseeding of failed stands that are deficient in perennial cover.

Landowner Projects

In 2021, the surface landowner GW46 Irrevocable Trust, please refer to Map 2.03.4-1 for landowner's property within the mine permit boundary, plans to install their own private irrigation line through the permit boundary to their adjacent property. This irrigation pipeline may be installed on the surface or underground within reclamation parcel IP-10. Please refer to annual reports maps the location of IP-10 reclamation parcel. This irrigation pipeline is not associated with New Horizon Mine, New Horizon Mine's on going reclamation activities, and the irrigation pipe line location (including surface and/or underground) is at the discretion of the surface land owner.

6.0 Irrigated Cropland Revegetation

The Morgan Property landowners (the Morgan's) have a long history of successful farming on their property in particular, and the Nucla area in general. The Prime Farmland (previously called out as Irrigated Cropland, but defined here forward as Prime Farmland) revegetation below has been assembled based on their input. Given the Morgan's extensive knowledge of farming their land, they may make suggestions to this plan, and if acceptable to New Horizon, changes will be made to successfully achieve the post mine land use of Prime Farmland.

New Horizon will rely on the details of this plan below for revegetation of Prime Farmland on the Johnson property.

All Prime Farmland within the permit area is being reclaimed to Irrigated Cropland, but not all Irrigated Cropland is Prime Farmland. See permit Section 2.06.6 for more information.

6.1 General Information

The Prime Farmland post-mining land use will occur on all of the Morgan Property (107.96 acres), and a small portion of New Horizon property (3.96 acres) on the northwest side of the permit near Tuttle Draw. Map 2.05.4-5 shows the reclamation land uses of the entire site, including irrigation areas. The species planted will be mostly alfalfa, with other crops rotated as appropriate to follow agricultural norms and good husbandry practices.

All Prime Farmland areas within the permit will be measured against the Prime Farmland reference area in terms of cover and crop production. The Prime Farmland reference area is located on the Morgan Property and will receive the same management as the rest of the property. All Prime Farmland areas will be managed in the same fashion, as outlined in this section.

Prime Farmlands have additional requirements. These additional requirements and plans are discussed in permit Section 2.06.6, subsection 6.0.

6.2 Irrigation Designs

The irrigation systems to be used on the Prime Farmland areas have been selected based on landowner input and local husbandry practices. Given the Morgan's experience and expertise in farming in the Nucla area, and on their property in particular, the irrigation designs are based on achieving successful reclamation.

The post-mine fields and brief descriptions of the irrigation type can be seen on Map 2.05.4-5, while Attachment 2.05.4(2)(e)-7 contain the irrigation designs for all Prime Farmlands.

6.4 Seeding of Irrigated Cropland

Several seed mixes may be used on the Prime Farmland at New Horizon Mine to achieve successful reclamation. All of these seed mixes are described in this subsection. All seed mixes will be planted following soil preparation.

Cover Crop Mix
This seed mix is used immediately after the final placement of the topsoil in the Prime Farmland areas. It is intended to provide fast revegetation to protect against erosion, and add organic matter to the soil. New Horizon will use oats as the cover crop or at a species as requested by the surface landowner.

Species Common Name	Seeding *Rate*
Oats (cover crop)	70 lbs/acre

Rotation Mix
Alfalfa fields are periodically tilled into the soil and replanted as part of normal husbandry practices. In between the alfalfa crop periods of the bond release period, a rotation crop will be planted. This rotation crop will be used to estimate the progress of the site during the reclamation.

Based on the input and expertise of the Morgan's, the rotation crop will likely be a quick growing small grain or corn crop. Example seeding rates for both oats and corn are shown below. A different crop may be suggested by the Morgan's as the surface landowner.

Species Common Name	Seeding *Rate*
Oats (rotation crop)	100 lbs/acre
Corn (rotation crop)	32,000 seed count/acre

Seed Mix #7 – Irrigated Alfalfa Cropland Mix (IC) Land Use

Species Scientific Name	**Common Name**	**Drilled PLS/Acre**	**Broadcast PLS/Acre**
Medicago sativa	Alfalfa	20-24	20-24
Avena sativa	Oats	70	70

Note: Alfalfa seed must be inoculated with a specific strain of Rhizobium bacteria. The oats will be planted with alfalfa as a companion crop, in the years that alfalfa is planted. Seeding schedule can be seen in subsection 5.3.6

Seed Mix #7 - Recommended Varieties

Alfalfa - Lahontan (AV120 and/or SS120)

Other varieties may be used, upon the approval of the landowner. New species may be developed which are better suited to these site conditions and soils.

Seeding and Management Schedule

The following narrative and Table 2.05.4(2)(e)-3 describes the sequence of steps for the revegetation process of Prime Farmland. This schedule applies to all Prime Farmland areas.

Table 2.05.4(2)(e)-3 Seeding and Management Schedule

Year	Seed Mix	Seeding Time	Interim Vegetation Monitoring	Bond Release Vegetation Study
1	Rotation Crop Mix	Spring/Summer		
2	Seed Mix #7	Spring/Summer		
3	No Seeding		Occurs	
4	No Seeding			
5	No Seeding			
6	Rotation Mix	Spring/Summer		
7	Seed Mix #7	Spring/Summer		
8	No Seeding		Occurs	Occurs
9	No Seeding			Occurs
10	No Seeding			Occurs

Note: Seed Mix #7 includes a companion crop of oats. This oat crop is planted with the alfalfa in that growing season.

Fertility testing of the soil will be conducted every year. Fertilization will be based on this testing each year.

Year 1 - In Spring-Summer, place topsoil and conduct topsoil preparation and seedbed preparation. Fertilize per lab recommendations. Rotation crop will be seeded following preparation. Provide irrigation water to establish the crop, and continue irrigation through the end of harvest to provide to keep the crop growing. Take soil samples after harvest in preparation for the following year, or in the spring prior to fertilizing and planting.

Year 2 - In the Spring-Summer, fertilize per lab recommendations. Seed Mix #7 will be planted. Provide irrigation water to establish the crop, and continue irrigation through the end of harvest to provide to keep the crop growing. Take soil samples after last cutting of alfalfa in preparation for the following year, or in the spring prior to fertilizing and planting.

Year 3-4 - Fertilize and irrigate the land, and harvest according to normal management procedures. Maintain irrigation through until harvest each season. Take soil samples after last cutting of alfalfa in preparation for the following year, or in the spring prior to fertilizing and planting.

Year 5 - In the Fall, till the alfalfa crop and let it sit over the winter.

Year 6 - Prepare the seedbed for planting, fertilize, and plant the Rotation Crop. Provide irrigation water to establish the crop, and continue irrigation through the end of harvest

to provide to keep the crop growing. Take soil samples after harvest in preparation for the following year, or in the spring prior to fertilizing and planting.

Year 7 - In the Spring-Summer, fertilize per lab recommendations. Seed Mix #7 (including the cover crop) will be planted. Provide irrigation water to establish the crop, and continue irrigation through the end of harvest to keep the crop growing. Take soil samples after last cutting of alfalfa in preparation for the following year, or in the spring prior to fertilizing and planting.

Year 8-10 - Fertilize and irrigate the land; harvest according to normal management procedures. Take soil samples after last cutting of alfalfa in preparation for the following year, or in the spring prior to fertilizing and planting.

Compare production against the Prime Farmland reference area for bond release during Years 8, 9 and 10 as appropriate.

In Years 4 and 5 the mine may use soil amendments in the Prime Farmland areas to improve the quality of the soil in the reclaim area. These amendments will be determined based on analysis of the reclaim area soil versus the undisturbed reference area soil. For example, manure may be applied if it is determined that the reclaim area soil has not recovered enough organic matter since its placement. Organic matter is often lost when soil is stockpiled, as has happened with all of the soil on the Morgan Property. Soil leaching may be done during non-alfalfa growing years only. Soil amendments and/or leaching will also be applied to the Prime Farmland reference area if necessary, since it has been fallow since 2008.

6.5 Irrigated Cropland Revegetation Management Plan

Tillage

Tillage is an important part of any reclamation plan development. It is important that tillage be done only when necessary and minimized to limit erosion, soil OM depletion and associated compaction. Tillage will be completed in the initial year and rotation year as necessary to alleviate compaction and prepare seed beds. The following tillage may be conducted as necessary based on the needs of the fields and the input of the landowners.

1. *Cultipacker* - If required the topsoil will be cultipacked prior to seeding to assist in the creation of a good seed bed. The need for seed bed preparation will be made by the seeding contractor based on experience and field conditions at the time of seeding. Disking, cultipacking, rock picking, land leveling, and rock raking are all normal husbandry practices that may be conducted as needed.

2. *Drill/Broadcast seeding* - Seeding should be conducted by normal husbandry practices and equipment. Seed placement is critical to establish a high quality cover crop. Seeding will be conducted according to the schedule shown above in 5.3.6.

Weed Management
Herbicides may be necessary to control weedy species during the initial year of reclamation. If herbicides are required they will be used based on Integrated Pest Management (IPM) techniques.

Harvest
Harvesting will take place at the discretion of the farmer.

Crop Management
The crops will be managed according to normal agriculture practices.

Irrigation Management
The irrigation could be limited at times of the year due to actual irrigation water availability. If this occurs it will be noted on the management worksheet and will be reviewed to determine alternative irrigation techniques and future crop selections.

6.6 Irrigated Cropland Success Criteria and Success Demonstration

All Prime Farmland areas will be measured against the Prime Farmland reference area to determine revegetation success. Irrigated cropland revegetation that is not Prime Farmland will have to achieve 90% of the cover and production of the reference area (after applying 90% confidence interval) to be considered successful. Prime Farmland areas will need to meet or exceed 100% of the cover and production of the reference area (same confidence interval) for revegetation to be considered successful. Revegetation success will be monitored for in each of the required study years prior to bond release.

Irrigated Cropland Reference Area
The Prime Farmland reference area is located on the south side of the Morgan Property within the mine permit area. It can be seen on Map 2.05.4-5. This area was originally set aside and not disturbed by mining to provide a buffer between the home of the Morgan's (to the south) and mine blasting activities. The soils in this area have been determined to be prime farmland soils of the same type found within the disturbed Prime Farmland areas immediately to the north. Map 2.04.9-1 shows these soils. Additionally, this area was managed as part of cropland fields that existed on the west end of the Morgan Property prior to mining. It received the same irrigation, fertilization, harvesting, and grazing as the Prime Farmland areas that have been disturbed by mining. The irrigation for this area was from the same water rights as the rest of the Morgan Property.

The combination of matching management, soils, and water on both the reference area and the disturbed areas of the Morgan Property make this reference area ideal for revegetation success measurements. Also, the soils have not been disturbed on the reference area during mining. This means that the reference area has a soil profile that matches the best pre-mine soils on the Morgan property. The reference area soils are prime farmland Barx soils. Again, this makes the reference area the best option for the comparison point with regards to Prime Farmland revegetation success.

The reference area has not been used as a cropland field since 2008, when water ceased to be applied to the area north of it prior to topsoil stripping. This prevents a vegetation analysis from being conducted at this time. According to the DRMS definitions, a reference area must be representative of the geology, soils, and vegetation of the permit area as determined by premining inventories. The Prime Farmland reference area shown on Map 2.05.4-5 is part of the Prime Farmland area designated on Map 2.04.10-1 (Pre Mine Vegetation), has the same soils (including prime farmland Barx) as the Morgan Property (Map 2.04.9-1), and shares the same overall geology as the rest of the Morgan property. The vegetation was historically the same since it was part of the larger irrigated alfalfa field.

Irrigated Cropland - Prime Farmland

Please see permit Section 2.06.6, subsection 6.6 for all information on the success criteria and demonstration for prime farmland areas of Irrigated Cropland. The revegetation success measurement criteria are described below in Rule 4.25.5(3):

Measurement of success in prime farmland revegetation will be determined based upon the techniques approved in the permit by the Division under [Rule] 2.06.6. At a minimum, the following shall be met:

*(a) Average annual crop production shall be determined based upon a minimum of 3 years of data. Crop production shall be measured for the three cropping years immediately prior to full release of bond in accordance with Rule 3.03.1(2)(c), or partial release of bond in accordance with Rules 3.03.1(2)(b), and 3.03.1(3)(b);*Emphasis added.

It should be noted that the revegetation success measurement for Prime Farmland is slightly different from that applied to Irrigated Cropland in general. Revegetation success on Prime Farmlands is determined using a three-year rolling average of production, compared to two years of production on Irrigated Cropland in general.

Irrigated Cropland - Non-Prime Farmland

A minimum of 2 years of production and cover data will be gathered in all non-prime farmland Irrigated Cropland areas. This is in accordance with Rule 4.15.9, shown below. Each year the IC data is gathered from reclaimed areas, it will also be gathered from the IC reference area.

Rule 4.15.9:

> *For areas to be used as cropland, success of revegetation shall be determined on the basis of crop production (statistical procedures using vegetation studies) from the mined area as compared to approved reference areas or other approved standard(s). Crop production from the mined area shall not be less than that of the approved reference area or standard for two of the last four years of the liability period established in 3.02.3. Crop production shall not be considered prior to year nine of the liability period. With respect to annual grain crops for which the cropping cycle may incorporate a summer fallow year, two of the last four cropping years will be considered. This liability period shall commence on the date of initial planting of the crop being grown. Production shall be considered equal if it is not less than 90% of the production as determined from the reference area or approved standard with 90% statistical confidence*. Emphasis added.

Revegetation Success Statistical Procedures - All Irrigated Cropland

Revegetation success on all Irrigated Cropland at the New Horizon Mine will be measured based on crop production according to either Rule 4.15.9 or Rule 4.25.5, depending on whether it is Non-prime Farmland or Prime Farmland. In both cases, measuring of the production will be carried out by using the quadrat method listed in Rule 4.15.11(1)(b)(i). The quadrat sampling method listed in this rule will be conducted according to Rule 4.15.11(2) as shown below:

Demonstrations of sample adequacy and revegetation success for cover and productivity shall be made in accordance with Rule 4.05.11(2).

(a) If the reclaimed area sample mean is equal to or greater than 90 percent of the relevant success standard, success may be demonstrated by direct comparison if sample size adequacy is demonstrated by the formula below. A minimum of 15 sample observations shall be taken even if statistical sample adequacy is achieved with fewer observations.