TRI-STATE

August 5, 2021

Mr. Zach Trujillo
Environmental Protection Specialist
Colorado Division of Reclamation, Mining & Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, CO 80203

**RE: Colowyo Coal Company L.P.**
**Permit No. C-1981-019**
**Minor Revision No. 237**
**Water Monitoring Plan**

Dear Mr. Trujillo,

Tri-State Generation and Transmission Association Inc. (Tri-State), is the parent company to Axial Basin Coal Company, which is the general partner to Colowyo Coal Company L.P. (Colowyo). Therefore, Tri-State on behalf of Colowyo is submitting minor revision 237 (MR-237) to Permit No. C-1981-019.

MR-237 updates Map 10B and Section 4.05.13 Surface and Groundwater Monitoring in Volume 15. Colowyo recently surveyed each surface and groundwater monitoring locations in the field, and Map 10B has been updated with more accurate locations for the currently monitored surface and groundwater monitoring locations. Map 10B has also been updated to correct several discrepancies on two surface water monitoring sites that were shown as being monitored (outside and west of the permit boundary on Morgan Creek), but in fact are not monitored locations. In Section 4.015.13 in Volume 15, the groundwater points of compliance wells below Collom have additional clarification added to note the different between groundwater standards for these wells versus the point of compliance well standards that were recently approved under TR-148 for the West, East, and South Taylor Pits.

Included in 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) 326-3560 at your convenience.

Sincerely,

DocuSigned by:
Chris Gilbreath
D250C711D0BF450...

Chris Gilbreath
Senior Manager,
Remediation and Reclamation

CG:TT:der

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Enclosure

cc: Jennifer Maiolo (BLM-LSFO)
Tony Tennyson (via email)
Angela Aalbers (via email)
File: C. F. 1.1.1.217 - G471-11.3(21)d

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

Mine Company Name: **Colowyo Coal Company**
Permit Number: **C-1981-019**
Date: **July 28, 2021**
Revision Description: **MR-237 Water Monitoring Plan**

| 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 Change |
| 2A | | | | | No Change |
| 2B | | | | | No Change |
| 2C | | | | | No Change |
| 2D | | | | | No Change |
| 2E | | | | | No Change |
| 3 | | | | | No Change |
| 4 | | | | | No Change |
| 5A | | | | | No Change |
| 5B | | | | | No Change |
| 6 | | | | | No Change |
| 7 | | | | | No Change |
| 8 | | | | | No Change |
| 9 | | | | | No Change |
| 10 | | | | | No Change |
| 12 | | | | | No Change |
| 13 | | | | | No Change |
| 14 | | | | | No Change |
| 15 | | | | | No Change |
| 16 | | | | | No Change |
| 15 | Pages Rule 4, Page 10 through Rule 4, Page 13 (4 pages) | | Pages Rule 4, Page 10 through Rule 4, Page 13 (4 pages) | | Section 4.05.13 has been updated. |
| 16 | | | | | |
| 17 | | | | | No Change |
| 18A | | | | | No Change |
| 18B | | | | | No Change |

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|---|---|---|---|---|---|
| 18C | | | | | No Change |
| 18D | | | | | No Change |
| 19 | | | | | No Change |
| 20 | | | | | No Change |
| 21 | Map 10B | | Map10B | | Map 10B has been updated. |
| 22 | | | | | No Change |

1. Upper Wilson Creek (UWC) represents water quality upstream of all mining impacts.
2. Upper Middle Wilson Creek (UMWC) represents water quality downstream of the proposed Lower Wilson mining area.
3. Lower Wilson Creek (LWC) represents water quality immediately upstream of the confluence with Taylor Creek.

Groundwater – Eleven valley fill groundwater sites and one deep groundwater well will be monitored as a result of mining activity at Colowyo. Please refer to Exhibit 26, Item 1 for additional details regarding the wells in the Collom Area. Field parameters and laboratory anaylsis are gathered each quarter.

| Monitoring Type | Monitoring Location | Monitoring Frequency | Quarterly Field Parameters | Quarterly Parameters |
|---|---|---|---|---|
| Valley Fill Groundwater | MC-04-01[1] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | MC-04-02[2] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | MLC-04-01[3] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | MJ-95-01[4] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | MJ-95-03[5] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | Gossard Well[6] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | A-6 Well[7] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | North Good Spring Well[8] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | MT-95-02[9] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | A-7[10] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Valley Fill Groundwater | A-8[11] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Groundwater Well | Trout Creek Well[12] | Quarterly | Water level, Temperature, pH, Conductivity | See Below |
| Alluvial Well | LGSW-1 | Quarterly | Water level, Temperature, pH, Conductivity | Please see Volume 2C Exhibit 7, Item 19, Table 16 |
| Alluvial Well | LWCW-1 | Quarterly | Water level, Temperature, pH, Conductivity | Please see Volume 2C Exhibit 7, Item 19, Table 16 |

1. MC-04-01 – Located in the Collom Gulch valley fill, this site represents the condition of the Collom Gulch valley-fill aquifer adjacent to the Collom Pit.
2. MC-04-02 – Located in the Collom Gulch valley fill, this site represents the condition of the Collom Gulch valley-fill aquifer downgradient of the Collom Pit. This location is additionally designated as a "Point of Compliance" well for valley fill groundwater monitoring purposes. The applicable standards are the Department of Public Health and Evnironment Water Quality Control Comission Regulation 41 - The Basic Standards for Ground Water, Interim Narrative Standard.
3. MLC-04-01 – Located in the Lower Collom Gulch valley fill, this site will be located north of the temporay spoils pile in Lower Collom Gulch. This location is additionally designated as a "Point of Compliance" well for valley fill groundwater monitoring purposes. The applicable standards are the Department of Public Health and Evnironment Water Quality Control Comission Regulation 41 - The Basic Standards for Ground Water, Interim Narrative Standard.
4. MJ-95-01 – Located in the West Fork Jubb Creek valley fill, this site represents the condition of the West Fork Jubb Creek valley fill aquifer adjacent to the northeast (downgradient) side of the Collom Pit. This

location is additionally designated as a "Point of Compliance" well for valley fill groundwater monitoring purposes.

5. MJ-95-03 - Located in the Jubb Creek valley fill just downstream of the confluence of the West and East Forks of Jubb Creek, this site represents the condition of the valley-fill aquifer downgradient of the Collom Pit.
6. Gossard Well – Located within valley fill beneath the rail loop, this site represents the condition of the valley fill aquifer in the vicinity of the Gossard Coal Loadout Facility.
7. A-6 Well – Located in the Good Spring Creek valley fill, this site represents the condition up-gradient of and current mining activities.
8. North Good Spring Well – Located in the Good Spring Creek valley fill, this site represents the down-dip condition below existing and mining activities.
9. MT-95-02 – Located in the Taylor Creek valley fill, this site represents the down-dip condition below current and mining activities.
10. A-7 – Located in the West Fork of Good Spring Creek valley fill, this site represents a potential down-dip condition below South Taylor mining activities.
11. A-8 - Located in the West Fork of Good Spring Creek valley fill, this site represents the condition up-gradient of South Taylor mining activities.
12. Trout Creek Well – Located on the northeastern edge of the Collom Pit, this site respresents the regional aquifer condition of the Trout Creek Sandstone.
13. LGSW-1 – Located along Good Spring Creek, this site represents the down gradient condition below mining activities, and is designated as a "Point of Compliance" well for the alluvial aquifer on Good Spring Creek. The applicable standards are the Department of Public Health and Evnironment Water Quality Control Comission Regulation 41 - The Basic Standards for Ground Water, Interim Narrative Standard. How the Interim Narrative Standard will be implemented is described in Volume 2C, Exhibit 7, Item 19, Section 4 and the applicable standards are found in Volume 2C, Exhibit 7, Item 19, Table 16.
14. LWCW-1 – Located below the confluence of Wilson and Taylor Creeks, this site respresents the down gradient condition below mining activities and is designated as a "Point of Compliance" well for the alluvial aquifer on Wilson and Taylor Creeks. The applicable standards are the Department of Public Health and Evnironment Water Quality Control Comission Regulation 41 - The Basic Standards for Ground Water Interim Narrative Standard. How the Interim Narrative Standars will be implemented is described in Volume 2C, Exhibit 7, Item 19, Section 4 and the applicable standards are found in Volume 2C, Exhibit 7, Item 19, Table 16.

**Groundwater Laboratory Parameters**

| | | | | |
|---|---|---|---|---|
| pH | Conductivity at 25°C | Total Dissolved Solids | Bicarbonate ($HCO_3^-$)$^D$ | Calcium ($Ca^{+2}$)$^D$ |
| Magnesium ($Mg^{+2}$)$^D$ | Ammonia ($NH_3$)$^D$ | Nitrate$^D$ | Phosphate ($PO_4^{-3}$ as P)$^D$ | Sodium ($Na^+$)$^D$ |
| Sulfate ($SO_4^{-2}$)$^D$ | Arsenic (As)$^D$ | Iron (Fe)$^D$ | Lead (Pb)$^D$ | Manganese (Mn)$^D$ |
| Mercury (Hg)$^D$ | Selenium (Se)$^D$ | Zinc (Zn)$^D$ | | |
| D = Dissolved | | | | |

Prior to mining at Lower Wilson, the following three valley fill groundwater monitoring sites will be added:

1. MW-95-01 – Located in the Wilson Creek valley fill, this site represents the upstream, undisturbed background conditions of the valley fill aquifer.
2. MW-05-03 – Located in the Wilson Creek and unnamed drainage valley fill, this site represents valley fill groundwater quality immediately downgradient from Lower Wilson.
3. MW-95-02 – Located in the Wilson Creek valley fill, this site represents the downgradient conditions below Lower Wilson and the haul road.

It is reasonable to expect potential future monitoring activities for the Lower Wilson locations to mirror those for the existing operation as it pertains to frequency and specific parameters.

Groundwater Fill Piezometers - Monitoring of the West Pit fill piezometer and Section 16 Fill piezometer have been discontinued. The West Pit Fill and West Taylor Fill piezometers will be monitored quarterly for water levels. One additional piezometers will be installed into the toe of East Taylor Fill, once constructed, as described in Exhibit 21 Item 1.

A future spoil water monitoring well will be drilled (and water quality monitored) as identified on Map 41B in the reclaimed Collom Pit area to monitor and measure the potential development of a spoil aquifer. This location represents the lowest point in the Collom Pit.

**4.05.14 Transfer of Wells**

Please see Section 4.05.14 in Volume 1.

**4.05.15 Water Rights and Replacment**

Please see Section 4.05.14 in Volume 1 and Section 2.04.7(2) in Volume 15.

**4.05.16 Dischrage of Water into an Underground Mine**

This section is not applicable to the Collom Mine.

**4.05.17 Postmining and Rehabilitation of Sediment Pond, Diversions, Impoundments, and Treatment Facilities**

Please see Section 4.05.17 in Volume 1.

**4.05.18 Stream Buffer Zones**

Lands within 100 feet, or greater distance if required, of a perennial, an intermittent, or an ephemeral stream with a drainage area larger than one square mile are required to be protected under Rule 4.05.18, unless the Division specifically authorizes surface operations within the stream buffer zone. Stream buffer zones have been identified along Wilson Creek and Jubb Creek, as the drainage area reporting to these streams is larger than one square mile. Colowyo will be developing the Collom Haul Road which will be inside the stream buffer zone on both Wilson Creek and Jubb Creek.

The Collom Haul Road will cross Wilson Creek as shown on Map 25E Sheet 1. During construction Colowyo will install a round culvert, and will employ proper best management practices (BMPs) during the construction phase in accordance with Colowyo's approved stormwater management plan, Section 401 certification, and US Army Corps 404 permit..

The Collom Haul Road will also cross Jubb Creek as shown on Map 25E Sheet 1. The construction of the crossing will be similar to the Wilson Creek crossing and will utilize the same BMPs as will be installed at the Wilson Creek crossing.

As shown on Map 25E Sheet 1, the Collom Haul Road will parallel Jubb Creek. There will be one section of the haul road that will be slighty within 100 feet of the stream. As shown on Map 25E Sheet 1, at approximately Station 230+00 to 250+00 there will a slight amount of disturbance within the stream buffer zone on Jubb Creek. Proper BMPs will be employed prior to any disturbance occurring within

this area and once the road construction is complete any areas that can be reclaimed will be completed as soon as possible.

Much of Little Collom Gulch will be directly impacted by the Collom Pit, the temporary spoil pile, and the Section 25 Pond (see Map 23C). The Section 25 Pond will protect the lower reaches of Little Collom Gulch that will not be disturbed during mining and reclamation. It is expected that during mining the Collom Pit will intercept and hold surface water runoff thus providing less discharge through the Section 25 Pond. Clean water diversions will be constructed above the active operations (also potentially within Little Collom Gulch) to direct surface water runoff around the disturbed areas. Once mining is complete the entire Collom Pit will be backfilled with the material stored in the temporary spoil pile and the pre-mine profile and function of Little Collom Gulch will be restored.

It is not anticipated that any of the areas that are to be disturbed within the stream buffer zones will have any long term impacts to Wilson Creek, Jubb Creek, or Little Collom Gulch due to proper use of BMPs, sediment control structures, clean water diversions, and due the fact the disturbance will be offset by reclamation. The two road crossing will be stabilized immediately following construction, and Little Collom Gulch will be restored to the premine condition when mining and reclamation activies are complete.

No other areas within the Collom disturbance footprint will impact any stream buffer zones.

## 4.06 TOPSOIL

The topsoil removal, storage, and redistribution plan for the disturbed area associated with the Collom Pit mining areas will follow the procedures described Section 2.05.3 (5) and 2.05.4 (2) (d) in this volume. Additional information regarding the topsoil resource may be found in the Collom Soils baseline survey located in Exhibit 9, Volume 13. Before the disturbance of any area, topsoil is removed and segregated from other material. Upon removal, this material is either immediately redistributed on regraded areas or stockpiled in locations shown on the Topsoil Handling Map 28C

All topsoil, as classified in section 2.04.9, is removed from areas to be affected by the surface coal mining operations. The graphical representation of the topsoil removal is shown on the Topsoil Handling Map 28C. The average thicknesses for each soils series to be removed can be found on Table 2.04.9-16 as defined in Table 2.04.9-19. Removal techniques for topsoil are described in Section 2.05.3. Furthermore, please see Section 4.06 in Volume 1 for additional information regarding topsoil.

## 4.07 SEALING OF DRILLED HOLES AND UNDERGROUND OPENINGS

Drill holes and underground openings will be sealed in accordance with the procedures outlined in the Section 4.07 in Volume 1.