

LORENCITO CANYON MINE
Permit No. C-1996-084

INSPECTION OF EXCESS SPOIL-FILLS 7, 8, & 9
March 5, 2020

The spoil fills at the Lorencito Canyon Mine were inspected on March 5, 2020. The weather was clear and windy with the temperature around 30°F. The ground was frozen. Vegetation was good throughout the site for the time of year. Sediment control ponds situated down slope from the fills were mostly empty and were not near discharging. Erosional features were minimal on all three fill sites.

FILL AREA No. 7

GENERAL DESCRIPTION OR REFERENCE TO SITE PLAN:

The CTL Thompson report dated April 27, 2001, "Stability Analysis and Geo-technical Recommendations Lorencito Surface Mine Phase 1" addresses the general requirements as also in Section 4.09.1 to 4.09.2 of the Colorado Mined Land Reclamation Board for Coal Mining.

ACTIVITY DURING INSPECTION:

☐ Removal of Topsoil and Organic Matter
☐ Placement of Under-drains
☐ Installation of Surface Drainage System
☐ Construction of Fill
☐ Placement of Topsoil
☐ Seeding
☒ Other Facility in Final Reclamation – Phase 1 Bond Released

SEDIMENT CONTROL

Sediment pond construction has been completed in accordance with plans submitted to and approved by the DMG and as-constructed survey/drawings certified by a Registered Land Surveyor and/or a Professional Engineer. All surface run-off from the fill area is directed to this sediment control facility known as Pond 7.

SURFACE DRAINAGE

Armored Ditches line the east and west boundary of the fill area. Lateral ditches on the fill face direct runoff to these side ditches. A fourth east-west ditch was constructed at the upper most extent of the fill connecting to both armored ditches on the east and west perimeters. No erosional problems were noted at the intersections or along the lateral ditches and the armored ditches. Slopes are well vegetated and no erosional problems were observed.

SITE PREPARATION

As indicated in previous inspection reports, organic materials such as brush and trees were removed from the proposed fill area followed by topsoil removal prior to fill placement. Design criteria did not require

keyway cuts for steeper valleys with minimal soil cover (Fill #7). No evidence of springs or seeps was observed during site preparation.

DRAINAGE SYSTEM (UNDERDRAINS)

Drain sizes are specified by CDMG regulations for fills which can be classified as Valley Fills. Fill area #7 is not a valley fill. CTL Thompson recommended a minimum 6' x 12' triangular section (area = 64 SF) for this size fill. As indicated by previous inspection reports, as constructed drainage generally were more trapezoidal with a top width of 12', bottom width of 8', and averaged height of 8' (area = 80 SF). Sandstone recovered from durable "channel" sandstone deposits encountered during the mining process were used in drain construction. Mirafi 160 fabric was used in lieu of filter material.

FILL PLACEMENT

CDMG regulations require that spoil be 'placed in horizontal lifts in a controlled manner, concurrently compacted and necessary to ensure mass stability'. Maximum lift thicknesses are not specified. As indicated by previous inspection reports, lifts were placed in accordance with plans specified by CTL Thompson. Spoil material was transported to the fill area using a combination of trucks and dozers. Left thicknesses of up to 50' were placed within the area removed from the fill face by more than 50 ft. thinner lifts of 6-8 ft. with leveling and compactive effort supplied by dozers and trucks was utilized as fill placement advances to within fifty feet of the slope face. No fill placement occurred during this quarter.

COVER MATERIAL

As documented by previous inspection reports, cover placement seeding and mulching occurred during the second quarter of 2002. During the first quarter of 2004 additional topsoil was transported to the upper-most portion of the fill area lying between the area seeded in 2002 and the lateral ditch placed at the upper perimeter of fill 7. The northeast portion of this area, approximately 1.60 acres, was final graded and seeded in August of 2006.

STRUCTURAL INTEGRITY

The entire excess spoil fill facility was examined for signs of failure and instability such as tension cracks, ground movement, springs and seeps, and standing water. There was no indication of potential instability at time of inspection.

DOCUMENTATION AND OTHER OBSERVATIONS

Overall the site is in good condition. The vegetation on the fill is encouraging.



Fill #7

FILL AREA No. 8

GENERAL DESCRIPTION OR REFERENCE TO SITE PLAN:

The CTL Thompson report dated April 27, 2001, "Stability Analysis and Geo-technical Recommendations Lorencito Surface Mine Phase 1" addresses the general requirements as also in Section 4.09.1 to 4.09.2 of the Colorado Mined Land Reclamation Board for Coal Mining.

ACTIVITY DURING INSPECTION:

- ☐ Removal of Topsoil and Organic Matter
- ☐ Placement of Under-drains
- ☐ Installation of Surface Drainage System
- ☐ Construction of Fill
- ☐ Placement of Topsoil
- ☐ Seeding
- ☒ Other

Facility in Final Reclamation – Phase 1 Bond Released

SEDIMENT CONTROL

Sediment pond construction has been completed in accordance with plans submitted to and approved by the DMG and as-constructed survey\drawings certified by a Registered Land Surveyor and/or a Professional Engineer. All surface run-off from the fill area is directed to this sediment control facility known as Pond 8.

SURFACE DRAINAGE

Armored Ditches line the east and west boundary of the fill area. Lateral ditches on the fill face direct runoff to these side ditches. No erosional problems were noted at the intersections or along the lateral ditches and the armored ditches. Slopes are well vegetated and no erosional problems were observed.

SITE PREPARATION

As indicated in previous inspection reports, organic materials such as brush and trees were removed from the proposed fill area followed by topsoil removal prior to fill placement. Design criteria did not require keyway cuts for steeper valleys with minimal soil cover (Fill #8). No evidence of springs or seeps was observed during site preparation.

DRAINAGE SYSTEM (UNDERDRAINS)

Drain sizes are specified by CDMG regulations for fills which can be classified as Valley Fills. Fill area #8 is a valley fill. CTL Thompson recommended a minimum 6' x 12' triangular section (area = 64 SF) for this size fill. Under-drain system was extended down slope to allow establishing the designed slope criteria for final slope (assuming no resumption of mining). The typical dimensions of the extended drainage generally were more trapezoidal with a top width of 10', bottom width of 14', and averaged height of 8' (area > 96 SF). Sandstone recovered from durable "channel" sandstone deposits encountered during the mining process were used in drain construction. Mirafi 160 fabric was used in lieu of filter material.

FILL PLACEMENT

Fill placement has been completed in accordance with the approved plan. No additional fill placement is anticipated.

COVER MATERIAL

Final fill configuration has been established and topsoil material has been placed on the excess spoil-fill. The area was mulched and seeded in the fourth quarter of 2003. Soil was placed and spread on the upper most surface of the fill in May of 2004. During the second quarter of 2005, areas disturbed by maintenance of the armored down-drains were seeded using certified weed free straw and the approved rangeland seed mix. The construction access road east of the east down-drain was hand mulched and seeded during August of 2006.

STRUCTURAL INTEGRITY

The entire excess spoil fill facility was examined for signs of failure and instability such as tension cracks, ground movement, springs and seeps, and standing water. There was no indication of potential instability at time of inspection.

DOCUMENTATION AND OTHER OBSERVATIONS

Overall the site is in good condition. Vegetation is very good on the fill.



Fill #8

FILL AREA No. 9

GENERAL DESCRIPTION OR REFERENCE TO SITE PLAN:

The CTL Thompson report dated April 27, 2001, "Stability Analysis and Geo-technical Recommendations Lorencito Surface Mine Phase 1" addresses the general requirements as also in Section 4.09.1 to 4.09.2 of the Colorado Mined Land Reclamation Board for Coal Mining.

ACTIVITY DURING INSPECTION:

- ☐ Removal of Topsoil and Organic Matter
- ☐ Placement of Under-drains
- ☐ Installation of Surface Drainage System
- ☐ Construction of Fill
- ☐ Placement of Topsoil
- ☐ Seeding
- ☒ Other

Facility in Final Reclamation – Phase 1 Bond Released

SEDIMENT CONTROL

Sediment pond construction has been completed in accordance with plans submitted to and approved by the DMG and as-constructed survey\drawings certified by a Registered Land Surveyor and/or a Professional Engineer. All surface run-off from the fill area is directed to this sediment control facility known as Pond 9A. No Discharge has occurred during this quarter. Pond is holding minimal water and is functioning in good order.

SURFACE DRAINAGE

Armored Ditches line the east and west boundary of the fill area. Lateral ditches on the fill face direct runoff to these side ditches. No erosional problems were noted at the intersections or along the lateral ditches and the armored ditches. Slopes are well vegetated and no erosional problems were observed at the time of this inspection.

SITE PREPARATION

As indicated in previous inspection reports, organic materials such as brush and trees were removed from the proposed fill area followed by topsoil removal prior to fill placement. Design criteria did not require keyway cuts for steeper valleys with minimal soil cover (Fill #9). No evidence of springs or seeps was observed during site preparation.

DRAINAGE SYSTEM (UNDERDRAINS)

Drain sizes are specified by CDMG regulations for fills which can be classified as Valley Fills. Fill area #9 is not a valley fill. CTL Thompson recommended a minimum 6' x 12' triangular section (area = 64 SF) for this size fill. As indicated by previous inspection reports, as constructed drainage generally were more trapezoidal with a top width of 12', bottom width of 8', and averaged height of 8' (area > 80 SF). Sandstone recovered from durable "channel" sandstone deposits encountered during the mining process were used in drain construction. Mirafi 160 fabric was used in lieu of filter material.

FILL PLACEMENT

CDMG regulations require that spoil be 'placed in horizontal lifts in a controlled manner, concurrently compacted and necessary to ensure mass stability'. Maximum lift thicknesses are not specified. As indicated by previous inspection reports, lifts were placed in accordance with plans specified by CTL Thompson. Spoil material was transported to the fill area using a combination of trucks and dozers. Lift thicknesses of up to 50' were placed within the area removed from the fill face by more than 50 feet. Fill placement terminated by second quarter 2002. No fill placement occurred during this quarter, nor is future placement anticipated.

COVER MATERIAL

As documented by previous inspection reports, cover placement, seeding, and mulching was completed during the second quarter of 2002 and upper areas during the second quarter of 2004. During the second quarter of 2005, areas disturbed by maintenance of the armored down-drains were hand seeded using certified weed free straw and approved rangeland seed mix.

STRUCTURAL INTEGRITY

The entire excess spoil fill facility was examined for signs of failure and instability such as tension cracks, ground movement, springs and seeps, and standing water. There was no indication of potential instability at time of inspection.

DOCUMENTATION AND OTHER OBSERVATIONS

Overall the site is in good condition.



Fill #9

Certification

This inspection was conducted by Vince Massarotti, a qualified professional and MSHA certified inspector of earth and rock-fill embankments, waste banks and impoundments, under the direction of Mr. Charles McGlothlin, a registered professional engineer licensed in the State of Colorado.

This is to certify, to the best of my knowledge and belief, that maintenance, since the previous certification and as determined during this inspection and discussions with mine personnel, is in accordance with designs as approved by the Division of Reclamation, Mining and Safety.

Vince Massarotti
Inspector

3-11-2020
Date

Charles W. McGlothlin
Charles W. McGlothlin
Professional Engineer

3/24/20
Date

Inspections completed in compliance with Rule 4.09.1(11)(b) must be submitted to the Division within two weeks of completion.