



Proposed Decision
and
Findings of Compliance
for the

Terror Creek Loadout
C-1983-059

Permit Renewal No. 8

June 6, 2023

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Introduction

This document is the decision package prepared by the Colorado Division of Reclamation, Mining and Safety (the Division) for the Terror Creek Loadout. This document includes: 1) the proposed decision to approve the renewal application; 2) a summary which includes a history of the review of the permit application, a description of the environment affected by the operation and a description of the mining and reclamation plan; and 3) the written findings of compliance the Division has made as required by the Colorado Surface Coal Mining Reclamation Act. Detailed information concerning the findings of compliance can be found in the Regulations of the Colorado Mined Land Reclamation Board for Coal Mining.

The Division has received an application for a renewal to a permit to conduct surface coal mining and reclamation operations at the Terror Creek Loadout (Loadout). The application was submitted by Oxbow Mining, LLC. The Loadout will be operated by Oxbow Mining, LLC. The Loadout is located on private lands within Delta County, Colorado. The legal description of the lands included within the permit area is:

Parts of Section 15, Township 13 South, Range 91 West of the 6th Principal Meridian.

Proposed Decision

The Colorado Division of Reclamation, Mining and Safety proposes to approve an application for permit renewal.

The application was submitted by Oxbow Mining, LLC for the Loadout. This decision is based on a finding that the operations will comply with all requirements of the Colorado State Program as found in the Colorado Surface Coal Mining Reclamation Act, Section 34-33-101 *et seq.*, C.R.S., and the Regulations promulgated pursuant to the Act. If no request for a formal hearing is made within thirty (30) days of the first publication of the issuance of this proposed decision, then this decision becomes final. Upon submittal of acceptable surety by the applicant, the permit will be issued. The permit application, all supporting documentation and any stipulations or conditions will become a binding part of the permit.

No coal mining operations may be conducted on any Federal surface or Federal coal until the Secretary of the Interior has approved the proposed mining plan. The Loadout permit boundary does not include any Federal surface or minerals.

Summary

The Review Process

The Terror Creek Loadout was permitted and originally operated as an independent coal handling and train loadout facility and is located in Delta County, approximately four miles north of the town of Paonia, Colorado. The Terror Creek Loadout was permitted under the permanent state regulatory program in 1983. The Loadout was originally permitted by the Terror Creek Company. The permittee has subsequently been changed twice, first to Terror Creek, LLC. through Minor Revision No. 25 (MR-25), and then to Oxbow Mining, LLC. (Oxbow), the current permittee, through Succession of Operator No. 1 (SO-1).

The original 1983 permit has been renewed seven times. No applications for Surety Release have been submitted. The Permit Renewals are summarized in Table 1.

Table 1: Permit Renewal History

Permitting Action	Approval Date
C-1983-059 issued by Division	8/23/1983
RN-1	9/26/1988
RN-2	8/23/1993
RN-3	8/23/1998
RN-4	8/23/2003
RN-5	7/10/2008
RN-6	2/28/2015
RN-7	1/23/2020

Revisions to the permit submitted since the last midterm review of the Terror Creek Loadout PAP (MT-8, dated September 7, 2021) are shown in Table 2.

Table 2: History of Revisions since MT-7

Revision	Brief Description	Approval Date
SI-2	Surety Increase following MT-8	9/20/2021
MR-32	Update Sections 2.03.4 and 2.04.11 of the Permit Application Packet (PAP)	5/15/2023

Oxbow submitted the application for this Permit Renewal No. 8 (RN-8) on March 2, 2023, the Division deemed the application complete for the purposes of filing on March 3, 2023. The Division sent completeness notification letters to appropriate agencies in accordance with Rule 2.07.3(3)(b). The ownership and control information was updated with MR-32. The information was checked against the AVS database on June 6, 2023, no issues were reported that would affect the approval of RN-8.

Description of the Environment

Site Description and Land Use (Rule 2.04.3)

Information regarding site description and land use can be located in Section 2.04.3 of the Permit Application Package (PAP).

The loadout facilities are located approximately four miles northeast of Paonia, CO along State Highway No. 133. The 20.00 acre permit area is situated on a moderately steep colluvial deposit between State Highway No. 133 and the flood plain of the North Fork of the Gunnison River. The approximate location of the permit area is indicated by the pink polygon in Figure 1.



Figure 1: The approximate location of the Terror Creek Loadout Permit Area Boundary

The approximate elevation of the permit area is 5,900 feet. The surrounding area is

mountainous, with elevations ranging up to 8,300 feet at the summit of Jumbo Mountain, to the southeast of the permit area.

The North Fork of the Gunnison River has the appearance of a moderately broad alluvial valley, extending to approximately 1,500 feet wide. The valley separates high table lands south of the river from the slopes of the Grand Mesa to the north.

The permit area is drained by the North Fork of the Gunnison River and two unnamed ephemeral drainages. Water in the North Fork is characterized as a calcium bicarbonate type with moderate levels of sulfate. The flood plain of the North Fork, immediately to the south of the permit area, has been found to meet the geomorphic criteria and irrigation requirements of an alluvial valley floor (AVF).

The primary land uses in the valley are irrigated agriculture, underground coal mining, and wildlife habitat. Orchards and pasture land are irrigated via the Fire Mountain Canal, which diverts water from the North Fork of the Gunnison, and the Deer Trail Ditch, which diverts water from Hubbard Creek. The pre-disturbance land use at the Loadout was for irrigated orchards. Irrigation water at the Loadout is supplied by the Deer Trail Ditch, which flows by culvert over the Fire Mountain Canal near the northern permit boundary.

Adjacent to the Loadout site, across Old Highway 133, is the site of the Bowie No. 2 Mine (C-1996-083). This underground coal mine received its permit on April 4, 1997. Numerous pre-law underground mines exist north and east of the Loadout.

Cultural and Historic Resources (Rule 2.04.4 and 2.05.6(4))

Cultural and historic resources are discussed in Section 2.04.4 of the PAP.

In a letter dated August 8, 2019, the State Historic Preservation Officer concluded that the only known resource within the permit area of the Terror Creek Loadout is the Fire Mountain Canal, which is eligible for listing to the National Register of Historic Places (site 5DT1277). The town of Bowie, located in the project vicinity has also been officially determined eligible for inclusion in the National Register of Historic Places. Neither the Fire Mountain Canal nor the town of Bowie will be impacted by the Loadout's operation.

Geology (Rules 2.04.5 and 2.04.6)

For a description of the geology, refer to Section 2.04.6 in the PAP. Map 2 of the PAP details the Geology/Hydrology within the permit and adjacent areas.

The rocks exposed in the vicinity of the permit area are the sandstones and shales of the Upper Cretaceous Mesaverde formation. The structure of the sedimentary rocks in the area dips gently to the east. Localized faults and rolls occur as a result of tectonic activity. Due north of the permit area, the Mesaverde formation contains several sequences of coal bearing rocks. The rocks present in the area of the Loadout site are of Mancos shale formation. Within the North Fork of the Gunnison River valley quaternary age alluvial deposits are found.

A colluvial deposit in excess of 50 feet thick overlies the Mancos shale within the permit area and consists of an unconsolidated mixture of large, angular shaped boulders, and rocks and cobbles of various sizes. The unconsolidated material stratigraphically overlies the Mancos shale in the permit area and, since the early the 1900s, has been graded to its present surface configuration to allow for irrigated agriculture. The unconsolidated and poorly sorted nature of the colluvial material indicates that it was placed by gravitational mass wasting from the adjacent steep slopes. Some transport by overland flow of surface waters is also evident. The unconsolidated nature of the material lends itself to deep weathered zones and infiltration of surface water.

Hydrologic Balance (Rules 2.04.5, 2.04.7, 2.05.3(4), 2.05.6(3) and 4.05)

Surface water and groundwater information can be found in Section 2.04.7 of the PAP. A description of surface water and groundwater occurrence and mining impacts on groundwater within the permit and adjacent areas can be found in the "Probable Hydrologic Consequences of Mining" section of this document and the "Cumulative Hydrologic Impact Assessment" document for this mine area.

All drainage basins and associated drainages within the permit area and adjacent areas are shown on the Geology/Hydrology Map (Map 2 in the PAP). The permit area is drained primarily by the North Fork of the Gunnison River and two ephemeral tributaries to the North Fork. There are no perennial or intermittent streams on the permit area or adjacent to the permit area. The Fire Mountain Canal and the Deer Trail Ditch intersect all overland flow upstream from the permit area. Production of agricultural products at the site is possible only by irrigation.

Groundwater occurrences in areas adjacent to the permit area are found in two different formations. Alluvial material of the North Fork of the Gunnison River contains groundwater resulting primarily from runoff and flow of the North Fork. Groundwater in very minor amounts may also be found in the formations of the Mesaverde formation. Due to its higher elevation above the North Fork of the Gunnison River and relative discontinuity of sandstones, shales, and siltstone material, little groundwater is evident. A review of the Regional Geology/Hydrology Map (Map 2 in the PAP), shows no evidence of springs within the area of the Loadout facility.

As reviewed in the geologic section of this document, the permit area is located on colluvial material significantly above the elevation of the North Fork which directly affects the amount of groundwater found at the site. In fact, no groundwater is thought to be present in the colluvial material above the elevation of the North Fork. Only minor amounts of groundwater can be expected above the potentiometric surface which coincides with the North Fork. Operations at the Terror Creek facility will not intersect any groundwater within the colluvial material due to limited excavation planned for the permit area.

Climatological Information (Rule 2.04.8)

Information on the climate in the area of the Loadout is detailed in Section 2.04.8 of the PAP. In addition, Exhibit 6 of the PAP provides data from the weather station in Paonia, Colorado, on

average precipitation, temperature, and wind. The wind information was developed for the West Elk Mine site which is approximately 7 miles east of the Loadout.

The climate of the region is typical of the Rocky Mountain area. The valley is semi-arid with annual precipitation averaging about 15 inches per year. The May - September precipitation is 5 inches for the lowlands and 13 inches for the mountain peaks. Temperature extremes at Paonia have ranged from -28 °F in January to 100 °F during July and August. The average annual temperature is approximately 49 °F. Snowfall averages 58 inches per year.

Soils (Rule 2.04.9)

Soil resource information is contained in Section 2.04.9 of the PAP. Exhibit 7 contains more detailed information on soils as well as soil sample cross sections and analyses, which were taken from different areas of the site.

The soil samples collected by the applicant indicate a clay loam soil with poor horizontal development overlying unconsolidated colluvial parent material at an average depth of 11 to 13 inches.

The soil mapping units which are present in the permit area consist of Progresso Loam, which is found on slopes of 6 to 12 percent, and Torriorthents-Haplargids. Review of the soils analyses indicates that no problems are expected with use of this soil material during any potential reclamation activities.

Vegetation (Rule 2.04.10)

Vegetation information is provided in Section 2.04.10 of the PAP.

As the permit area, prior to mining activities, was used for fruit orchards, the dominant vegetation type was apple and pear trees. In addition, some small areas within the orchards have been used for production of hay. Virtually all of the permit area, prior to loadout operations, has been used for agricultural purposes.

Fish and Wildlife (Rule 2.04.11)

Information on fish and wildlife resources is contained in Section 2.04.11 of the PAP.

Mule deer, elk, and black bear are located in the North Fork region in substantial numbers. Cougar, or mountain lion, have been observed in the area in the past, but their numbers are limited due to the extended territorial nature of the species. No critical habitats for the three principal species are found within the area disturbed by the applicant. Wildlife use of the permit area is largely incidental, and some use of the agricultural land by wildlife does occur, particularly during winter. Because the loadout facilities are located on an area previously used for agricultural purposes, no critical habitat is expected to be impacted.

The most common game bird found in the permit and adjacent area is the mourning dove. In

limited areas, the blue grouse may occur, but only at adjacent higher elevations. During breeding season, several species of raptors are found in the vicinity of the permit area. The red-tail hawk and golden eagle have been commonly observed in the winter, and bald eagles may use the area along the North Fork of the Gunnison River.

The North Fork of the Gunnison River begins at the confluence of Anthracite and Muddy Creeks, approximately 15 miles upstream from the permit area. The stream is classified as a fishery stream by Colorado Parks and Wildlife. Surveys assessing the condition of the aquatic environment show that the section of the stream above Paonia, CO is in good condition. Fish species in the river vary within the location of the stream.

The applicant made an evaluation of Threatened & Endangered Species, candidate species and their Delta County habitats for the Terror Creek Loadout site, this was most recently updated in May 2023, with MR-32. As detailed in Section 2.04.11 of the PAP, eleven species were identified from the U.S. Fish & Wildlife Service list of endangered, threatened, proposed and candidate species for Delta County. These include the Yellow Billed Cuckoo, Gunnison Sage Grouse, Mexican Spotted Owl, Colorado Pikeminnow, Razorback Sucker and Humpback Chub, Bonytail Chub, Hookless Cactus, Clay-loving Wild Buckwheat, Parachute Beardtongue, Canada Lynx and the Monarch Butterfly. In addition, the possible presence of bald eagles and golden eagles was examined. The evaluation found that only the bald eagle and golden eagle had suitable habitat in that area of the North Fork of the Gunnison River valley and that both eagle species would only use the habitat for occasional seasonal foraging. The conclusion was that the Terror Creek Loadout site would not adversely affect these species or their habitats.

Description of the Operation and Reclamation Plans

Permitted facilities at the Terror Creek Loadout consist of a truck scale, raw, crushed, and sorted coal stockpiles, crushing and screening facilities, a train loadout facility, and an office, shop, bathhouse, and storage facilities. The anticipated annual coal tonnage permitted to be handled at this facility is up to 500,000 tons.

Drainage and sedimentation control consists of a diversion ditch to direct undisturbed irrigation drainage and storm runoff around the site, a berm to prevent spillage of coal over the bench, and a sediment pond and dugout pond to retain disturbed drainage and allow for NPDES compliance prior to discharge.

Sediment will be periodically removed from the sedimentation ponds to ensure proper functioning of the ponds. If needed, the sediment removed from the ponds will be placed in the sediment storage pile. Annually, during the summer months, a portion or all of the sediment pile will be spread over the site to improve drainage and to keep the size of the pile at approximately 1,500 tons. Interim revegetation of road cuts, berms, and the topsoil stockpiles further minimize wind and water erosion.

Raw coal from haulage trucks or from the raw coal stockpile is approved to be dumped into an enclosed, underground feeder. The coal is then conveyed to appropriate screens for size separation and crushed if necessary. The product coal is then either loaded directly into rail cars

or placed in an appropriate stockpile for later loading. Product coal includes lump, stoker, and fines. Limited coal crushing is performed at the loadout. Crushing, conveying and loadout operations are equipped with a water spray system to control dust.

Prior to the approval of Permit Revision No. 1 (PR-01), the reclamation plan specified the demolition and disposal of some facilities, grading to restore the site to the approximate original contour, topsoil replacement, and seeding with adapted pasture grasses. The site was to be reclaimed to a post-mining land use of irrigated hay “Cropland”. Details of the previously approved plan have been retained in section 2.05.4 of the PAP for future reference.

With the approval of PR-01, the Division approved a change in the post-mining land use to “Industrial or Commercial”. The currently approved reclamation plan is described in section 2.05.5 of the PAP. The reclamation plan specifies that the facility pads will remain in the pads current configurations, which reflect the configurations during the active life of the loadout. Concrete walls and footers will be demolished and Loadout tunnels will be filled. The approved post-mining topography is shown on Map 10 of the PAP, which was revised with PR-01. Map 10 and section 2.05.5 both refer to Maps 12 and 13 of the PAP, which identify topographic sections. Maps 12 and 13 of the PAP were not revised with PR-01, however the text of section 2.05.5 and in the legend of Map 10 of the PAP clearly states that the “Present Configuration” shown in the topographic section drawings now represents the revised post-mining configuration.

Facilities to remain after reclamation include the office, garage, wooden building adjacent to the office, the paved haul road and all of the gravel access road. The siding track may remain if it is sold to the Union Pacific Railroad.

Findings of the Colorado Division of Reclamation, Mining and Safety
for the
Terror Creek Loadout

Explanation of Findings

Pursuant to Rule 2.07.6(2) of the Regulations of the Colorado Mined Land Reclamation Board for Coal Mining, and the approved state program, the Division of Reclamation, Mining and Safety or the Board must make specific written findings prior to issuance of a permit, permit renewal or permit revision. These findings are based on information made available to the Division that demonstrates that the applicant will be able to operate in compliance with the Colorado Surface Coal Mining Reclamation Act and the Regulations promulgated pursuant to the Act.

The findings in the following sections required by Rule 2.07.6(2) are listed in accordance with that Rule. The findings and specific approvals required pursuant to Rule 2.07.6(2)(m) are listed in accordance with Rule 4 and are organized under subject or discipline subtitles.

This findings document has been updated for this permit renewal. The following findings have been reevaluated and updated if necessary to reflect changes which will occur as a result of this permit revision.

Section A - Rule 2.07.6

1. The permit application is accurate and complete. All requirements of the Act and these rules have been complied with (2.07.6(2)(a)).
2. Based on information contained in the permit application and other information available to the Division, the Division finds that surface coal mining and reclamation can be feasibly accomplished at the Terror Creek Loadout (2.07.6(2)(b)).
3. The assessment of the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance, as described in 2.05.6(3), has been made by the Division. This assessment entitled "Cumulative Hydrologic Impact Study - North Fork of the Gunnison River," is available for inspection at the offices of the Division. The Division finds that the operations proposed under the application have been designed to prevent damage to the hydrologic balance outside the proposed permit area. Please refer to Section B III (Hydrologic Balance) of this document for additional discussion of the predicted hydrologic consequences of mining operations at the Terror Creek Loadout (2.05.6(3) and 4.05).
4. The Division finds that the affected area is, subject to valid rights existing as of August 3, 1977, not within:
 - a) An area designated unsuitable for surface coal mining operations (2.07.6(2)(d)(i));

- b) An area under study for designation as unsuitable for surface coal mining operations (2.07.6(2)(d)(ii));
- c) The boundaries of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System including rivers under study for designation, and National Recreation Areas (2.07.6(2)(d)(iii)(A));
- d) Three hundred feet of any public building, school, church, community or institutional building, or public park (2.07.6(2)(d)(iii)(B));
- e) One hundred feet of a cemetery (2.07.6(2)(d)(iii)(C));
- f) The boundaries of any National Forest unless the required finding of compatibility has been made by the Secretary of the U.S. Department of Agriculture (2.07.6(2)(d)(iii)(D));
- g) One hundred feet of the outside right-of-way line of any public road except where mine access or haul roads join such line, and excepting any roads for which the necessary approvals have been received, notices published, public hearing opportunities provided, and written findings made (2.07.6(2)(d)(iv));

The haul /access road for the Loadout joins State Highway 133.

- h) Three hundred feet of an occupied dwelling unless a written waiver from the owner has been provided (2.07.6(2)(d)(v)).

Exhibit 12 of the PAP contains a letter from a resident south of the Loadout consenting to operations within 300 feet of his dwelling.

5. On the basis of a letter sent to the Division on August 8, 2019, from the State Historic Preservation Office, the Division finds that subject to valid existing rights as of August 3, 1977, the mining operation will not adversely affect any publicly owned park or place listed on or eligible for listing in the National Register of Historic Places as determined by the State Historic Preservation Office (2.07.6(2)(e)(i)).
6. For this operation, private mineral estate has not been severed from private surface estate; therefore, the documentation specified by Rule 2.03.6(2) is not required (2.07.6(2)(f)).
7. On the basis of evidence submitted by the applicant and received from other state and federal agencies as a result of the Section 34-33-114(3) compliance review required by the Colorado Surface Coal Mining Reclamation Act, the Division finds that Oxbow Mining, LLC does not own or control any operations which are currently in violation of any law, rule, or regulation of the United States, or any State law, rule, or regulation, or any provision of the Surface Mining Control and Reclamation Act or the Colorado Surface

Coal Mining Reclamation Act (2.07.6(2)(g)(i)).

8. Oxbow Mining, LLC does not control and has not controlled mining operations with a demonstrated pattern of willful violations of the Act of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with the provisions of the Act (2.07.6(2)(h)).
9. The Division finds that surface coal mining and reclamation operations to be performed under this permit will not be inconsistent with other such operations anticipated to be performed in areas adjacent to the permit area (2.07.6(2)(i)).
10. The Division estimates the reclamation liability for mining operations in this permit term to be \$208,382. The Division currently holds a \$290,000 performance bond for the Terror Creek Loadout (2.07.6(2)(j)).
11. The Division has made a negative determination for the presence of prime farmland within the permit area. The decision was based on mapping by the U.S. Soil Conservation Service which demonstrates that no prime farmland mapping units are found within the permit area (2.07.6(2)(k)).
12. Based on information provided in the application the Division has determined that an alluvial valley floor exists within the permit or adjacent area. The alluvial valley floor is known as the North Fork of the Gunnison River Alluvial Valley Floor and exists adjacent to the permit area (2.07.6(2)(k) and (2.06.8(3)(c)).

For additional specific findings concerning this alluvial valley floor please see Section B, XVII.

13. The Division approved the post-mining land use of “Commercial or Industrial”. It was determined that this land use meets the requirements of Rule 4.16 for the permit area (2.07.6(2)(l)).
14. Specific approvals have been granted or are proposed. These approvals are addressed in the following section, Section B (2.07.6(2)(m)).
15. The Division finds that the activities proposed by the applicant would not affect the continued existence of endangered or threatened species or result in the destruction or adverse modification of their critical habitats (2.07.6(2)(n)).
16. The Division has contacted the Office of Surface Mining, Reclamation Fees Branch. As of this time the operator, Oxbow Mining, LLC, is current in the payment of reclamation fees required by 30 CFR Chapter VII, subchapter R (2.07.6(2)(o)).

Section B - Rule 4

I. Roads - Rule 4.03

A. Haul Roads

1. Information pertaining to roads can be found on pages 2.05-5R and 2.05-9, and Maps 5 and 9 of the PAP. The haul /access road at the Loadout connects the facilities with State Highway 133. Road cross - sections and profile drawings are presented on Map 9 of the PAP. The location of road drainage ditches and culverts is provided on Map 14 of the PAP.
2. The Division proposes to approve the retention of the haul road (depicted on Map 10 of the PAP) as the road is compatible with the approved post-mining land use, and a request for its retention was submitted by the landowner.
3. Oxbow has obtained a Permit for Access from the State Highway Department for the highway approach and a License Agreement with the Bureau of Reclamation and the Fire Mountain Canal Company to allow construction of a concrete box culvert across the Fire Mountain Canal (4.03.1(1)(f)(i).

B. Access Roads

1. The Division proposes to approve the retention of the graveled access road (depicted on Map 10 of the PAP) which leads to the office area as it is compatible with the approved post-mining land use, as stated above in the haul road section, and a request for its retention was submitted by the landowner.

C. Light-Use Roads

1. The Terror Creek Loadout maintains two light-use roads. One road parts from County Road 4365 and enters the permit area from the east side, below the storage area, and ends at the water tank.
2. The second light -use road parts from County Road 4365 and enters the permit area from the east side, below the sediment pond. This road provides access to the railroad siding and the over-the-track coal bin.
3. The Division proposes to approve the retention of the light-use roads (depicted on Map 10 of the PAP) as the roads are compatible with the approved post-mining land use, and a request for their retention was submitted by the landowner.

II. Support Facilities - Rule 4.04

- A. Construction of support facilities did not result in any damage to any protected structures. Therefore the Division has previously approved those activities (4.04(6)).

III. Hydrologic Balance - Rule 4.05

A. Water Quality Standards and Effluent Limitations

- 1. There is one sediment pond and one dugout pond at the Terror Creek Loadout that treat drainage from the disturbed area. These ponds function as designed to ensure that applicable water quality standards and effluent standards are met.
- 2. The Division has approved small area exemptions from the use of sediment ponds, due to the limited size of the areas, the fact that ponds and treatment facilities are not necessary for the drainage to meet the effluent limitations of Rule 4.05.2 and applicable State and Federal water quality standards for receiving streams, and due to the fact that no mixing of surface drainage with a discharge from underground workings will occur, as the operation is a loadout and no mining will occur. The small areas to be exempted include the outslope of the facilities pad, the over-the-track loadout facility, and the railroad spur track (4.05.2(3)(b)(i)).

B. Diversions and Conveyance of Overland Flow

- 1. Sediment control ditches have been designed and constructed in compliance with Rule 4.05.3. Locations are shown on Map 14 and designs can be found in Exhibit 9 of the PAP (4.05.3(2)).

C. Stream Channel Diversions

- 1. No stream channel diversions are proposed or approved.

D. Sedimentation Ponds

- 1. One sediment pond and one dugout pond have been constructed. The ponds have been designed, constructed and maintained in accordance with the requirements of Rules 4.05.6 and 4.05.9. The locations of the ponds are shown on Map 14 of the PAP. The ponds are located as near as practical to the disturbed area and are not located within perennial streams, in accordance with (4.05.6(1)(b)).

E. Acid-forming and Toxic-forming Spoil

- 1. No major subsurface disturbances are planned during the facility construction; therefore, no overburden will be removed or stored as a result of the loadout

construction (4.05.8(3)).

F. Impoundments

1. Refer to the section regarding sediment ponds (4.05.9).

G. Surface and Ground Water Monitoring

1. The applicant will not conduct groundwater monitoring as groundwater will not be affected by the construction of the loadout at the site. No disturbance of the subsurface is required or planned.
2. The applicant will conduct monitoring of surface water in a manner approved by the Division. The monitoring plan is specified in Section 2.05, Surface Water Monitoring, page 2.05-24R of the PAP (4.05.13(2)).

H. Transfer of Wells

1. No wells will be within or adjacent to the Terror Creek Loadout permit boundary. This section does not apply (4.05.14(3)).

I. Discharge of Water into an Underground Mine

1. This operation consists of loadout activities only. No extraction of coal will take place. This section does not apply (4.05.16(2)).

J. Stream Buffer Zones

1. No mining activity will occur within 100 feet of a perennial stream. This section does not apply (4.05.18(1)).

K. Probable Hydrologic Consequences

Under Rule 2.07.6(2)(c), the Division is required to make an assessment of the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance and to make a finding (as discussed in Section A of this document) that the operations proposed in the permit application have been designed to prevent material damage to the hydrologic balance outside of the proposed permit area. This section of the findings document is divided into the following subsections: Description of the Hydrologic Environment; Probable Hydrologic Consequences of the Terror Creek Loadout; and Summary and Findings. A separate Cumulative Hydrologic Impact Assessment (CHIA) has been conducted and is available for review. The CHIA assesses the projected cumulative hydrologic impacts for all anticipated mining operations in the general area of the Terror Creek Loadout in the North Fork of the Gunnison River Valley.

1. Description of the Hydrologic Environment

- a. Regional Geology

For information regarding the geology of the site, refer back to the section entitled Description of the Environment, Geology.

- b. Groundwater

For information regarding the groundwater of the site, refer back to the section entitled Description of the Environment, Hydrologic Balance.

- c. Surface Water

For information regarding the surface water of the site, refer back to the section entitled Description of the Environment, Hydrologic Balance.

2. Probable Hydrologic Consequences

- a. Groundwater Effects and Mitigation

There is no expected impact to groundwater by the Terror Creek Loadout due to the lack of occurrence of groundwater within the immediate area to be affected by the operation. The operation is located on colluvial material significantly above the elevation of the North Fork of the Gunnison River. This colluvium appears to be in direct hydrologic communication with the North Fork alluvial aquifer. Only minor amounts of groundwater can be expected above the piezometric surface which coincides with the North Fork. Information presented by the applicant with respect to a privately owned water well south of the permit area indicates that water is not encountered until the river elevation is reached. Operations at the Terror Creek Loadout will not intersect any groundwater within the colluvial material due to limited excavation planned for the permit area. Excavation associated with the loadout pad was completed to approximately 20 feet below ground surface and no groundwater was encountered. No springs or seeps have been identified along the colluvial deposit in the vicinity of the permit area.

Because no further surface disturbance is proposed, there is no potential for significant impacts to groundwater quantity in the area. There is a very slight potential for quality of water in the alluvial aquifer immediately downslope from the disturbed area to be degraded as a result of percolation of lower quality water from the coal storage piles and sediment pond. The potential for material damage is considered to be negligible and is further discussed in an upcoming section on Operations on Alluvial Valley Floors.

b. Surface Water Effects and Mitigation

Drainage and sediment control measures implemented by the applicant are sufficient to ensure that the quality of water downstream from the site is not impacted. The only impact on water quantity is the consumptive use of approximately 6 acre-feet per year during the operational life of the Loadout.

The Terror Creek Loadout withdraws water from two sources. Water for dust suppression is supplied by senior water rights from the Deer Trail Ditch. The ditch withdraws water from Hubbard Creek. Use averaged 5,000 gallons per day (5.6 acre-feet/year). Previously, this water was used to irrigate orchards where the loadout is now located. A domestic well which supplies about 450 gallons per day (0.5 acre-feet/year) was used for domestic use at the Loadout office and bathhouse. Total consumption at the Loadout amounted to 0.002% of the North Fork's mean annual yield at Somerset. This amount of consumption is considered by the Division to be insignificant.

3. Summary and Findings

The Division has examined the probable hydrologic consequence due to mining operations for groundwater and surface water systems at the Terror Creek Loadout. The operator has taken the necessary measures to ensure that mining operations will not affect the hydrologic regime (2.07.6(2)(c)).

IV. Topsoil

- A. Baseline soils information can be found in Section 2.04.9 of the PAP. Map 3 of the PAP shows the locations of the soil mapping units. The topsoil salvage and redistribution plan can be found in Section 2.05 of the PAP. Map 8 of the PAP details the Topsoil Handling Plan and contains the locations of the topsoil stockpiles.

Prior to construction of the loadout facility, topsoil was removed and stockpiled. There are two topsoil stockpile locations. A large pile is located on the west side of the permit area, and a smaller pile is located on the east side of the permit area, near the county road.

The Division has granted a variance from topsoil removal in accordance with Rule 4.06.2(2)(a). An area containing less than one acre is being used for open storage of items and materials which will not cause any contamination or degradation of the in-place soils. Traffic in this storage area is light, primarily foot and light truck travel, and of an infrequent nature. To date, existing vegetation has not been harmed and no erosion has occurred, nor is any expected. Therefore, the Division finds that this variance was granted in an appropriate manner and reaffirms that decision.

V. Sealing of Drilled Holes and Underground Openings

- A. There are no drilled holes or underground openings at the Terror Creek Loadout. This section does not apply (4.07).

VI. Use of Explosives

- A. There are no explosives used at the Terror Creek Loadout. This section does not apply (4.08).

VII. Disposal of Excess Spoil

- A. The Terror Creek Loadout will not require a disposal area for excess spoil. This section does not apply (4.09).

VIII. Coal Mine Waste Banks

- A. The Terror Creek Loadout will not require coal mine waste banks. This section does not apply (4.10).

IX. Coal Mine Waste

- A. No coal mine waste from the Terror Creek Loadout will be returned to underground workings (4.11.3).
- B. Disposal of non-coal waste was handled as required (4.11.4).
- C. No dams or embankments constructed of coal mine waste have been or proposed to be constructed (4.11.5).

X. Backfilling and Grading

- A. Backfilling and grading information can be found on pages 2.05-8, 2.05-9, and 2.05-16R, and on Maps 10, 10A, 12, and 13 of the PAP.

With the approval of PR-01, the Division approved the retention of the facility pads in their current operational configuration. This is consistent with the post-mining land use “Industrial or Commercial”, and requires minimal backfilling and grading (4.14.3(1)(a)).

XI. Revegetation

- A. Pre-disturbance vegetation conditions are described on page 2.04-14. The revegetation plan that was approved prior to PR-01 has been retained for reference and is presented on pages 2.05-10 through 2.05-14 of the PAP.

The pre-disturbance vegetation in the permit area and vegetation existing adjacent to the permit area is predominantly irrigated agricultural crops, including fruit orchards with an understory of pasture grasses and irrigated pasture land.

Per the revegetation plan approved prior to the approval of PR-01, upon final grading and topsoil replacement, the disturbed area would be reseeded with adapted grasses and forbs to achieve a post-mine land use of irrigated cropland. Page 2.05.12R in the PAP details the seed mix that was to be used. Due to the permit area for the Terror Creek Loadout being less than 40 acres in size (13.6 acres total), the revegetation success standard is based on data collected in 1983 and 1984 from an area immediately west of the Loadout. This area is shown on Map 4 of the PAP, entitled Pre and Post Disturbance Land Use. The Division determined that the area of data collection is topographically and edaphically comparable to the disturbed area. Data submitted had been used by the Division to set a revegetation success standard for production in the reclaimed area at 2,700 lbs/acre (4.15.7(2)(d)(vi)).

With the approval of PR-01 the post-mining land use for the entire permit area was changed to “Industrial or Commercial”. As such, the ground cover of living plants shall not be less than required to control erosion (4.15.10(2))

XII. Post-mining Land Use

- A. The Division is proposing to approve a post-mining land use of “Industrial or Commercial”. The land use meets the criteria of Rule 4.16.3.

XIII. Protection of Fish, Wildlife and Related Environmental Values

- A. The applicant has proposed the use of persistent pesticides to the site during operation and reclamation activities at the site. A weed management plan is in place to address noxious weeds, particularly white top, that appear at the Terror Creek Loadout. The operator will maintain records of herbicide use on the property for inspection by Division personnel.

XIV. Protection of Underground Mining

- A. There are no current or proposed surface mining operations within or adjacent to the Terror Creek Loadout.

XV. Subsidence Control

- A. This section does not apply to this operation, as Terror Creek is a coal loadout. No mining has occurred nor is mining approved to occur.

XVI. Concurrent Surface and Underground Mining

- A. This section does not apply to the Terror Creek Loadout.

XVII. Operations on Alluvial Valley Floors

- A. Identification of Alluvial Valley Floors

The PAP identifies an alluvial deposit extending approximately one mile to the east (upstream) and three miles to the southwest (downstream) of the permit area along the North Fork of the Gunnison River (Map 2 of the PAP). Lands upstream from the permit area are not a part of the hydrologic system that could be affected by the Loadout operation; therefore, no determination will be made by the Division for those lands at this time.

The valley bottom complex in the immediate vicinity of the proposed permit area (i.e., sections 15 and 22) consists of the current flood plain of the North Fork of the Gunnison River and a sloping colluvial deposit which rises above the flood plain to the north. Cropland, primarily fruit orchards and hay land, exists on both the colluvium and the flood plain in the vicinity and is irrigated with water diverted from the Deer Trail Ditch which roughly parallels State Highway 133 along the northern border of the permit area.

Detailed site geology (Map 1) and land use information (Map 4) provided within the PAP, with regard to the colluvial deposit, is limited to an area extending approximately 1,500 feet in all directions from the proposed permit boundary. An evaluation of the colluvial deposit with respect to alluvial valley floor inclusion will be limited to that portion of the deposit mapped as Qc (unconsolidated colluvium) on Map 11 of the PAP.

Construction of the Loadout pad and haul /access road within the permit area has disturbed approximately 13 acres, primarily orchard land. Surface disturbances have been limited to the colluvial deposit, with no surface disturbance in the present flood plain. No further surface disturbance is proposed or approved.

The PAP describes the unconsolidated deposit as being composed of colluvial

material resulting from mass wasting and slope wash from the steep slopes rising to the north of the permit area (see Map 11 of the PAP). The text indicates that, since settlement in the early 1900's, the area was graded to allow construction of the Fire Mountain Canal and accommodate flood irrigation.

The affected area occupies a transitional area (mapped as Qc on Map 2 of the PAP) between the flood plain and terrace complex below (mapped as Qa on Map 11 of the PAP) and the steeper upland slopes to the north of the permit area. It is the Division's determination that this transitional area is more appropriately considered to be an upland area rather than part of the flood plain and terrace complex as defined in Rules 1.04(10), (142), and (147).

Although colluvial deposits can be considered to be part of unconsolidated alluvial deposits in many cases, in this particular instance the deposits are fairly deep and appear to be underlain by bedrock or other fairly consolidated material (on the basis of test pits and observation by Division personnel). The permit area is also on a moderately steep slope (15%), which the applicant suggests was previously graded to accommodate agricultural activity. The type of irrigation practiced on these colluvial deposits consists of diverting the flow from a nearby irrigation canal into a system of furrows. This type of irrigation is the only feasible practice under such steep slope constraints and is considered to be artificial subirrigation rather than flood irrigation as strictly defined in Rule 1.04(48).

Based on considerations of the nature of the material, steepness of slopes and irrigation practice, the Division finds that the permit area is more appropriately considered to be within the upland area relative to the alluvial valley floor and is not within the flood plain and terrace complex. The Division therefore makes a negative determination for the presence of alluvial valley floors in the specific area of proposed disturbance for the Terror Creek operation.

The valley bottom below the proposed disturbance (below the existing railroad grade) is considered to be an alluvial valley floor. The Division therefore is required to make a finding for the impact of the disturbance on an adjacent alluvial valley floor. These findings are presented below.

B. Alluvial Valley Floor Findings

Pursuant to Rules 2.06.8 and 4.24.2, the Division is required to make specific written findings on the effect of mining upon any alluvial valley floor's within the permit and adjacent area. The findings for the North Fork alluvial valley floor are presented below. Mining activity (construction of the loadout facility) has already disturbed approximately 13 acres of land on the colluvial slope. No further surface disturbance is proposed by the applicant.

Pursuant to Rule 2.06.8(5)(a)(i), the Division finds that the surface coal mining operations would not interrupt, discontinue, or preclude farming on the alluvial

valley floor. Loadout operations on the colluvial slope will not physically impact farming operations on the alluvial flood plain adjacent to the permit area. Groundwater is not present in the colluvium in the permit area and surface water from above the adjacent flood plain will be diverted around the disturbed area. No future impact which might interrupt, discontinue, or preclude farming on the flood plain is proposed. Thus, operations at Terror Creek would not interrupt, discontinue, or preclude farming on previously undisturbed portions of the alluvial valley floor.

Pursuant to Rule 2.06.8(5)(a)(ii), the Division finds that the surface coal mining operations would not materially damage the quality and quantity of water in surface and underground water systems that supply those alluvial valley floors or portions of alluvial valley floors. Given the small size (13.6 acres) and nature of the disturbance, no significant hydrologic impacts are anticipated. There is minimal potential for the quality of water supplied to the alluvial valley floor via the Deer Trail Ditch or the Fire Mountain Canal to be affected. The canals are located upslope from the disturbed area. Irrigation runoff and storm runoff will be diverted around the disturbance and disturbed flows will be routed through a sediment pond prior to discharge. The applicant has obtained water rights to Deer Trail Ditch water totaling 300 acre-feet per year and anticipated a maximum need of approximately 44 acre-feet per year when the loadout was operational. 44 acre-feet is approximately .01% of the mean annual flow of the North Fork.

The applicant's discussion of probable hydrologic consequences has identified no anticipated changes in surface water quality. All runoff from disturbed surface areas drains through an approved sediment control system. No material damage to the quality of surface waters supplied to the alluvial valley floor is anticipated due to sediment control at the site and the fact that the ditch, which supplies the AVF, is located upslope of the disturbance.

There is a slight potential for water quality degradation to occur in the alluvial aquifer immediately down gradient of the loadout pad as a result of percolation of degraded water through the colluvium. This potential is considered insignificant for the following reasons. First, the small amount of degraded percolation water that would infiltrate would be rapidly diluted by existing water in the system. Second, the amount of percolation water would be minimized by the small size of the contributing drainage area (less than 15 acres) and the fact that the compacted surface of the pad will favor runoff over infiltration.

Pursuant to Rules 4.24.2(1) and (2), the Division finds that surface coal mining and reclamation operations would be conducted to preserve, throughout the mining and reclamation process, the essential hydrologic functions of alluvial valley floors not within the affected area and would be conducted to reestablish the essential hydrologic functions of the alluvial valley floor within the affected area. As stated previously, operations are not expected to materially damage the quantity and quality of surface and ground water that supply the alluvial valley floor

downstream from the permit area. Pond discharge sampling, as specified in Section V of this document, will be implemented to document the assumptions of this finding. Operations, as presented in the PAP, will not interfere with or preclude irrigation of those portions of the AVF not within the affected area. Appropriate culverts and ditches have been required, where necessary.

XVIII. Operations on Prime Farmland

- A. Pursuant to Rule 2.07.6(2)(k), the Division has made a negative determination for the presence of prime farmland within the proposed permit area. The decision was based on mapping by the U.S. Soil Conservation Service, which demonstrates that no prime farmland mapping units are found within the permit area.

XIX. Mountaintop Removal

- A. This section does not apply to the Terror Creek Loadout.

XX. Operations on Steep Slopes

- A. This section does not apply to the Terror Creek Loadout.

XXI. In Situ Processing

- A. This section does not apply to the Terror Creek Loadout.