STATE OF COLORADO

Gibson - DNR, Amber <amber.gibson@state.co.us>

Bradford Mesa TR Adequacy Review #1 Response

1 message

PFM Consulting <pfmconsultingcompany@gmail.com> Mon, Apr 28, 2025 at 6:47 AM
To: "Gibson - DNR, Amber" <amber.gibson@state.co.us>

Good morning, Amber.

I've attached the updated maps and narrative for your review. I had to remove a lot of the figures in the narrative, as it was making formatting very difficult. When needed, I referred back to the original, approved narrative. I've highlighted in red text anything that was added, and removed all the previous features that were no longer planned, i.e. "dump".

Let me know if you think this sufficiently addresses all of your questions in the Adequacy Review and allows for the continuance of the Technical Revision review process.

Thanks!

Jodi Schreiber, Owner
PFM Consulting LLC
719-529-0916
pfmconsultingcompany@gmail.com

PFM Consulting Website
Titan Transport Website
Jodi Schreiber Farms Website

"Success is not final, failure is not fatal; it is the courage to continue that counts. "

–Winston Churchill

6 attachments

- **Bradford Mesa Existing Conditions r5 pdf.pdf** 1363K
- **Bradford Mesa Mining r3.1 pdf.pdf** 862K
- **Bradford Mesa Legal R2.1 pdf.pdf** 15529K
- **Bradford Mesa Phases R3.1 pdf.pdf** 1218K
- **Bradford Mesa Reclamation r3.1 pdf.pdf** 2214K
- **Updated Mining and Reclamation Plan 4.25.25.docx** 264K

EXHIBIT A LEGAL DESCRIPTION

The site is approximately 7 miles northeast of Walsenburg, CO. The property is bounded by dry rangeland in each cardinal direction with Union Pacific and Burlington Northern Santa Fe railroad tracks parallel to the western edge of the site between 50-500 feet from the permit boundary. The main site access is located at eastern edge of the DRMS boundary and crosses Edmundson Ranch lands to join County Road 120 as shown on Exhibit C. A legal description is shown on Exhibit C. A general location map is enclosed as Exhibit A/B Pg 1.

The total permit area is 1,113 acres.

1. Legal Description

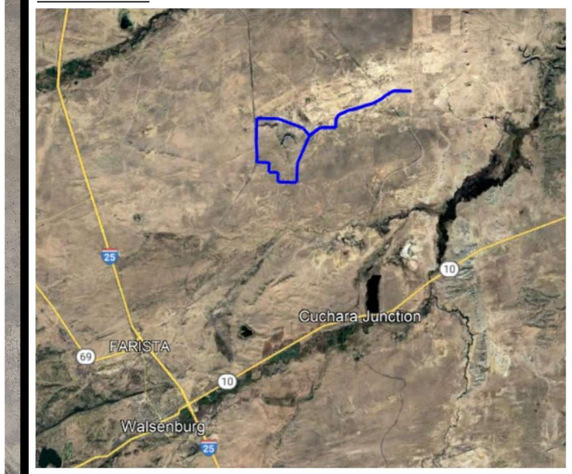
The full permit area including the mining area and the haul road is 1,113 acres.

E 1/2 of SW 1/4, SE1/4 of NE 1/4 of S35 T26S R66W
S 1/2 of N 1/2, S 1/2 of S36 T26S R66W
E 1/2 of NE 1/4 S2 T27S R66W
N 1/2, NE 1/4 of SW 1/4,SE 1/4 of S1 T27S R66W
S 1/2 of S31 T26S R66W
W 1/2 of NW 1/4 S6 T27S R65W

The pit can also be described as being located at:
Latitude 37°43'40.0512" N
Longitude 104°43'5.3868" W

With a mine entry locations of:
Latitude 37°44'9.8196" N
Longitude 104°42'46.2312" **W**

Overview



Bradford Mesa Pit
Legal Exhibit A/B PG 1

Map By James Higgs
Southway
4/20/25

Entrance 37.754181°-104.663587°

Pit Permit 1,113 acres

CR 120

CR 120

Nad 83

1)37.735889°-104.712886°
2)37.725418°-104.718320°
3)37.717993°-104.718428°
4)37.718012°-104.727586°
5)37.721645°-104.727603°
6)37.721676°-104.732130°
7)37.725329°-104.732022°
8)37.725468°-104.738186°
9)37.726513°-104.738074°
10)37.727378°-104.738058°
11)37.728161°-104.738075°
12)37.732693°-104.738558°
13)37.742333°-104.738604°
14)37.742318°-104.728108°
15)37.738926°-104.715831°
16)37.736100°-104.712800°
17)37.736626°-104.712130°
18)37.739391°-104.707705°
19)37.739562°-104.700382°
20)37.739690°-104.700218°
21)37.743090°-104.700143°
22)37.744316°-104.698873°
23)37.745062°-104.697511°
24)37.745698°-104.695578°
25)37.746349°-104.694292°
26)37.746446°-104.693010°
27)37.747036°-104.690309°
28)37.749315°-104.681850°
29)37.751329°-104.677640°
30)37.752215°-104.676460°
31)37.753167°-104.674536°
32)37.754191°-104.672399°
33)37.754230°-104.663586°
34)37.754147°-104.663584°
35)37.754074°-104.672332°
36)37.753130°-104.674403°
37)37.752115°-104.676395°
38)37.751255°-104.677551°
39)37.749240°-104.681730°
40)37.746920°-104.690231°
41)37.746340°-104.692965°
42)37.746236°-104.694198°
43)37.745637°-104.695410°
44)37.744976°-104.697351°
45)37.744214°-104.698749°
46)37.742935°-104.699952°
47)37.739434°-104.700021°
48)37.739279°-104.707618°
49)37.736538°-104.712043°

E 1/2 of SW 1/4, SE1/4 of NE 1/4 of S35 T26S R66W

S 1/2 of N 1/2, S 1/2 of S36 T26S R66W

E 1/2 of NE 1/4 S2 T27S R66W

N 1/2, NE 1/4 of SW 1/4,SE 1/4 of S1 T27S R66W

S 1/2 of S31 T26S R66W

W 1/2 of NW 1/4 S6 T27S R65W

N

1 mi

Google Earth

Bradford Mesa Pit
Legal Exhibit A/B PG 2

Map By James Higgs
Southway
4/20/25

Entrance 37.754181°-104.663587°

Nad 83
1)37.735889°-104.712886°
2)37.725418°-104.718320°
3)37.717993°-104.718428°
4)37.718012°-104.727586°
5)37.721645°-104.727603°
6)37.721676°-104.732130°
7)37.725329°-104.732022°
8)37.725468°-104.738186°
9)37.726513°-104.738074°
10)37.727378°-104.738058°
11)37.728161°-104.738075°
12)37.732693°-104.738558°
13)37.742333°-104.738604°
14)37.742318°-104.728108°
15)37.738926°-104.715831°
16)37.736100°-104.712800°
17)37.736626°-104.712130°
18)37.739391°-104.707705°
19)37.739562°-104.700382°
20)37.739690°-104.700218°
21)37.743090°-104.700143°
22)37.744316°-104.698873°
23)37.745062°-104.697511°
24)37.745698°-104.695578°
25)37.746349°-104.694292°
26)37.746446°-104.693010°
27)37.747036°-104.690309°
28)37.749315°-104.681850°
29)37.751329°-104.677640°
30)37.752215°-104.676460°
31)37.753167°-104.674536°
32)37.754191°-104.672399°
33)37.754230°-104.663586°
34)37.754147°-104.663584°
35)37.754074°-104.672332°
36)37.753130°-104.674403°
37)37.752115°-104.676395°
38)37.751255°-104.677551°
39)37.749240°-104.681730°
40)37.746920°-104.690231°
41)37.746340°-104.692965°
42)37.746236°-104.694198°
43)37.745637°-104.695410°
44)37.744976°-104.697351°
45)37.744214°-104.698749°
46)37.742935°-104.699952°
47)37.739434°-104.700021°
48)37.739279°-104.707618°
49)37.736538°-104.712043°

Pit Permit 1,113 acres

E 1/2 of SW 1/4, SE1/4 of NE 1/4 of S35 T26S R66W

S 1/2 of N 1/2, S 1/2 of S36 T26S R66W

E 1/2 of NE 1/4 S2 T27S R66W

N 1/2, NE 1/4 of SW 1/4,SE 1/4 of S1 T27S R66W

S 1/2 of S31 T26S R66W

W 1/2 of NW 1/4 S6 T27S R65W

N

3000 ft

Bradford Mesa Pit
Legal Exhibit A/B PG 3

Map By James Higgs
Southway
4/20/25

Entrance 37.754181°-104.663587°

Nad 83
1)37.735889°-104.712886°
2)37.725418°-104.718320°
3)37.717993°-104.718428°
4)37.718012°-104.727586°
5)37.721645°-104.727603°
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11)37.728161°-104.738075°
12)37.732693°-104.738558°
13)37.742333°-104.738604°
14)37.742318°-104.728108°
15)37.738926°-104.715831°
16)37.736100°-104.712800°
17)37.736626°-104.712130°
18)37.739391°-104.707705°
19)37.739562°-104.700382°
20)37.739690°-104.700218°
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23)37.745062°-104.697511°
24)37.745698°-104.695578°
25)37.746349°-104.694292°
26)37.746446°-104.693010°
27)37.747036°-104.690309°
28)37.749315°-104.681850°
29)37.751329°-104.677640°
30)37.752215°-104.676460°
31)37.753167°-104.674536°
32)37.754191°-104.672399°
33)37.754230°-104.663586°
34)37.754147°-104.663584°
35)37.754074°-104.672332°
36)37.753130°-104.674403°
37)37.752115°-104.676395°
38)37.751255°-104.677551°
39)37.749240°-104.681730°
40)37.746920°-104.690231°
41)37.746340°-104.692965°
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43)37.745637°-104.695410°
44)37.744976°-104.697351°
45)37.744214°-104.698749°
46)37.742935°-104.699952°
47)37.739434°-104.700021°
48)37.739279°-104.707618°
49)37.736538°-104.712043°

E 1/2 of SW 1/4, SE1/4 of NE 1/4 of S35 T26S R66W

S 1/2 of N 1/2, S 1/2 of S36 T26S R66W

E 1/2 of NE 1/4 S2 T27S R66W

N 1/2, NE 1/4 of SW 1/4,SE 1/4 of S1 T27S R66W

S 1/2 of S31 T26S R66W

W 1/2 of NW 1/4 S6 T27S R65W

Pit Permit 1,113 acres

23 °45
22
°46
21
°47
19 °20
°48
18
°49
17
°50
°16

Google Earth
Image © 2025 Airbus

N

1000 ft

Bradford Mesa Pit
Legal Exhibit A/B PG 4

Map By James Higgs
Southway
4/20/25

Entrance 37.754181°-104.663587°

Nad 83
1)37.735889°-104.712886°
2)37.725418°-104.718320°
3)37.717993°-104.718428°
4)37.718012°-104.727586°
5)37.721645°-104.727603°
6)37.721676°-104.732130°
7)37.725329°-104.732022°
8)37.725468°-104.738186°
9)37.726513°-104.738074°
10)37.727378°-104.738058°
11)37.728161°-104.738075°
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13)37.742333°-104.738604°
14)37.742318°-104.728108°
15)37.738926°-104.715831°
16)37.736100°-104.712800°
17)37.736626°-104.712130°
18)37.739391°-104.707705°
19)37.739562°-104.700382°
20)37.739690°-104.700218°
21)37.743090°-104.700143°
22)37.744316°-104.698873°
23)37.745062°-104.697511°
24)37.745698°-104.695578°
25)37.746349°-104.694292°
26)37.746446°-104.693010°
27)37.747036°-104.690309°
28)37.749315°-104.681850°
29)37.751329°-104.677640°
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33)37.754230°-104.663586°
34)37.754147°-104.663584°
35)37.754074°-104.672332°
36)37.753130°-104.674403°
37)37.752115°-104.676395°
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45)37.744214°-104.698749°
46)37.742935°-104.699952°
47)37.739434°-104.700021°
48)37.739279°-104.707618°
49)37.736538°-104.712043°

Pit Permit 1,113 acres

23 45 24 44 25 43 26 42 27 41 39 28

E 1/2 of SW 1/4, SE1/4 of NE 1/4 of S35 T26S R66W
S 1/2 of N 1/2, S 1/2 of S36 T26S R66W
E 1/2 of NE 1/4 S2 T27S R66W
N 1/2, NE 1/4 of SW 1/4,SE 1/4 of S1 T27S R66W
S 1/2 of S31 T26S R66W
W 1/2 of NW 1/4 S6 T27S R65W

N

1000 ft

Google Earth
Image © 2025 Airbus

Bradford Mesa Pit
Legal Exhibit A/B PG 5

Map By James Higgs
Southway
4/20/25

Entrance 37.754181°-104.663587°

Nad 83
1)37.735889°-104.712886°
2)37.725418°-104.718320°
3)37.717993°-104.718428°
4)37.718012°-104.727586°
5)37.721645°-104.727603°
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31)37.753167°-104.674536°
32)37.754191°-104.672399°
33)37.754230°-104.663586°
34)37.754147°-104.663584°
35)37.754074°-104.672332°
36)37.753130°-104.674403°
37)37.752115°-104.676395°
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43)37.745637°-104.695410°
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45)37.744214°-104.698749°
46)37.742935°-104.699952°
47)37.739434°-104.700021°
48)37.739279°-104.707618°
49)37.736538°-104.712043°

120

32

35

34

33

31

36

30

37

29

38

Pit Permit 1,113 acres

120

E 1/2 of SW 1/4, SE1/4 of NE 1/4 of S35 T26S R66W

S 1/2 of N 1/2, S 1/2 of S36 T26S R66W

E 1/2 of NE 1/4 S2 T27S R66W

N 1/2, NE 1/4 of SW 1/4,SE 1/4 of S1 T27S R66W

S 1/2 of S31 T26S R66W

W 1/2 of NW 1/4 S6 T27S R65W

N

1000 ft

EXHIBITS C/D **PREMINE AND MINE PLAN MAPS**

Exhibit C - Existing Conditions Exhibit D- Mining Map

Exhibit D-1 – Mining Phases

Bradford Mesa Pit
Existing Conditions Exhibit C

Southway
Map By James Higgs
4/22/25

Bradford Reservoir
Reservoir Area
Mapped By
USFWS Freshwater
Emergent Wetland

Bradford Reservoir

Huerfano Cucharas IRR CO

Edmundson Ranches LLC

Edmundson Ranches LLC

BLM

Edmundson Ranches LLC

Edmundson Ranches LLC

BLM

Edmundson Ranches LLC

Edmundson Ranches LLC

Colorado State Land Board

Edmundson Ranches LLC

Edmundson Ranches LLC

JW Cattle Company LLC

JW Cattle Company LLC

Edmundson Ranches LLC

Margaret Meyer

Margaret Meyer

BLM

Margaret Meyer

Bradford Mesa

DENVER AND RIO GRANDE WESTERN

COLORADO AND

Edmundson R

JW Cattle Company LLC

County CUP #00-060 Boundary

Cattle Tank

Well #263436 approximately 1280 feet due west from permit boundary

Culvert

BLM Mineral Ownership Boundary

DRMS Boundary
CUP Boundary
BLM Mineral Ownership
Property Boundary
Railroad ROW
Fenceline

Well #271383

Legend
- Permit Boundary (1,113 Acres)
- Existing Fence Line
- 10' Existing Contours
- BLM Mineral Ownership Boundary
- Property Lines
- County CUP #00-060 Boundary
- 200' Outside Permit Boundary

N

1 mi

Google Earth

Bradford Mesa Pit - Southway
Mining Map Exhibit D.1 Phases

4/20/25
Map By James Higgs

Phase 51
Phase 55
Phase 54
Phase 34
Phase 33
Phase 52
Phase 50
Phase 53
Phase 19
Phase 35
Phase 49
Phase 18
Phase 32
Phase 48
Phase 1
Phase 47
Phase 36
Phase 20
Phase 17
Phase 46
Phase 31
Phase 2
Phase 45
Phase 21
Phase 37
Phase 16
Phase 30
Phase 43
Phase 44
Phase 22
Phase 3
Phase 38
Phase 29
Phase 15
Phase 42
Phase 23
Phase 4
Phase 39
Phase 28
Phase 14
Phase 41
Phase 5
Phase 24
Phase 40
Phase 13
Phase 27
Phase 6
Phase 25
Phase 12
Phase 26
Phase 7
Phase 11
Phase 8
Phase 10
Phase 9

Notes:
All Phases are 20 acres except the last phase 55 which is 14 acres

3000 ft

Bradford Mesa Pit - Southway
Mining Map Exhibit D

4/20/25
Map By James Higgs

Permit Boundaries (1,113 Acres)

Phase 19

Phase 18

Phase 1

Phase 20

Phase 17

Phase 2

Phase 16

Phase 3

Mining Direction

Mining Direction

Mining Direction

Approximate Processing Area

Approximate Stockpile Area

31

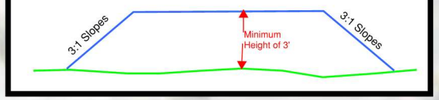
5821

6926

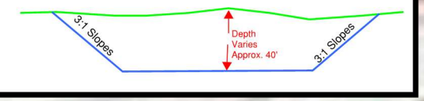
950

Legend
- Permit Boundary (1,094 Acres)
- 10' Existing Contours
- Erosion Berm/Stockpile of Topsoil
- Stockpile of Overburden

Typical Berm Section



Typical Section



Notes:
1) Floor depth will be determined in the field
2) All slopes will be mined at a 3:1, except for the working face.
3) Entrance Location: 37.754181°-104.663587°
4) For land owners please see the land owner map.

N

1000 ft

EXHIBITD MINING PLAN

1. General Mining Plan

Exhibit C shows the current conditions of the Bradford Mesa Quarry. Mine access is via Edmundson Ranch lands fed from County Road 120. The site is bound by fencing along the western and southern edges. Prior to disturbance, the northern and eastern boundaries will be staked and signed.

The geologic unit to be mined is an Eocene diabase (basalt) sill that ranges in thickness from 5 to 25 feet with the thickest wedge of the unit approximately located through the center of Bradford Mesa. The sill intruded the Cretaceous Pierre Shale and currently acts as a cap rock for the brittle underlying shale slopes. In areas where northeast trending dikes intruded into the Pierre Shale and where the shale is in contact with the dike, contact metamorphism deformed the shale into localized slate.

The site was previously awarded a DRMS permit (M-2009-003) to the operator Impact Investments in August, 2009. However, no mining occurred at the site due to market conditions. Site exploration at this time included core hole drilling in four locations. Additionally, 19 test pits were dug prior to 2009 to determine the depth of overburden and ripability of shale and intermittent slate. Borings indicate the sill plane varies in thickness from 5 to 25 feet and dips to the southwest at a 3-5% grade (Figure 1).

The sill is estimated to be overlain by 0-12 inches of topsoil, variable depths of overburden ranging from 2 to 20 feet at its deepest areas, and/or variable thicknesses of Pierre Shale (Figure 2). Actual mining depth will reach 30 to 90 feet, but design slopes will remain constant. Mining wi11 occur in phases that advance from the northeast corner south and moving west with the phases. Map C shows the Mining plan with projected phasing and Exhibit F features the Reclamation plan. General contours within mining phases are shown on Exhibit C. Reclamation contours will reflect those presented on Exhibit F. Exact contours on Maps C and F are not detailed as mining and reclamation will occur concurrently and will mitigate the lack of known true mining contours.

In general, each new mining phase will be mined by first excavating 6 inches of topsoil and underlying variably thick overburden with front-end loaders, excavators and bulldozers. Overburden is believed to range in thickness from 2 to 20 feet thick with an average of 6 feet across the site. Overburden consists of variable compositions of poorly graded fine grained sand located south of the dike with well graded sand, cobbles, boulders, and colluvium along the east side of the mesa. Generally, well graded material overlies the sill to the east while sandier overburden overlies the Pierre shale that overlies the sill in the western extents of the mesa. Topsoil, overburden, blasted shale, and separated waste fines will be stockpiled and used to backfill the slopes of mined out areas to a 3H:1V slope during Reclamation as shown on Map F. Stockpiles will be minimal and reclamation will occur concurrently with mining. Each phase's recovered materials will be used to reclaim the previously mined strip within the adjacent phase and will not be stockpiled.

After overburden is removed and as necessary, the target sill and overlying shale, where present, will be drilled and blasted to specified rough size and sorted. A preliminary blast plan is included in Appendix 3 - Blasting Plan. Blasting will be completed by a contract licensed Operator who will provide a detailed final blast plan to the Division prior to any blasting as a part of mining. Overlying shale and the basalt sill will be coarsely blasted to an average size of 3' minus. Coarse blasted shale will be used as backfill in reclamation and excess coarse blasted shale will be blended with excess overburden in the dump. Blasted sill material will be loaded via front-end loader into a crusher where it will be further processed with respect to size and sorted into piles accordingly. Sorted and stockpiled sill material will be hauled off site to the market. Stockpiles of material will be located in the main processing area, see Map C.

The processing area will be stripped of topsoil and overburden and will be placed into a long-term stockpile - a sediment control structure – surrounding the working area. When road base becomes available following mining of Phase 1, the processing area will be capped with road base.

The main processing area will move with the phases. When this time comes, the processing area will be relocated to a previously mined phase adjacent to the main processing area.

Blasting and mining will reach a depth of approximately 30 feet below the pre-mine ground surface along the eastern extents of the mesa where overburden is minimal. Mining depths will reach approximately 90 feet deep along the western extents of the mesa as the target basalt sill is approximately 60 feet below the current ground surface and is covered by shale in those areas. Regardless of location, blasting and mining depths will reach the base of the basalt sill at that specific location. Prior to blasting, overburden will stockpiled around the mine area for stormwater control. Blasting and mining will occur in 40-foot lifts until the target resource - the basalt sill - is reached. Therefore, the maximum active highwall will be 40 feet tall and 50 feet long after overburden is removed in a previous lift. New mining areas will be developed in approximately 20 acre phases. It is anticipated that mining of phases will occur in numerical order; however, if test drill holes yield high shale and overburden thickness above the basalt sill, mining of deep resource phases (>80 feet to the basalt sill) may not occur until later in the mine life, if at all.

Prior to mining a new phase, the advance phase will be stripped of topsoil and reclamation to be used in the previously mined phase for reclamation.

Raw blasted basalt material will be loaded into a portable crusher/screen plant where various sizes of product will be created and sorted into separate size-dependent stockpiles. Maximum processing capacity is approximately 4,000 tons per day. The crushing operation, asphalt hot plant, concrete batch plant, and processed stockpile locations may change during the mine's life as mining proceeds across the mining area.

Normal groundwater levels are known to be greater than 100 feet below the pre-mined ground surface based on well data in the surrounding area. No water will be encountered in the operation. However, in the unlikely event that water is encountered during mining, excavation will immediately stop and the area will be backfilled with at least 2 feet of overburden to cover any exposed water. No pit dewatering will take place as the groundwater table is below the bottom of the pit elevation.

Mining activities are expected to occur all months of the year and processing operations that include screening and crushing of gravel will occur concurrently. Expected annual average

production is 70,000 tons. Actual production rates will fluctuate based on market conditions. Raw material will be processed and sold as various products: crushed rock, chips, and road base. "Naturals" or sandy fines from the screening operation are expected to make up approximately 10% of the raw material mined and will be mixed into overburden.

Used asphalt pavement and concrete rubble may be imported and stockpiled on site to be used for future crushing and stockpiling for use as a recycled material in new construction. Additionally, imported concrete and asphalt may be used in the base layers of backfilling and will be thoroughly covered with overburden and topsoil as per the reclamation plan. This material will be certified per Rule 3.1.5(9) as detailed in Exhibit E. Import and use of recycled asphalt and concrete on site is not anticipated but the right to do so is requested in this filing. Occasionally, soil that is determined to be free of debris and is certified inert may be brought to the site and stockpiled for use during reclamation.

Topsoil, overburden, and blasted shale from newly disturbed areas will be used to reclaim mined out areas; therefore, total site disturbance will be minimized as reclamation will occur concurrently with mining. This will reduce material moving as well as reduce the maximum area to be reclaimed; maximum disturbance is discussed in Exhibit L.

Excess shale and surplus overburden will be used for reclamation purposes immediately following mining activities in each phase. Stockpiles of this material will encompass the mine area for stormwater control.

2. Mining Timetable

Projected average annual production for the Bradford Mesa Quarry is 70,000 tons per year. It is currently estimated that 30-60 million tons of basalt are available to be mined within the quarry. Mining will be completed based on market conditions; therefore, with an average estimate of 45 million tons of basalt available mined at a rate of 70,000 tons per year, mining of the Bradford Mesa resource will occur over several decades.

The mining schedule is planned to minimize disturbance by reclaiming mined-out areas as new mining phases become active. Note that if large contracts are awarded to the site, production could increase and reduce the life of the pit. On the contrary, if contracts are less than anticipated, the life of the pit could be extended.

3. Mine Facilities and Operation

It is extremely unlikely that any toxic or acid-producing materials will be encountered during the mining operation as the site was historically rangeland with minor more riparian areas near the Bradford Reservoir. However, in the event that such materials are encountered, they will be covered with subsoil and topsoil from onsite stockpiles to the same depths outlined in the reclamation plan and no more mining will occur in the area.

The processing area will be located in the active phase. Aggregate processing equipment is portable and the processing area will move and follow active mining throughout the site. Portable mining equipment such as loaders, dozers, trucks and excavators will be serviced on an as-needed basis onsite. Upon reclamation, all portable equipment will be removed from the site. A summary of equipment and related tanks that may exist on site at any given time is listed below.

A portable asphalt plant with associated tanks
A portable concrete plant with associated tanks
Truck scales
A portable office trailer
Equipment parking and maintenance

Overflow resource stockpiling
A portable crusher with associated tanks
Active pit serving as a stormwater settling pond
10,000 gallon diesel fuel tank in secondary containment (110% of tank capacity)
4,000 gallon water tank used for dust suppression
Portable lights with a generator for emergency after hours maintenance support

The following list is the best estimate of equipment that will be used onsite throughout the mine life:

2-4 Front end loaders
crushing and screening plant
1-3 D-10 Bulldozer
I 4000 gallon water truck
off-highway road haul trucks (number will depend upon production needs)
15 and 24 ton on-road haul trucks (number will depend upon production needs)

A portable asphalt plant may be erected on the site periodically. Material crushed and stockpiled on site may be used for asphalt production. Maximum asphalt production will not exceed 2,000 tons per day. Asphalt production may occur only during the warm season months of April through October. Components associated with the portable asphalt plant include:

Liquid asphalt storage
Aggregate feed bins
Mixer
Conveyors
Lime silo
Truck loading equipment
Power supply and distribution

All fuel tanks will have secondary containment. Some are double walled, others will be located within bermed or lined areas that have over 110% of the volume of the largest stored tank. Fuel

tanks will be located in the processing area. Several hazardous materials will be stored and used onsite throughout the project. These materials include products that are associated with diesel motors and products associated with asphalt and concrete production.

No night mining activity is scheduled for the operation; however, portable lighting may be used within the pit from time to time. Portable lights will only be used for the purpose of equipment maintenance activities within permitted hours in the winter months while the days are shorter. Portable toilets will be used for employees. Mining structures such as the scale house, fueling area, and office trailer, will be portable and will be located within the processing area. Structures such as the asphalt plant, concrete plant, and crushing and screening equipment will also be portable and will move throughout the site, as needed.

Existing 4-strand barbed wire fences border parts of the western edge of the site parallel to the Union Pacific and Burlington Northern Santa Fe railroad tracks. The southern extent of the site is boarded by barbed wire fences separating Edmundson Ranch lands from neighboring parcels. The Operator commits to clearly marking the permit boundary in areas that do not have fences. Speed limits and other traffic control signs will be found throughout the site and around the operation area. No problems are expected with vandalism.

The site will use existing on site roads located on Edmundson Ranch land. No new roads will be created through the Colorado State Land Board property with the exception of temporary tracks used to transport blasted material to the processing area. Unimproved roads on State Land Board and Edmundson Ranch lands are detailed on the Existing Conditions Map and Legal. The gravel haul road exists solely on Edmundson Ranch land until it joins County Road 120 as shown on the Existing Conditions Map. To facilitate drainage across the ROW, 18" corrugated metal pipe culverts will be installed at a spacing of every 1,000 horizontal feet. Multiple fences are crossed and gates are shown on Map C-3. After turning south on County Road 120, haul trucks will join CO-10 to Highway 25 for transport north and south or will enter the town of Walsenburg to access US-160 to transport material to the west. The Edmundson Ranch land road is an unimproved road that will be graveled prior to hauling; County Road 120 is a gravel road without shoulders; and CO-IO and US-160 are paved roads without shoulders. No sidewalks are

adjacent to any roads. A County Road Access Permit will be pursued if necessitated by Huerfano County.

The haul road will remain post-mining, as is the landowner's wish. See the enclosed affidavit, following exhibit D, signed by the landowner ensuring the haul road will remain post-mining and is therefore exempt from inclusion in the bond and reclamation efforts.

No stormwater or process water will leave the site and all runoff will be trapped on site and waters will infiltrate the pit floor within 72 hours.

Natural drainages from unmined portions of the mesa will be diverted around the mining and processing areas either through drainage ditch relocations or construction of isolation berms. Fine sediment will be removed as needed from the sumps throughout the site. Material removed from the sumps will be placed in the mining strip that is actively being filled at that time. Although the sump will be lined with fines that will periodically require removal after accumulation, the lack of consistent precipitation in the area paired with the known low rain values will ensure that captured water either evaporates or will infiltrate the very porous ground surface. Additionally, all sumps will be emptied of sediment build-up periodically to ensure infiltration of water through the base of the sump. Additional calculations for the stormwater/sediment settling pond are presented in Exhibit G - Water Information.

4. Topsoil and Overburden Handling

Topsoil ranges from 0-12 inches thick on site, 6 inches is the anticipated average. Both topsoil and overburden are used on site for reclamation of mined out areas. In the event that the Bradford Mesa Quarry needs to store topsoil, overburden, or waste fines in a berm, material piles will be within the foot print of the current pit. Topsoil stockpiles will be constructed to 2H:1V slopes and overburden piles will have 2H:**1**V

slopes. To prevent erosion, the stockpiles will be seeded with the native seed mix detailed in Exhibit F within 180 days of establishment.

Stockpiles recovered as the result of opening Phase 1 will be stored in the processing area and will be used to provide sediment control for the processing area. Overburden from Phase **1** and/or the processing area will be used to build-up the processing area sediment control structure and will be topped with topsoil from Phase **1** and/or the processing area. Each subsequent phase's recovered materials will be used to reclaim the previously mined strip within the adjacent phase and will not be stockpiled.

Anticipated topsoil to be removed and stockpiled in undisturbed future mining areas amounts to 360,040 CY and is equal to the amount required during reclamation of all disturbed areas with a topsoil application of 6 inches. Anticipated overburden in all unmined areas to be removed and stockpiled totals to 4,320,470 CY and is equal to double the required volume of 2,160,240 CY needed for reclamation of all disturbed areas with a replaced overburden depth of 3 feet. These are estimates based on the NRCS soils report, average known topsoil and overburden depths, and the previous permit's boring results.

5. Schedule of Operations

Mining operations will occur Monday through Saturday during daylight hours and intermittently during the life of the operation. Mining, screening and processing will be conducted with portable equipment at various times of the year. Product will be sold throughout the year. Night mining will not occur; although minor truck activity or repairs may occur after daylight hours. Mining and processing will take place no more than 12 hours per day, during daylight hours, Monday through Saturday. Hauling will take place from 7 am to 7 pm Monday through Saturday.

6. Huerfano County Impacts and Environmental Impacts

The impacts to Huerfano County will be limited. No dust is expected from the operation as the pit and roads are watered as needed. In the event that airborne dust is observable, immediate action to mitigate dust via roadway wetting and a slowdown of production will be initiated and sustained until airborne dust is mitigated. Water used is brought on site and applied on an as-

needed basis to control dust on haul roads and within the mine area. Water will also be pumped from an industrial well currently being permitted, see Map C-2 for the future well location. Magnesium chloride will be used annually or as needed to further aid in dust mitigation.

Noise and traffic will be limited to blasting and crushing. Blasting will be sporadic in nature and will occur only during hours of operation. As processing will be ongoing, noise from crushing activities may exist; however, the location of the site ensures minimal impact to the surrounding landscape. No residential use properties are within 500 feet of the pit.

A Conditional Use Permit (CUP 00-060) was approved by the Huerfano County Commissioners on September 20, 2000. This CUP runs with the land and is still valid.

7. **Future Railroad Access**

Initial offsite haulage of construction materials will utilize the Edmundson Ranch haul road and the County Road. As the quarry progresses, it is anticipated that rail service will be brought to the site. Designs are in process with the Union Pacific and Burlington Northern Santa Fe Railway Companies; however, they are not available at the time of the permitting. An approximate foot print of the rail yard is shown on Map C-2 of the previously approved application. To mine the main processing area, the rail loop will be moved to the southern most extent of the DRMS permit boundary. However, this area is outside the CUP boundary and will require an amendment with Huerfano County. Any changes regarding relocation of the rail loop and movement of the main processing area will be submitted to the Division by a technical revision prior to making any on site changes.

EXHIBIT E RECLAMATION PLAN

1. General Reclamation Plan

The total disturbed area to be reclaimed under this permit is 1,113 acres. Reclamation plans can be viewed on Exhibit F. Post-mining land use will return the entire disturbed site back to dry rangeland with native grasses on all slopes. All slopes will be reclaimed to 3H:1V or shallower. As described in the mining plan, reclamation will occur concurrently with mining. Overburden will be pushed at a 3H:1 V slope to the adjacent phase in reclamation resulting in only 40 vertical feet of active blasted basalt highwall at any given time. No more than 50 lateral feet of highwall will remain in need of gross earthworks at any time.

Topsoil and overburden from the current mining phase will be used to reclaim the previous mined out phase (Figure 8). A front end loader and dozer will be used to place and distribute overburden and topsoil throughout the site. When mining in the western areas of the site, increased shale will be blasted with the basalt sill. Blasted shale will be mixed with overburden as backfill and excess shale will be deposited in the dump. Average cost per cubic yard is $1.50. It is anticipated that backfilling and seeding will occur at 2 to 3 year intervals until the site is completely mined. As the first phase is opened, topsoil and overburden will be stockpiled to be used for that phase's reclamation post mining. In the event that topsoil and overburden berms are in place longer than 6 months, the berms will be seeded with the native seed mix detailed in Exhibit F to diminish wind erosion.

Topsoil will be replaced to a depth of 6 inches, the average depth of topsoil found throughout the site is 0-12 inches. Due to the type of mining - dozer push to stockpile - traditional overburden resurfacing may be unnecessary. This is because the dozer push down mining technique inherently results in 3H:IV side slopes and a pit floor that matches pre-mining slopes of approximately 5H:IV. However, excess overburden, and blasted shale where available, will be used to cover existing shallower than 3H:IV mining slopes, as needed, to redistribute the abundance of excavated overburden and blasted shale. When dispersed, overburden and shale will be placed and compacted to at least 3' depth.

By using onsite stockpiled materials and completing reclamation of mined phases concurrent with active mining, the distance that topsoil and overburden is transported, as well as the amount of material to be rehandled, will be minimized. Additionally, mined and unreclaimed acreage will be minimized and will make the worst case reclamation area smaller thus decreasing the required bond.

The internal haul road will be left in place from the processing area and through Edmundson Ranch lands until it reaches County Road 120 as desired by the property owner. The Reclamation Map shows tentative post-reclamation roads to remain indefinitely; however, exact reclamation road orientations are not known and will be determined by the land owner. See the enclosed signed Haul Road affidavit. If a rail yard is developed, it will be left in place as desired by the landowner. See the enclosed signed Rail Spur affidavit.

On occasion, topsoil or overburden may be imported to the site to be used in reclamation. To ensure that all imported materials are clean and inert and according to Rule 3.1.5(9) the individual or company delivering material to the facility is required to sign an affidavit certifying that material is clean and inert, states the original source, and the estimated volume. A blank

affidavit of import is included in this exhibit. The importer, the Operator, also certifies that all imported materials are clean and inert, see the executed affidavit certifying all imported materials are inert at the end of this exhibit.

Additionally, certified inert concrete and asphalt may be imported to the site and used as the base layers of backfilling. This is advantageous because inert concrete and asphalt will be used to make up for the limited overburden expected to be recovered from the site. All exposed rebar will be either removed from the concrete it's held within or will be buried by at least 3 feet of acceptable fill material. See the enclosed example affidavit of import and a signed affidavit by the Operator certifying imported material is inert.

2. Reclamation Timetable

Reclamation will take place concurrently with mining with an additional estimated 6 months of reclamation commencing after mining is completed. Mining is projected to be completed by 2065. Therefore, final reclamation and bond release is expected to be completed by 2066 or within 46 years. Exhibit L: Reclamation Costs describes the worst-case bond scenario.

3. Revegetation Plan

For each area of reclamation, soil will be disked to loosen surficial soils. Due to the mild grade, seed can be drilled in most areas, but broadcast seeding will be utilized where reclaimed perimeter slopes do not allow drilling. The seed mix listed below (Table 3.1) will be used to revegetate the site with a native grass mix on all surfaces. This seed mix was verified as adequate for the Bradford Mesa area by Anthony Arnhold of the NRCS Colorado Area 2 Office which includes Walsenburg, Colorado on December 17, 2019.

Certified weed free mulch will be crimped into the surface at 4000 lbs. per acre, i.e. 2 tons of weed free mulch per acre. Fertilizer may be added as determined by a soil test at the time of seeding. Surface roughening will be used in tilled topsoil to provide moisture concentration and shade areas in order to promote better conditions for successful vegetation establishment. Surface roughening is detailed in the attached Surface Roughening section from the Urban Storm Drainage Criteria Manual Volume 3 (November 2010) included at the end of this exhibit. In areas where slopes or material conditions do not permit for drill seeding, broadcast seeding will occur at double the drill seeding rate. See the Temporary and Permanent Seeding section from the Urban Storm Drainage Criteria Manual Volume 3 (July 2012) included at the

end of this exhibit. Seeding will take place during the fall following retopsoiling of slopes. Slopes will be regraded, backfilled, and retopsoiled as soon as they are able to be reclaimed and as additional mining phases become active.

Native Grass Seed Mix

Species	**Pounds of pure live seed per acre (drilled)**
Blue grama	1.8
Westem wheatgrass	9.6
Sideoats grama	1.8
Needle and thread	2.2
Indian ricegrass	1.2
Little bluestcm	0.7
Galleta grass	0.4
Green needlegrass	1.0
Total	**18.7**

Broadcast seeding will be done at double the drill rate.

4. Post-Reclamation Site Drainage

Map F-1 shows arrows indicating the approximate direction of drainage throughout the site. Final reclamation surfaces will be graded such that drainage waters flow in a similar path to the original path. Final dump reclamation will include catch ditches to control stormwater runoff along the dump slope and will direct excess storm flows to the dump sump where surface water will infiltrate the porous and dry landscape within 72 hours. Catch ditches along the dump will remain cleared and maintained until reclamation is deemed complete. Following the completion of reclamation and the release of the bond by the Division, the catch benches will no longer be cleared and maintained and will be allowed to return to the conditions of the surrounding landscape.

5. Weed Control

Measures will be employed for the control of any noxious weed species. The objective of this weed management plan is to control undesirable plants on the Bradford Mesa site. Plants identified through the Colorado Noxious Weed Act (C.R.S. 35-5.5) and the Huerfano County Noxious Weed List as undesirable and designated for management within the County will be removed. Plants identified as noxious weeds will be managed by control measures. A Weed Control Plan will be utilized as follows:

1) Each April, a weed survey will be taken of the permit area.

2) If any weedy patches or noxious plants are identified, chemicals approved for use by the weed control staff of Huerfano County will be sprayed by backpack sprayer or 4-wheeler.

3) After reclamation, weed surveys and spraying will continue until perennial cover and production of the site meets ORMS requirements and bond release is obtained.

The Division and Huerfano County staff will be consulted regarding any weed infestation areas and control measures to be implemented prior to their initiation. The plan does not contemplate total weed removal on the property. Past experience shows that some initial weed cover in the first year following retopsoiling is beneficial to reclamation efforts in rangeland sites. Weeds provide shade for new grasses, are a means of holding snow on the seedbed longer, and protect seedlings from wind and water erosion until the planted species firmly take hold.

All phases and areas of the mining operation will be monitored closely throughout the year allowing the Operator to determine if any additional weeds become present. If any new weed species are found, Huerfano County and the Division will be consulted to formulate the best plan to mitigate the new infestation.

6. Revegetation Success Criteria

Areas will be deemed adequate when vegetation is established to control erosion and noxious weeds are not present in any significant amounts and all of the conditions of Rule 3.1.10 are met.

7. Monitoring Reclamation Success

Monitoring reclamation on an ongoing basis will allow minor revisions to assure efficient and successful reclamation. The Operator plans to use the local Natural Resources Conservation Service (NRCS) office to assist in determining the ability of the reclaimed land to control erosion. If minor changes or modifications are needed to the seeding and reclamation plan, revision plans will be submitted to the Division, as required. It is anticipated that the Division will provide assistance in evaluating the success of ongoing reclamation processes. All areas disturbed and reclaimed and any other important items regarding reclamation will be submitted in the required annual reports to the Division.

Surface Roughening

Description

Surface roughening is an erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. Surface roughening creates variations in the soil surface that help to minimize wind and water erosion. Depending on the technique used, surface roughening may also help establish conditions favorable to establishment of vegetation.

Appropriate Uses

Surface roughening can be used to provide temporary stabilization of disturbed areas, such as when revegetation cannot be immediately established due to seasonal planting limitations. Surface roughening is not a stand-alone BMP, and should be used in conjunction with other erosion and sediment controls.

Surface roughening is often implemented in conjunction with grading and is typically performed using heavy construction equipment to track the surface. Be aware that tracking with heavy equipment will also compact soils, which is not desirable in areas that will be revegetated. Scarifying, tilling, or ripping are better surface roughening techniques in locations where revegetation is planned. Roughening is not effective in very sandy soils and cannot be effectively performed in rocky soil.

Design and Installation

Typical design details for surfacing roughening on steep and mild slopes are provided in Details SR-1 and SR-2, respectively.

Surface roughening should be performed either after final grading or to temporarily stabilize an area during active construction that may be inactive for a short time period. Surface roughening should create depressions 2 to 6 inches deep and approximately 6 inches apart. The surface of exposed soil can be roughened by a number of techniques and equipment. Horizontal grooves (running parallel to the contours of the land) can be made using tracks from equipment treads, stair-step grading, ripping, or tilling.

Fill slopes can be constructed with a roughened surface. Cut slopes that have been smooth graded can be roughened as a subsequent operation. Roughening should follow along the contours of the slope. The tracks left by truck mounted equipment working perpendicular to the contour can leave acceptable horizontal depressions; however, the equipment will also compact the soil.

Maintenance and Removal

Care should be taken not to drive vehicles or equipment over areas that have been surface roughened. Tire tracks will smooth the roughened surface and may cause runoff to collect into rills and gullies.

Because surface roughening is only a temporary control, additional treatments may be necessary to maintain the soil surface in a roughened condition.

Areas should be inspected for signs of erosion. Surface roughening is a temporary measure, and will not provide long-term erosion control.

SURFACE ROUGHENING INSTALLATION NOTES

1. SEE PL.AN VIEW FOR:
   -LOCATION(S) OF SURFACE ROUGHENING.

2 SURFACE ROUGHENING SHALL BE PROVIDED PROMPTLY AFIER COMPLETION OF FINISHED GRADING (FOR AREAS NOT RECEIVING fOPSOIL) OR PRIOR *TO* TOPSOIL PLACEMENT OR ANY FORECASTED RAIN EVENT.

3. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD WILL BE PL.ACED WITHOUT DELAY IN THE CONSTRUCTION SEQUENCE, SURFACE ROUGHENING IS NOT REQUIRED.

4. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP ANO DOWN A SLOPE USING EQUIPMENT TREADS.

5 A FARMING DISK SHALL NOT BE USED FOR SURFACE ROUGHENING.

SURFACE ROUGHENING MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTEI\IANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS ANO CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3 WHERE BMPs HAVE FAILED, REPAIR OR REPLACE UPON DISCOVERY OF THE FAILURE.

4. VEHICLES AND EQUIPMENT SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.

5. IN NON-fURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE

6. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING. SURFACES SHALIL BE RE-ROUGHENED AS NECESSARY TO AINTI>JN GROOVE DEPTH AND SMOOTH OVER RILL EROSION.

(DHAILS ADAPfED FROM rowN Of PARKER. COLORADO. NOT AVAILABLE IN AUfOCAD)

@IE;. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAJLS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICri DETAIL SriOULD SE USED WHEN DIFFERENCES ARE NOTED

Temporary and Permanent Seeding (TS/PS) EC-2

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer),

Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-I. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush *(Chrysothamnus nauseosus),* fourwing saltbush *(Atriplex canescens)* and skunkbrush sumac *(Rhus trilobata)* could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum *(Prunus americana),* woods rose *(Rosa woodsii),* plains cottonwood *(Populus sargentii),* and willow *(Populus spp.)* may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Speciesa (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½–¾
6. Sudangrass	Warm	5-10	½–¾
7. Sorghum	Warm	5-10	½–¾
8. Winter wheat	Cool	20-35	1 - 2
9. Winter barley	Cool	20-35	1 - 2
10. Winter rye	Cool	20-35	1-2
11. Triticale	Cool	25--40	1-2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common[a] Name	Botanical Name	Growth Seasonb	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Alakali Soil Seed Mix					
Alkali sacaton	*Sporobolus airoides*	Cool	Bunch	1,750,000	0.25
Basin wildrye	*Elymus cinereus*	Cool	Bunch	165,000	2.5
Sotlar streambank wheatgrass	*Agropyron nparium 'Sadar'*	Cool	Sod	170,000	2.5
Jose tall wheatgrass	*Agropyron elongatum 'Jose'*	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.75**
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	2.0
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Sotlar streambank wheatgrass	*Agropyron riparium 'Sadar'*	Cool	Sod	170.000	2.5
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	7.0
Total					**15.5**
High Water Table Soil Seed Mix					
Meadow foxtail	*Alopecurus pratensis*	Cool	Sod	900,000	0.5
Redtop	*Agrostis alba*	Warm	Open sod	5,000,000	0.25
Reed canarygrass	*Phalaris arundinacea*	Cool	Sod	68,000	0.5
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Pathfinder switchgrass	*Panicum virgatum 'Pathfinder'*	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	*Agropyron elongatum 'Alkar'*	Cool	Bunch	79,000	5.5
Total					**10.75**
Transition Turf Seed Mix'					
Ruebens Canadian bluegrass	*Paa compressa 'Ruebens'*	Cool	Sod	2,500,000	0.5
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	*Lolium perenne 'Citation'*	Cool	Sod	247,000	3.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Total					**7.5**

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Seasonb	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithzi 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrassd	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[0]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgra s	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January I-March 15				
March 16-April 30	4	1,2,3		
May I-May 15	4			
May 16-June30	4,5,6,7			
July I-July 15	5,6,7			
July 16-August 31				
September I-September 30		8,9,10,11		
October I-December 31				

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching **BMP** Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

EXHIBIT F

RECLAMATION MAPS

Map F Reclamation Plan

Bradford Mesa Pit Reclamation Map Exhibit E

Map By James Higgs
Southway
4/20/25

COLORADO STATE TRUST LAND

HUERFANO CUCHARAS IRR CO

BLM

EDMUNDSON RANCHES LLC

JW CATTLE RANCH LLC

EDMUNDSON RANCHES LLC

COLORADO STATE TRUST LAND

EDMUNDSON RANCHES LLC

EDMUNDSON RANCHES LLC

JW CATTLE RANCH LLC

MEYER MARGARET
ETAL

MEYER MARGARET
ETAL

BLM

Road To Remain
(16 acres)

Permit Boundaries
(1,113 acres)

3:1 Slopes

Grade to drain

6850

6900

6950

6000

6050

6100

Notes:
1) All slopes to be reclaimed to a 3:1 or flatter
2) Please see the Land Owner Map for all known land owners.
3) Contours are 5' intervals.

Typical Section

Approx. 4" of Topsoil
Approx. 6" of overburden

N

3000 ft

EXHIBIT G WATER INFORMATION

1. General

Pre-mining current conditions of the site include dry rangeland and native grass vegetation, a high mesa top, and lower valley areas including the now dry Bradford Reservoir. The disturbed areas of the site are approximately 1 mile south of the Bradford Canal and approximately 1 mile east of the Homestead Canal. Associated canals connecting the above mentioned waterways are further than 0.75 miles from the disturbed areas of the site. The closest major water of the U.S. is the Huerfano River, 3.75 miles to the northwest of the site. The site is well outside of FEMA identified floodplains.

Surface water flows will be limited and surface waters are expected to infiltrate prior to accumulating and leaving the site. Surface water flows to the west and southwest and are temporarily captured by onsite berms.

Due to the coarse soil textures found at the sight, permeability is moderate and most precipitation and runoff percolates quickly into the ground. Surface water that does not reach the sump will infiltrate into the underlying fractured Pierre shale and porous sand and gravel overburden and will occur within 72 hours. Surface flows that do not occur within the active mining area will be diverted around the disturbed area via two foot tall berms and/or small ditches. No sediment will be allowed to leave the site and cloud any downstream waters.

NRCS Custom Soil Resource Report details Group D soils for the area of the Bradford Mesa Quarry site. The runoff coefficient for Group D soils that cover open space with grass cover <50% is 0.89.

The site will not affect existing water rights. The pit will not expose groundwater and will not store stormwater for more than 72 hours. After reclamation, stormwater encountered in the mining area will continue to infiltrate or evaporate.

Two principal ways that gravel pit mining could affect the water quality of the area downstream are through poor sediment controls within the site causing increased sedimentation downstream and by fuel leakage from a ruptured tank. Water encountered in the pit will not be released from the site. The only water that will be found within the disturbed area is stormwater runoff and currently held Edmundson Ranch water that will be used for processing and for dust control. Once excavation of new phases begins, all water from the disturbed area will drain to the bermed active mine area or the processing area sump and will not leave the site. Each backfilled mined out phase will include a perimeter stormwater control berm that serves to isolate the mined phase with respect to stormwater. These phase specific perimeter berms will only be removed once that phase is topsoiled, seeded, and deemed reclaimed. Water that falls on the dump will be collected via each lift's catch bench and funneled to the eastern dump sump. Fuel leakage is an unanticipated problem because all fuel tanks on site have secondary containment as well as strict SPCC Plan procedures for spill prevention and control.

Potential wetlands are found within the permit area but outside the disturbed area boundary in the northeast comer of the site near the currently dry Bradford Reservoir. 227.96 acres of Freshwater Emergent Wetland PEMIJ and 2.01 acres of Freshwater Forested/Shrub wetland PSSA are mapped surrounding the Bradford Reservoir. Wetlands are mapped on maps C-1, C-2, and F-1 located in Appendix 2. No mining of surface disturbance will occur within 100 feet of currently mapped wetland areas; therefore, no waters of the U.S. will be affected by the operation.

Two cattle water tanks are located within the mining area and are fed by buried water pipes that roughly follow on site roadways, see Map C-1 Current Conditions. Water is pumped from the Edmundson Ranch well #162873-A; a 600 foot deep stock well. This well is approximately 3.5 miles from the site near the NE comer of the amalgamated Edmundson Ranches, LLC lands and is further pumped up onto the mesa via a booster pump located 385 feet northeast of the eastern most comer of the permit area. During mining, care will be taken when excavating near any and all buried water lines and they will be removed, as needed, to facilitate mining. Water tanks may be used during mining as processing area water storage. Reclamation may include replacement of disturbed water lines and will be determined by the land owner during the relevant phase's reclamation. A structure agreement detailing water lines and cattle tanks is signed by the Operator and the Property Owner and is included in Exhibit S.

According to searches on the Division of Water Resources database, there are no wells within 600 feet of the Bradford Mesa Quarry permit boundary.

2. Groundwater

The Braford Mesa Quarry is located within the Arkansas River Basin as well as the Dakota-Cheyenne sedimentary aquifer. The site will mine the Eocene diabase (basalt) sill with removal of overlying Cretaceous Pierre Shale and overburden. Groundwater is encountered >I 00 feet below the undisturbed ground surface in undifferentiated alluvial aquifers located within the Cretaceous Dakota Sandstone/Dakota Group and underlying Cheyenne Sandstone Member of the Purgatoire Formation. The Pierre Shale depositionally sits between approximately 850 - 5,000 feet above the Dakota Sandstone. This wide range accounts for potential erosive loss of the

Pierre Shale that is between 0 - 4,000 feet thick in the area. It is not expected that groundwater will be encountered during any phase of mining.

3. Water Consumption for the Operation and Water Rights

An industrial well is being permitted with the Division of Water Resources for water to be used in processing as well as dust mitigation. This well will remain during reclamation following the completion of mining; see the enclosed signed Water Well affidavit. Augmentation water will be supplied by the Huerfano County Conservation District. Exposed surface groundwater is very unlikely to be encountered during any phase of mining at the Bradford Mesa Quarry; therefore, a Substitute Water Supply Plan (SWSP) is not necessary. Because the basalt sill to be mined is dry, no water losses will occur from the resource during mining.

Dust will be controlled by water. Additional dust mitigation on roadways includes bi-annual or as needed applications of magnesium chloride. Water will be used as needed to spot eliminate any problem dust areas and to be used in a spray bar during initial crushing. 40,000 - 50,000 gallons is a high and conservative estimate of pumped gallons used on site daily, as needed.

EXHIBIT L WORST CASE RECLAMATION SCENARIO

Mining at the Bradford Mesa Quarry will mine a total of 1,113 acres. Given the length of time it will take to mine this entire site (>40 years), the Operator will phase the mining plan.

Due to the type of mining, dozer push-down, no backfilling is necessary to create 3H:1V reclamation slopes. The maximum 50 foot active highwall may require blasting to create a 3H:1 V slope, where needed. Therefore, bond calculations are based on highwall blasting and grading and placement of topsoil for a projected 40 acres of disturbed land at the time of final reclamation: approximately two 20 acres phases.

The following reclamation tasks will be required.

- Mobilization of equipment <45 miles= $20,000.00.
- Active highwall grading: 50 feet of roughly 1H:IV slope will be backfilled to create a 3H:IV slope.
- Topsoil and replacement topsoil (waste fines) surfacing= 40 acres at 6 inches deep
- Rangeland revegetation and mulching of the 40 acres disturbed area. $820/acre native grass seed mix+ $1000/acre mulch *1.5 to account for 50% failure rate= $109,000.00.

Table L-1 Expansion Reclamation Task and Cost Estimate

Activity Description	Time (Months)	Cost($)
Mobilization <45 mile	.25	5,000.00
Highwall backfilling	.25	15,000.00
Place Topsoil	1	10,000.00
Revegetation of disturbed areas. Includes seeding and mulching.	1	109,000.00
Subtotal	**2.5**	**$139,000.00**
DRMS Costs (28% x direct costs)		**$38,000.00**
Final Reclamation Bond Amount		**$177,000.00**

The final reclamation bond amount should be set at $177,000.