WordPerfect Document Compare Summary

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Deletions are shown with the following attributes and color:
~~Strikeout~~, Blue RGB(0,0,255).
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Section 2.05.4(2)(c)

Backfilling and Grading

Table of Contents

List of ~~Attachments~~

Section 2.05.4(2)(c)

Backfilling and Grading

Backfilling and Grading Methods

Mining and backfilling operations at New Horizon Mine will be performed concurrently. Scrapers and/or shovel loaded trucks will remove the overburden and parting materials, then haul the material to a previously mined area to be backfilled.

Along the cropline in the New Horizon 2 area, some box cut overburden material will initially be temporarily stockpiled outside of the area mined (see Map 2.05.3-1). This box cut material has been stockpiled in a borrow pit near the southeast corner of the permit area and is available for backfilling at the end of mining or at any other time to backfill the mining pit. All vegetative and organic material and topsoil will be removed from the area where overburden material is to be placed. The temporarily stockpiled material will be graded into the mined area and hauled to the final pit area according to the reclamation plan. Map 2.05.4-1 illustrates the reclaimed land contours for the years 1993 to 200~~2~~7 as well as the projected reclamation contours for the year 200~~3~~7- 2013. Since scrapers, trucks and dozers will be used, backfilling operations will occur concurrently with mining operations. No draglines will be used. Backfilled material will be placed to minimize effects on post-mining vegetation and ground water, minimize off-site effects and support the approved post-mining land use. Approximately six months will be needed to complete the final backfilling operations in each of the areas mined.

Upon completion of the backfilling, all areas disturbed by mining will be graded to a smoothed landform that approximates the existing, pre-mined landform (see Map 2.05.4-1).
This map also has 3 cross sections which show the pre-mining and post-mining land surfaces.

General Grading Requirements

Final Graded Slopes. Post-mining slopes will not be uniform but will approximate the general nature of the pre-mining topography and the post mine land use. All highwalls will be eliminated and graded to a 5H:1V slope or flatter. Minor areas on the north limit of the amendment area have slopes greater than 3H:1V. These slopes will be restored to approximate original contour.

Terraces. Terracing in the final reclamation is not proposed at the New Horizon Mine.

Small Depressions. Small depressions are not proposed at the New Horizon Mine with the exception of the restoration of the depression at Pond 014. The pre-mine landscape shows this depression. After mining, this depression is restored and ~~becomes~~ Pond 014 no longer exists. This pond handles a small drainage area which flows into the depression.

Steep Slopes. New Horizon Mine does not have steep slopes as defined in the regulations.

Final Grading. Final grading and preparation of the backfilled material before ~~-~~placement of topsoil material will be done along the contour to minimize subsequent erosion and instability. If such grading is hazardous to equipment operators, then grading will be done in a direction other than generally parallel to the contour.

Final Pit Backfilling. The final pit is located at the western edge of the permit area on Western Fuels property. In order to eliminate any final highwalls and to achieve grading that is conducive to the ~~approximate original landform~~post mine land use, ~~some~~all stockpiled highwall material will be pushed or dozed into the final mined area. Map 2.05.4-1 shows ~~typical~~ cross sections of the fill material placed into the mined pits. Material above the final highwall may be blasted or ripped and then graded to blend into the surrounding topography.

Western Mining Area Backfilling The post mine topography of the western mining area of New Horizon #2 Mine near Nucla, CO will be a combination of approximate original contour (Morgan, Benson, and Lloyd land) and modified original contour (Western Fuels land). This can be seen on Map 2.05.4-1. The modified original topography on the Western Fuels owned land is due to backfill

quantity limitations imposed by previous mining at New Horizon #2 Mine. The slope varies from shallower than 3H:1V to 5H:1V, with a few exceptions, which is very good for the post mine land use of dryland.

Mining at New Horizon #2 is a standard strip pit operation. Initial topsoil is stripped and salvaged for reclamation, upper overburden is removed by mobile equipment, lower overburden is drilled and blasted, and then overburden is removed from above the coal seam and placed behind the pit into the void of the previous mining area. This process can be seen in Map 2.05.3-1 in Section 2.05.3. This is a highly efficient process for both mining and reclamation, as it reduces the need to transport large amounts of overburden to and from any storage piles as well as minimize the amount of previous pit that is not backfilled.

The coal seam at New Horizon #2 Mine is at a relatively consistent depth from the surface, but the length of the each pit can vary significantly. This becomes more pronounced as the mine reaches its current western extent. As can be seen on Map 2.05.4-1-2, the pit length (north to south) will reduce from over 1400' to 750'. This means that there will be less overburden created by new mining than there is void space in previous mining strips. In order to make up for some of the discrepancy, and to insure that lands not owned by Western Fuels are returned to approximate original contour, material will be hauled from active mining areas to mined out areas that need additional backfill. Attachment 2.05.4(2)(c)-7 shows the sequence of mining and hauling that will be used to re-establish the new topography on Morgan, Lloyd and Benson properties.

The lands owned by Lloyd, Benson, and Morgan will all be returned to approximate contour, with a similar drainage pattern to the pre-mine conditions. In areas of minor topographic change, the land has been improved by having a more consistent slope over broad areas, which will facilitate irrigation of fields.

The WFC parcel has a modified topography with the following properties (determined using Carlson CAD software):

Table 2.05.4(2)(c) - WFC Property Topography Properties

	Pre-Mine Topography	Post-Mine Topography
Average Elevation	5624	5604'
Maximum Elevation	5673	5575'
Minimum Elevation	5550	5560'
Average Land Slope	2.71%	2.61%
Steepest Slope	37.7%	27.6%

The new surface drainage patterns for the WFC property are shown on Map 2.05.3(3)-1-2.

Western Mining Area Backfilling Plan

The backfilling sequence for the New Horizon Mine west of 2700 Road is shown on both Map 2.05.3(3)-1-2 and Attachment 2.05.4(2)(c)-7. The mining cuts from Attachment 2.05.4(2)(c)-7 correlate to the numbered cuts on Map 2.05.3(3)-1-2.

The backfilling sequence has been designed to minimize the need for stockpiling of overburden and material re-handling. For most of the mine sequence this is done with cast blasting of the initial overburden into the previously mined out open cut. The remaining overburden material is then hauled from the new mining cut into the mined out cut. In most cases this leads to each cut backfilling the one that precedes it (ex: Cut-92 material backfills Cut-91). However, as the shape of the mining area changes (Cut-94 and Cut-95), not enough material is generated from new excavation to backfill the previous cut.

In order to mitigate this problem, and ensure that post-mine topography is achieved, two things are done. Firstly, the mining cut that needs more backfill than the next cut can generate will remain “open” until enough material is generated by mining to successfully backfill. Secondly, backfill will be hauled from a variety of cuts ahead of the “open” cut and used to fill the “open” cut. The source cuts for backfill material can be seen in the Backfill Source column of Attachment 2.05.4(2)(c)-7.

At the west end of the Morgan property, the Bench 1 material from Cut-99B will be stockpiled in non-topsoiled areas of the Morgan property to the east of the mining. This is to ensure that all Bench 1 material excavated from the Morgan property is also backfilled onto the Morgan property. Since the mining cuts on the west end of the Morgan property are the end of mining on the Morgan property, the Bench 1 material from Cut-99B will have to be split between Cut-99B and Cut-98B. This can be seen on Attachment 2.05.4(2)(c)-7.

Special Handling of Bench 1 Overburen on Morgan Prime Farmland Per the request of the Morgan Family and Dave Berry from the DRMS, WFC will special handle **"all"** the weathered sandstone and shale strata's (Bench 1 spoil) in the 0- 40 feet range of the undisturbed surface back onto the Morgan property. This Bench 1 Spoil will be placed on the upper portion of the finished graded backfill, just under the topsoil lay down zone. This special handling was started June 2010 and will continue just through the Morgan property

Thin and Thick Overburden.

The New Horizon 2 permit area does not meet the requirements of either the thick or thin overburden as shown by the following calculations:

103.96' maximum stripping depth
79.93' average overburden
7.94' Combined Upper and Lower Dakota

At the average stripping depth
79.93' overburden
+ 7.78' coal
87.71' material excavated

at 15% Swell
1.15 x (79.93) = 91.92 material replaced
91.92'/87.71' = 1.048 of the initial thickness

Therefore, the 0.8 requirement for thin overburden and the 1.2 requirement for thick overburden are not met.

At the maximum stripping depth

96.02' overburden
+ 7.94' coal
103.96' material excavated

at 15 % Swell
1.15 x (96.02') = 110.42' material replaced
110.42'/103.96' = 1.062 of the initial thickness

Therefore, the 0.8 requirement for thin overburden and the 1.2 requirement for thick overburden are not met.

Disposal of Excess Spoil

All excavated non-coal material from the mining areas will be used for backfilling the mined pits and blending mined areas into the existing topography to achieve the approximate original landform. Therefore, no excess spoil material will exist.

Postmining Topography

Since mining operations will be performed with shovel/truck and dozers at New Horizon 2 instead of a dragline, the post-mining topography was estimated based upon a 15 percent swell factor. Experience from 1995 to 1999 has shown that the initial swell is reduced over time with settling, which results in a ~~net change of 8%~~net8% increase in volume. The need for the slot cut along BB Road and 2700 Road will cause the overburden behind this area to be slightly raised, ~~however,~~but the extra height is still within the limits of approximate original contour. In addition, WFC received a letter, dated 20 September 2002 from San Miguel Power Association, a major NH2 landowner, that the post-mining contouring on their property was acceptable. See Attachment 2.04.(2)(c)-5 for the 20 September 2002 letter.

In some areas, in order to return the land to topography that meets the landowners' needs, swell volume was placed else where. This primarily affects the Lloyd and Benson properties, which are now slightly higher than in pre-mine. Excess overburden volume from the Morgan property was moved to the Lloyd and Benson areas in order to meet the Morgan's requirements of returning the land to the same surface elevation.

Map 2.05.4-1 shows the post-mining topography, which is ~~nearly identical to~~in accordance with the ~~existing topography~~post mine land use. Cross-section locations are also shown on this map. ~~Typical c~~Cross sections through the mining areas are shown on Map 2.05.4-1 as well. These cross sections show ~~existing,~~ original~~,~~ and post-mining ground. In the New Horizon 2 area, the mined-out portions of county roads BB Road and 2700 Road (see Map 2.05.3(3)-13 will be restored to its original condition and approximate location as specified by agreement with Montrose County (see Attachment 2.05.3(3)-8 of the Mine Facilities Section.

Slides and Other Damage

WFC does not anticipate any problems with slides at New Horizon 2 Mine during the term of mining and reclamation activities.

Postmining Pond Retention

As described in the Mine Facilities ~~s~~Section, Pond 007 will be retained for use by the landowner and the embankment of 5th Street must remain for ongoing use of the road. See Attachment 2.05.3(3)-16 Demonstration of Retention of Pond 007 for details.

Pond 008 was constructed in an area which contained three small stock ponds on the Burbridge property. The landowner has provided a letter stating that he would like Pond 008 to remain to replace the three ponds which existed in the pre-mining condition. This letter is provided in Attachment 2.05.4(2)(C)-4 at the end of this section. Compliance with Rule ~~Rule~~ 4.05.9(13) (a) through (f) for pond retention after reclamation is enclosed in Attachment 2.05.3(3)-19.

Postmining Roads

All of the original roads that cross the New Horizon Mine will be restored to original conditions and Montrose County standards. Per the request of Cal Benson, the portion of the BB Detour Road on his property will be left in place. A letter to that affect is attached to this section.

Postmining Drainage Channels

All major drainages in the New Horizon 2 area that are to be disturbed by mining activities will be reclaimed to approximate the premining configuration and to blend with the undisturbed drainage above and below the area to be reclaimed. Two pre-mining channels are encountered and restored. These are called the Krill Channel, on the easternmost portion of the mined area, and the San Miguel Channel, which drains into the reclaimed area of Pond 007. Both of these channels are shown on Map 2.05.3(3)-1 Surface Hydrology. The post-mining drainage channels will be designed, constructed, and maintained to the following specifications:

1. Gentle sloping banks which shall be stabilized by vegetation;

2. Prevent additional contributions of suspended solids to streamflow and to runoff outside the permit area;

3. Blend with the undisturbed drainage above and below the area to be reclaimed;

4. Safely pass the runoff from a 10-year, 24-hour precipitation event.

The reclaimed drainages are designed to safely pass the 10-year, 24-hour precipitation event and to be stable. The peak flow was determined by using the SEDCAD+ Version 3.0 computer program. A listing of the input parameters for obtaining the peak flows for the reclaimed drainage channels are ~~attached~~shown in the appropriate channel attachment. The peak flow determination assumed the total watershed of the reclaimed channel and was determined at the downstream end of the channel. Most of the reclaimed channel ~~reach~~ will not have to handle that large a peak flow rate. This was done to ensure that the drainage channel capacity will be adequate and yet conservatively designed.

A limiting permissible velocity of 5.0 feet per second (fps) was used to ~~insure~~ensure that the postmining drainage channels would be nonerodible and stable. The permissible velocity was obtained, Table 3.4, from "Red Book" by Barfield et al., 1981 for a grass mixture vegetated channel. The shape of the reclaimed channel was assumed for design purposes to be trapezoidal with 10h:1v side slopes as a worst case condition. The side slopes will be no steeper than 10h:1v.

The channel bottom was calculated using the SEDCAD+ Version 3.0 computer program. The channel width was increased to insure that the peak velocity was below the limiting velocity. The typical trapezoidal channel section was selected for design purposes only for the entire length of the reclaimed channel. "Reclaimed Drainage Channel Design" on the following pages contains the specific design information of the reclaimed drainage channel in the eastern portion of the New Horizon 2 permit area (San Miguel Draw).

The reclaimed drainage channels will be topsoiled and revegetated according to Sections 2.05.4(2)(d) and (e) respectively. Attachments 2.05.4(2)(C)-1 and 2.05.4(2)(C)-3, which immediately follow this section, show the designs for these restored channels.

Any other channels which are left after reclamation are road ditches, as described in Section 2.05.3(3) - Mine Facilities.

Attachment 2.05.4(2)(c)-1

Reclaimed Krill Drainage Channel Design

New Horizon 2

Reclaimed Krill Drainage Channel Design

Introduction

The design of the reclaimed drainage channel in the New Horizon 2 permit area was based on DMG regulations for conveyance of overland flow of watersheds less than one square mile. The reclaimed channel is shown on Map 2.05.4-2 between points AA to AA'. The premine drainage channel slope is 3.0 percent and the post-mining drainage channel will be 3.18 percent.

Design

For the design of this reclaimed channel, the SEDCAD + model was used to predict runoff from the watershed (see Attachment A). A 10-year, 24-hour precipitation event was used in the design. The peak flow was determined at the downstream end of the drainage channel. Following is a list of main input factors.

Input	**Channel AA-AA'**
Precipitation	2.0 in
Drainage Area	159.75 ac
CN	81
L	4000 ft
Y	165 ft
Output	
Q	31.38 cfs

Based on this discharge, SEDCAD+ was used to design the reclaimed drainage channel bottom width based on Manning's equation calculation. The shape of the channel was assumed to be trapezoidal with 10h:1v side slopes. The channel bottom width was increased to ~~insure~~ensure that

the peak velocity was below the limiting velocity of 5.0 fps. Below is a summary of the input factors and the results determined by the computer program.

Channel Factor	**Channel AA-AA'**
Q	31.38 cfs
Z (side slopes)	10:1
Shape	Trapezoidal
n	0.030
Limiting Velocity	5.0 fps
Slope	0.0413 ft/ft

Results	
Normal Depth (dn)	0.37 ft
Flow velocity	4.58 fps
Channel width	15 ft

Results

Based on the above results, the reclaimed drainage channel will have a minimal width of 15 feet and gently sloping sides. The bottom will be relatively flat with minute channeling. Added rock may be placed for energy dissipation. A trapezoidal channel with a minimum bottom width of 15 feet and 10h:1v or flatter side slopes and no free board simulates this condition. The actual width will vary from 15 feet up to 100+ feet. This typical cross section or one with the same or larger cross sectional area, will be used for the entire channel reach. This will ~~insure~~ensure that the velocity will be below the limiting velocity of 5.0 fps, since the peak flow was determined at the downstream end of the reclaimed drainage channel. No free board was calculated because minimal, if any, damage will occur if the flow does leave the banks for short periods of time.

The reclaimed drainage channel will be topsoiled and revegetated according to Section 2.05.4(2)(d) and (e).

Attachment 2.05.4(2)(C)-2

Reclaimed Krill Drainage Channel Design

West Lateral

New Horizon 2

Reclaimed Krill Drainage Channel Design

West Lateral

Introduction

The design of the reclaimed drainage channel in the New Horizon 2 permit area was based on DMG regulations for conveyance of overland flow of watersheds less than one square mile. The reclaimed channel is shown on Map 2.05.4-2 between points BB to BB'. The pre-mine drainage channel slope is 2.67 percent and the post-mining drainage channel will be 2.67 percent.

Design

For the design of this reclaimed channel, the SEDCAD + model was used to predict runoff from the watershed (see Attachment A). A 10-year, 24-hour precipitation event was used in the design. The peak flow was determined at the downstream end of the drainage channel. Following is a list of main input factors.

Input	**Channel BB-BB'**
Precipitation	2.0 in
Drainage Area	13.19 ac
CN	81
L	1500 ft
Y	40 ft
Output	
Q	4.49 cfs

Based on this discharge, SEDCAD+ was used to design the reclaimed drainage channel bottom width based on Manning's equation calculation. The shape of the channel was assumed to be trapezoidal with 3h:1v side slopes. The channel bottom width was increased to insure that the

peak velocity was below the limiting velocity of 5.0 fps. Below is a summary of the input factors and the results determined by the computer program.

Channel Factor	Channel BB-BB'
Q	4.49 cfs
Z (side slopes)	3:1
Shape	Trapezoidal
n	0.030
Limiting Velocity	5.0 fps
Slope	0.0267 ft/ft

Results	
Normal Depth (dn)	0.26 ft
Flow velocity	4.41 fps
Channel width	4 ft

Based on the above results, the reclaimed drainage channel will be generally flat bottomed with a minimal width of 4 feet.

The reclaimed drainage channel will be topsoiled and revegetated according to Section 2.05.4(2)(d) and (e).

Attachment 2.05.4(2)(C)-3

Reclaimed San Miguel Power Drainage Channel Design

New Horizon 2

Reclaimed San Miguel Power Drainage Channel Design

Introduction

The design of the reclaimed drainage channel in the New Horizon 2 permit area was based on DMG regulations for conveyance of overland flow of watersheds less than one square mile. The reclaimed channel is shown on Map 2.05.4-2 between points CC to CC'. The premine drainage channel slope is 3.70 percent and the post-mining drainage channel will be 3.70 percent.

Design

For the design of this reclaimed channel, the SEDCAD + model was used to predict runoff from the watershed (see Attachment C). A 10-year, 24-hour precipitation event was used in the design. The peak flow was determined at the downstream end of the drainage channel. Following is a list of main input factors.

Input	Channel CC-CC'
Precipitation	2.0 in
Drainage Area	89.26 ac
CN	81
L	2300 ft
Y	85 ft

Output

Q	32.55 cfs

Based on this discharge, SEDCAD+ was used to design the reclaimed drainage channel bottom width based on Manning's equation calculation. The shape of the channel was assumed to be trapezoidal with 10h:1v side slopes. The channel bottom width was increased to insure that the

peak velocity was below the limiting velocity of 5.0 fps. Below is a summary of the input factors and the results determined by the computer program.

Channel Factor	**Channel CC-CC'**
Q	32.55 cfs
Z (side slopes)	10:1
Shape	Trapezoidal
n	0.030
Limiting Velocity	5.0 fps
Slope	0.0370 ft/ft
Results	
Normal Depth (dn)	0.24 ft
Flow velocity	4.21 fps
Channel width	30 ft

Based on the above results, the reclaimed drainage channel will be generally flat bottomed with a minimal width of 30 feet. The bottom will be relatively flat with minute channeling. Added rock may be placed for energy dissipation.

The reclaimed drainage channel will be topsoiled and revegetated according to Section 2.05.4(2)(d) and (e)

Attachment 2.05.4(2)(C)-4
Modification to the Number of Stock Ponds Left
on the Burbridge Property after Backfilling

Ward E. and Elma E. Burbridge
P. O. Box 92
Nucla, CO 81424
(970)864-7408

February 4, 2003

R. Lance Wade, Mine Manager
Western Fuels-Colorado, LLC
P.O. Box 628
Nucla, CO 81424-0628

RE: Amendment to Coal Mining Lease Dated November 14, 1995

We the undersigned hereby request that the second sentence of the first paragraph of **Section 4. Other Benefits to Lessor** be amended from "Lessee will replace the three existing stock ponds in their general existing locations with existing sizes or larger as approved by the Division of Minerals and Geology." to read "Lessee will replace the three existing stock ponds with one pond in the location of Pond 008 sized as agreed upon in the letter of August 16, 2001, and as approved by the Division of Minerals and Geology."

Ward E. Burbridge

Ward E. Burbridge

Elma E. Burbridge

Elma E. Burbridge

Accepted:

Western Fuels-Colorado, LLC.
By R. Lance Wade
Mine Manager

Attachment 2.05.4(2)(C)-5

San Miguel Power Letter

Dated

20 September 2002

SAN MIGUEL POWER ASSOCIATION, INC.

A Touchstone Energy Partner

September 18, 2002

RECEIVED SEP 2 0 2002

Ross Gubka P.E.
Chief Engineer
Western Fuels-Colorado
P.O. Box 128
Nucla, CO. 81424

RE: New Horizon Mine (Permit No. C-1981-008)
Bond Release Application No. 8 (SL-8)

Dear Sir:

As per the meeting on September 18, 2002 with Harry Ranney, State of Colorado Mined Land Reclamation representative, Marvin Walisky, San Miguel Power Assn. representative and yourself, San Miguel Power accepts the re-contouring and re-vegetation to date of the property located in Section 6, T.46 N., R.15 W. (Approximately 80 acres) San Miguel Power requests that Western Fuels leaves in place Pond No. 7. This pond could be used for livestock, irrigation and wildlife usage. It is a considerable benefit to the property.

Sincerely,

Gary Norton
General Manager, San Miguel Power Association, Inc.

Headquarters
Box 817, Nucla, Colorado 81424
970-864-7311 • 970-864-7257 FAX

Box 547, Telluride Colorado 81435
970-728-3825 • 970-728-5287 FAX

Box 523, Ouray, Colorado 81427
970-325-4434 • 970-325-4685 FAX

Box 419, Silverton, Colorado 81433
970-387-5711 • 970-387-5711 FAX

Attachment 2.05.4(2)(C)-6

San Miguel Power Letter

Dated

17 June 1998

JUN 17 1998

SAN MIGUEL POWER ASSOCIATION, INC.

A Touchstone Energy® Partner

June 16, 1998

Mr. Ross Gubka, P.E.
Chief Engineer
Western Fuels-Colorado
P.O. Box 628
Nucla, CO 81424

RE: NEW HORIZON MINE SEDIMENT PONDS 001, 006, AND 007

Dear Mr. Gubka:

On behalf of the San Miguel Power Board of Directors, I am requesting that the three sediment ponds (001, 006, and 007) that have been constructed and maintained on San Miguel's property, be left. We feel that they are of beneficial use to us since no other water is available on much of the tracts involved. This was approved by the board on May 20, 1998.

We understand that if the Colorado Division of Minerals and Geology requires any modifications, Western Fuels-Colorado will bear all expenses to meet them before turning the ponds over to San Miguel.

If you have any questions or concerns, please feel free to call me.

Sincerely,

SAN MIGUEL POWER ASSOCIATION, INC.

Gary N. Norton
General Manager

GNN/cit

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Box 817, Nucla, Colorado 81424
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Attachment 2.05.4(2)(c)-7

Post Mine Overburden and Backfill Balance Table