

Carter - DNR, Jocelyn <jocelyn.carter@state.co.us>

RE: Re: Re: Re: DRMS Technical Revision 3 - Clarification

1 message

Mike Golliher <MGolliher@petelien.com>
To: "Carter - DNR, Jocelyn" <jocelyn.carter@state.co.us>

Wed, Jan 3, 2024 at 5:18 PM

Jocelyn,

Our scanner was not doing a great job so I am sending these exhibits separately.

Please let me know if you have any questions or need anything else.

Thank you, Mike

Michael Golliher

Technical Director of Mine Planning

Pete Lien & Sons Inc.

Office: (605) 939-2719

Mobile: (605) 209-2619

mgolliher@petelien.com



From: Carter - DNR, Jocelyn <jocelyn.carter@state.co.us>

Sent: Wednesday, January 3, 2024 1:31 PM **To:** Mike Golliher < MGolliher@petelien.com>

Subject: [ExternalSender] Re: Re: Re: DRMS Technical Revision 3

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Mike,

If you have it as one file, that would be great. If not, separate files by exhibits will work as well.

Thanks,

On Wed, Jan 3, 2024 at 1:18 PM Mike Golliher < MGolliher@petelien.com > wrote:

Jocelyn,

How would you like the revised TR?

One all encompassing .pdf or separate ones for each exhibit?

Thank you, Mike

Michael Golliher

Technical Director of Mine Planning

Pete Lien & Sons Inc.

Office: (605) 939-2719

Mobile: (605) 209-2619

mgolliher@petelien.com



From: Carter - DNR, Jocelyn <jocelyn.carter@state.co.us>

Sent: Friday, December 22, 2023 11:28 AM **To:** Mike Golliher < MGolliher@petelien.com>

Cc: Lennberg - DNR, Patrick <patrick.lennberg@state.co.us> **Subject:** [ExternalSender] Re: Re: DRMS Technical Revision 3

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Mike,

Regarding your questions about SR3, it looks like the original release application was submitted in November of 2006, the inspection was not able to be done until 2 June 2007 where a final map of the area to be released was needed before finalizing the release. The original due date for the requested map was 6 July 2007, but an extension request was submitted 28 June 2007 and another on 24 October 2007 before being withdrawn on 29 January 2007. I've attached the withdrawal request submitted to the Division.

I hope this helps.

Enjoy the Holiday weekend.

On Fri, Dec 22, 2023 at 8:36 AM Mike Golliher <MGolliher@petelien.com> wrote:

Jocelyn,

Here are the guidelines Wyoming uses for reclamation cost estimating.

For now, I will use these to develop an estimate for Munroe.

Once you get a chance to get to get it into your system, we can compare the two.

Thank you, Mike

Michael Golliher

Technical Director of Mine Planning

Pete Lien & Sons Inc.

Office: (605) 939-2719

Mobile: (605) 209-2619

mgolliher@petelien.com



From: Carter - DNR, Jocelyn <jocelyn.carter@state.co.us>

Sent: Friday, December 22, 2023 7:41 AM **To:** Mike Golliher < MGolliher@petelien.com>

Cc: Ebert - DNR, Jared <jared.ebert@state.co.us>; Lennberg - DNR, Patrick <patrick.lennberg@state.co.us>

Subject: [ExternalSender] Re: Re: DRMS Technical Revision 3

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Mike,

Unfortunately, the Division does not have a guideline document to aid with building a cost estimate. Rule 6.3.4(2) is a great resource that will help outline what the Division requires in a cost estimate. It states that it is for a 110 and 111 type of permit, but it's applicable to a 112c as well.

I've attached the most recent filed cost estimate for permit number M-1977-002HR, it's from 1996 so the rate amounts are not accurate, but it gives an idea of how the State builds/structures cost estimates for reclamation. I am waiting to put the cost estimate together for this revision until the total affected area has been established, once I have that, I will build the estimate and compare it with what is provided to verify it's accuracy.

Let me know if there is anything I can do to help.

~Jocelyn

Jocelyn Carter

Environmental Protection Specialist

Division of Reclamation, Mining & Safety

1313 Sherman St., Suite 215

Denver, CO 80203

(303) 866-3567 ext. 8110

(720) 666-1065 cell

7 attachments

- 20240103_Munroe_TR-03_Clarification.pdf
- 20231228_Munroe_Current_Reclamation Bond Estimate.pdf 130K
- 20231228_Munroe_TR-03_Reclamation Bond Estimate.pdf
- 20240102 M-1977-002-HR Munroe_TR3_Exhibit D.pdf 128K
- 20240102 M-1977-002-HR Munroe_TR3_Exhibit E.pdf 126K
- **20240102_M-1977-002-HR_TR3_ExhibitC.pdf** 7576K
- 20240102_M-1977-002-HR_TR3_ExhibitF.pdf





& Sons, Inc.

January 03, 2024

Colorado Division of Reclamation, Mining and Safety Room 215 1001 E 62nd Avenue Denver, Colorado 80216

Re: <u>Pete Lien & Sons, Inc.</u>; <u>Mining Permit No. M-1977-002 HR; Munroe Gypsum; Technical Revision Request to formalize Affected Areas and increase the Total Disturbed Area at any one time. Clarification</u>

Permittee submits the following items for clarification based on the 15 November 2023 letter from Jocelyn Carter, Environmental Protection Specialist.

Application:

1) The permittee for the site is Colorado Lien Company, on Exhibits D and E this name is crossed out and the name Pete Lien & Sons, Inc. is provided. If there has been a change in business name, it would require a Succession of Operator to be filed with the Division in accordance with Rule 1.16(3) and 1.12.

The business name of Colorado Lien Company has been restored on Exhibits D and E.

Rule 6.4.3 – Exhibit C – Pre-mining and Mining Plan Map:

2) Revise map to indicate the name of the permittee, Colorado Lien Company, in accordance with Rule 6.2.1(2).

The business name of Colorado Lien Company is now indicated on Exhibit C.

- 3) Revise Exhibit C map to include the following, in accordance with Rule 6.4.3:
 - a. All adjoining surface owners of record; per subparagraph (a)

 Eldon Ackerman, Ackerman Land and Livestock and Ackerman Family Farms are shown as adjoining surface owners.
 - b. Clearly identify existing "ranch road" and the "spur roads" that will be built on affected land; per subparagraph (b)

The Ranch Road and Spur Roads have been identified.

c. Existing topography of the area with contour lines and the direction and rate of slope of the affected land; per subparagraph (c)

Contour lines and the direction of slope have been added to Exhibit C.



& Sons, Inc.

d. Owner's name, type of structures, and location of all significant, valuable, and permanent man-made structures contained on the area of affected land and within two hundred (200) feet of the affected land; per subparagraph (g)

There are no significant, valuable or permanent man-made structures within the permit area or within two hundred (200) feet of the affected land.

Rule 6.4.4 – Exhibit D – Mining Plan:

4) Based on the last annual report, 18.6 acres have been affected to date and 21.9 acres are reported to have been backfilled. Based on the Exhibit C – Pre-mining and Mining Plan Map submitted with the revision, the Division estimates about 19.7 acres have been affected and not shown as "released". Further, based on the Division's files only five (5) acres have been approved for reclamation liability release (SR1 date 26 July 1993 and SR2 dated 31 May 1994), and the proposed Exhibit C and F maps show an area of about 8.53 acres as being released. Technical Revision No. 3 requests the total disturbed area to be 15 acres. It does not appear this will be adequate to cover the currently non-bond released affected area at the site. Provide clarification or otherwise revise the TR3 request.

A review of all the areas that have been disturbed and or reclaimed was conducted. This review revealed some mathematical errors and the withdrawal of Surety Release 3 (SR-3) that had previously been included in the amount of released acres that were reported.

Therefore, we believe the number of acres currently affected (mining + incomplete and or unreleased reclamation should be amended to 22.73 acres.

Total acres backfilled should be reduced from 21.9 to 20.7 acres.

As of the 2022-2023 Annual Report submittal, we show 7.52 acres of disturbed land not backfilled or in some aspect of reclamation. This is under the 9.9 acres currently allowed.

Part of the TR-3 request is to increase the amount of disturbed land not backfilled, graded, contoured and reseeded from 9.9 acres to 15 acres. We understand that the reclamation cost estimate will increase, and we have provided a copy of the Bond Calculation Report as an attachment.



& Sons, Inc.

- 5) Revise Exhibit D to include the following information, in accordance with Rule 6.4.4(e):
 - a. Clearly outline how mining will progress in phases/sequence in the areas shown on the Exhibit C – Pre-mining and Mining Plan Map. Include a timetable narrative that reflects what is provided on the map into the written plan of Exhibit D, to include estimated periods of time for the various stages/phases; per sub-subparagraph (i) and (iii).
 - Mining phases have been added to Exhibit C. Because of the inherent inconsistency of gypsum beds in this area, and future demand, it is not possible to provide definitive periods of time for each phase or stage. We believe that each mining phase will be active for 1-4 years.
 - b. Provide the acreage of the four mining areas shown on Exhibit C Pre-mining and Mine Plan Map, per sub-subparagraph (ii).
 - Acreage for each of the four mining areas has been added to Exhibit C.
- 6) Revise Exhibit D in accordance with Rule 6.4.4(j) to provide the dimensions of the "existing ranch road" and of the "spur roads" that will be built in addition to any improvements that will be made to the existing road because of mining operations.
 - Exhibit D has been amended to include a description of the "ranch" and "spur" roads.
- 7) At the time of Conversion Application No. 1 (CN1), approved 21 November 1995. The permittee submitted Exhibit T and additional information to clarify how mining and reclamation was to progress in relation to the 9.9 acres of disturbance. This plan defined each of the mine areas (Bodies A, B, C, and D), though the mining plan map did not clearly label these areas. Update the mining plan to clarify the level of disturbance that will exist within the proposed increase in disturbed acres, this should correlate and reflect the reclamation cost estimate (see Rule 6.4.12 Exhibit L Reclamation Costs below) and the current level of disturbance at the site discussed in item #4 above.

Mining Areas A, B, C, and D have been defined. The level of disturbance within those areas will range between 0 and 100% but at no time will the amount of disturbance that has not been backfilled, or had the reclamation process started, exceed 15 acres.

Rule 6.4.5 – Exhibit E – Reclamation Plan:

- 8) Revise Exhibit E to include the following information, in accordance with Rule 6.4.5(e):
 - c. A timetable narrative reflecting what is provided in Exhibit F Reclamation Plan Map into the written plan of Exhibit E Reclamation Plan, to include estimated periods of time for the various stages/phases; per sub-subparagraph (i).



& SONS, JNC.

Estimated times for mining and reclamation are very difficult to define because of the nature of the gypsum in this area. Reclamation within each mining/reclamation phase will be completed within 2-3 years after mining.

- d. Provide the acreage of the four reclamation areas shown on Exhibit F Reclamation Plan Map, per sub-subparagraph (ii).

 Acreage for the four mining and reclamation areas, including the Spur Road widening.
 - Acreage for the four mining and reclamation areas, including the Spur Road widening, are shown on the map.
- 9) Revise Exhibit E to specify information about final grading. Specify the maximum anticipated slope gradient or expected ranges thereof in accordance with Rule 6.4.5(2)(f)(i).

 Maximum final grades will not exceed 2H: 1V slopes for 120 feet around the final extents of the area where gypsum has been removed. All of the remaining areas will be contoured and graded with 3H: 1V slopes or less and mimic the natural topography of the area.
- 10) Proposed revised Exhibit E states at the top of the Exhibit that 12 acres have been mined. See item #4 above regarding the various acreage discrepancies noted. Explain these discrepancies and update Exhibit E as necessary and clarify the total mined area and proposed increase in disturbed area.

A total of 27.55 acres have been mined through the 2022-2023 reporting timeframe. The total mined area of 70.7 acres will not increase. We propose an increase from 9.9 acres to 15 acres for areas that have not been backfilled, contoured and reseeded.

Rule 6.4.6 Exhibit F – Reclamation Plan Map:

- 11) Revise map to show topography with sufficient contour lines and the rate of slope of all reclaimed areas in accordance with Rule 6.4.5(a).
 - Topographic lines and areas with proposed reclamation slopes have been added.
- 12) Revise map to portray the proposed final land use of each portion of the affected land in accordance with Rule 6.4.6(b).
 - The final land use for the whole area is Range Land. This is now stated within a note box.
- 13) Revise map to indicate the name of the permittee, Colorado Lien Company, in accordance with Rule 6.2.1(2).
 - The Colorado Lien Company name has been restored to the map.



Rule 6.4.12 – Exhibit L – Reclamation Costs:

14) Provide an updated reclamation cost estimate, in accordance with Rule 6.4.12, reflecting the proposed revision to the mining and reclamation plan with an increase of the maximum disturbed land to 15 acres. Be advised, your estimate must include all the currently non-bond released affected land (see item #4 above).

Two reclamation cost estimates based on Wyoming DEQ guidelines and resources have been included as attachments.

One showing an estimate for the current level of disturbance and another for the proposed level of disturbance.

Updated Exhibits C, D, E and F showing the proposed changes are attached.

If there are any questions regarding this submittal or if additional information is required, please contact me at (605) 939-2719 or by email at mgolliher@petelien.com.

Respectfully,

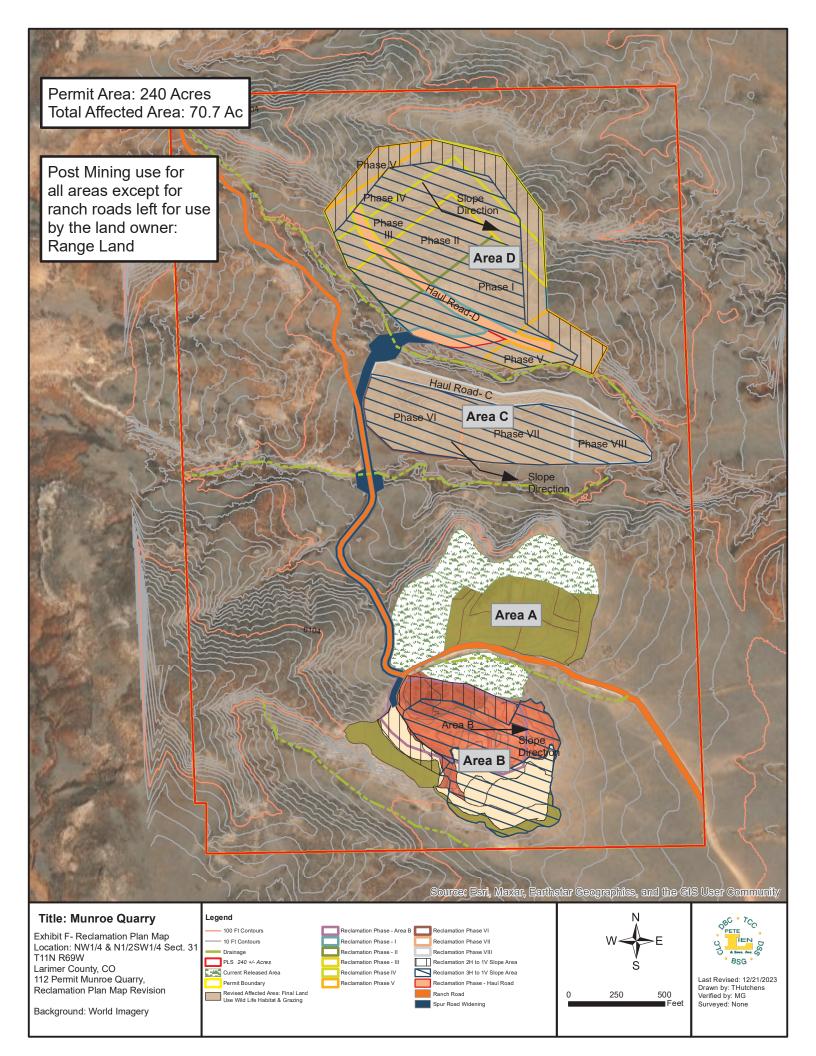
Michael Golliher

Technical Director of Mine Planning

Pete Lien & Sons, Inc.

Attachments included: Munroe Quarry Exhibits C, D, E, F

20231228_Munroe_Current_Reclamation Bond Estimate 20231228_Munroe_TR-03_Reclamation Bond Estimate



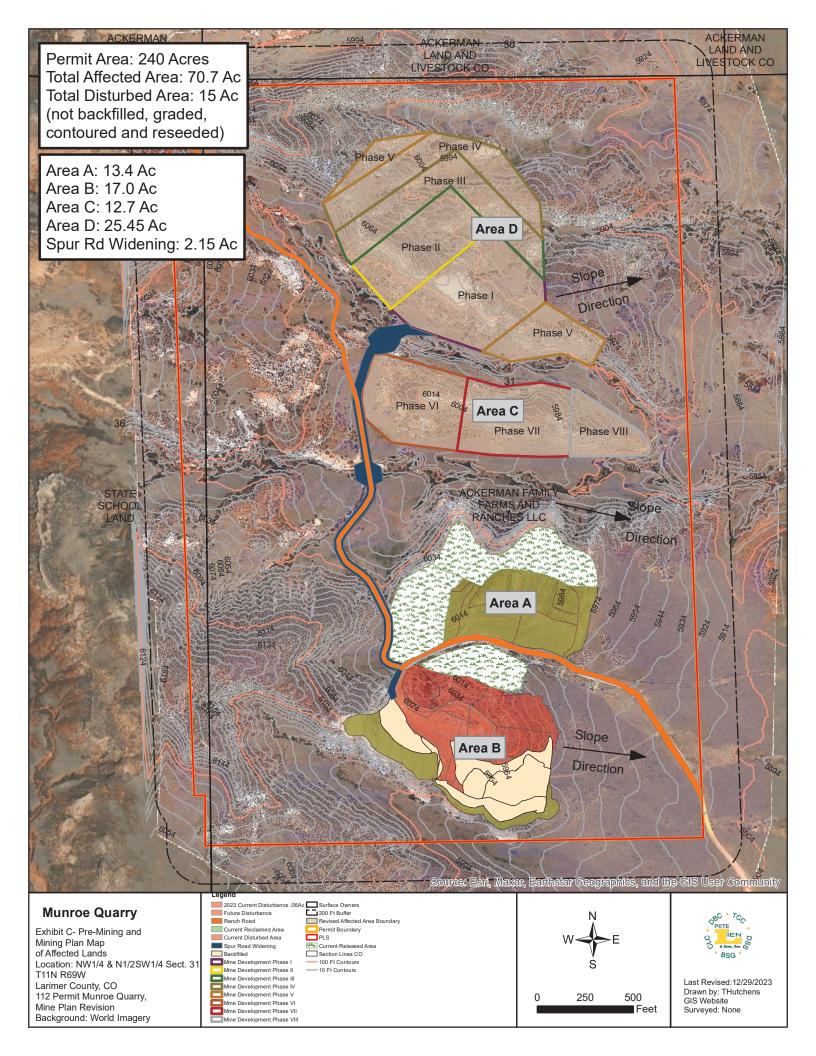


Exhibit Page 14

EXHIBIT E - RECLAMATION PLAN (TR-3 revisions in Italics)

MUNROE QUARRY (M-77-002HR)
Larimer County, CO

Safety & Environment Office Rapid City, SD 57709-0440

(605) 342-7442 FAX 394-6979

Reclamation will follow the same concept and schedule as followed since 1977. Since that time, a total of five acres of disturbed land has been successfully reclaimed and released of a total of approximately twelve acres mined.

Since operations began in 1977, 27.55 acres have been disturbed of the permitted Total Affected Area of 70.7 acres.

Of that 27.55 acres, 4.82 acres have been reclaimed and released. Another 9.45 acres in Mining Area A have also been reclaimed and will be considered for a Surety Release request in 2024.

A revised reclamation sequence is shown as part of the TR-3, Exhibit H submittal. Each reclamation phase will be completed within 2-3 years after mining has been completed in that area.

1. Waste materials, including overburden, will be used as fill prior to contouring, placement of topsoil and seeding. The material will be placed and spread using a scraper or bulldozer. Contouring will be done with a bulldozer and/or grader to develop drainage patterns similar to surrounding land and previously existing conditions.

Exposing and removing gypsum may result in highwalls ranging in height from 35-60 feet, with a maximum height of 70 feet. Reclaimed slopes will be 2H:1V or gentler as noted in Exhibit L – Reclamation Costs of the 112 Permit Conversion.

To determine slope gradients for Exhibit F, the Reclamation Plan Map, an area approximately 120 feet wide (120 ft H: 60 ft V) will extend inward towards mined out areas from the final mining faces created by removing gypsum.

Within that 120 foot wide area, reclaimed slopes will be 2H:1V or gentler.

The remaining areas within the Total Affected Area of 70.7 acres will be contoured and graded with slopes 3H:1V or gentler, or otherwise mimicking the natural terrain in the permit area.

Overburden or topsoil stockpiles may be placed within the Total Affected Area boundary, but outside of areas that are being mined for gypsum if needed. If this is done, the overburden or topsoil will be shaped to mimic natural terrain with no slopes greater than 3H:1V.

Otherwise, overburden will be placed within previously mined areas.

- 2. Post-reclamation use will be as rangeland, the same use as pre-mining.
- 3. The top layer, up to four inches in depth, of existing ground surface (the rooting zone material) will be stripped and handled as topsoil. This material will be stockpiled and protected for use in reclamation.
- 4. Further reclamation will begin once all extraction of gypsum and backfilling is completed in an area of one to two acres. Topsoil (rooting zone material) will be taken from stockpiles or directly from areas being stripped and placed on the contoured backfill. Topsoil will be spread using a bulldozer. As necessary, based on Natural Resource Conservation Service/District guidelines, topsoil will be amended with other soils and/or biosolids to provide a good seedbed for reclamation.

- 5. Once placed, soil will be ripped by the bulldozer or plowed to loosen the soil in preparation for seeding. As needed, this material will be disced and/or raked and up to 200 pounds of fertilizer (30-60-30, solid) will be applied to each acre, as required.
- 6. Seed mix information is provided in Exhibits I and J. See mix will be spread by mechanical broadcasting and/or hydroseeding. Planting will be done in spring or fall to maximize available moisture.
- 7. As needed, when seed is mechanically broadcast, mulch will be applied at a rate of 3 tons/acre and disk crimped. Mulch will be natural grass hay, straw, or state-approved compost. When seed is hydroseeded, hydro mulching as needed will be done in conjunction with seeding and a tackifier will be used as needed. Newly seeded areas will be fenced as necessary to reduce cattle impact on new plants.
- 8. Vegetative cover will be reviewed annually to determine if additional seeding, soil amendment or fertilization is needed. The operator will work with the Division of Minerals and Geology, Fort Collins Conservation District and landowner to determine a suitable level of vegetative cover, especially of Mountain Mahogany and other browse.
- 9. No mining structures will remain after mining. Only the existing ranch road will remain unreclaimed.
- 10. Total disturbed land not backfilled, graded, contoured and reseeded will not exceed **9.9 15** acres. Generally, new disturbance will not take place until previously reclaimed land is released, to keep total at or less than **9.9 15** acres.

Colorado Lien CompanyPermit Conversion Application: Munroe Quarry

01/02/2024

CL-MQ-AP-DO 1-0995

Exhibit Page 13

EXHIBIT D – MINING PLAN (TR-3 revisions in Italics)

MUNROE QUARRY (M-77-002HR)
Larimer County, CO

Safety & Environment Office Rapid City, SD 57709-0440

(605) 342-7442 FAX 394-6979

Mining will be a continuation of the existing 9.9 acre mining operation, which has been in existence since 1977.

- 1. Topsoil cover (estimated four inches or less) will be removed by a bulldozer and stockpiled for future reclamation. Stockpiles will be protected, as needed, by seeding or use of cover material or agents and will be located in previously mined areas not yet reclaimed.
- 2. Dolomitic shale will be removed by bulldozer or drilling and blasting. The material (up to 35 feet thick) will be hauled to previously mined areas and used for backfilling.
- 3. Gypsum will be extracted from a bed of 25-35 feet thickness by drilling and blasting.
- 4. Shotrock gypsum will be used as a feedstone for a portable crusher, to be placed with stockpiles of feedstone and crushed product in a pit area where material has been previously extracted but not yet reclaimed.
- 5. Crushed gypsum in various sizes will be stockpiled and then loaded by wheeled loader into over-the-road haul trucks and trailers.
- 6. *Typically, and* D-depending on thickness of the bed, the area disturbed during each mining season will be approximately one-half to one-acre.

Up to 5 acres of additional development may be required to transition from Mining Area B to Mining Area D.

Normally, the gypsum bed will be mined in a single bench, although benching will be done as necessary to allow access for quarry equipment for stripping, drilling and blasting of overburden and gypsum. Additional benching will be done when necessary to minimize safety hazards associated with falling rock from highwalls.

Mine Phases have been added to Exhibit C, beginning with the **Current Mining Area** in Area B. Gypsum in this area is estimated to be depleted sometime between 2025 and 2026.

Mining will then progress to Area D. Five Phases (I, II, III, IV, V) have been identified on Exhibit C. Each phase will be active for 1-4 years depending on demand and the availability of gypsum. We have found the gypsum lenses in this area to be irregularly shaped and hard to locate definitively, hence the wide range in years. Therefore, we would expect Area D to be depleted in 5 to 20 years (2030-2045).

Phases VI, VII and VIII are located in Area C. Each phase in this area will be active for 1-4 years depending on demand and the availability of gypsum. Therefore, we would expect Area C to be depleted in 3 to 12 years after Area D is depleted (2033-2057)

7. The existing ranch road which passes by the current quarry operation will continue to be used as the access and haul road, with short spur roads built to reach other gypsum deposits as necessary. The spur roads will be reclaimed when no longer needed for mining: the ranch road will remain.

The Ranch Road that transects the permit is approximately 5,900 feet long and has been improved to approximately 25 feet wide for the use of the landowner after mining operations have been completed.

A 1,650 ft. portion of the Ranch Road that connects Area A to Areas C and D will be widened to 50 ft. to accommodate off-highway equipment. This widened section, plus a small Spur Section, accounts for approximately 2.15 acres of additional disturbance and is included in the total affected area of 70.7 acres.

If the landowner would like for it to remain, it will, otherwise reclamation of the additional width of the road and the Spur Section is included in the reclamation calculation.

- 8. No toxic or acid-forming materials will be exposed during extracting operations. All waste rock, including overburden, will be stored away from surface drainage ways and stabilized to minimize erosion and off-site wind or water deposition.
- 9. No chemicals will be used on site except for normal petroleum, oils and lubricants for vehicles and equipment, water and dust suppressants for dust control.
- 10. Dust suppressants (including but not limited to magnesium chloride brine, lignin sulfate and other accepted agents) and water will be used for dust control as needed. Water will be imported to the site via water truck.
- 11. A portable chemical toilet and other sanitary and safety equipment and facilities will be located on site and moved as needed to support the operation. Pumping and maintenance will be contracted out: human waste and ordinary solid waste will be disposed of off-site. No other structures, including ditches, buildings, or impoundments except those required for storm water control and protection of danger and reclaim areas are anticipated to be placed.
- 12. Total disturbed land not backfilled, graded, contoured and reseeded will not exceed **9.9 15** acres, including non-permanent haul roads, stockpiles, and plant sites.

Exhibit T, Paragraph 3. of the 112 Permit Conversion, includes a provision that "there may be a requirement by the Division for an increase in bonding to provide for any additional areas disturbed before final release of the revegetated area".

Colorado Lien Company accepted that provision at the time of conversion and will provide a reclamation bond that includes adequate coverage for Total disturbed land not backfilled, graded, contoured and reseeded will not exceed **9.9 15** acres, including non-permanent haul roads, stockpiles, and plant sites, plus any reclaimed lands that have not received final release.

Colorado Lien Company 01/02/2024
Permit Conversion Application: Munroe Quarry CL-MQ-AP-11-001-0995

Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023 (TR-03)

2022-2023 Bond Calculations

Table 1

Summary of Bond Estimate	Volume/Area	Units		t per	Units	Cost For	
	Estimate		Produ	uction		Task	
Reclamation Task							
Highwall Reduction							
Blasting Highwall	11,111	CY	\$	0.859	\$/CY	\$ 9,544	
Reducing Highwall	9,444	CY	\$	0.17	\$/CY	\$ 1,577	
Rip pit floor	15.0	Acres	\$	789.71	\$/acre	\$ 11,846	
Rough/Final Grade	19.3	Acres	\$	65.02	\$/acre	\$ 1,254	
Topsoil application	10,358	CY	\$	0.61	\$/CY	\$ 6,269	4" Topsoil
Revegetation	19.3	Acres	\$	550.00	\$/acre***	\$ 10,604	
Seeding costs (30% Revegetation)	9.26	Acres	\$	550.00	\$/acre	\$ 5,092	Seeding + Reseeding acreage
Demolition						\$ -	
Subtotal						\$ 46,186	
Contingency					38%	\$ 17,551	
Total Bond						\$ 63,736.49	

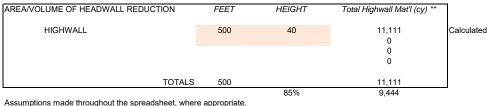
Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023 (TR-03)

MUNROE GYPSUM QUARRY

SUMMARY OF CURRENT LAND STATUS

		REQUIRED RECLAMATION (acres)					
DISTURBED AREA	Highwall Estimate (ft)	TOTAL ACRES	LAST WORK DONE	RIPPING NEEDED	TOPSOIL NEEDED	SEEDING NEEDED	Reseedin (-30%)
ORIGINAL PERMIT AREA		70.7					
Total Project Disturbance as o	of 9/7/2023	27.55					
2022-2023 Annual Report	420						
2022-2023 Released		-4.82					
2022-2023 Reclaimed		-11.58					11.58
2022-2023 Backfilled/Graded		-4.28			4.28	4.28	
2022-2023 Future Disturbance	9	0.65					
TR-03 Addition	80	5.88					
Existing roads prior to mining	(Ranch Road)	0.00	No reclamation required	0.00	0.00	0.00	
Temporary Access Roads			·				
Spur Road - Ranch Road Wid	ening	1.60					
TOTAL AFFECTED TO DATE (not released, backfilled, reclaimed or graded) 15.00			0.00	4.28	4.28	11.58	
Add Back - TOTAL AFFECTED TO DATE (not released, backfilled, reclaimed or graded)			15.00	15.00	15.00		
Reclamation Requ	<u> </u>		•	15.00	19.28	19.28	11.58
Permit Lis	mit	15.00					

MUNROE GYPSUM QUARRY Summary of highwall reduction



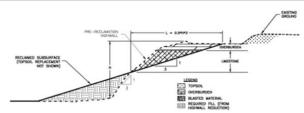
Assumptions made throughout the spreadsheet, where appropriate.

Job Correction Factors Efficiency

83%

Highwall Reduction

This has been the common practice at this and other quarries that PLS operates throughout WY. The drilling and blasting costs have been estimated using LQD Guideline #12. Slope reduction is then completed by moving the blasted material as backfill for the bottom portion of the highwall. The yards required for slope reduction have been conservatively estimated by assuming that 85% of the material will have to be moved for slope reduction. The reclamation plan allows for some highwalls to remain after closure however all highwalls are shown as being reduced in the bond estimate providing a conservative estimate. No additional disturbance is anticipated in the reduction of the highwalls as PLS strips back from the highwall at least 25' to ensure that topsoil is preserved. This additional stripped area has been accounted for in the disturbed acreage number.



Blasting Cost Estimate

Cost to move the material

LQD Guideline #12 12/05/2022-R. Barney, (Table D-3 Blasting Costs)

CY estimate taken from Table 2

11,111 0.859\$/BCY = \$ 9,544 0.859 \$/BCY

Slope Reduction Cost Estimate

Assumed to be the 85% of the blasted yards for conservative estimate.

Cost to move the Material

Appendix E

PLS uses D9 Dozer at 150' downhill push, -20% grade Estimate from LQD Guideline #12, 12/05/2022- R. Barney

Efficiency Factor grade factor visibility Adjusted Productivity Cost per hour Cost per CY

1050 CY/HR
83%
140.0%
90.0%
 1098.09 CY/HR
183.37 \$/HR
0.17 \$/CY

11,111 X 85% X 0.16 \$/CY = \$

1,577

Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023 (TR-03)

Ripping Cost Estimate

Areas requiring ripping include pit floor and roads created by mining. Areas which have only been stripped will not require ripping. Mine access road is not included as it will be a final reclamation feature. This estimated quantity of ripping removes the area of the highwall reduced above between the toe of the reclaimed slope to the crest of the reclaimed slope.

				Acres requiring	ripping	15.0 Acres
	D10 Dozer used for ripping					
	LQD Guideline #12, 12/05/2022 - R.Bar	ney				0.394 acre/l
			Efficiency Factor			75%
	Annondiv Id		Adjusted Productivity Estimated operating		Φ.	0.27 acre/l
	Appendix I1		Adjusted Cost		\$	789.71 \$/acre
			rajuotou ooot		Ψ	
Cost to R	ough/final Grade			15 acres X 789.71 \$	/acre=	\$11,846
	PLS shows that the following # acres re Final reclamation will be accomplished not be necessary to include a cost estin	hrough a combir	nation of rough and final			
				Acres requiring rough g	rading	19.3 Acres
	D9 Dozer					
	LQD Guideline #12, 12/05/2022- R. Bar	ney		Appendix M		3.39 acres
			Efficiency Factor			83%
			Adjusted Productivity		•	2.82 acres
	Appendix E		Estimated operating		\$	183.37 \$/hou 65.02 \$/acre
			Adjusted Cost		Φ	65.02 \$/acre
				19.2 acres X 65.02 \$	/acre= \$	1,254
	Reclamation plan allows for rock outcro These areas will not require the placem					
	seeding are shown with topsoil applied.	·	Acres requiring topsoi		ed*	19.28 Acres 0.33 feet
	seeding are shown with topsoil applied.	Actual Topso	Acres requiring topsoi		ed*	19.28 Acres 0.33 feet 10,358 CY
	Topsoil applied w/ 637K push-pull scrap	Actual Topso Calculated to er, LQD Guidelir	Acres requiring topsoi il Thickness Calculated t psoil stockpile volume	oy CY of Topsoil Stockpile	d*	0.33 feet
		Actual Topso Calculated to er, LQD Guidelir e.	Acres requiring topsoi il Thickness Calculated to psoil stockpile volume ne #12 12/05/2022- R. Ba	oy CY of Topsoil Stockpile	od*	0.33 feet 10,358 CY
	Topsoil applied w/ 637K push-pull scrap	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T	Acres requiring topsoi il Thickness Calculated to psoil stockpile volume ne #12 12/05/2022- R. Ba	oy CY of Topsoil Stockpile	ed*	0.33 feet 10,358 CY 21.05 trips/h
	Topsoil applied w/ 637K push-pull scrap	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T Efficiency	Acres requiring topsoi il Thickness Calculated I psoil stockpile volume ne #12 12/05/2022- R. Ba rips /hour	oy CY of Topsoil Stockpile	bd*	0.33 feet 10,358 CY 21.05 trips/t
	Topsoil applied w/ 637K push-pull scrap	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T	Acres requiring topsoi il Thickness Calculated I psoil stockpile volume ne #12 12/05/2022- R. Ba rips /hour	oy CY of Topsoil Stockpile	ed*	0.33 feet 10,358 CY 21.05 trips/r 83% 17.47 trips/r
	Topsoil applied w/ 637K push-pull scrap	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T Efficiency Adjusted trips Capacity of sr	Acres requiring topsoi il Thickness Calculated I psoil stockpile volume ne #12 12/05/2022- R. Ba rips /hour	oy CY of Topsoil Stockpile	ed*	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri
	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimat	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T Efficiency Adjusted trips Capacity of sr 17.4715 trips/ Hourly Cost	Acres requiring topsoi il Thickness Calculated It psoil stockpile volume ne #12 12/05/2022- R. Birips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4	oy CY of Topsoil Stockpile	ed*	0.33 feet 10,358 CY 21.05 trips/r 83% 17.47 trips/r 28.63 CY/tri 500.21 CY/hd 302.74 \$/hou
	Topsoil applied w/ 637K push-pull scrap	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T Efficiency Adjusted trips Capacity of su	Acres requiring topsoi il Thickness Calculated It psoil stockpile volume ne #12 12/05/2022- R. Birips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4	oy CY of Topsoil Stockpile	\$ \$	0.33 feet 10,358 CY 21.05 trips/t
	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimat	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T Efficiency Adjusted trips Capacity of sr 17.4715 trips/ Hourly Cost	Acres requiring topsoi il Thickness Calculated I psoil stockpile volume ne #12 12/05/2022- R. Ba rips /hour //hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4	oy CY of Topsoil Stockpile	\$ \$	0.33 feet 10,358 CY 21.05 trips/r 83% 17.47 trips/r 28.63 CY/tri 500.21 CY/hd 302.74 \$/hou
	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimal Appendix C ess varies across the site, mation plan (D.4) calls for an average of tion	Actual Topsoi Calculated top er, LQD Guideline. Unadjusted Tr Efficiency Adjusted trips Capacity of so 17.4715 trips/ Hourly Cost Quantity Cost	Acres requiring topsoi il Thickness Calculated I psoil stockpile volume ne #12 12/05/2022- R. Ba rips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4) it 10357 CN	py CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$	\$ \$ \$	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/hd 302.74 \$/hou 0.605 \$/CY
The reclar	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimated Appendix C ess varies across the site, mation plan (D.4) calls for an average of toon PLS assumes all disturbed unreclaimed	Actual Topsoi Calculated to er, LQD Guidelir e. Unadjusted T Efficiency Adjusted trips Capacity of si 17.4715 trips/ Hourly Cost Quantity Cost	Acres requiring topsoi il Thickness Calculated It psoil stockpile volume ne #12 12/05/2022- R. Ba rips /hour //hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4 10357 CN	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in	\$ \$ \$	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/hd 302.74 \$/hou 0.605 \$/CY
The reclare Revegeta The ar	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimal Appendix C ess varies across the site, mation plan (D.4) calls for an average of tion	Actual Topsoi Calculated to er, LQD Guideline. Unadjusted T Efficiency Adjusted trips Capacity of so 17.4715 trips/ Hourly Cost Quantity Cost	Acres requiring topsoi il Thickness Calculated It psoil stockpile volume ne #12 12/05/2022- R. Bi rips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4) t soil to be recovered and e revegetation. Except i	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in	\$ \$ \$	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/hd 302.74 \$/hou 0.605 \$/CY
The reclare Revegeta The ar	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimal Appendix C ess varies across the site, mation plan (D.4) calls for an average of tion PLS assumes all disturbed unreclaimed ea requiring revegetation practices includile footprints and all other disturbed areas	Actual Topsoi Calculated to eer, LQD Guideline. Unadjusted T Efficiency Adjusted trips Capacity of sr 17.4715 trips/ Hourly Cost Quantity Cost Quantity Cost 4" (0.33 ft.) of top areas will requir le the approxima is associated with	Acres requiring topsoi il Thickness Calculated to psoil stockpile volume ne #12 12/05/2022- R. Birips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4) to be recovered and e revegetation. Except at ted topsoil haulroutes to a mining activities.	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in	\$ \$ \$	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/hc 302.74 \$/hou 0.605 \$/CY \$6,269
The reclare Revegeta The ar	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimat Appendix C ess varies across the site, mation plan (D.4) calls for an average of tion PLS assumes all disturbed unreclaimed ea requiring revegetation practices includible footprints and all other disturbed areas Appendix Q estima Total acres requirin	Actual Topsoi Calculated to Calculated to Calculated to Calculated Topsoi Capacity of st. 17.4715 tripsoi Hourly Cost Quantity Cost Quantity Cost Capacity of st. 17.4715 tripsoi Hourly Cost Quantity Cost Capacity of st. 18.18 (0.33 ft.) of top Capacity Capacity Cost Capacity Cost Quantity Cost Capacity Ca	Acres requiring topsoi il Thickness Calculated it psoil stockpile volume ne #12 12/05/2022- R. Ba rips /hour //hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4 10357 CN ripsoil to be recovered and re revegetation. Except a ted topsoil haulroutes to mining activities.	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/hc 302.74 \$/hou 0.605 \$/CY \$6,269
The reclare Revegeta The ar	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimat Appendix C ess varies across the site, mation plan (D.4) calls for an average of tion PLS assumes all disturbed unreclaimed ea requiring revegetation practices includible footprints and all other disturbed areas Appendix Q estima Total acres requirin	Actual Topsoi Calculated to Calculated to Calculated to Calculated Topsoi Capacity of st. 17.4715 tripsoi Hourly Cost Quantity Cost Quantity Cost Capacity of st. 17.4715 tripsoi Hourly Cost Quantity Cost Capacity of st. 18.18 (0.33 ft.) of top Capacity Capacity Cost Capacity Cost Quantity Cost Capacity Ca	Acres requiring topsoi il Thickness Calculated topsoil stockpile volume in #12 12/05/2022- R. Birips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4) is soil to be recovered and e revegetation. Except a ted topsoil haulroutes to mining activities.	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/hc 302.74 \$/hou 0.605 \$/CY
The reclai	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimat Appendix C ess varies across the site, mation plan (D.4) calls for an average of tion PLS assumes all disturbed unreclaimed ea requiring revegetation practices includible footprints and all other disturbed areas Appendix Q estima Total acres requirin	Actual Topsoi Calculated to er, LQD Guideline. Unadjusted T Efficiency Adjusted trips Capacity of si 17.4715 trips/ Hourly Cost Quantity Cost Quantity Cost 4" (0.33 ft.) of top areas will requir le the approxima a associated with the of revegetation g seeding paragraph I, pg 6 550 \$/acre X	Acres requiring topsoi il Thickness Calculated It psoil stockpile volume ne #12 12/05/2022- R. Birips /hour fi/hour x 28.63 CY/trip (\$362.77 - \$53.43 (1/4) 10357 CY soil to be recovered and the revegetation. Except it ted topsoil haulroutes to a mining activities.	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in from the stockpiles, the	\$ \$ \$ shdustrial	0.33 feet 10,358 CY 21.05 trips/h 83% 17.47 trips/h 28.63 CY/tri 500.21 CY/ho 302.74 \$/hou 0.605 \$/CY \$6,269 \$550.00 \$/acre 19.3 Acres
The reclai	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimal Appendix C ess varies across the site, mation plan (D.4) calls for an average of atton PLS assumes all disturbed unreclaimed ea requiring revegetation practices includile footprints and all other disturbed areas Total acres requirin ****(Guideline 12A, p. 4)	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T Efficiency Adjusted trips Capacity of so 17.4715 trips, Hourly Cost Quantity Cost 4" (0.33 ft.) of top areas will requir le the approxima s associated with ee of revegetation g seeding paragraph I, pg 6 550 \$/acre X ailure. Cost for r Acres requirir	Acres requiring topsoi il Thickness Calculated topsoil stockpile volume in e #12 12/05/2022- R. Birips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4) is 10357 CN is oil to be recovered and e revegetation. Except a ted topsoil haulroutes to mining activities.	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in area to be reclaimed as in the stockpiles, the stockpiles area to be seed less area to the require seed less area area.	\$ \$ \$ shdustrial	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/ho 302.74 \$/hou 0.605 \$/CY \$6,269 \$550.00 \$/acre 19.3 Acres \$10,604
The reclai	Topsoil applied w/ 637K push-pull scrap Case #2, 1,000 ft. one-way haul estimal Appendix C ess varies across the site, mation plan (D.4) calls for an average of atton PLS assumes all disturbed unreclaimed ea requiring revegetation practices includile footprints and all other disturbed areas Total acres requirin ****(Guideline 12A, p. 4)	Actual Topso Calculated to er, LQD Guidelir e. Unadjusted T Efficiency Adjusted trips Capacity of so 17.4715 trips, Hourly Cost Quantity Cost Quantity Cost areas will require the approxima associated with e of revegetation g seeding paragraph I, pg 6 550 \$/acre X ailure. Cost for r Acres requirir Cost per acre	Acres requiring topsoi il Thickness Calculated topsoil stockpile volume in e #12 12/05/2022- R. Birips /hour craper /hour X 28.63 CY/trip (\$362.77 - \$53.43 (1/4) is 10357 CN is oil to be recovered and e revegetation. Except a ted topsoil haulroutes to mining activities.	by CY of Topsoil Stockpile arney D10 for Ripping OB)) * 0.605226960660018 \$ placed. area to be reclaimed as in area to be reclaimed as in the stockpiles, the stockpiles area to be seed less area to the require seed less area area.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	0.33 feet 10,358 CY 21.05 trips/t 83% 17.47 trips/t 28.63 CY/tri 500.21 CY/ho 302.74 \$/hou 0.605 \$/CY \$6,269 \$550.00 \$/acre 19.3 Acres \$10,604

Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023 (TR-03)

\$0

<u>Demolition</u>
There are no temporary or permanent structures that would require demolition on this site.

Cost for demolition	
Removal of Portable Structures	
0 trips @ 160 miles roundtrip @ \$1.5 per mile	0
Removal of equipment, salvage parts, etc.	
0 days and 3 men and a piece of machinery for loading salvage items (\$225/hr)	0

Contingency Factors

Appe	endix S. F	Reclamation	at this site is I	being complete	d concurrently	and is straightf	orward.		
------	------------	-------------	-------------------	----------------	----------------	------------------	---------	--	--

Contingency Definitions	Contingency	
	Percent	
Cost to redesign by independent firm	4.0%	
Contractor profit	10.0%	
Pre-construction investigation & stabilization	2.0%	
Independent firm manage project	5.0%	
Site monitor for 10 years	3.0%	
Security for site and insurance	2.0%	
Long-term administrative and accounting	2.0%	
Unknown + 10%	10.0%	

Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023

2022-2023 Bond Calculations

Table 1

Summary of Bond Estimate	Volume/Area	Units	Cost per	Units	Cost For	
•	Estimate		Production		Task	
Reclamation Task						
Highwall Reduction						
Blasting Highwall	9,333	CY	\$ 0.859	\$/CY	\$ 8,017	
Reducing Highwall	7,933	CY	\$ 0.17	\$/CY	\$ 1,325	
Rip pit floor	7.5	Acres	\$ 789.71	\$/acre	\$ 5,939	
Rough/Final Grade	11.8	Acres	\$ 65.02	\$/acre	\$ 767	
Topsoil application	6,339	CY	\$ 0.61	\$/CY	\$ 3,837	4" Topsoil
Revegetation	11.8	Acres	\$ 550.00	\$/acre***	\$ 6,490	
Seeding costs (30% Revegetation)	7.01	Acres	\$ 550.00	\$/acre	\$ 3,858	Seeding + R
Demolition					\$ -	
Subtotal					\$ 30,233	
Contingency				38%	\$ 11,488	
Total Bond					\$ 41,721.21	

Seeding + Reseeding acreage

Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023

MUNROE GYPSUM QUARRY

SUMMARY OF CURRENT LAND STATUS

DISTURBANO		REQUIRED RECLAMATION (acres)				
Highwall	TOTAL	LAST	RIPPING	TOPSOIL	SEEDING	
Estimate (ft)	ACRES	WORK DONE	NEEDED	NEEDED	NEEDED	(-30%)
RIGINAL PERMIT AREA	70.7					
Total Project Disturbance as of 9/7/2023	27.55					
2022-2023 Annual Report 420						
2022-2023 Released	-4.82					
2022-2023 Reclaimed not Released	-11.58					11.58
2022-2023 Additional Backfilled	-4.28			4.28	4.28	
2022-2023 Future Disturbance	0.65					
Existing roads prior to mining (Ranch Road)	0.00	No reclamation required	0.00	0.00	0.00	
Temporary Access Roads						
Spur Road - Ranch Road Widening						
TOTAL AFFECTED TO DATE (not released, backfilled, reclaimed or graded)	7.52		0.00	4.28	4.28	11.58
Add Back - TOTAL AFFECTED TO DATE (not released, backfilled, reclaimed or graded)			7.52	7.52	7.52	
Reclamation Required (acres)			7.52	11.80	11.80	11.58
Permit Limit	9.90					

MUNROE GYPSUM QUARRY Summary of highwall reduction

AREA/VOLUME OF HEADWALL REDUCTION	FEET	HEIGHT	Total Highwall Mat'l (cy) **	
HIGHWALL	420	40	9,333 0	Calculated
			0 0	
TOTALS	3 420		9,333	
		85%	7,933	_

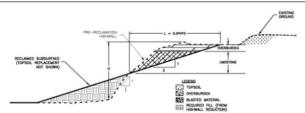
Assumptions made throughout the spreadsheet, where appropriate.

Job Correction Factors Efficiency

83%

Highwall Reduction

This has been the common practice at this and other quarries that PLS operates throughout WY. The drilling and blasting costs have been estimated using LQD Guideline #12. Slope reduction is then completed by moving the blasted material as backfill for the bottom portion of the highwall. The yards required for slope reduction have been conservatively estimated by assuming that 85% of the material will have to be moved for slope reduction. The reclamation plan allows for some highwalls to remain after closure however all highwalls are shown as being reduced in the bond estimate providing a conservative estimate. No additional disturbance is anticipated in the reduction of the highwalls as PLS strips back from the highwall at least 25' to ensure that topsoil is preserved. This additional stripped area has been accounted for in the disturbed acreage number.



Blasting Cost Estimate

Cost to move the material

LQD Guideline #12 12/05/2022-R. Barney, (Table D-3 Blasting Costs)

CY estimate taken from Table 2

9,333 0.859\$/BCY = \$

0.859 \$/BCY

Slope Reduction Cost Estimate

Assumed to be the 85% of the blasted yards for conservative estimate.

Cost to move the Material

Appendix E

PLS uses D9 Dozer at 150' downhill push, -20% grade Estimate from LQD Guideline #12, 12/05/2022- R. Barney

Efficiency Factor grade factor visibility Adjusted Productivity Cost per hour Cost per CY

1050 CY/HR 83% 140.0% 90.0% 1098.09 CY/HR 183.37 \$/HR 0.17 \$/CY

9,333 X 85% X 0.16 \$/CY = \$

8,017

1,325

Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023

Ripping Cost Estimate

Areas requiring ripping include pit floor and roads created by mining. Areas which have only been stripped will not require ripping. Mine access road is not included as it will be a final reclamation feature. This estimated quantity of ripping removes the area of the highwall reduced above between the toe of the reclaimed slope to the crest of the reclaimed slope.

		Acres requiring rip	ping	7.5 Acres
	D10 Dozer used for ripping			
	LQD Guideline #12, 12/05/2022 - R.Barn			0.394 acre/hr
		Efficiency Factor		75%
	Appendix I1	Adjusted Productivity Estimated operating	¢	0.27 acre/HR 215.37 \$/HR
	дрених п	Adjusted Cost	\$	789.71 \$/acre
		7.5 acres X 789.71 \$/a	icre=	\$5,939
Cost to F	Rough/final Grade			
		uire rough/final grading from the Land Summary Table. rrough a combination of rough and final grading therefore it has ate for both activities.		
		Acres requiring rough gra	ading	11.8 Acres
	D9 Dozer			
	LQD Guideline #12, 12/05/2022- R. Barn	ey Appendix M		3.39 acres/hour
	EQD Galdeline #12, 12/05/2022-11. Dam	Efficiency Factor		83%
		Adjusted Productivity		2.82 acres/hour
	Appendix E	Estimated operating	\$	183.37 \$/hour
		Adjusted Cost	\$	65.02 \$/acre
		11.8 acres X 65.02 \$/a	icre= \$	767
T1	Application			
	seeding are shown with topsoil applied.	Unadjusted Trips /hour Efficiency Adjusted trips/hour	*	11.80 Acres 0.33 feet 6,339 CY 21.05 trips/hour 83% 17.47 trips/hour
	Appendix C	Capacity of scraper 17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB)) Quantity Cost	\$	28.63 CY/trip 500.21 CY/hour 302.74 \$/hour 0.605 \$/CY
	Appendix C	17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB))	\$ \$ \$	28.63 CY/trip 500.21 CY/hour 302.74 \$/hour
The recla	ness varies across the site, amation plan (D.4) calls for an average of 4' attion PLS assumes all disturbed unreclaimed a	17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB)) Quantity Cost 6339 CY * 0.605226960660018 \$/C " (0.33 ft.) of topsoil to be recovered and placed. areas will require revegetation. Except area to be reclaimed as ind the approximated topsoil haulroutes to/from the stockpiles, the		28.63 CY/trip 500.21 CY/hour 302.74 \$/hour 0.605 \$/CY
The recla	ness varies across the site, amation plan (D.4) calls for an average of 4' ation PLS assumes all disturbed unreclaimed a rea requiring revegetation practices include sile footprints and all other disturbed areas a	17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB)) Quantity Cost 6339 CY * 0.605226960660018 \$/C " (0.33 ft.) of topsoil to be recovered and placed. areas will require revegetation. Except area to be reclaimed as ind the approximated topsoil haulroutes to/from the stockpiles, the associated with mining activities.		28.63 CY/trip 500.21 CY/hour 302.74 \$/hour 0.605 \$/CY \$3,837
The recla	ness varies across the site, amation plan (D.4) calls for an average of 4' ation PLS assumes all disturbed unreclaimed a rea requiring revegetation practices include sile footprints and all other disturbed areas a	17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB)) Quantity Cost 6339 CY * 0.605226960660018 \$/C " (0.33 ft.) of topsoil to be recovered and placed. areas will require revegetation. Except area to be reclaimed as ind the approximated topsoil haulroutes to/from the stockpiles, the associated with mining activities.		28.63 CY/trip 500.21 CY/hour 302.74 \$/hour 0.605 \$/CY
The recla	ness varies across the site, amation plan (D.4) calls for an average of 4' atton PLS assumes all disturbed unreclaimed area requiring revegetation practices include ille footprints and all other disturbed areas a Appendix Q estimate Total acres requiring	17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB)) Quantity Cost 6339 CY * 0.605226960660018 \$/C " (0.33 ft.) of topsoil to be recovered and placed. areas will require revegetation. Except area to be reclaimed as ind the approximated topsoil haulroutes to/from the stockpiles, the associated with mining activities.	ustrial	28.63 CY/trip 500.21 CY/hour 302.74 \$/hour 0.605 \$/CY \$3,837
The recla Revegeta The ar stockp	ness varies across the site, amation plan (D.4) calls for an average of 4' ation PLS assumes all disturbed unreclaimed a rea requiring revegetation practices include sile footprints and all other disturbed areas a Appendix Q estimate Total acres requiring ***(Guideline 12A, pa	17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB)) Quantity Cost 6339 CY * 0.605226960660018 \$/C " (0.33 ft.) of topsoil to be recovered and placed. areas will require revegetation. Except area to be reclaimed as ind the approximated topsoil haulroutes to/from the stockpiles, the associated with mining activities. e of revegetation costs seeding aragraph I, pg 6 suggests \$400/acre plus \$150/acre for application) 550 \$/acre X 11.8 acres = illure. Cost for reseeding of all areas that require seed less area received.	ustrial	28.63 CY/trip 500.21 CY/hour 302.74 \$/hour 0.605 \$/CY \$3,837 \$550.00 \$/acre*** 11.8 Acres \$6,490
The recla Revegeta The ar stockp	ness varies across the site, amation plan (D.4) calls for an average of 4' ation PLS assumes all disturbed unreclaimed a rea requiring revegetation practices include sile footprints and all other disturbed areas a Appendix Q estimate Total acres requiring ***(Guideline 12A, pa	17.4715 trips/hour X 28.63 CY/trip Hourly Cost (\$362.77 - \$53.43 (1/4 D10 for Ripping OB)) Quantity Cost 6339 CY * 0.605226960660018 \$/C " (0.33 ft.) of topsoil to be recovered and placed. areas will require revegetation. Except area to be reclaimed as ind the approximated topsoil haulroutes to/from the stockpiles, the associated with mining activities. e of revegetation costs seeding arragraph I, pg 6 suggests \$400/acre plus \$150/acre for application) 550 \$/acre X 11.8 acres =	ustrial	28.63 CY/trip 500.21 CY/hour 302.74 \$/hour 0.605 \$/CY \$3,837 \$550.00 \$/acre*** 11.8 Acres \$6,490

Bond Calculation Report - Munroe Gypsum Quarry Permit #M-1977-002 HR Revised 12/28/2023

\$0

<u>Demolition</u>
There are no temporary or permanent structures that would require demolition on this site.

Cost for demolition	
Removal of Portable Structures	
0 trips @ 160 miles roundtrip @ \$1.5 per mile	0
Removal of equipment, salvage parts, etc.	
0 days and 3 men and a piece of machinery for loading salvage items (\$225/hr)	0

Contingency Factors

Appendix S. Reclamation at this site is being completed concurrently and is straightforward.

Contingency Definitions	Contingency Percent
Cost to redesign by independent firm	4.0%
Contractor profit	10.0%
Pre-construction investigation & stabilization	2.0%
Independent firm manage project	5.0%
Site monitor for 10 years	3.0%
Security for site and insurance	2.0%
Long-term administrative and accounting	2.0%
Unknown + 10%	10.0%

Total Contingency 38.0% Adjusted to match Guideline 12A, Table 3.