COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

March 17, 2021

Mr. Bill Tezak
Colorado Quarries, Inc.
270 S. 15th Street
Cañon City, CO 81212

Re: Mica Lode, Permit No. M-1977-144;
Technical Revision (TR-01) Preliminary Adequacy Review

Dear Mr. Tezak:

The Division of Reclamation, Mining and Safety (DRMS) received a request for a Technical Revision (TR-01) addressing the following:

Revise affected area boundaries, and the mining and reclamation plans for all affected areas.

The submittal was called complete for the purpose of filing on March 3, 2021. The **decision date for TR-01 is April 2, 2021**. Please be advised that if you are unable to satisfactorily address any concerns identified in this review before the decision date, **it will be your responsibility to request an extension of the review period**. If there are outstanding issues that have not been adequately addressed prior to the end of the review period, and no extension has been requested, the Division may deny this Technical Revision.

The following comments are based on the DRMS review of the request for TR-01:

1) A note on Permit Areas: Along with the TR-01 application, High Country Consulting Services emailed me kmz files delineating the various permit boundaries for use in Google Earth. All 11 affected area boundaries matched the areas presented in Exhibit D and added up to the approved 35 acres of affected area (when rounded to one decimal place). However, some discrepancies were found between the totals of the four non-disturbed areas in the kmz files (totaling 7.8 acres) when compared to the 8.9 acres presented in Exhibit D; and the total permit boundary approved at 46 acres and found to be 47.7 acres in the provided kmz files. Upon zooming in on the provided Google Earth files, I observed the non-disturbed areas and the permit boundary were drawn with an offset of between 5 and 20 feet from the affected area boundaries, leaving undefined gaps in between. Using the affected area boundaries as a guide, I was easily able to eliminate these gaps and adjust the non-disturbed areas and permit boundary to that presented in the TR application text and be consistent with the approved permit. No response is necessary, just be aware the kmz files provided to the DRMS for the non-disturbed areas and permit boundary do not fully correspond to the text in the TR. If the adjusted kmz files are of use to you, I will be glad to email them to you. Please be aware the DRMS expects all affected area boundaries be marked in the field for future inspections.

2) Bench configurations: Based on review of the proposed bench configurations for the west and east highwalls, it is unclear what to expect for final reclamation. The Exhibit D mining plan for the west highwall states the "Final slope configuration (for stability and MSHA requirements) will be 40-foot tall 1.25:1 walls, alternating with 25-foot wide, gently-sloping benches". This is repeated in Exhibit E and there are similar discussions related to the East Highwall reclamation. Does this mean the intra-bench slope between benches will be at 1.25H:1V or the overall slope (approximately 120 ft high, needing three benches) will be 1.25H:1V? Does the sloping bench allude to the competent rock surface or the backfill of fines and/or growth media discussed in Exhibit E? There are also references to "backfilling waste rock on the pit floor" and placing "fines on the benches". Please clarify the intent. Some cross-section sketches would be very useful. These cross-sections should also show what portions of the pit are to be benched and what is to be sloped.

3) Ruby Pit: Exhibit D states the Ruby Pit will be mined to 3H:1V, while Exhibit E states the highwalls will be reduced to 2.5H:1V. DRMS field observations of the Ruby pit suggest there is both weathered and competent rock in the Ruby Pit highwalls. Please address the following:

    a. Is the intent to reclaim the Ruby Pit with 3H:1V or 2.5H:1V slopes?

    b. Will it need to be straight (constant slope) or benched?

    c. Will blasting be required?

4) Ruby Pit Pond: Both Exhibits D and E indicate a pond may be part of the reclamation plan for the Ruby Pit. While the existence of the pond in the Mica Lode pit pre-dates requirements for a permanent augmentation plan there, that is not the case for a potential pond in the Ruby Pit. Please be aware the DRMS cannot approve a pond as part of the Ruby Pit reclamation paln until all applicable requirement from the Division of Water Resources are met. As there is no currently exposed groundwater in the Ruby Pit and this is only stated as a possibility in this TR, the DRMS will not require adherence to DWR rules at this time. Furthermore, the the DRMS does not approve the inclusion of a pond in the Ruby Pit reclamation plan at this time.

5) MQND-3 (North Dump): Both Exhibits D and E indicate reclamation is complete for the North Dump. Is it ready for release? If so, please submit an acreage reduction request following the review and approval of this TR.

6) Area A: Similarly, both Exhibits D and E indicate reclamation is complete for Area A. Is it ready for release? If so, please submit an acreage reduction request following the review and approval of this TR.

7) General reclamation plan specifications: The numbered specifications in Exhibit E states backfill will be compacted in areas where needed (No. 3) and "Salvaged woody debris will be respread on certain areas after seeding" (No. 6). Please:

    a. Clarify the criteria for where compaction is needed,

    b. Describe how compaction is to be adequately achieved,

    c. Define which areas will have salvaged woody debris spread after seeding.

8) Approved Seed Mix: The application states the currently approved seed mix will be used for all reclamation. This seed mix contains "fairway" or crested wheatgrass and was approved over 30 years ago with CN-01. Experience has shown crested wheatgrass can develop into monocultures. Pursuant to Rule 3.1.10, the reclamation plan should be designed to "establish a diverse, effective, and long-lasting vegetative cover". We recommend consulting with the local NRCS office to determine whether this seed mix should be updated/revised. If so, revising it during this open TR would prevent having to submit a TR at a later date to update the seed mix.

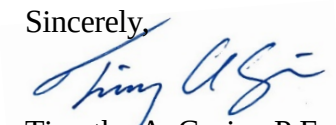
9) Growth medium: Several areas of the reclamation plan discuss spreading growth medium, yet no thickness is stated. The DRMS needs a growth medium thickness commitment in order to calculate growth medium quantities for on-site hauling and placement. Please state the planned depth of growth media placement (note six inches is a recommended minimum) and how it will be placed.

10) Exhibit L Blasting Costs: Blasting and grading for the IMC-2 Quarry is listed at $1.00/CY, whereas for the West and East Highwalls, drilling and blasting is listed at $2.00/CY. The DRMS has limited blasting cost data, but $2.00/CY is high and $1.00 is likely low. Please clarify your unit costs for drilling and blasting, providing backup data if possible (supporting data for blasting costs can be made confidential if so desired).

11) DRMS Cost Estimate: Exhibit L costs propose the use of a Cat 830 loader. The DRMS equipment database does not include this model and I have been unable to locate meaningful specifications for the 830 to compare with the 980 loader used in the enclosed sample cost estimate. The attached cost estimate is a considered a sample as it only provides reclamation cost estimates for the Ruby Pit and the East Highwall. Your responses to several of the above comments may affect our final reclamation cost estimate. Also included in our sample estimate, and not specifically addressed in Exhibit L, is the intra-site hauling of backfill and growth media. Please review the attached sample and provide clarifications and/or corrections where appropriate. After receipt of your responses, we will finalize our reclamation cost estimate.

If you have any questions or need further information, please contact me at (303)328-5229 [cell].

Sincerely,



Timothy A. Cazier, P.E.
Environmental Protection Specialist

Enclosure: Sample Reclamation Cost Estimate

ec: DRMS file
Nicole Martin, Colorado Quarries - eNotify
Bob Oswald, High Country Consulting Services

COST SUMMARY WORK

Task description: **Cost Estimate**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: 0000 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-0000
User: TC1

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
EW10	East Highwall Slope Reduction Blasting @ $2.00/CY	NA	1700	8.00	$3,400
EW11	east Highwall-Doze remaining blasted material	DOZER	1	2.73	$675
EW40	East Highwall Haul & Place Growth Media	TRUCK1	1	3.26	$2,318
EW50	Reveg East HIghwall	REVEGE	1	12.00	$1,689
RP12	Ruby Pit - Reduce slopes to 3H:1V	DOZERGRADER	1	16.00	$4,295
RP13	Ruby Pit - Pit floor grading	DOZERGRADER	1	3.00	$805
RP22	Ruby Pit placement of oversize material in pit	LOADER	1	0.74	$120
RP40	Ruby Pit Haul & Place Growth Media	TRUCK1	1	8.29	$6,463
RP50	Reveg Ruby Pit	REVEGE	1	18.00	$4,202
SW60	Mob / Demob Equipment	MOBILIZE	1	5.00	$6,198
		SUBTOTALS:		**77.02**	**$30,165**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$609
Performance bond:	1.05	Total =	$317
Job superintendent:	38.51	Total =	$2,678
Profit:	10.00	Total =	$3,016
		TOTAL O & P =	$6,621
		CONTRACT AMOUNT (direct + O & P) =	$36,786

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$0	Total =	$0
Engineering work and/or contract/bid preparation:	4.25	Total =	$1,563
Reclamation management and/or administration:	5.00		$1,839
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$10,024
		TOTAL BOND AMOUNT (direct + indirect) =	**$40,189**

BULLDOZER WORK

Task description: **East Highwall-Doze remaining blasted material**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: EW11 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-EW11
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: NA
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$116.22	NA
Operating Cost/Hour:	$89.77	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $247.28
Total Fleet Cost/Hour: **$247.28**

MATERIAL QUANTITIES

Initial Volume: 1,000
Swell factor: 1.640
Loose volume: **1,640** LCY

Source of estimated volume: Exhibits E & L
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Rock, avg. ripped or blasted 0.7

Average push gradient: 0 %
Average site altitude: 6,600 feet

Material weight: 2,800 lbs/LCY

Weight description: Granite - Broken

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.700	(CAT HB)
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4293

Adjusted unit production: 601.02 LCY/hr

Adjusted fleet production: **601.02** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.411/LCY

Total job time: **2.73** Hours
Total job cost: **$675**

TRUCK/LOADER TEAM WORK

Task description: **East Highwall Haul & Place Growth Media**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: EW40 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-EW40
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	NA
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	100
Ownership cost/hour:	$20.31	$55.34	NA	$116.22	NA	$10.06
Operating cost/hour:	$48.09	$65.29	NA	$89.77	NA	$18.78
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	$0.00
Operator cost/hour:	$0.00	$40.71	NA	$41.30	NA	$0.00
Unit Subtotals:	$68.40	$161.33	NA	$247.28	NA	$28.84
Number of Units:	4	1	0	1	0	1
Group Subtotals:	Work:	$434.93	Support:	$247.28	Maint:	$28.84

Total work team cost/hour: **$711.05**

MATERIAL QUANTITIES

Initial volume: 1,984 CCY Swell factor: 1.125
Loose volume: **2,232** LCY

Source of estimated volume: Assume 6” over 2.46Ac hauled from East Dump
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,650 Pounds/LCY
Description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 35,400 Pounds
Payload Capacity: 13.36 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **8.25** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	**8.250**	LCY

Job Condition Corrections: Site Altitude (ft.): 6600 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 1 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.040	minutes
	Adjusted Loader Cycle Time:	**0.510**	minutes
	Net Load Time per Truck:	**0.100**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.100	Minutes	Adjusted for site altitude:	0.100	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	700.00	3.00	3.00	6.00	1855	0.424

Haul Time: **0.424** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	700.00	-3.00	3.00	0.00	2938	0.263

Return Time: **0.263** minutes
Total Truck Cycle Time: **2.187** minutes

Loading Tool unit Production 825.00 LCY/Hour Adjusted for job efficiency: 684.75 LCY/Hour

Truck Unit Production 226.34 LCY/Hour Adjusted for job efficiency: 187.86 LCY/Hour

Optimal No. of Trucks: 4 Truck(s) Selected Number of Trucks: 4 Truck(s)

Adjusted hourly truck team production: 751.44 LCY/Hour
Adjusted single truck/loader team production: 684.75 LCY/Hour
Adjusted multiple truck/loader team production: **684.75** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **3.26** Hours

Unit cost: $1.038 /LCY Total job cost: **$2,318**

REVEGETATION WORK

Task description: **Reveg East HIghwall**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: EW50 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-EW50
User: TC1

Agency or organization name: DRMS (ref. Exhibits E & L)

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.16
Weed control spraying (MEANS 31 31 16.13 3100)	$193.60
Total Tilling Cost/Acre	**$300.76**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	2.50	8.09	$22.19
Crested Wheatgrass - Ephraim	1.50	6.89	$6.49
Sideoats Grama - El Reno	2.25	7.39	$18.84
Pubescent Wheatgrass - Luna	3.50	7.23	$11.90
Milk Vetch, Cicer - Monarch	0.65	2.16	$5.33
Totals Seed Mix	10.40	31.76	**$64.75**

Application

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	$232.00
Total Seed Application Cost/Acre	**$232.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
Total Mulch Materials Cost/Acre				**$0.00**

Application

Description	Cost /Acre
	$
Total Mulch Application Cost/Acre	**$0.00**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres: 2.46
Estimated Failure Rate: 30%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $597.51
Cost /Acre*: $296.75

Initial Job Cost: **$1,469.87**
Reseeding Job Cost: **$219.00**
Total Job Cost: **$1,689**
Job Hours: **12.00**

DOZERGRADER WORK

Task description: **Ruby Pit - Reduce slopes to 3H:1V**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #:	RP12	State:	Colorado	Abbreviation:	None
Date:	3/16/2021	County:	Fremont	Filename:	M144-RP12
User:	TC1				

Agency or organization name: DRMS (ref. TR-01, Exh. E)

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	
Blade Type:	
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$116.22	NA
Operating Cost/Hour:	$89.77	100
Ripper own. Cost/Hour:	$12.00	NA
Ripper op. Cost/Hour:	$9.18	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $268.46
Total Fleet Cost/Hour: **$268.46**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $268.46/LCY

Total job time: **16.00** Hours
Total job cost: **$4,295**

DOZERGRADER WORK

Task description: **Ruby Pit - Pit floor grading**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #:	RP13	State:	Colorado	Abbreviation:	None
Date:	3/16/2021	County:	Fremont	Filename:	M144-RP13
User:	TC1				

Agency or organization name: DRMS (ref. TR-01, Exh. E)

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	
Blade Type:	
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$116.22	NA
Operating Cost/Hour:	$89.77	100
Ripper own. Cost/Hour:	$12.00	NA
Ripper op. Cost/Hour:	$9.18	100
Operator Cost/Hour:	$41.30	NA

Total unit Cost/Hour: $268.46
Total Fleet Cost/Hour: **$268.46**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $268.46/LCY

Total job time: **3.00** Hours
Total job cost: **$805**

WHEEL LOADER – LOAD AND CARRY WORK

Task description: **Ruby Pit placement of oversize material in pit**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: RP22 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-RP22
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 980H Horsepower: 315
Attachment 1: ROPS Cab Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$55.34	NA
Operating Cost/Hour:	$65.29	100
Operator Cost/Hour:	$40.71	NA
Total Unit Cost/Hour:	$161.33	
Total Fleet Cost/Hour:	$161.33	

MATERIAL QUANTITIES

Initial volume: 150 CCY Swell factor: 1.000
Loose volume: **150** LCY

Source of estimated volume: Ref. Exh. E
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Loader Cycle Time:

Unadjusted Basic Cycle Time (load, dump, maneuver): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 6” and over diameter 0.03	0.030	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.010	minutes
	Adjusted Basic Cycle Time:	0.540	minutes

Rolling Resistance – Road Conditions

Haul: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0
Return: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	175	0.00	5.00	5.00	0.1547	(Cat HB)
Return Route:	175	0.00	5.00	5.00	0.1399	(Cat HB)

Total Travel Time: 0.2946 minutes
Total Cycle Time: **0.8346** minutes

Load Bucket Capacity

Rated Capacity: 7.50 LCY (heaped)
Bucket Fill Factor: 0.450 Rock - Poorly blasted (40% - 50%) 0.450
Adjusted Capacity: **3.38** LCY

Job Condition Correction Factors
Site Altitude: 6600 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Unadjusted Hourly Unit Production: 242.63 LCY/Hour
Adjusted Hourly Unit Production: 201.39 LCY/Hour
Adjusted Hourly Fleet Production: **201.39** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: **0.74** Hours

Unit cost: $0.801 /LCY Total job cost: **$120**

TRUCK/LOADER TEAM WORK

Task description: **Ruby Pit Haul & Place Growth Media**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: RP40 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-RP40
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	CAT 980H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance –Motor Grader:	NA
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	100
Ownership cost/hour:	$20.31	$55.34	NA	$116.22	NA	$10.06
Operating cost/hour:	$48.09	$65.29	NA	$89.77	NA	$18.78
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	$0.00
Operator cost/hour:	$0.00	$40.71	NA	$41.30	NA	$0.00
Unit Subtotals:	$68.40	$161.33	NA	$247.28	NA	$28.84
Number of Units:	5	1	0	1	0	1
Group Subtotals:	Work:	$503.33	Support:	$247.28	Maint:	$28.84

Total work team cost/hour: **$779.45**

MATERIAL QUANTITIES

Initial volume: 4,937 CCY Swell factor: 1.125
Loose volume: **5,554** LCY

Source of estimated volume: Assume 6” over 6.12Ac hauled from East Dump
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,650 Pounds/LCY
Description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 35,400 Pounds
Payload Capacity: 13.36 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **8.25** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	7.500	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	**8.250**	LCY

Job Condition Corrections: Site Altitude (ft.): 6600 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 1 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.550 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.040	minutes
	Adjusted Loader Cycle Time:	**0.510**	minutes
	Net Load Time per Truck:	**0.100**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.100	Minutes	Adjusted for site altitude:	0.100	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	1.50	3.00	4.50	2665	0.853

Haul Time: **0.853** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	-1.50	3.00	1.50	2905	0.714

Return Time: **0.714** minutes
Total Truck Cycle Time: **3.067** minutes

Loading Tool unit Production 825.00 LCY/Hour Adjusted for job efficiency: 684.75 LCY/Hour

Truck Unit Production 161.40 LCY/Hour Adjusted for job efficiency: 133.96 LCY/Hour

Optimal No. of Trucks: 5 Truck(s) Selected Number of Trucks: 5 Truck(s)

Adjusted hourly truck team production: 669.79 LCY/Hour
Adjusted single truck/loader team production: 669.79 LCY/Hour
Adjusted multiple truck/loader team production: **669.79** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **8.29** Hours

Unit cost: $1.164 /LCY Total job cost: **$6,463**

REVEGETATION WORK

Task description: **Reveg Ruby Pit**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: RP50 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-RP50
User: TC1

Agency or organization name: DRMS (ref. Exhibits E & L)

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$107.16
Weed control spraying (MEANS 31 31 16.13 3100)	$193.60
Total Tilling Cost/Acre	**$300.76**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	2.50	8.09	$22.19
Crested Wheatgrass - Ephraim	1.50	6.89	$6.49
Sideoats Grama - El Reno	2.25	7.39	$18.84
Pubescent Wheatgrass - Luna	3.50	7.23	$11.90
Milk Vetch, Cicer - Monarch	0.65	2.16	$5.33
Totals Seed Mix	10.40	31.76	**$64.75**

Application

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	$232.00
Total Seed Application Cost/Acre	**$232.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
Total Mulch Materials Cost/Acre				**$0.00**

Application

Description	Cost /Acre
	$
Total Mulch Application Cost/Acre	**$0.00**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres: 6.12
Estimated Failure Rate: 30%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $597.51
Cost /Acre*: $296.75

Initial Job Cost: **$3,656.76**
Reseeding Job Cost: **$544.83**
Total Job Cost: **$4,202**
Job Hours: **18.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mob / Demob Equipment**

Site: **Mica Lode** Permit Action: TR-01 Permit/Job#: M1977144

PROJECT IDENTIFICATION

Task #: SW60 State: Colorado Abbreviation: None
Date: 3/16/2021 County: Fremont Filename: M144-SW60
User: TC1

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	$17.20	$29.63	$38.69
Operating Cost/Hour:	$26.56	$47.02	$55.69
Operator Cost/Hour:	$23.63	$23.63	$23.63
Helper Cost/Hour:	$0.00	$23.53	$23.53
Total Unit Cost/Hour:	$67.39	$123.81	$141.54

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D8T - 8SU	53.08	$128.22	$141.54	1	$269.76	$141.54	$250.00
CAT 980H	33.12	$55.34	$123.81	1	$179.15	$123.81	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$6.72	$67.39	1	$74.11	$67.39	$250.00
ATLAS COPCO ROC D3-01,3.0 in.	0.00	$58.81	$67.39	1	$126.20	$67.39	$250.00
Subtotals:					**$649.22**	**$400.13**	**$1,000.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	$100.31	5	$501.55	$501.55
ANFO Bulk Delivery Truck	$223.71	1	$223.71	$223.71
Subtotals:			**$725.26**	**$725.26**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	CAÑON CITY	
Total one-way travel distance:	20.00	miles
Average Travel Speed:	20.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$4,747.92
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$1,450.52

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	1.00	1.00
Return Time (Hours):	1.00	1.00
Loading Time (Hours):	0.25	NA
Unloading Time (Hours):	0.25	NA
Subtotals:	2.50	2.00

JOB TIME AND COST

Total job time:	**5.00**	Hours
Total job cost:	**$6,198**	