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

MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Cañon Dolomite Quarry	**MINE/PROSPECTING ID#:** M-1977-376	**MINERAL:** Dolomite	**COUNTY:** Fremont
INSPECTION TYPE: Surety-Related Inspection	**WEATHER:** Clear	**INSP. DATE:** September 14, 2023	**INSP. TIME:** 10:20
OPERATOR: Holcim - WCR, Inc.	**OPERATOR REPRESENTATIVE:** Lu Toxvard & Kurt Thurmann	**TYPE OF OPERATION:** 112c - Construction Regular Operation	

REASON FOR INSPECTION: Surety Related	**BOND CALCULATION TYPE:** Complete Bond	**BOND AMOUNT:** $232,000.00
DATE OF COMPLAINT: NA	**POST INSP. CONTACTS:** None	**JOINT INSP. AGENCY:** None
INSPECTOR(S): Timothy Cazier, P.E.	**INSPECTOR'S SIGNATURE:**	**SIGNATURE DATE:** February 1, 2024

The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.

INSPECTION TOPIC: Sediment Control
PROBLEM/POSSIBLE VIOLATION: Problem: Erosion features were observed on the repaired Old Fines Disposal area slope leading to possible offsite sediment discharge. This is a problem at this time for failure to protect the outside the affected land pursuant to C.R.S. 34-32.5-116 (4) (i).
CORRECTIVE ACTIONS: The operator shall implement BMPs to prevent possible offsite siltation and provide photo documentation to the Division demonstrating such BMPs have been installed/implemented by the corrective action date.
CORRECTIVE ACTION DUE DATE: 4/01/24

OBSERVATIONS

This inspection was conducted as part of a Succession of Operator (SO) application. The SO application was called complete for the purpose of filing on 9/5/2023. A draft bond estimate was generated prior to this inspection and provided to Mr. Thurmann during the inspection. A copy is attached to this report.

The Cañon Dolomite Quarry is typically accessed from Hwy 50 and is located approximately one mile west of Hwy 50 and about 0.8 miles north of Tunnel Drive. For this inspection, the site was accessed from the Aggregate Source pit (M-1977-193) to the south of the Cañon Dolomite site. This is a 112c dolomite mine. Haul truck traffic was observed on the access road at the time of the inspection. Site representatives indicated the pit is open for sales twice a month on Thursdays.

Availability of Records: Annual reports are current, having been filed through December 2023, stating the last mining activity was August 23, 2023. The previous inspection was on August 11, 2020. The approved post-mine land use is rangeland. There were no open infractions prior to the inspection. Both the surface and minerals are privately owned.

Acid And Toxic Materials: No acid or toxic materials are involved in or stored at this operation.

Backfilling and Grading: Benches are to be ~30 feet high by ~60 feet wide to be backfilled at 4H:1V with crusher fines available onsite (see **Photo 1**).

Excess Spoil and Dev. Waste: No overburden piles were observed.

Financial Warranty: The DRMS currently holds a $232,000 bond which was last updated in 20193. As part of the SO review process, the bond was reviewed and updated with current unit costs. A draft estimate for a $280,471 bond was provided to Mr. Thurmann during the inspection. This estimate included a $600 line item for the removal of a water tank. As a water tank could not be located during the inspection, it has been removed from the estimate. The **revised bond estimate is $279,730** and is attached to this report. Subsequent to this inspection, Holcim-WCR indicated that they accept this revised bond estimate. **This report will accompany a surety increase letter**.

Fish and Wildlife: No impact to wildlife was observed.

Hydrologic Balance: No standing water was observed in the pit and no exposed groundwater was observed.

Gen. Compliance with Mine Plan: The operation appeared to be in compliance with the approved mine plan. The maximum allowed disturbed area is 41 acres (ref. TR-2). Google Earth was used to measure the disturbed area, which was approximately 15.9 acres in the active pit area (see **Photos 2 - 5**) and 1.4 acres in the Fines Disposal Area (including the access road from below on the east side), based on older 2019 imagery. The Old Quarry Disposal Area (see **Photo 6**) is also considered disturbed but is in the process of "self-reclamation" due to the lack of ongoing disturbance. TR-3 was approved in 2018 to address the severe erosion issues observed in the Fines Disposal Area (see **Photo 7**) during the 2018 inspection.

Highwalls were estimated to vary between 15 and 20 feet in height and appeared stable (see **Photo 8**).

Off-site Damage: The operation appeared to be confined to the permit boundary, based on Google Earth review and site observations.

Processing Waste: All observed stockpiles (including crusher fines) were characterized by site representatives as product. No processing waste was observed.

Roads: Haul and access roads did not appear to be a source of sediment that could be tracked offsite.

Right of Entry: Holcim-WCR demonstrated ownership of the site as part of the SO application process.

Reclamation Success: As stated above, the Old Quarry Disposal area is in the process of self-reclamation. However, the recycled asphalt will need to be removed prior to release from reclamation liability. Grading to repair the erosion in the Fines Disposal Area was completed ca. 2020 by the previous Permittee. Some minor repair is advised prior to reseeding this area. No reclamation has been initiated in the active mine area.

Revegetation: No noxious weeds were observed. No successful revegetation (see Fines Disposal area discussion above) was observed.

Sediment Control: No significant erosion was observed in either the active mine area or the Old Quarry Disposal area. However, the establishment of vegetation on the regraded Fines Disposal Area is proving to be a challenge (see **Photo 9**) and it appears sediment could be exiting the site via the riprap-lined downchute channel below the old access road. **Insufficient sediment control is cited as a problem on p. 1 of this report**.

Support Facilities On-site: A truck scale, scale house and loader were observed on site.

Signs and Markers: The permit sign was properly posted (see **Photo 10**). Based on previous inspections, it is known that the western boundary of the active area is inconsistently marked using a mix of access roads and pre-law disturbance highwalls. The DRMS advises a more recognizable means of marking the west boundary be implemented before any bench mining proceeds to the west.

Permit Stipulations: There are no open permit stipulations.

Storm Water MGT Plan: No oil or fuel spills observed. No culvert maintenance was required at the time of the inspection.

Topsoil: The approved reclamation plan acknowledges there is no topsoil on site due to limited topsoil in the general area and pre-law disturbance. As such, the reclamation plan committed to using "unmarketable quarry fines" for growth media and augmenting this material with "fertilizer and mulch". Given the change in the market for crusher fines, the DRMS recommends Holcim-WCR review the AM-1 approved reclamation plan and either reserve sufficient crusher fines for growth media or submit a technical revision proposing an alternate plan.

Structures: No structures were observed within 200 feet of the affected area.

Post Inspection Meeting: The following issues were discussed during the closeout meeting:

- Problem cited – Insufficient sediment control below the Fines Disposal area. We discussed BMPs (best management practices) needing to be implemented and considered a sediment trap in the old access road above the riprap-lined downchute channel might be the best option.
- Bond – Mr. Thurmann requested the line item for water tank removal be struck from the reclamation cost estimate. The attached revised bond estimate includes the removal of that line item.

Please contact Tim Cazier (303)328-5229 or email at tim.cazier@state.co.us if you have any questions regarding this report.

PHOTOGRAPHS

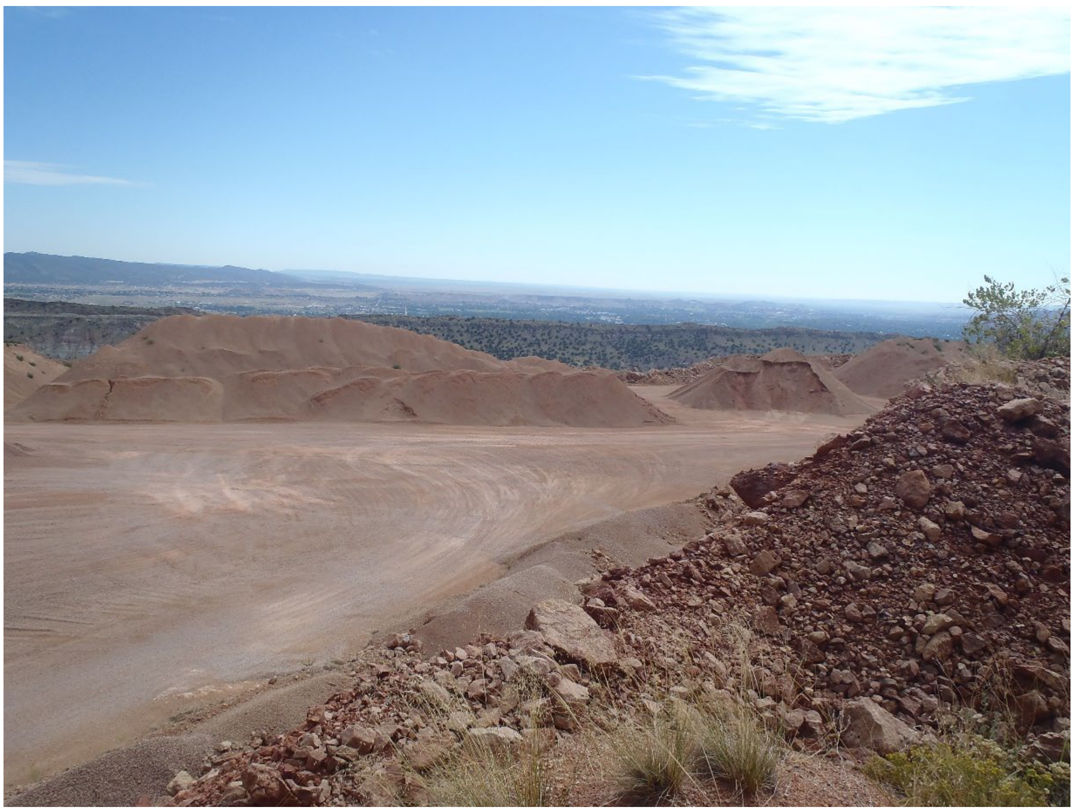

Photo 1. Crusher fines stockpile east of pit floor access road on the south end (looking SE).

PHOTOGRAPHS (cont.)

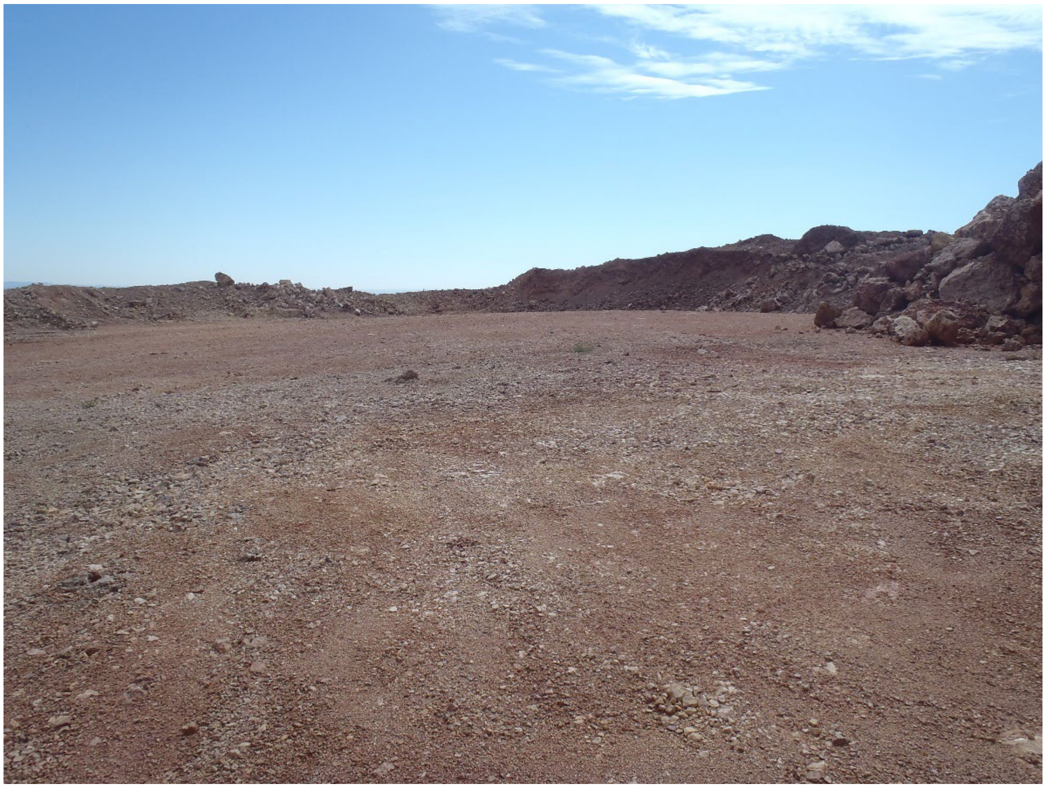

Photo 2. First bench (looking south).

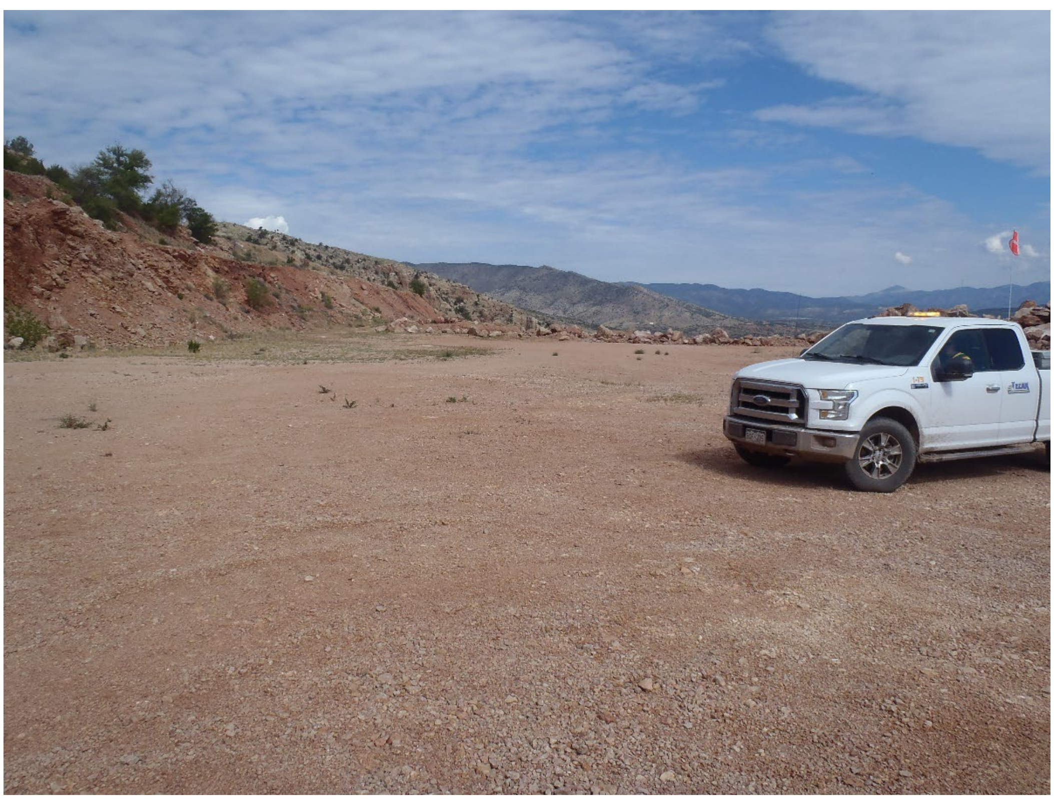

Photo 3. First bench (looking north).

PHOTOGRAPHS (cont.)

Photo 4. Pit floor (looking SSW from the east side).

Photo 5. Pit floor (looking NNW from the east side).

PHOTOGRAPHS (cont.)

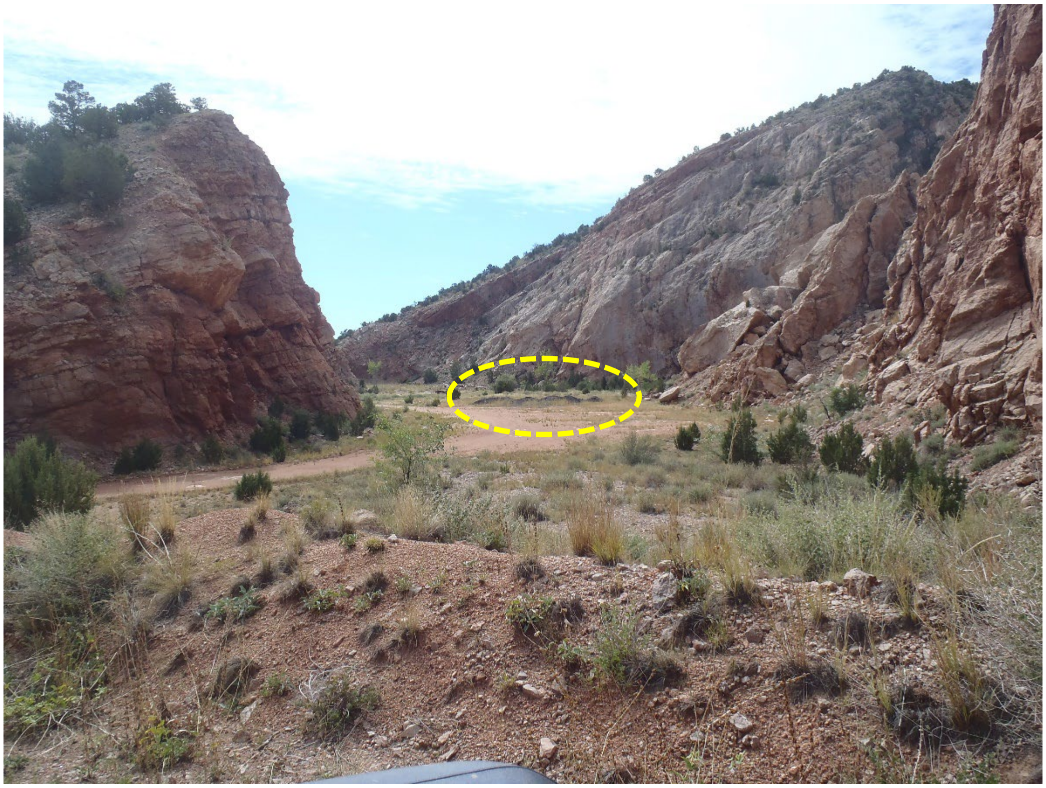

Photo 6. Old Quarry Disposal area (looking south from access road, note circled RAP stockpile).

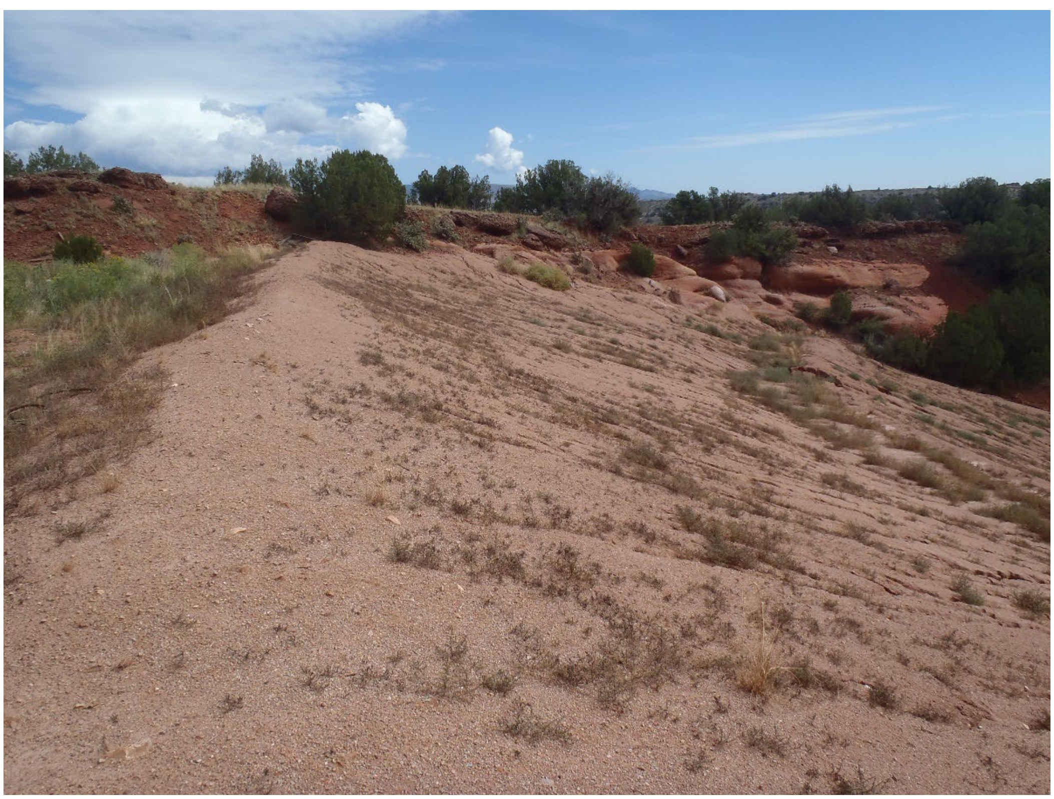

Photo 7. Upper portion of repaired Fines Disposal area (looking NE from crest).

PHOTOGRAPHS (cont.)

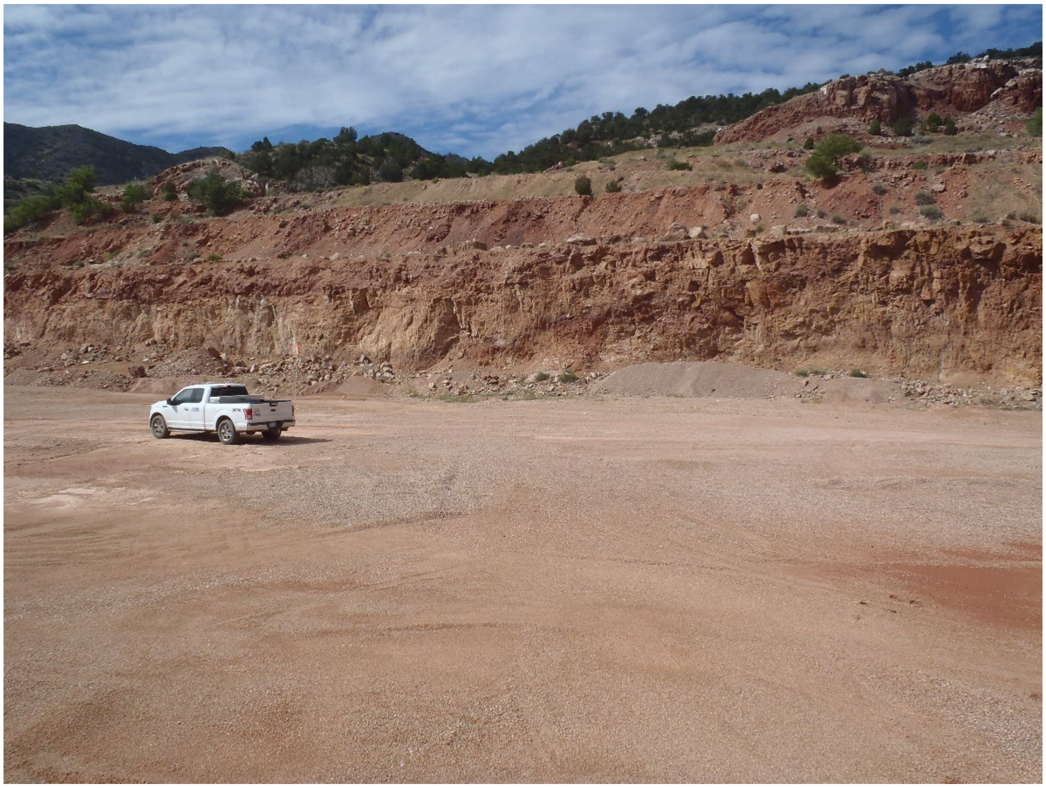

Photo 8. Typical highwalls (looking west from pit floor).

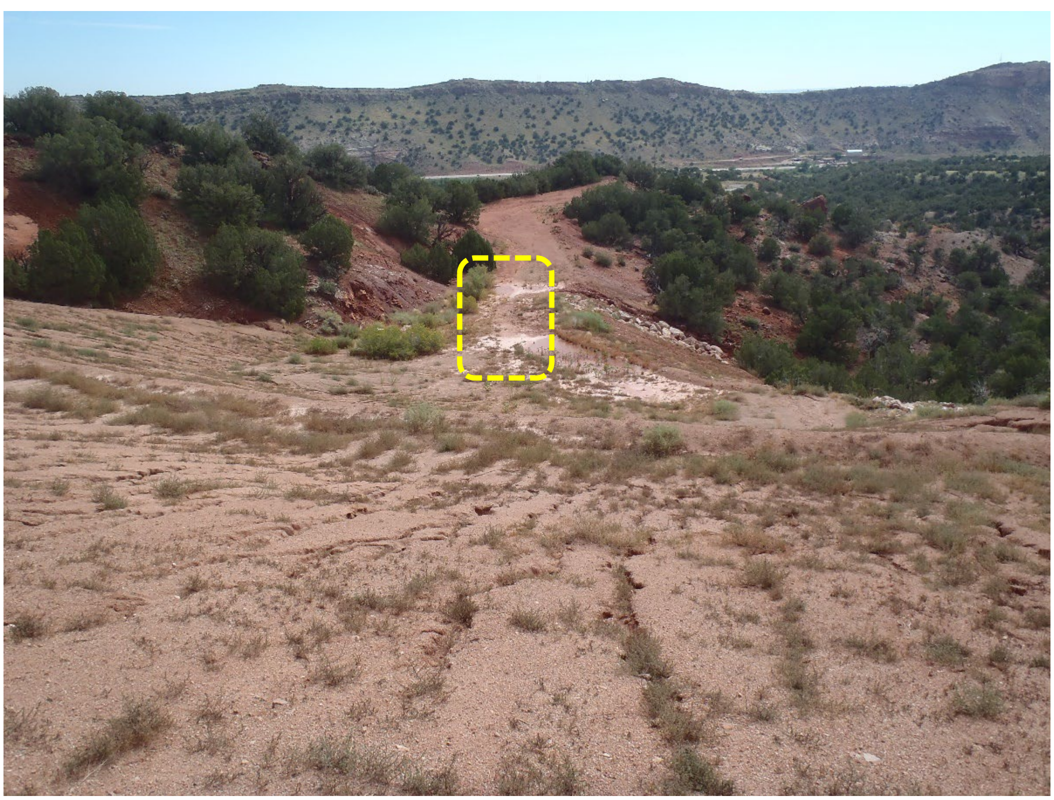

Photo 9. Lower repaired Fines Disposal area (looking east from crest) needing a sediment trap as noted.

PHOTOGRAPHS (cont.)

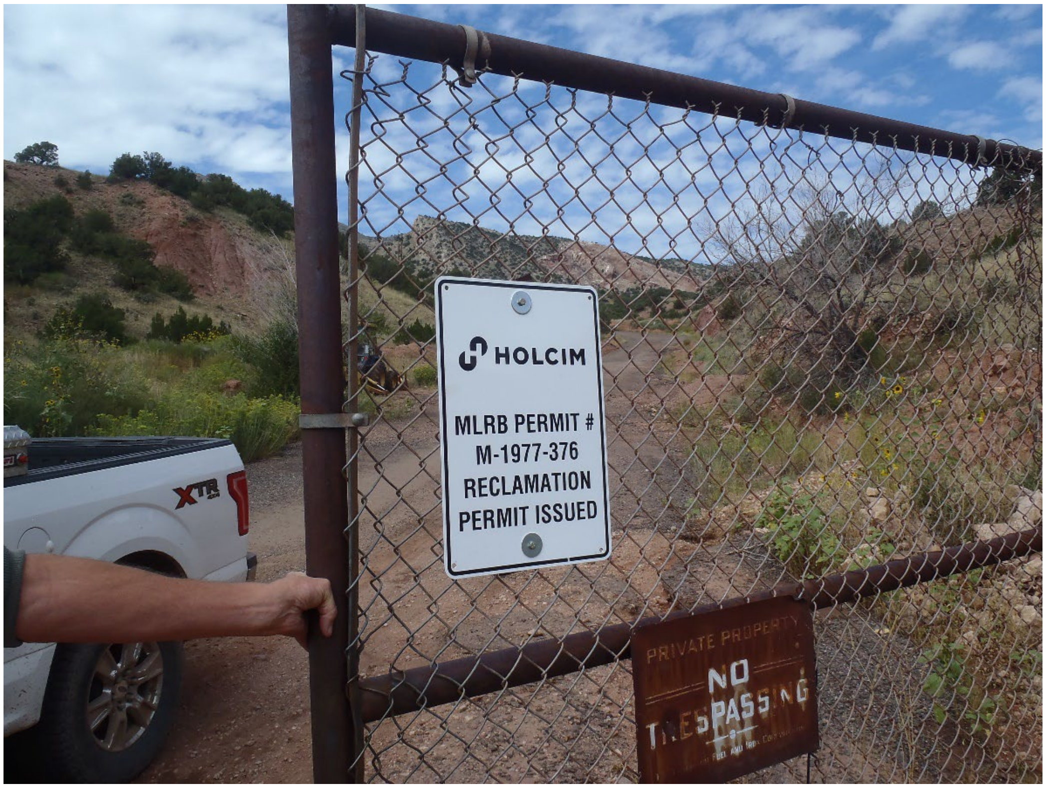

Photo 10. Permit sign on gate at bottom of access road.

GENERAL INSPECTION TOPICS

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS---------------------------------- Y	(FN) FINANCIAL WARRANTY-------- Y	(RD) ROADS----------------- Y
(HB) HYDROLOGIC BALANCE------------ Y	(BG) BACKFILL & GRADING--------- Y	(EX) EXPLOSIVES--------- Y
(PW) PROCESSING WASTE/TAILING---- Y	(SF) PROCESSING FACILITIES------- Y	(TS) TOPSOIL--------------- Y
(MP) GENL MINE PLAN COMPLIANCE- Y	(FW) FISH & WILDLIFE---------------- Y	(RV) REVEGETATION---- Y
(SM) SIGNS AND MARKERS---------------- Y	(SP) STORM WATER MGT PLAN---- N	(RS) RECL PLAN/COMP-- Y
(ES) OVERBURDEN/DEV. WASTE--------- Y	(SC) EROSION/SEDIMENTATION--- PB	(ST) STIPULATIONS------- Y
(AT) ACID OR TOXIC MATERIALS------- Y	(OD) OFF-SITE DAMAGE---------------Y	

Y = Inspected / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

Inspection Contact Address

Kurt Thurmann
Holcim - WCR, Inc.
1687 Cole Blvd, Suite 300
Golden, CO 80401

Enclosure: Reclamation Cost Estimate

ec: Hunter Ridley, DRMS
DRMS file

COST SUMMARY WORK

Task description: **Cost Summary**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 9/28/2023 County: Fremont Filename: M77-3762019
User: TC1

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
A12	Reveg fines disposal area - hydrospray	REVEGE	1	6.00	$16,777
B01	Fill 1,000 ft of bench @4H:1V	TRUCK1	1	39.92	$24,499
B02	Fill half of 2nd flat bench (10" over 6 ac)	TRUCK1	1	20.50	$21,244
B04	Fill half of 1st flat bench (10" over 4 ac)	TRUCK1	1	12.88	$16,087
B06	Haul/dump fines @ east edge of bench (10" over 3 ac)	TRUCK1	1	10.25	$12,837
B07	Reveg #1 face - hydrospray	REVEGE	1	2.00	$7,829
B89	Reveg benches #2 & 4 - Drill Seed	REVEGE	1	20.00	$25,212
C01	Haul rock for Old Quarry Fines DA riprap channel	TRUCK1	1	2.47	$2,043
C02	Construct 450 ft rock-lined channel	POSTMINING	1	167.46	$73,805
C03	Reveg old quarry fines disposal slope area - hydrospray	REVEGE	1	2.00	$5,592
C04	Reveg Old Quarry fines disposal open area - Drill Seed	REVEGE	1	4.00	$5,042
M10	Mob/Demob Equipment	MOBILIZE	1	1.53	$6,992
			SUBTOTALS:	**289.01**	**$217,959**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$4,403
Performance bond:	1.05	Total =	$2,289
Job superintendent:	147.50	Total =	$9,599
Profit:	10.00	Total =	$21,796
		TOTAL O & P =	$38,087
		CONTRACT AMOUNT (direct + O & P) =	$256,046

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$0	Total =	$0
Engineering work and/or contract/bid preparation:	4.25	Total =	$10,882
Reclamation management and/or administration:	5.00		$12,802
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$61,771
		TOTAL BOND AMOUNT (direct + indirect) =	**$279,730**

REVEGETATION WORK

Task description: **Reveg fines disposal area - hydrospray**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: A12 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: A12
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	380.00	pound	$0.50	$188.75
			Total Fertilizer Materials Cost/Acre	**$188.75**

Application

Description	Cost /Acre
Hydro spreader (MEANS 32 01 90.13 0180)	$247.86
Total Fertilizer Application Cost/Acre	**$247.86**

TILLING

Description	Cost /Acre
Weed control spraying (MEANS 31 31 16.13 3100)	$338.80
Total Tilling Cost/Acre	**$338.80**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Paloma	3.00	9.71	$33.38
Crown Vetch - Emerald	2.00	5.05	$25.97
Sand Dropseed	0.20	23.88	$1.95
Mountain Brome - Bromar	3.40	5.46	$12.92
Crested Wheatgrass - Nordan	1.40	6.43	$5.46
Russian Wildrye - Bozoisky	2.00	8.03	$12.96
Alfalfa - Ladak (inoculated)	0.20	0.96	$0.51
Milk Vetch, Cicer - Lutana	1.40	4.66	$11.48
Thickspike Wheatgrass - Critana	1.40	4.95	$9.63
Rabbitbrush, Rubber	0.02	0.30	$1.29
Needlegrass, Green - Lodorm	2.80	11.63	$32.97

Flax, Lewis Blue	1.00	6.63	$16.50
Saltbush, Four Wing	1.00	1.38	$12.50
Winter Fat	1.60	4.08	$32.80
Penstemon, Palmer	1.40	30.96	$76.30
Totals Seed Mix	22.82	124.11	**$286.61**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$1,313.33
Total Seed Application Cost/Acre	**$1,313.33**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$429.79	$859.57
Total Mulch Materials Cost/Acre				**$859.57**

Application

Description	**Cost /Acre**
Hydromulching (MEANS 32 92 19.13 1100)	$1,306.80
Total Mulch Application Cost/Acre	**$1,306.80**

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: 3
Estimated Failure Rate: 25%
*Selected Replanting Work Items: FERTILIZING, SEEDING, MULCHING

Cost /Acre: $4,541.72
Cost /Acre*: $4,202.92

Initial Job Cost: **$13,625.16**
Reseeding Job Cost: **$3,152.19**
Total Job Cost: **$16,777**
Job Hours: **6.00**

TRUCK/LOADER TEAM WORK

Task description: **Fill 1,000 ft of bench @4H:1V**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: B01 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: B01
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	NA
-Dump Area:	NA
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	NA	NA	100
Ownership cost/hour:	$108.06	$65.69	NA	NA	NA	$11.35
Operating cost/hour:	$71.88	$48.09	NA	NA	NA	$22.92
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	NA	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	$0.00
Operator cost/hour:	$32.54	$40.71	NA	NA	NA	$0.00
Unit Subtotals:	$212.48	$154.49	NA	NA	NA	$34.27
Number of Units:	2	1	0	0	0	1
Group Subtotals:	Work: $579.45		Support: $0.00		Maint: $34.27	

Total work team cost/hour: **$613.72**

MATERIAL QUANTITIES

Initial volume: 16,667 CCY Swell factor: 1.000
Loose volume: **16,667** LCY

Source of estimated volume: Exhibit L, Task B1 (TR-2)
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: 2,700 Pounds/LCY
Description: Sand and clay - Loose
Rated Payload: 62,000 Pounds
Payload Capacity: 22.96 LCY

Truck Bed (volume) Basis:

Struck Volume:	17.10	LCY
Heaped Volume:	22.10	LCY
Average Volume:	19.60	LCY
Adjusted Volume:	22.10	LCY

Final Truck Volume Based on Number of Loader Passes: **20.63** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	5.000	LCY (heaped)
Bucket Fill Factor:	0.825	Blasted rock - avg. blasted (75 - 90%) 0.825
Adjusted Capacity:	**4.125**	LCY

Job Condition Corrections: Site Altitude (ft.): 6200 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: 5 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(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:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.060	minutes
	Adjusted Loader Cycle Time:	**0.440**	minutes
	Net Load Time per Truck:	**1.860**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.600	Minutes
Truck Load Time:	1.860	Minutes	Adjusted for site altitude:	1.860	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.000	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Hard, smooth, stabilized, surfaced, watered, maintained 2.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	5.00	2.00	7.00	1036	1.030

Haul Time: **1.030** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-5.00	2.00	-3.00	3080	0.391

Return Time: **0.391** minutes

Total Truck Cycle Time: **4.881** minutes

Loading Tool unit Production 503.05 LCY/Hour — Adjusted for job efficiency: 417.53 LCY/Hour

Truck Unit Production 253.53 LCY/Hour — Adjusted for job efficiency: 210.43 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) — Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 420.87 LCY/Hour

Adjusted single truck/loader team production: 417.53 LCY/Hour

Adjusted multiple truck/loader team production: **417.53** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **39.92** Hours

Unit cost: $1.470 /LCY — Total job cost: **$24,499**

TRUCK/LOADER TEAM WORK

Task description: **Fill half of 2nd flat bench (10" over 6 ac)**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #:	B02	State:	Colorado	Abbreviation:	None
Date:	9/12/2023	County:	Fremont	Filename:	B02
User:	TC1				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 160M
-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	NA	100	100
Ownership cost/hour:	$108.06	$65.69	NA	NA	$102.08	$11.35
Operating cost/hour:	$71.88	$48.09	NA	NA	$79.65	$22.92
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$0.00	$0.00
Operator cost/hour:	$32.54	$40.71	NA	NA	$28.56	$0.00
Unit Subtotals:	$212.48	$154.49	NA	NA	$210.29	$34.27
Number of Units:	3	1	0	0	1	1
Group Subtotals:	Work: $791.93		Support: $0.00		Maint: $244.56	

Total work team cost/hour: **$1,036.49**

MATERIAL QUANTITIES

Initial volume: 8,067 CCY Swell factor: 1.000
Loose volume: **8,067** LCY

Source of estimated volume: Exhibit L, Task B2 & 3, assume average of 10" (TR-2)
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: 2,700 Pounds/LCY
Description: Sand and clay - Loose
Rated Payload: 62,000 Pounds
Payload Capacity: 22.96 LCY

Truck Bed (volume) Basis:

Struck Volume:	17.10	LCY
Heaped Volume:	22.10	LCY
Average Volume:	19.60	LCY
Adjusted Volume:	22.10	LCY

Final Truck Volume Based on Number of Loader Passes: **20.63** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	5.000	LCY (heaped)
Bucket Fill Factor:	0.825	Blasted rock - avg. blasted (75 - 90%) 0.825
Adjusted Capacity:	**4.125**	LCY

Job Condition Corrections: Site Altitude (ft.): 6200 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: 5 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(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:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.060	minutes
	Adjusted Loader Cycle Time:	**0.440**	minutes
	Net Load Time per Truck:	**1.860**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.600	Minutes
Truck Load Time:	1.860	Minutes	Adjusted for site altitude:	1.860	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.000	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Very hard, smooth, asphalt or concrete, no tire penetration 1.2

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3500.00	5.00	1.20	6.20	1122	3.191

Haul Time: **3.191** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3500.00	-5.00	1.20	-3.80	3064	1.178

Return Time: **1.178** minutes
Total Truck Cycle Time: **7.829** minutes

Loading Tool unit Production: 503.05 LCY/Hour — Adjusted for job efficiency: 417.53 LCY/Hour

Truck Unit Production: 158.07 LCY/Hour — Adjusted for job efficiency: 131.19 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) — Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 393.58 LCY/Hour
Adjusted single truck/loader team production: 393.58 LCY/Hour
Adjusted multiple truck/loader team production: **393.58** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **20.50** Hours

Unit cost: $2.633 /LCY — Total job cost: **$21,244**

TRUCK/LOADER TEAM WORK

Task description: **Fill half of 1st flat bench (10" over 4 ac)**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: B04 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: B04
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 160M
-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	NA	100	100
Ownership cost/hour:	$108.06	$65.69	NA	NA	$102.08	$11.35
Operating cost/hour:	$71.88	$48.09	NA	NA	$79.65	$22.92
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	$0.00	$0.00
Operator cost/hour:	$32.54	$40.71	NA	NA	$28.56	$0.00
Unit Subtotals:	$212.48	$154.49	NA	NA	$210.29	$34.27
Number of Units:	4	1	0	0	1	1
Group Subtotals:	Work: $1,004.41		Support: $0.00		Maint: $244.56	

Total work team cost/hour: **$1,248.97**

MATERIAL QUANTITIES

Initial volume: 5,378 CCY Swell factor: 1.000
Loose volume: **5,378** LCY

Source of estimated volume: Exhibit L, Task B4 & 5, assume average of 10"
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: 2,700 Pounds/LCY
Description: Sand and clay - Loose
Rated Payload: 62,000 Pounds
Payload Capacity: 22.96 LCY

Truck Bed (volume) Basis:

Struck Volume:	17.10	LCY
Heaped Volume:	22.10	LCY
Average Volume:	19.60	LCY
Adjusted Volume:	22.10	LCY

Final Truck Volume Based on Number of Loader Passes: **20.63** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	5.000	LCY (heaped)
Bucket Fill Factor:	0.825	Blasted rock - avg. blasted (75 - 90%) 0.825
Adjusted Capacity:	**4.125**	LCY

Job Condition Corrections: Site Altitude (ft.): 6200 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: 5 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(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:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.060	minutes
	Adjusted Loader Cycle Time:	**0.440**	minutes
	Net Load Time per Truck:	**1.860**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.600	Minutes
Truck Load Time:	1.860	Minutes	Adjusted for site altitude:	1.860	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.000	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Very hard, smooth, asphalt or concrete, no tire penetration 1.2

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4500.00	5.00	1.20	6.20	1122	4.083

Haul Time: **4.083** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4500.00	-5.00	1.20	-3.80	3064	1.514

Return Time: **1.514** minutes
Total Truck Cycle Time: **9.057** minutes

Loading Tool unit Production: 503.05 LCY/Hour — Adjusted for job efficiency: 417.53 LCY/Hour

Truck Unit Production: 136.63 LCY/Hour — Adjusted for job efficiency: 113.41 LCY/Hour

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

Adjusted hourly truck team production: 453.63 LCY/Hour
Adjusted single truck/loader team production: 417.53 LCY/Hour
Adjusted multiple truck/loader team production: **417.53** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **12.88** Hours

Unit cost: $2.991 /LCY — Total job cost: **$16,087**

TRUCK/LOADER TEAM WORK

Task description: **Haul/dump fines @ east edge of bench (10" over 3 ac)**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #:	B06	State:	Colorado	Abbreviation:	None
Date:	9/12/2023	County:	Fremont	Filename:	B06
User:	TC1				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
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:	$108.06	$65.69	NA	$241.38	NA	$11.35
Operating cost/hour:	$71.88	$48.09	NA	$143.92	NA	$22.92
%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:	$32.54	$40.71	NA	$41.30	NA	$0.00
Unit Subtotals:	$212.48	$154.49	NA	$426.60	NA	$34.27
Number of Units:	3	1	0	1	0	1
Group Subtotals:	Work: $791.93		Support: $426.60		Maint: $34.27	

Total work team cost/hour: **$1,252.80**

MATERIAL QUANTITIES

Initial volume: 4,033 CCY Swell factor: 1.000
Loose volume: **4,033** LCY

Source of estimated volume: Exhibit L, Task B6, assume average of 10"
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: 2,700 Pounds/LCY
Description: Sand and clay - Loose
Rated Payload: 62,000 Pounds
Payload Capacity: 22.96 LCY

Truck Bed (volume) Basis:

Struck Volume:	17.10	LCY
Heaped Volume:	22.10	LCY
Average Volume:	19.60	LCY
Adjusted Volume:	22.10	LCY

Final Truck Volume Based on Number of Loader Passes: **20.63** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	5.000	LCY (heaped)
Bucket Fill Factor:	0.825	Blasted rock - avg. blasted (75 - 90%) 0.825
Adjusted Capacity:	**4.125**	LCY

Job Condition Corrections: Site Altitude (ft.): 6200 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: 5 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(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:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.060	minutes
	Adjusted Loader Cycle Time:	**0.440**	minutes
	Net Load Time per Truck:	**1.860**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.600	Minutes
Truck Load Time:	1.860	Minutes	Adjusted for site altitude:	1.860	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.000	Minutes

Truck Travel (Haul & Return) Time: Road Condition: Very hard, smooth, asphalt or concrete, no tire penetration 1.2

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3500.00	5.00	1.20	6.20	1122	3.191

Haul Time: **3.191** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3500.00	-5.00	1.20	-3.80	3064	1.178

Return Time: **1.178** minutes
Total Truck Cycle Time: **7.829** minutes

Loading Tool unit Production 503.05 LCY/Hour — Adjusted for job efficiency: 417.53 LCY/Hour

Truck Unit Production 158.07 LCY/Hour — Adjusted for job efficiency: 131.19 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) — Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 393.58 LCY/Hour
Adjusted single truck/loader team production: 393.58 LCY/Hour
Adjusted multiple truck/loader team production: **393.58** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **10.25** Hours

Unit cost: $3.183 /LCY — Total job cost: **$12,837**

REVEGETATION WORK

Task description: **Reveg #1 face - hydrospray**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: B07 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: B07
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
10-34-0, 18-46-0, 5-10-5	380.00	pound	$0.50	$188.75
			Total Fertilizer Materials Cost/Acre	**$188.75**

Application

Description	**Cost /Acre**
Hydro spreader (MEANS 32 01 90.13 0180)	$247.86
Total Fertilizer Application Cost/Acre	**$247.86**

TILLING

Description	**Cost /Acre**
Weed control spraying (MEANS 31 31 16.13 3100)	$338.80
Total Tilling Cost/Acre	**$338.80**

SEEDING

Seed Mix	**Rate – PLS LBS / Acre**	**Seeds per SQ. FT**	**Cost /Acre**
Indian Ricegrass - Paloma	3.00	9.71	$33.38
Crown Vetch - Emerald	2.00	5.05	$25.97
Sand Dropseed	0.20	23.88	$1.95
Mountain Brome - Bromar	3.40	5.46	$12.92
Crested Wheatgrass - Nordan	1.40	6.43	$5.46
Russian Wildrye - Bozoisky	2.00	8.03	$12.96
Alfalfa - Ladak (inoculated)	0.20	0.96	$0.51
Milk Vetch, Cicer - Lutana	1.40	4.66	$11.48
Thickspike Wheatgrass - Critana	1.40	4.95	$9.63
Rabbitbrush, Rubber	0.02	0.30	$1.29
Needlegrass, Green - Lodorm	2.80	11.63	$32.97

Flax, Lewis Blue	1.00	6.63	$16.50
Saltbush, Four Wing	1.00	1.38	$12.50
Winter Fat	1.60	4.08	$32.80
Penstemon, Palmer	1.40	30.96	$76.30
Totals Seed Mix	22.82	124.11	**$286.61**

Application

Description	**Cost /Acre**
Hydro seeding (MEANS 32 92 19.14 0200)	$1,313.33
Total Seed Application Cost/Acre	**$1,313.33**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$429.79	$859.57
Total Mulch Materials Cost/Acre				**$859.57**

Application

Description	**Cost /Acre**
Hydromulching (MEANS 32 92 19.13 1100)	$1,306.80
Total Mulch Application Cost/Acre	**$1,306.80**

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: 1.4
Estimated Failure Rate: 25%
*Selected Replanting Work Items: FERTILIZING,SEEDING,MULCHING

Cost /Acre: $4,541.72
Cost /Acre*: $4,202.92

Initial Job Cost: **$6,358.41**
Reseeding Job Cost: **$1,471.02**
Total Job Cost: **$7,829**
Job Hours: **2.00**

REVEGETATION WORK

Task description: **Reveg benches #2 & 4 - Drill Seed**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: B89 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: B89
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
10-34-0, 18-46-0, 5-10-5	380.00	pound	$0.50	$188.75
			Total Fertilizer Materials Cost/Acre	**$188.75**

Application

Description	**Cost /Acre**
Hydro spreader (MEANS 32 01 90.13 0180)	$247.86
Total Fertilizer Application Cost/Acre	**$247.86**

TILLING

Description	**Cost /Acre**
Weed control spraying (MEANS 31 31 16.13 3100)	$338.80
Total Tilling Cost/Acre	**$338.80**

SEEDING

Seed Mix	**Rate – PLS LBS / Acre**	**Seeds per SQ. FT**	**Cost /Acre**
Indian Ricegrass - Paloma	1.50	4.86	$16.69
Crown Vetch - Emerald	1.00	2.53	$12.99
Sand Dropseed	0.10	11.94	$0.98
Mountain Brome - Bromar	1.70	2.73	$6.46
Crested Wheatgrass - Nordan	0.70	3.21	$2.73
Russian Wildrye - Bozoisky	1.00	4.02	$6.48
Alfalfa - Ladak (inoculated)	0.10	0.48	$0.26
Milk Vetch, Cicer - Lutana	0.70	2.33	$5.74
Thickspike Wheatgrass - Critana	0.70	2.47	$4.81
Rabbitbrush, Rubber	0.01	0.15	$0.64
Needlegrass, Green - Lodorm	1.40	5.82	$16.49

Flax, Lewis Blue	0.50	3.32	$8.25
Saltbush, Four Wing	0.50	0.69	$6.25
Winter Fat	0.80	2.04	$16.40
Penstemon, Palmer	0.70	15.48	$38.15
Totals Seed Mix	11.41	62.06	**$143.30**

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
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$429.79	$859.57
Total Mulch Materials Cost/Acre				**$859.57**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$74.46
Total Mulch Application Cost/Acre	**$74.46**

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: 10
Estimated Failure Rate: 25%
*Selected Replanting Work Items: FERTILIZING,SEEDING,MULCHING

Cost /Acre: $2,084.74
Cost /Acre*: $1,745.94

Initial Job Cost: **$20,847.40**
Reseeding Job Cost: **$4,364.85**
Total Job Cost: **$25,212**
Job Hours: **20.00**

TRUCK/LOADER TEAM WORK

Task description: **Haul rock for Old Quarry Fines DA riprap channel**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: C01 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: C01
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	NA
-Dump Area:	NA
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	NA	NA	100
Ownership cost/hour:	$108.06	$65.69	NA	NA	NA	$11.35
Operating cost/hour:	$71.88	$48.09	NA	NA	NA	$22.92
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	NA	NA	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	$0.00
Operator cost/hour:	$32.54	$40.71	NA	NA	NA	$0.00
Unit Subtotals:	$212.48	$154.49	NA	NA	NA	$34.27
Number of Units:	3	1	0	0	0	1
Group Subtotals:	Work: $791.93		Support: $0.00		Maint: $34.27	

Total work team cost/hour: **$826.20**

MATERIAL QUANTITIES

Initial volume: 1,000 CCY Swell factor: 1.000
Loose volume: **1,000** LCY

Source of estimated volume: TR-03, page A-18
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: 2,800 Pounds/LCY
Description: Granite - Broken
Rated Payload: 62,000 Pounds
Payload Capacity: 22.14 LCY

Truck Bed (volume) Basis:

Struck Volume:	17.10	LCY
Heaped Volume:	22.10	LCY
Average Volume:	19.60	LCY
Adjusted Volume:	22.10	LCY

Final Truck Volume Based on Number of Loader Passes: **20.63** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	5.000	LCY (heaped)
Bucket Fill Factor:	0.825	Blasted rock - avg. blasted (75 - 90%) 0.825
Adjusted Capacity:	**4.125**	LCY

Job Condition Corrections: Site Altitude (ft.): 6200 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: 5 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): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 6" and over diameter 0.03	0.030	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.040	minutes
	Adjusted Loader Cycle Time:	**0.460**	minutes
	Net Load Time per Truck:	**1.940**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.600	Minutes
Truck Load Time:	1.940	Minutes	Adjusted for site altitude:	1.940	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.000	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	4000.00	-5.00	3.00	-2.00	3064	1.360

Haul Time: **1.360** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	4000.00	5.00	3.00	8.00	1903	2.195

Return Time: **2.195** minutes
Total Truck Cycle Time: **7.095** minutes

Loading Tool unit Production: 487.20 LCY/Hour — Adjusted for job efficiency: 404.38 LCY/Hour

Truck Unit Production: 174.42 LCY/Hour — Adjusted for job efficiency: 144.77 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) — Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 434.30 LCY/Hour
Adjusted single truck/loader team production: 404.38 LCY/Hour
Adjusted multiple truck/loader team production: **404.38** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) — Total job time: **2.47** Hours

Unit cost: $2.043 /LCY — Total job cost: **$2,043**

Post-Mining Drainage Channel Construction (Ditches)

Task description: **Construct 450 ft rock-lined channel**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: C02 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: C02
User: TC1

Agency or organization name: DRMS

Channel	Length (ft)	Depth (ft)	Width (bottom) (ft)	Side Slopes (XH:1V)	Width (top) (ft)	Excavated Vol./LF (CY)	Excavated Vol. (total) (CY)
1	450	4.00	6.00	2.00	22.00	2.0741	933
Totals:	450						933

Riprap	Riprap Thickness (2xD50) (ft)	Perimeter, P (ft)	Area for Geotextile (excl. anchor trenches) (sf)	Riprap Vol. (CY)
	2.50	23.89	10,750	995
Totals:			10,750	995

Materials Needed:

Geotextile (SY incl. 15% wastage): 1,374
Riprap (CY): 995
Excavation (CY): 933

Costs:

	Geotextile (SY):		Riprap (CY):		Excavation (CY):	
Material Costs:		$3.30		$34.50		$0.00
Labor Cost:		$0.32		$14.65		$2.84
Equipment Cost:		$0.00		$15.10		$2.39
Means Reference	31 32 1916 1510		31 37 1310 0100		31 23 1642 0310	

Totals:

Geotextile (SY): $4,972.40
Riprap (CY): $63,951.62
Excavation (CY): $4,881.33

Hours:

Geotextile (SY): 87.50 SY/HR — 15.70
Riprap (CY): 7.75 CY/HR — 128.43
Excavation (CY): 40.00 CY/HR — 23.33

Total Post-Mining Channel Reconstruction hours: **167.46** Hours
Total Post-Mining Channel Reconstruction Cost: **$73,805**

REVEGETATION WORK

Task description: **Reveg old quarry fines disposal slope area - hydrospray**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: C03 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: C03
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	380.00	pound	$0.50	$188.75
			Total Fertilizer Materials Cost/Acre	**$188.75**

Application

Description	Cost /Acre
Hydro spreader (MEANS 32 01 90.13 0180)	$247.86
Total Fertilizer Application Cost/Acre	**$247.86**

TILLING

Description	Cost /Acre
Weed control spraying (MEANS 31 31 16.13 3100)	$338.80
Total Tilling Cost/Acre	**$338.80**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Paloma	3.00	9.71	$33.38
Crown Vetch - Emerald	2.00	5.05	$25.97
Sand Dropseed	0.20	23.88	$1.95
Mountain Brome - Bromar	3.40	5.46	$12.92
Crested Wheatgrass - Nordan	1.40	6.43	$5.46
Russian Wildrye - Bozoisky	2.00	8.03	$12.96
Alfalfa - Ladak (inoculated)	0.20	0.96	$0.51
Milk Vetch, Cicer - Lutana	1.40	4.66	$11.48
Thickspike Wheatgrass - Critana	1.40	4.95	$9.63
Rabbitbrush, Rubber	0.02	0.30	$1.29
Needlegrass, Green - Lodorm	2.80	11.63	$32.97

Flax, Lewis Blue	1.00	6.63	$16.50
Saltbush, Four Wing	1.00	1.38	$12.50
Winter Fat	1.60	4.08	$32.80
Penstemon, Palmer	1.40	30.96	$76.30
Totals Seed Mix	22.82	124.11	**$286.61**

Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	$1,313.33
Total Seed Application Cost/Acre	**$1,313.33**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$429.79	$859.57
Total Mulch Materials Cost/Acre				**$859.57**

Application

Description	Cost /Acre
Hydromulching (MEANS 32 92 19.13 1100)	$1,306.80
Total Mulch Application Cost/Acre	**$1,306.80**

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: 1
Estimated Failure Rate: 25%
*Selected Replanting Work Items: FERTILIZING, SEEDING, MULCHING

Cost /Acre: $4,541.72
Cost /Acre*: $4,202.92

Initial Job Cost: **$4,541.72**
Reseeding Job Cost: **$1,050.73**
Total Job Cost: **$5,592**
Job Hours: **2.00**

REVEGETATION WORK

Task description: **Reveg Old Quarry fines disposal open area - Drill Seed**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: C04 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: C04
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	380.00	pound	$0.50	$188.75
			Total Fertilizer Materials Cost/Acre	**$188.75**

Application

Description	Cost /Acre
Hydro spreader (MEANS 32 01 90.13 0180)	$247.86
Total Fertilizer Application Cost/Acre	**$247.86**

TILLING

Description	Cost /Acre
Weed control spraying (MEANS 31 31 16.13 3100)	$338.80
Total Tilling Cost/Acre	**$338.80**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Paloma	1.50	4.86	$16.69
Crown Vetch - Emerald	1.00	2.53	$12.99
Sand Dropseed	0.10	11.94	$0.98
Mountain Brome - Bromar	1.70	2.73	$6.46
Crested Wheatgrass - Nordan	0.70	3.21	$2.73
Russian Wildrye - Bozoisky	1.00	4.02	$6.48
Alfalfa - Ladak (inoculated)	0.10	0.48	$0.26
Milk Vetch, Cicer - Lutana	0.70	2.33	$5.74
Thickspike Wheatgrass - Critana	0.70	2.47	$4.81
Rabbitbrush, Rubber	0.01	0.15	$0.64
Needlegrass, Green - Lodorm	1.40	5.82	$16.49

Flax, Lewis Blue	0.50	3.32	$8.25
Saltbush, Four Wing	0.50	0.69	$6.25
Winter Fat	0.80	2.04	$16.40
Penstemon, Palmer	0.70	15.48	$38.15
Totals Seed Mix	11.41	62.06	**$143.30**

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
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$429.79	$859.57
Total Mulch Materials Cost/Acre				**$859.57**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$74.46
Total Mulch Application Cost/Acre	**$74.46**

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
Estimated Failure Rate: 25%
*Selected Replanting Work Items: FERTILIZING, SEEDING, MULCHING

Cost /Acre: $2,084.74
Cost /Acre*: $1,745.94

Initial Job Cost: **$4,169.48**
Reseeding Job Cost: **$872.97**
Total Job Cost: **$5,042**
Job Hours: **4.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mob/Demob Equipment**

Site: **Cañon Dolomite Quarry** Permit Action: SO-5 Permit/Job#: M1977376

PROJECT IDENTIFICATION

Task #: M10 State: Colorado Abbreviation: None
Date: 9/12/2023 County: Fremont Filename: M10
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:	$20.26	$36.04	$47.05
Operating Cost/Hour:	$39.51	$76.08	$82.85
Operator Cost/Hour:	$22.52	$22.52	$22.52
Helper Cost/Hour:	$0.00	$23.53	$23.53
Total Unit Cost/Hour:	$82.29	$158.17	$175.95

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 730	25.19	$108.06	$82.29	4	$761.40	$329.16	$1,000.00
CAT 966H	25.80	$65.69	$82.29	1	$147.98	$82.29	$250.00
CAT 160M	17.53	$102.08	$82.29	1	$184.37	$82.29	$250.00
Cat D8T - 8SU	47.71	$241.38	$158.17	1	$399.55	$158.17	$250.00
Power Mulcher (Bowie LD-90)	6.00	$25.94	$82.29	1	$108.23	$82.29	$250.00
Hydroseeder with Tractor	28.00	$12.80	$158.17	1	$170.97	$158.17	$250.00
				Subtotals:	**$1,772.50**	**$892.37**	**$2,250.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	$34.27	1	$34.27	$34.27
		Subtotals:	**$34.27**	**$34.27**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	CAÑON CITY	
Total one-way travel distance:	4.00	miles
Average Travel Speed:	30.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$6,983.13	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$9.14	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.13	0.13
Return Time (Hours):	0.13	0.13
Loading Time (Hours):	0.25	NA
Unloading Time (Hours):	0.25	NA
Subtotals:	0.77	0.27

JOB TIME AND COST

Total job time: **1.53** Hours

Total job cost: **$6,992**