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: T.H.E. Aggregate Source	**MINE/PROSPECTING ID#:** M-1977-193	**MINERAL:** Granite, granite gneis and gravel	**COUNTY:** Fremont
INSPECTION TYPE: Surety-Related Inspection	**WEATHER:** Clear	**INSP. DATE:** September 14, 2023	**INSP. TIME:** 10:00
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:** $913,998.00	
DATE OF COMPLAINT: NA	**POST INSP. CONTACTS:** None	**JOINT INSP. AGENCY:** None	
INSPECTOR(S): Timothy Cazier, P.E.	**INSPECTOR'S SIGNATURE:** 	**SIGNATURE DATE:** September 15, 2023	

GENERAL INSPECTION TOPICS

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

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

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

OBSERVATIONS

This inspection was conducted in conjunction with two other Succession of Operator (SO) inspections (M-1977-376 and M-2007-014). The Permittee (Holcim-WCR) was represented by Lu Toxvard and Kurt Thurmann who were present during the inspection. The Aggregate Source Pit is accessed from US Hwy 50, just west of the intersection with Tunnel Drive approximately 1.5 miles west of Cañon City. This is a 112c stone and gravel mine. It was operating at the time of the inspection.

As the site was last inspected on May 17, 2023, a complete inspection was not necessary. The succession of operation application was called complete for the purpose of filing on 9/8/2023. 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. I explained the bond requires a separate accounting between the private land and the federal land on the west for bond tracking purposes by the Bureau of Land Management (BLM).

Site representatives explained their solution to mining the ridge, which was the primary focus of the May inspection. The plan is to mine the ridge from east to west and develop a catch bench along the base of the advancing highwall to capture rock fall due to blasting the narrow ridge.

Inspection Contact Address

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

Enclosure: Draft Bond Estimate with Federal vs Private Land breakout

ec: DRMS file
Ray Ogle, BLM

M-1977-193 SO-2 Bond Split: Private vs Federal

Private/Federal Split Calc.

				Tasks 110 - 190 & 551 - 555	*Tasks 210 - 505*
			SO-2 Combined	**SO-2 Private**	**SO-2 Federal**
Total Direct cost:			$ 1,206,646.00	$ 989,128.00	$ 217,518.00
Liability insurance:	2.02%		$ 24,374.25	$ 19,980.39	$ 4,393.86
Performance bond:	1.05%		$ 12,669.78	$ 10,385.84	$ 2,283.94
Job superintendent:	556.765	Hrs @ $65.08	$ 36,234.27	$ 29,705.12	$ 6,529.15
hours split:				456.44	100.325
Profit:	10%		$ 120,664.60	$ 98,912.80	$ 21,751.80
TOTAL O&P:			$ 193,942.90	$ 158,984.14	$ 34,958.75
CONTRACT AMOUNT (direct + O & P)			$ 1,400,588.90	$ 1,148,112.14	$ 252,476.75
Financial warranty processing (legal/related costs):	$ 500.00		$ 500.00	$ 500.00	$ -
Engineering work and/or contract/bid preparation:	4.25%		$ 59,525.03	$ 48,794.77	$ 10,730.26
Reclamation management and/or administration:	5.00%		$ 70,029.44	$ 57,405.61	$ 12,623.84
		TOTAL INDIRECT COST =	$ 323,997.37	$ 265,684.52	$ 58,312.85
		TOTAL BOND AMOUNT (direct + indirect) =	$ 1,530,643.37	$ 1,254,812.52	$ 275,830.85

DRAFT – Pre-SO-2 Inspection

COST SUMMARY WORK

Task description: **Cost Summary**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: M193-000
User: TC1

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
110	Phase 1- Replace Topsoil (12" over 123.3 ac)	SCRAPER1	1	392.04	$257,897
120	Phase 1- Rough Grade Topsoil (10% of Task 110 area)	GRADER	1	8.94	$1,421
130	Phase 1- Rip Pit Floor	RIPPER	1	198.91	$52,141
140	Phase 1- Reseed Dist Area (pit flr, borrow area & rd easm't)	REVEGE	1	123.00	$518,642
150	Phase 1- Bench Ditch Maintenance	DOZERGRADER	1	5.00	$1,028
170	Permanent Structure Demolition	DEMOLISH	1	80.00	$37,557
190	Mob/Demob	MOBILIZE	1	1.40	$3,473
210	Phase 2 BLM- Replace Topsoil (12" over 14.3 ac)	SCRAPER1	1	45.47	$29,911
220	Phase 2 BLM- Rough Grade Topsoil (10% of Task 210 area)	GRADER	1	1.04	$165
230	Phase 2 BLM- Rip Pit Floor	RIPPER	1	23.07	$6,047
240	Phase 2 BLM- Reseed	REVEGE	1	14.00	$60,151
250	Phase 2 BLM- Bench Ditch Maintenance	DOZERGRADER	1	2.00	$411
310	Phase 3 BLM- Replace Topsoil (12" over 7.8 ac)	SCRAPER1	1	24.80	$16,315
320	Phase 3 BLM- Rough Grade Topsoil (10% of Task 310 area)	GRADER	1	0.56	$90
330	Phase 3 BLM- Rip Pit Floor	RIPPER	1	12.58	$3,298
340	Phase 3 BLM- Reseed	REVEGE	1	8.00	$32,809
350	Phase 3 BLM- Bench Ditch Maintenance	DOZERGRADER	1	3.45	$709
410	Phase 4 BLM- Replace Topsoil (12" over 7.1 ac)	SCRAPER1	1	22.57	$14,850
420	Phase 4 BLM- Rough Grade Topsoil (10% of Task 410 area)	GRADER	1	0.51	$82
430	Phase 4 BLM- Rip Pit Floor	RIPPER	1	11.45	$3,002
440	Phase 4 BLM- Reseed	REVEGE	1	7.00	$29,865
450	Phase 4 BLM- Bench Ditch Maintenance	DOZERGRADER	1	3.22	$662
501	Phase 5 BLM- Replace Topsoil (12" over 2.7 ac)	SCRAPER1	1	8.58	$5,647
502	Phase 5 BLM- Rough Grade Topsoil (10% of Task 501 area)	GRADER	1	0.51	$82
503	Phase 5 BLM- Rip Pit Floor	RIPPER	1	4.35	$1,142
504	Phase 5 BLM- Reseed	REVEGE	1	3.00	$11,357
505	Phase 5 BLM- Bench Ditch Maintenance	DOZERGRADER	1	4.49	$923

551	Phase 5 Tezak- Replace Topsoil (12" over 17.3 ac)	SCRAPER1	1	55.01	$36,186
552	Phase 5 Tezak- Rough Grade (10% of Task 551 area)	GRADER	1	1.25	$200
553	Phase 5 Tezak- Rip Pit Floor	RIPPER	1	27.91	$7,316
554	Phase 5 Tezak- Reseed	REVEGE	1	17.00	$72,770
555	Phase 5 Tezak- Bench Ditch Maintenance	DOZERGRADER	1	2.42	$497
		SUBTOTALS:		**1113.53**	**$1,206,646**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$24,374
Performance bond:	1.05	Total =	$12,670
Job superintendent:	556.77	Total =	$36,234
Profit:	10.00	Total =	$120,665
		TOTAL O & P =	$193,943
		CONTRACT AMOUNT (direct + O & P) =	$1,400,589

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$500	Total =	$500
Engineering work and/or contract/bid preparation:	4.25	Total =	$59,525
Reclamation management and/or administration:	5.00		$70,029
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$323,997
		TOTAL BOND AMOUNT (direct + indirect) =	**$1,530,643**

SCRAPER TEAM WORK

Task description: **Phase 1- Replace Topsoil (12" over 123.3 ac)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 110 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 110
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COST Shift basis: 1 per day

	Equipment Description
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	$341.67	NA	NA	NA	NA	NA
Operating cost/hour:	$285.26	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	$657.83	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	$657.83	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$657.83**

MATERIAL QUANTITIES

Initial volume: 198,924 CCY Swell factor: 1.125
Loose volume: **223,790** LCY

Source of estimated volume: TR10 application
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 2,650 lbs/LCY
Material description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 81,600 pounds
Payload Capacity: 30.79 LCY

Scraper Bowl (volume) Basis:

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **29.00** LCY

Cycle Time:

Scraper Loading Time: 0.80 Minutes
Maneuver and Spread Time: 0.70 Minutes

Job Condition Correction: Site Altitude: 5600 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	3.00	5.00	8.00	783	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: **0.36** minutes

Total Scraper team cycle time: **2.53** minutes
Adjusted for job conditions: 570.83 LCY/Hour
Selected Number of Scrapers: 1 Scraper(s)
Adjusted single scraper team (unit) hourly production: 570.83 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **570.83** LCY/Hour

Unadjusted unit production/hour: 687.75 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **392.04** Hours

Unit cost: $1.152 /LCY Total job cost: **$257,897**

MOTOR GRADER WORK

Task description: **Phase 1- Rough Grade Topsoil (10% of Task 110 area)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 120 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 120
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$74.98	NA
Operating Cost/Hour:	$55.26	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$158.80	
Total Fleet Cost/Hour:	**$158.80**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 12.30 acres

Source of estimated acreage: TR10 application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 5600 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **8.95** Hours

Unit cost: $115.53 per acre Total job cost: **$1,421**

BULLDOZER RIPPING WORK

Task description: **Phase 1- Rip Pit Floor**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 130 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 130
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II Horsepower: 240
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$114.76	NA
Operating Cost/Hour:	$91.98	100
Ripper Ownership Cost/Hour:	$9.06	NA
Ripper Operating Cost/Hour:	$5.02	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$262.12	

Total Fleet Cost/Hour: **$262.12**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 123.30 acres Rip Depth (ft): 1.00 Volume: 198,924 BCY or CCY

Source of estimated quantity: TR10 Application

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.45 feet/pass
Average Ripping Width: 6.50 feet/pass
Average Ripping Length: 400.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.747 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr

Site Altitude: 5,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **0.62** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **198.92** Hours

Unit cost: $422.878 Per acre Total job cost: **$52,141**

REVEGETATION WORK

Task description: **Phase 1- Reseed Dist Area (pit flr, borrow area & rd easm't)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 140 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 140
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.44	$132.00
Composted manure DRMS Survey	2,000.00	pound	$0.43	$850.00
			Total Fertilizer Materials Cost/Acre	**$982.00**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	$29.62
Tractor towed spreader (MEANS 32 01 90.13 0120)	$41.82
Total Fertilizer Application Cost/Acre	**$71.44**

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	$100.40
Total Tilling Cost/Acre	**$100.40**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	$7.99
Indian Ricegrass - Nespar	1.50	4.86	$13.31
Sideoats Grama - Butte	2.50	8.21	$22.50
Juniper, Single Seed	1.00	0.29	$75.33
Crested Wheatgrass - Standard	0.50	2.30	$2.08
Pine, Pinyon	1.00	0.03	$29.50
Mahogany, Mountain	1.50	2.03	$55.21
Needle and Thread	1.50	3.96	$62.78
Western Wheatgrass - Native	1.00	2.53	$6.00

Saltbush, Four Wing	2.50	3.44	$31.25
Winter Fat	1.50	3.82	$30.75
Totals Seed Mix	15.00	39.63	**$336.69**

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**
Straw, 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
Power mulcher (MEANS 32 91 13.16 0350)	$147.67
Total Mulch Application Cost/Acre	**$222.13**

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: 123.3 Cost /Acre: $2,804.23
Estimated Failure Rate: 50% Cost /Acre*: $2,804.23
*Selected Replanting Work Items: FERTILIZING, TILLING, SEEDING, MULCHING

Initial Job Cost: **$345,761.56**
Reseeding Job Cost: **$172,880.78**
Total Job Cost: **$518,642**
Job Hours: **123.00**

DOZERGRADER WORK

Task description: **Phase 1- Bench Ditch Maintenance**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 150 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 150
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K2 XL - 5P
Horsepower:
Blade Type:
Attachment: NA
Shift Basis: 1 per day
Data Source:

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$102.71	NA
Operating Cost/Hour:	$61.54	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: $205.55
Total Fleet Cost/Hour: **$205.55**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $205.55/LCY

Total job time: **5.00** Hours
Total job cost: **$1,028**

DEMOLITION WORK

Task description: **Permanent Structure Demolition**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 170 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 170
User: TC1

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 94.10 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Existing Office - single story	30'x40'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	9,600.00	CF	$0.38	$3,661.44
Existing Office Floor	30'x40'	Floor, concrete, demolition only, average reinforcing - 6 in. thick	1,200.00	SF	$1.20	$1,437.84
Office Addition - 2-story portion ONLY	30'x40'x16'	Bldg. (MN) demo./off-site disposal in approved landfill - Max. 15 mile haul	19,200.00	CF	$0.48	$9,279.36
Office Addition Mech. Room	8.5'x10'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	680.00	CF	$0.38	$259.35
Office Addition Vault (conc.)	9.5'x10'x8'	Bldg. (SC) demo./off-site disposal in approved landfill - Max. 15 mile haul	760.00	CF	$0.64	$485.41
Office Addition Floor	30'x40'+18'x10'	Floor, concrete, demolition only, average reinforcing - 6 in. thick	1,380.00	SF	$1.20	$1,653.52
Water Tank Stor. bldg #1 (dirt floor)	35'x20'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	5,600.00	CF	$0.38	$2,135.84
Water Tank Stor. bldg #2 (dirt floor)	35'x15'x8'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	4,200.00	CF	$0.38	$1,601.88
Remove Pavement from Cañon City prop.	1000'x30'	Pavement, bituminous, demolition only - 3 in. thick	3,333.00	SY	$5.02	$16,731.66
Truck Scale Pit Floors (2)	70'x10' each	Demo. and on-site disposal in existing pit, 6 in. thick - Max. 10,000 ft. haul	1,400.00	SF	$1.26	$1,760.08
Truck Scale Pit Foundation	70'x20'	Demo. and on-site disposal in existing pit, 1.0 ft. x 2 ft. - Max. 10,000 ft. haul	180.00	LF	$5.03	$905.17

Job Hours: **80.00** **Subtotal (unadjusted):** **$39,911.55** **Total Cost (adjusted for location):** **$37,556.77**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mob/Demob**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 190 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 190
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 631G	52.50	$341.67	$175.95	1	$517.62	$175.95	$250.00
Cat D7R DS XR Series II	32.01	$114.76	$158.17	1	$272.93	$158.17	$250.00
CAT 12M	16.01	$74.98	$82.29	1	$157.27	$82.29	$250.00
Cat D5K2 XL - 5P	11.15	$102.71	$82.29	1	$185.00	$82.29	$250.00
Subtotals:					**$1,132.82**	**$498.70**	**$1,000.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Drill/Broadcast Seeder with Tractor	$14.81	1	$14.81	$14.81
Power Mulcher (Bowie LD-90)	$57.02	1	$57.02	$57.02
Subtotals:			**$71.83**	**$71.83**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	CAÑON CITY	
Total one-way travel distance:	3.00	miles
Average Travel Speed:	30.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$3,459.12	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$14.37	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.10	0.10
Return Time (Hours):	0.10	0.10
Loading Time (Hours):	0.25	NA
Unloading Time (Hours):	0.25	NA
Subtotals:	0.70	0.20

JOB TIME AND COST

Total job time:	**1.40**	Hours
Total job cost:	**$3,473**	

SCRAPER TEAM WORK

Task description: **Phase 2 BLM- Replace Topsoil (12" over 14.3 ac)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 210 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 210
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	$341.67	NA	NA	NA	NA	NA
Operating cost/hour:	$285.26	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	$657.83	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	$657.83	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$657.83**

MATERIAL QUANTITIES

Initial volume: 23,071 CCY Swell factor: 1.125
Loose volume: **25,955** LCY

Source of estimated volume: TR10 application
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,650 lbs/LCY
Material description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 81,600 pounds
Payload Capacity: 30.79 LCY

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **29.00** LCY

Cycle Time:

Scraper Loading Time: 0.80 Minutes
Maneuver and Spread Time: 0.70 Minutes

Job Condition Correction: Site Altitude: 5600 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	3.00	5.00	8.00	783	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: **0.36** minutes

Total Scraper team cycle time: **2.53** minutes
Adjusted for job conditions: 570.83 LCY/Hour
Selected Number of Scrapers: 1 Scraper(s)
Adjusted single scraper team (unit) hourly production: 570.83 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **570.83** LCY/Hour

Unadjusted unit production/hour: 687.75 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **45.47** Hours

Unit cost: $1.152 /LCY Total job cost: **$29,911**

MOTOR GRADER WORK

Task description: **Phase 2 BLM- Rough Grade Topsoil (10% of Task 210 area)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 220 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 220
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$74.98	NA
Operating Cost/Hour:	$55.26	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$158.80	
Total Fleet Cost/Hour:	**$158.80**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.43 acres

Source of estimated acreage: TR10 application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 5600 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.04** Hours

Unit cost: $115.53 per acre Total job cost: **$165**

BULLDOZER RIPPING WORK

Task description: **Phase 2 BLM- Rip Pit Floor**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 230 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 230
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II Horsepower: 240
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$114.76	NA
Operating Cost/Hour:	$91.98	100
Ripper Ownership Cost/Hour:	$9.06	NA
Ripper Operating Cost/Hour:	$5.02	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$262.12	

Total Fleet Cost/Hour: **$262.12**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 14.30 acres Rip Depth (ft): 1.00 Volume: 23,071 BCY or CCY

Source of estimated quantity: TR10 Application

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 1.00 feet/pass
Average Ripping Width: 6.50 feet/pass
Average Ripping Length: 400.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.747 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr

Site Altitude: 5,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **0.62** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **23.07** Hours

Unit cost: $422.878 Per acre Total job cost: **$6,047**

REVEGETATION WORK

Task description: **Phase 2 BLM- Reseed**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 240 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 240
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.44	$132.00
Composted manure DRMS Survey	2,000.00	pound	$0.43	$850.00
			Total Fertilizer Materials Cost/Acre	**$982.00**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	$29.62
Tractor towed spreader (MEANS 32 01 90.13 0120)	$41.82
Total Fertilizer Application Cost/Acre	**$71.44**

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	$100.40
Total Tilling Cost/Acre	**$100.40**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	$7.99
Indian Ricegrass - Nespar	1.50	4.86	$13.31
Sideoats Grama - Butte	2.50	8.21	$22.50
Juniper, Single Seed	1.00	0.29	$75.33
Crested Wheatgrass - Standard	0.50	2.30	$2.08
Pine, Pinyon	1.00	0.03	$29.50
Mahogany, Mountain	1.50	2.03	$55.21
Needle and Thread	1.50	3.96	$62.78
Western Wheatgrass - Native	1.00	2.53	$6.00

Saltbush, Four Wing	2.50	3.44	$31.25
Winter Fat	1.50	3.82	$30.75
Totals Seed Mix	15.00	39.63	**$336.69**

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**
Straw, 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
Power mulcher (MEANS 32 91 13.16 0350)	$147.67
Total Mulch Application Cost/Acre	**$222.13**

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: 14.3 Cost /Acre: $2,804.23
Estimated Failure Rate: 50% Cost /Acre*: $2,804.23
*Selected Replanting Work Items: FERTILIZING, TILLING, SEEDING, MULCHING

Initial Job Cost: **$40,100.49**
Reseeding Job Cost: **$20,050.24**
Total Job Cost: **$60,151**
Job Hours: **14.00**

DOZERGRADER WORK

Task description: **Phase 2 BLM- Bench Ditch Maintenance**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 250 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 250
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K2 XL - 5P
Horsepower:
Blade Type:
Attachment: NA
Shift Basis: 1 per day
Data Source:

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$102.71	NA
Operating Cost/Hour:	$61.54	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: $205.55
Total Fleet Cost/Hour: **$205.55**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $205.55/LCY

Total job time: **2.00** Hours
Total job cost: **$411**

SCRAPER TEAM WORK

Task description: **Phase 3 BLM- Replace Topsoil (12" over 7.8 ac)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 310 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 310
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	$341.67	NA	NA	NA	NA	NA
Operating cost/hour:	$285.26	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	$657.83	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	$657.83	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$657.83**

MATERIAL QUANTITIES

Initial volume: 12,584 CCY Swell factor: 1.125
Loose volume: **14,157** LCY

Source of estimated volume: TR10 application
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,650 lbs/LCY
Material description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 81,600 pounds
Payload Capacity: 30.79 LCY

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **29.00** LCY

Cycle Time:

Scraper Loading Time: 0.80 Minutes
Maneuver and Spread Time: 0.70 Minutes

Job Condition Correction: Site Altitude: 5600 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	3.00	5.00	8.00	783	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: **0.36** minutes

Total Scraper team cycle time: **2.53** minutes
Adjusted for job conditions: 570.83 LCY/Hour
Selected Number of Scrapers: 1 Scraper(s)
Adjusted single scraper team (unit) hourly production: 570.83 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **570.83** LCY/Hour

Unadjusted unit production/hour: 687.75 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **24.80** Hours

Unit cost: $1.152 /LCY Total job cost: **$16,315**

MOTOR GRADER WORK

Task description: **Phase 3 BLM- Rough Grade Topsoil (10% of Task 310 area)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 320 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 320
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$74.98	NA
Operating Cost/Hour:	$55.26	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$158.80	
Total Fleet Cost/Hour:	**$158.80**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.78 acres

Source of estimated acreage: TR10 application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 5600 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.57** Hours

Unit cost: $115.53 per acre Total job cost: **$90**

BULLDOZER RIPPING WORK

Task description: **Phase 3 BLM- Rip Pit Floor**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 330 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 330
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II Horsepower: 240
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$114.76	NA
Operating Cost/Hour:	$91.98	100
Ripper Ownership Cost/Hour:	$9.06	NA
Ripper Operating Cost/Hour:	$5.02	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$262.12	

Total Fleet Cost/Hour: **$262.12**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 7.80 acres Rip Depth (ft): 1.00 Volume: 12,584 BCY or CCY

Source of estimated quantity: TR10 Application

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	feet/pass
Average Ripping Width:	6.50	feet/pass
Average Ripping Length:	400.00	feet/pass
Average Dozer Speed:	88.00	feet/minute
Average Maneuver Time:	0.25	minutes/pass
Production per unit area:	0.747	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr

Site Altitude:	5,600	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **0.62** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **12.58** Hours

Unit cost: $422.878 Per acre Total job cost: **$3,298**

REVEGETATION WORK

Task description: **Phase 3 BLM- Reseed**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 340 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 340
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.44	$132.00
Composted manure DRMS Survey	2,000.00	pound	$0.43	$850.00
			Total Fertilizer Materials Cost/Acre	**$982.00**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	$29.62
Tractor towed spreader (MEANS 32 01 90.13 0120)	$41.82
Total Fertilizer Application Cost/Acre	**$71.44**

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	$100.40
Total Tilling Cost/Acre	**$100.40**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	$7.99
Indian Ricegrass - Nespar	1.50	4.86	$13.31
Sideoats Grama - Butte	2.50	8.21	$22.50
Juniper, Single Seed	1.00	0.29	$75.33
Crested Wheatgrass - Standard	0.50	2.30	$2.08
Pine, Pinyon	1.00	0.03	$29.50
Mahogany, Mountain	1.50	2.03	$55.21
Needle and Thread	1.50	3.96	$62.78
Western Wheatgrass - Native	1.00	2.53	$6.00

Saltbush, Four Wing	2.50	3.44	$31.25
Winter Fat	1.50	3.82	$30.75
Totals Seed Mix	15.00	39.63	**$336.69**

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**
Straw, 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
Power mulcher (MEANS 32 91 13.16 0350)	$147.67
Total Mulch Application Cost/Acre	**$222.13**

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: 7.8 Cost /Acre: $2,804.23
Estimated Failure Rate: 50% Cost /Acre*: $2,804.23
*Selected Replanting Work Items: FERTILIZING, TILLING, SEEDING, MULCHING

Initial Job Cost: **$21,872.99**
Reseeding Job Cost: **$10,936.50**
Total Job Cost: **$32,809**
Job Hours: **8.00**

DOZERGRADER WORK

Task description: **Phase 3 BLM- Bench Ditch Maintenance**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 350 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 350
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K2 XL - 5P
Horsepower:
Blade Type:
Attachment: NA
Shift Basis: 1 per day
Data Source:

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$102.71	NA
Operating Cost/Hour:	$61.54	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: $205.55
Total Fleet Cost/Hour: **$205.55**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $205.55/LCY

Total job time: **3.45** Hours
Total job cost: **$709**

SCRAPER TEAM WORK

Task description: **Phase 4 BLM- Replace Topsoil (12" over 7.1 ac)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 410 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 410
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	$341.67	NA	NA	NA	NA	NA
Operating cost/hour:	$285.26	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	$657.83	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	$657.83	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$657.83**

MATERIAL QUANTITIES

Initial volume: 11,454 CCY Swell factor: 1.125
Loose volume: **12,886** LCY

Source of estimated volume: TR10 application
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,650 lbs/LCY
Material description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 81,600 pounds
Payload Capacity: 30.79 LCY

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **29.00** LCY

Cycle Time:

Scraper Loading Time: 0.80 Minutes
Maneuver and Spread Time: 0.70 Minutes

Job Condition Correction: Site Altitude: 5600 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	3.00	5.00	8.00	783	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: **0.36** minutes

Total Scraper team cycle time: **2.53** minutes
Adjusted for job conditions: 570.83 LCY/Hour
Selected Number of Scrapers: 1 Scraper(s)
Adjusted single scraper team (unit) hourly production: 570.83 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **570.83** LCY/Hour

Unadjusted unit production/hour: 687.75 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **22.57** Hours

Unit cost: $1.152 /LCY Total job cost: **$14,850**

MOTOR GRADER WORK

Task description: **Phase 4 BLM- Rough Grade Topsoil (10% of Task 410 area)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 420 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 420
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$74.98	NA
Operating Cost/Hour:	$55.26	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$158.80	
Total Fleet Cost/Hour:	**$158.80**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.71 acres

Source of estimated acreage: TR10 application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 5600 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.52** Hours

Unit cost: $115.53 per acre Total job cost: **$82**

BULLDOZER RIPPING WORK

Task description: **Phase 4 BLM- Rip Pit Floor**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 430 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 430
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II Horsepower: 240
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$114.76	NA
Operating Cost/Hour:	$91.98	100
Ripper Ownership Cost/Hour:	$9.06	NA
Ripper Operating Cost/Hour:	$5.02	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$262.12	

Total Fleet Cost/Hour: **$262.12**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 7.10 acres Rip Depth (ft): 1.00 Volume: 11,455 BCY or CCY

Source of estimated quantity: TR10 Application

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 1.00 feet/pass
Average Ripping Width: 6.50 feet/pass
Average Ripping Length: 400.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.747 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr

Site Altitude: 5,600 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **0.62** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **11.45** Hours

Unit cost: $422.878 Per acre Total job cost: **$3,002**

REVEGETATION WORK

Task description: **Phase 4 BLM- Reseed**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 440 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 440
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.44	$132.00
Composted manure DRMS Survey	2,000.00	pound	$0.43	$850.00
			Total Fertilizer Materials Cost/Acre	**$982.00**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	$29.62
Tractor towed spreader (MEANS 32 01 90.13 0120)	$41.82
Total Fertilizer Application Cost/Acre	**$71.44**

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	$100.40
Total Tilling Cost/Acre	**$100.40**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	$7.99
Indian Ricegrass - Nespar	1.50	4.86	$13.31
Sideoats Grama - Butte	2.50	8.21	$22.50
Juniper, Single Seed	1.00	0.29	$75.33
Crested Wheatgrass - Standard	0.50	2.30	$2.08
Pine, Pinyon	1.00	0.03	$29.50
Mahogany, Mountain	1.50	2.03	$55.21
Needle and Thread	1.50	3.96	$62.78
Western Wheatgrass - Native	1.00	2.53	$6.00

Saltbush, Four Wing	2.50	3.44	$31.25
Winter Fat	1.50	3.82	$30.75
Totals Seed Mix	15.00	39.63	**$336.69**

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**
Straw, 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
Power mulcher (MEANS 32 91 13.16 0350)	$147.67
Total Mulch Application Cost/Acre	**$222.13**

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: 7.1 Cost /Acre: $2,804.23
Estimated Failure Rate: 50% Cost /Acre*: $2,804.23
*Selected Replanting Work Items: FERTILIZING, TILLING, SEEDING, MULCHING

Initial Job Cost: **$19,910.03**
Reseeding Job Cost: **$9,955.02**
Total Job Cost: **$29,865**
Job Hours: **7.00**

DOZERGRADER WORK

Task description: **Phase 4 BLM- Bench Ditch Maintenance**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 450 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 450
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K2 XL - 5P
Horsepower:
Blade Type:
Attachment: NA
Shift Basis: 1 per day
Data Source:

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$102.71	NA
Operating Cost/Hour:	$61.54	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: $205.55
Total Fleet Cost/Hour: **$205.55**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $205.55/LCY

Total job time: **3.22** Hours
Total job cost: **$662**

SCRAPER TEAM WORK

Task description: **Phase 5 BLM- Replace Topsoil (12" over 2.7 ac)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 501 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 501
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	$341.67	NA	NA	NA	NA	NA
Operating cost/hour:	$285.26	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	$657.83	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	$657.83	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$657.83**

MATERIAL QUANTITIES

Initial volume: 4,356 CCY Swell factor: 1.125
Loose volume: **4,901** LCY

Source of estimated volume: TR10 application
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,650 lbs/LCY
Material description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 81,600 pounds
Payload Capacity: 30.79 LCY

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **29.00** LCY

Cycle Time:

Scraper Loading Time: 0.80 Minutes
Maneuver and Spread Time: 0.70 Minutes

Job Condition Correction: Site Altitude: 5600 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	3.00	5.00	8.00	783	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: **0.36** minutes

Total Scraper team cycle time: **2.53** minutes
Adjusted for job conditions: 570.83 LCY/Hour
Selected Number of Scrapers: 1 Scraper(s)
Adjusted single scraper team (unit) hourly production: 570.83 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **570.83** LCY/Hour

Unadjusted unit production/hour: 687.75 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **8.58** Hours

Unit cost: $1.152 /LCY Total job cost: **$5,647**

MOTOR GRADER WORK

Task description: **Phase 5 BLM- Rough Grade Topsoil (10% of Task 501 area)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 502 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 502
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$74.98	NA
Operating Cost/Hour:	$55.26	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$158.80	
Total Fleet Cost/Hour:	**$158.80**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 0.71 acres

Source of estimated acreage: TR10 application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 5600 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.52** Hours

Unit cost: $115.53 per acre Total job cost: **$82**

BULLDOZER RIPPING WORK

Task description: **Phase 5 BLM- Rip Pit Floor**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 503 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 503
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II Horsepower: 240
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$114.76	NA
Operating Cost/Hour:	$91.98	100
Ripper Ownership Cost/Hour:	$9.06	NA
Ripper Operating Cost/Hour:	$5.02	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$262.12	

Total Fleet Cost/Hour: **$262.12**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 2.70 acres Rip Depth (ft): 1.00 Volume: 4,356 BCY or CCY

Source of estimated quantity: TR10 Application

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	feet/pass
Average Ripping Width:	6.50	feet/pass
Average Ripping Length:	400.00	feet/pass
Average Dozer Speed:	88.00	feet/minute
Average Maneuver Time:	0.25	minutes/pass
Production per unit area:	0.747	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr

Site Altitude:	5,600	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **0.62** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **4.36** Hours

Unit cost: $422.878 Per acre Total job cost: **$1,142**

REVEGETATION WORK

Task description: **Phase 5 BLM- Reseed**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 504 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 504
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.44	$132.00
Composted manure DRMS Survey	2,000.00	pound	$0.43	$850.00
			Total Fertilizer Materials Cost/Acre	**$982.00**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	$29.62
Tractor towed spreader (MEANS 32 01 90.13 0120)	$41.82
Total Fertilizer Application Cost/Acre	**$71.44**

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	$100.40
Total Tilling Cost/Acre	**$100.40**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	$7.99
Indian Ricegrass - Nespar	1.50	4.86	$13.31
Sideoats Grama - Butte	2.50	8.21	$22.50
Juniper, Single Seed	1.00	0.29	$75.33
Crested Wheatgrass - Standard	0.50	2.30	$2.08
Pine, Pinyon	1.00	0.03	$29.50
Mahogany, Mountain	1.50	2.03	$55.21
Needle and Thread	1.50	3.96	$62.78
Western Wheatgrass - Native	1.00	2.53	$6.00

Saltbush, Four Wing	2.50	3.44	$31.25
Winter Fat	1.50	3.82	$30.75
Totals Seed Mix	15.00	39.63	**$336.69**

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**
Straw, 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
Power mulcher (MEANS 32 91 13.16 0350)	$147.67
Total Mulch Application Cost/Acre	**$222.13**

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: 2.7 Cost /Acre: $2,804.23
Estimated Failure Rate: 50% Cost /Acre*: $2,804.23
*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MULCHING

Initial Job Cost: **$7,571.42**
Reseeding Job Cost: **$3,785.71**
Total Job Cost: **$11,357**
Job Hours: **3.00**

DOZERGRADER WORK

Task description: **Phase 5 BLM- Bench Ditch Maintenance**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 505 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 505
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K2 XL - 5P
Horsepower:
Blade Type:
Attachment: NA
Shift Basis: 1 per day
Data Source:

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$102.71	NA
Operating Cost/Hour:	$61.54	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: $205.55
Total Fleet Cost/Hour: **$205.55**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $205.55/LCY

Total job time: **4.49** Hours
Total job cost: **$923**

SCRAPER TEAM WORK

Task description: **Phase 5 Tezak- Replace Topsoil (12" over 17.3 ac)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 551 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 551
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	NA	NA
Ownership cost/hour:	$341.67	NA	NA	NA	NA	NA
Operating cost/hour:	$285.26	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	$30.90	NA	NA	NA	NA	NA
Unit Subtotals:	$657.83	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	$657.83	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$657.83**

MATERIAL QUANTITIES

Initial volume: 27,911 CCY Swell factor: 1.125
Loose volume: **31,400** LCY

Source of estimated volume: TR10 application
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Scraper Bowl (volume) Basis:

Material weight: 2,650 lbs/LCY
Material description: Decomposed rock - 25% Rock, 75% Earth
Rated Payload: 81,600 pounds
Payload Capacity: 30.79 LCY

Struck Volume: 24.00 LCY
Heaped Volume: 34.00 LCY
Average Volume: 29.00 LCY
Adjusted Capacity: **29.00** LCY

Cycle Time:

Scraper Loading Time: 0.80 Minutes
Maneuver and Spread Time: 0.70 Minutes

Job Condition Correction: Site Altitude: 5600 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	3.00	5.00	8.00	783	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	-3.00	5.00	2.00	2914	0.36

Return Time: **0.36** minutes

Total Scraper team cycle time: **2.53** minutes
Adjusted for job conditions: 570.83 LCY/Hour
Selected Number of Scrapers: 1 Scraper(s)
Adjusted single scraper team (unit) hourly production: 570.83 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **570.83** LCY/Hour

Unadjusted unit production/hour: 687.75 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **55.01** Hours

Unit cost: $1.152 /LCY Total job cost: **$36,186**

MOTOR GRADER WORK

Task description: **Phase 5 Tezak- Rough Grade (10% of Task 551 area)**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 552 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 552
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 12M Horsepower: 158
Ripper Attachment: Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$74.98	NA
Operating Cost/Hour:	$55.26	100
Ripper Ownership Cost/Hour:	$0.00	NA
Ripper Operating Cost/Hour:	$0.00	
Operator Cost/Hour:	$28.56	NA
Total Unit Cost/Hour:	$158.80	
Total Fleet Cost/Hour:	**$158.80**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.73 acres

Source of estimated acreage: TR10 application

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 10.40 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 8.40 feet
Unadjusted Hourly Unit Production: 1.5273 acres/hour

Job Condition Correction Factors Site Altitude: 5600 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.90	(1sh/d, fav.)
Net Correction:	0.9000	multiplier

Adjusted Hourly Unit Production: 1.3745 acres/Hour
Adjusted Hourly Fleet Production: **1.3745** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **1.26** Hours

Unit cost: $115.53 per acre Total job cost: **$200**

BULLDOZER RIPPING WORK

Task description: **Phase 5 Tezak- Rip Pit Floor**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 553 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 553
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D7R DS XR Series II Horsepower: 240
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$114.76	NA
Operating Cost/Hour:	$91.98	100
Ripper Ownership Cost/Hour:	$9.06	NA
Ripper Operating Cost/Hour:	$5.02	100
Operator Cost/Hour:	$41.30	NA
Total Unit Cost/Hour:	$262.12	

Total Fleet Cost/Hour: **$262.12**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 17.30 acres Rip Depth (ft): 1.00 Volume: 27,911 BCY or CCY

Source of estimated quantity: TR10 Application

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	feet/pass
Average Ripping Width:	6.50	feet/pass
Average Ripping Length:	400.00	feet/pass
Average Dozer Speed:	88.00	feet/minute
Average Maneuver Time:	0.25	minutes/pass
Production per unit area:	0.747	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.747 Acres/hr

Site Altitude:	5,600	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr
Adjusted Hourly Fleet Production: **0.62** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **27.91** Hours

Unit cost: $422.878 Per acre Total job cost: **$7,316**

REVEGETATION WORK

Task description: **Phase 5 Tezak- Reseed**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 554 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 554
User: TC1

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.44	$132.00
Composted manure DRMS Survey	2,000.00	pound	$0.43	$850.00
			Total Fertilizer Materials Cost/Acre	**$982.00**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 91 13.16 0950)	$29.62
Tractor towed spreader (MEANS 32 01 90.13 0120)	$41.82
Total Fertilizer Application Cost/Acre	**$71.44**

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	$100.40
Total Tilling Cost/Acre	**$100.40**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.50	8.16	$7.99
Indian Ricegrass - Nespar	1.50	4.86	$13.31
Sideoats Grama - Butte	2.50	8.21	$22.50
Juniper, Single Seed	1.00	0.29	$75.33
Crested Wheatgrass - Standard	0.50	2.30	$2.08
Pine, Pinyon	1.00	0.03	$29.50
Mahogany, Mountain	1.50	2.03	$55.21
Needle and Thread	1.50	3.96	$62.78
Western Wheatgrass - Native	1.00	2.53	$6.00

Saltbush, Four Wing	2.50	3.44	$31.25
Winter Fat	1.50	3.82	$30.75
Totals Seed Mix	15.00	39.63	**$336.69**

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**
Straw, 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
Power mulcher (MEANS 32 91 13.16 0350)	$147.67
Total Mulch Application Cost/Acre	**$222.13**

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: 17.3 Cost /Acre: $2,804.23
Estimated Failure Rate: 50% Cost /Acre*: $2,804.23
*Selected Replanting Work Items: FERTILIZING, TILLING, SEEDING, MULCHING

Initial Job Cost: **$48,513.18**
Reseeding Job Cost: **$24,256.59**
Total Job Cost: **$72,770**
Job Hours: **17.00**

DOZERGRADER WORK

Task description: **Phase 5 Tezak- Bench Ditch Maintenance**

Site: **T.H.E. Aggregate Source** Permit Action: SO-2 Permit/Job#: M1977193

PROJECT IDENTIFICATION

Task #: 555 State: Colorado Abbreviation: None
Date: 9/13/2023 County: Fremont Filename: 555
User: TC1

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K2 XL - 5P
Horsepower:
Blade Type:
Attachment: NA
Shift Basis: 1 per day
Data Source:

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$102.71	NA
Operating Cost/Hour:	$61.54	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: $205.55
Total Fleet Cost/Hour: **$205.55**

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $205.55/LCY

Total job time: **2.42** Hours
Total job cost: **$497**