December 23, 2015

Michael Anson Moffat Limestone Company P.O. Box 777 Craig, CO 81626



1313 Sherman Street, Room 215 Denver, CO 80203

RE: Juniper Quarry, Permit No. M-1982-141, Estimated Reclamation Costs Update

Dear Mr. Anson:

On November 24, 2015 the Division of Reclamation, Mining and Safety (Division) conducted a field inspection of the above mentioned site. During the inspection you expressed a desire to decrease Moffat Limestone Company's liabilities if possible. It was explained that typically the Division updates the reclamation cost estimate following a permit revision or a field inspection. Bond calculations are based on a combination of field observations and worst case scenario based on the approved reclamation permit. The calculations are based on what it would cost the State to hire a contractor to complete reclamation if an operator was unable to do so. Therefore, it is inherent that the costs will be more than what it costs the company to complete the required work.

In an effort to ensure the Financial Warranty for the above referenced site adequately reflects the actual current costs of fulfilling the requirements of the approved reclamation plan, the Colorado Division of Reclamation, Mining and Safety (Division) has updated the reclamation cost estimate (copy enclosed).

Division calculations estimate the cost to reclaim the above referenced site to be \$209,714. This is an increase of \$55,309 over the \$151,838 currently held by the Division. This estimate is based on conditions observed during the November 24, 2015 inspection.

On the inspection report it was noted that in several instances the actual disturbance was greater than what the mining and reclamation plans allowed. This inconsistency was cited as a problem, with the corrective actions to revise both plans. It is anticipated that pending the acceptance of the revisions the estimated liability may change. Please review the attached estimated bond and notes for input values there were changed to help guide you where ground conditions increased the liability as compared to the approved plan. Please review the enclosed figures as soon as possible and contact our office if any calculation errors are noted.

The operator should submit a Technical Revision, with the required \$216 revision fee, to update and clarify the mining and reclamation plans by *Thursday, March 10, 2016.*

If no Technical Revision to the mining and reclamation to resolve the inspection item is received by March 10, 2016 than it is the Divisions understanding that the operator has no objections to the bond calculated on December 8, 2015 for the amount of \$209,714 according the <u>current</u> permit conditions. At that time a Notice for Surety Increase will be issued for the above amount as required by the Act and Rules. Additionally the Division may find one or more violations for non-compliance with State Statutes, Rules and Regulations, and/or conditions specified in your permit for this site.



In the estimated bond it was noted that needle and thread grass was significantly more per pound when compared to the other grass species in the approved mix. In an effort to decrease liabilities Moffat Limestone Company may wish to revise their seed mix. Needle and thread grass could be replaced /supplemented with a comparable perennial cool season grass such as green needlegrass, prairie Junegrass, or Sanberg bluegrass. Or replaced/supplemented with a forb/shrub species such as, rubber rabbitbrush, big sagebrush, silver sagebrush or four-wing saltbush. Please note that in general forbs/shrubs tend to be only marginally less expensive than needle and thread. The rates and relative ratios may be adjusted but the total pounds of PLS/Acre should remain at or above 33 LBS of PLS/Acre for drill seeded.

When reviewing input values and how the current bond was calculated you suggested a different method of reclamation for the north highwall of the main pit. Currently blasting would be required to achieve proper grade and you thought backfilling may be more cost effective. As a note consolidated material may be sloped near vertical with benches while unconsolidated material must be no steeper than a 3:1. The Division tried this scenario. The use of a dozer to backfill the necessary 86,234 CCY to fill the trench to a 3:1 was marginally more expensive. However such quantities of backfilling would also require compaction and transporting of material across the pit which made this a far more expensive route (forms attached). Additionally you would need to certify that the necessary volume of material was available on site for backfill at all times or else the cost of importing fill would also have to be factored in. For this reason the Division will continue to estimate the bond using blasting with some minor grading unless otherwise dictated in a technical revision.

As indicated above blasting accounts for a large portion of the bond liability. If the operator certifies that all slopes will be left in a manner where no blast or significant contouring would be required in the event of bond forfeiture that item could be eliminated from the bond estimate entirely. This would require the operator to continually leave consolidated rock slopes stable with benches to break up the large walls and no need for additional rock scaling. All non-consolidate material along the highwalls would be no steeper than a 3:1. Items such as topsoiling and slope reductions of processing areas and stockpiles would remain unchanged.

The Division acknowledges that this estimated bond increase is substantial and largely due to the previous company owners deviating from their approved plans. The Division will allow for the 2016 construction season to make changes in the field as well as potential technical revisions before a notice of surety increase may be issued. Division Staff will inspection the site on or after September 15, 2016. At that time, the Division will ensure the Financial Warranty for the above referenced site adequately reflects the actual current costs of fulfilling the requirements of the approved reclamation plan. Staff will take into account any reclamation progress as well as changes resulting from any approved technical revisions.

If you require additional information, or have questions or concerns, please feel free to contact me. Amy Yeldell at the Division of Reclamation, Mining and Safety, 1313 Sherman St., Room 215, Denver, CO 80203. Direct contact can be made by phone at 970-254-8511 or via email at amy.yeldell@state.co.us

Sincerely,

Amy Yeldell

Environmental Protection Specialist Department of Natural Resources Division of Reclamation, Mining and Safety

Phone: (970) 254-8511 Fax: (970) 241-1516

Ec:

Russ Means, Senior EPS / Field Office Supervisor, Grand Junction DRMS

Enc:

Financial Warranty Cost Estimates

- Would also need a TR to certify stockpiled volume available for fill always or would not to add the cost to buy + import needed fill. -Backfill only 1 30K, plus transport 1/4 fill + compact 2/3 fill 2 dark.
Additional mab of applied equipment + support (water + goda) not accounted for ·Blusting + closing ~ #30 K

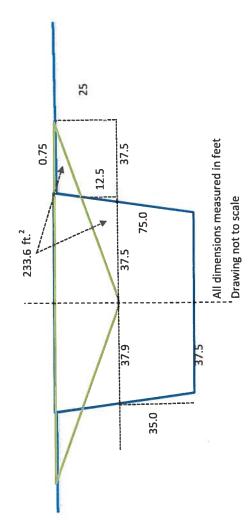
-DRMS will use for banding blasting + some beach grading backfill unless permit

Trench/hole reduction - cut and fill

					H:1V	3H:1V					
/north HW)	75.0	75.0	750	00.09	0.01 H:1V	3	350,391	12,977	1,977,938	73,257	
CN-1 Highwall reduction (grade Lower/north HW)	Top Width of Trench (ft.)	Top Bottom of Trench (ft.)	Length of Highwall (lft.)	Trench Height (ft.)	Initial Slope	Desired Slope	Top Cut & fill volume of material to be moved (ft.3)	Top Cut & Fill Volume of material to be moved (yd.3)	Bottom backfill volume of material to be moved (ft.3)	Bottom backfill Volume of material to be moved (yd. ³)	

2,328,328

Total volume of material to be moved (ft. ³) Total Volume of material to be moved (yd. ³)



M141-08a

Filename:

BULLDOZER WORK

Task description: CN1-Highwall reduction (grade Lower/ north HW) Site: Juniper Quarry Permit Action: Test Permit/Job#: M1982141 PROJECT IDENTIFICATION Task #: 08A State: Colorado Abbreviation: None

Moffat

County:

12/9/2015 User: **ACY**

> Agency or organization name: **DRMS**

HOURLY EQUIPMENT COST

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

Cost Breakdown:

Date:

Utilization % Ownership Cost/Hour: \$62.67 NA Operating Cost/Hour: \$108.22 100 Ripper op. Cost/Hour: \$0.00 0 Operator Cost/Hour: \$38.01 NA

Total unit Cost/Hour: Total Fleet Cost/Hour: \$208.90 \$208.90

MATERIAL QUANTITIES

Initial Volume: 86,234 Swell factor: 1.345 115,985 LCY Loose volume:

Source of estimated volume:

Backfill highwall trench 75'W x 60"H X 750'L

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Materials consistency description:

Rock, well ripped or blasted 0.8

Average push gradient: -30 % Average site altitude: 6,600 feet

Material weight:

2,600 lbs/LCY

Weight description: Limestone - Broken

Job Condition Correction Factor Source Operator Skill: 0.750 (AVG.) Material consistency: 0.800 (CAT HB) 1.000 Dozing method: (GEN.) Visibility: 1.000 (AVG.) Job efficiency: 0.830 (1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.885	(CAT HB)
Blade type:	1.000	(PAT)

Net correction:

0.5645

Adjusted unit production:

790.30 LCY/hr

Adjusted fleet production:

790.3 LCY/hr

JOB TIME AND COST

Fleet size:

1 Dozer(s)

Unit cost:

\$0.264/LCY

Total job time:

146.76 Hours

Total job cost:

\$30,659

COMPACTION WORK

	Permit Ac	etion: Test	Perm	nit/Job#: M19	982141
Task #: 08B Date: 12/14/2015 User: ACY	State: Colo County: Mof	orado fat	Abbrev File		e 1-08b
Agency or organ	-		400 772		
HOURLY EQUIPME	.				
Basic Machine Compactor Type			Horsepower: Shift Basis: Data Source:	354 1 per day (CRG)	
Cost Breakdown:			Utilization %		
	rship Cost/Hour:	\$62.10	NA		
	rating Cost/Hour:erator Cost/Hour:	\$116.14 \$28.75	100		
-	Unit Cost/Hour:	\$206.99	NA		
	Fleet Cost/Hour:	\$206.99	_		
MATERIAL QUANT	TITIES				
Loose volum	ne: 57,490	LCY	Shrink	age factor:	0.875
Compacted volum		CCY	Jii iii	age factor.	0.075
	arce of estimated volume: stimated shrinkage factor:	2/3 of backfill ma Cat Handbook	terial needed for the tre	ench	
HOURLY PRODUCT	<u>rion</u>	Unadjus	sted hourly production	$= (W \times S \times L)$	(C)/P
Con	npacted width per pass (W)	: 7.34	feet		
	erage Compactor Speed (S)		mph		
	ed thickness of each lift (L)		inches	21 105 5	
	Conversion Constant (C): mber of machine passes (P):			2in./27cu.ft.)	
	ted Hourly Unit Production		passes CCY/hour		
Job Condition Correction	•		itude: <u>6,600</u> feet		
	S	ource			
Altitude Adj:		AT HB)			
Ich Efficiency		hift/day)			
Job Efficiency:	0.8300 mul	tiplier			
Net Correction:					
Net Correction:A	djusted Hourly Unit Productions of the distribution of the distrib				
Net Correction:A	djusted Hourly Unit Produc				
Net Correction:A	djusted Hourly Unit Produc	3,177.6		15.83	Hours

TRUCK/LOADER TEAM WORK

Juniper Quar	ry	Perr	nit Action: Test	Permit/Job#:	M1982141
ROJECT ID	ENTIFICAT	<u> FION</u>			
Task #: 08	C	State:	Colorado	Abbreviation:	None
Date: 12	14/2015	_	N - CC- 4	7711	N/1/1 00a
User: AC	or organizati		Moffat MS	Filename: Shift basis: 1 per day	M141-08c
User: AC	Y or organizati	on name: DR	MS	Shift basis: 1 per day	M141-08C
User: AC	Y or organizati UIPMENT	on name: DR	MS Equipment Description	Shift basis: 1 per day	M141-08C
User: AC	Y or organizati UIPMENT	on name: <u>DR</u>	Equipment Description Cat 730	Shift basis: 1 per day	M141-08C
User: AC Agency OURLY EQ	or organizati UIPMENT Truck Load	cost er Team -Truck: -Loader: ent -Load Area:	Equipment Description Cat 730 CAT 972H NA	Shift basis: 1 per day	M141-08C
User: AC Agency [OURLY EQ St	or organization organizat	on name: <u>DR</u> COST er Team -Truck: -Loader:	Equipment Description Cat 730 CAT 972H NA NA	Shift basis: 1 per day	M141-08C

Cost Breakdown:	Truck/Loader Team		Support	Equipment	Maintenan	Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck	
%Utilization-machine:	100	100	NA	NA	NA	NA	
Ownership cost/hour:	\$35.72	\$38.44	NA	NA	NA	NA	
Operating cost/hour:	\$69.96	\$68.95	NA	NA	NA	NA	
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA	
Operator cost/hour:	\$26.72	\$37.13	NA	NA	NA	NA	
Unit Subtotals:	\$132.40	\$144.52	NA	NA	NA	NA	
Number of Units:	2	1	0	0	0	0	
Group Subtotals:	Work:	\$409.32	Support:	\$0.00	Maint:	\$0.00	

Total work team cost/hour: \$409.32

MATERIAL QUANTITIES

Initial volume: 21,559 CCY Swell factor: 1.165
Loose volume: 25,116 LCY

Source of estimated volume:

Source of estimated swell factor:

Material Purchase Cost:

Total Cost:

1/4 of the backfill material needed to fill trench

Cat Handbook

\$0.00

Total Cost: \$0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,900 Pounds/LCY
Description: Decomposed rock - 50% Rock, 50% Earth

Rated Payload: 62,000 Pounds
Payload Capacity: 21.38 LCY

Truck Bed (volume) Basis:

Struck Volume: 17.10 LCY Heaped Volume: 22.10 **LCY** Average Volume: 19.60 LCY Adjusted Volume: 21.38 **LCY**

Final Truck Volume Based on Number of Loader Passes:

17.22

LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity: Bucket Fill Factor: 5.600 LCY (heaped) 1.025

Rock - Earth Mixture (100%-105%) 1.025

Adjusted Capacity: 5.740 LCY

Job Condition Corrections:

Site Altitude (ft.): 6600 feet

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

Loading Tool Cycle Time:

Number of Loading Tool Passes Required to Fill Truck: 3

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating:

NA

Selected Value within this Basic Rating:

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):

minutes

	Factor (min.)	Source	
Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)	
Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)	
Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)	
Constant operation -0.04	-0.040	(Cat HB)	
Nominal target 0.00	0.000	(Cat HB)	
	Conveyor or dozer piled 10 ft. high and up 0.00 Common ownership of trucks and loaders -0.04 Constant operation -0.04	Material 1/8" to 3/4" diameter -0.02 -0.020 Conveyor or dozer piled 10 ft. high and up 0.00 0.000 Common ownership of trucks and loaders -0.04 -0.040 Constant operation -0.04 -0.040	

Net Cycle Time Adjustment: Adjusted Loader Cycle Time: -0.1000.425

minutes minutes

Net Load Time per Truck:

0.950

minutes

Truck Cycle Time:

Truck Exchange Time:

0.60 0.950

Minutes Minutes Adjusted for site altitude: Adjusted for site altitude:

0.600 0.950

1.000

Minutes Minutes

Truck Maneuver and Dump Time:

1.00

Minutes

Adjusted for site altitude:

Minutes

Truck Travel (Haul & Return) Time:

Truck Load Time:

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

penetration 5.0

Haul	Rout	e:
------	------	----

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	-3.00	5.00	2.00	2733	0.430

Haul Time: **0.430** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	3.00	5.00	8.00	1903	0.199

minutes Return Time: **0.199** Total Truck Cycle Time: 3.179 minutes

Loading Tool unit

Production

666.58 LCY/Hour

Adjusted for job efficiency: 553.26 LCY/Hour

Truck Unit Production

325.01 LCY/Hour

Adjusted for job efficiency: 269.76 LCY/Hour

Optimal No. of Trucks:

2 Truck(s)

Selected Number of Trucks:

2 ___ Truck(s)

Adjusted hourly truck team production:

539.51

LCY/Hour

Adjusted single truck/loader team production:
Adjusted multiple truck/loader team production:

539.51 539.51

LCY/Hour LCY/Hour

JOB TIME AND COST

Fleet size: ___ 1

Team(s)

Total job time: 46.55 Hours

Unit cost: \$0.759

/LCY

Total job cost: \$19,055

December 8, 2015

Michael Anson Moffat Limestone Company P.O. Box 777 Craig, Co 81626



1313 Sherman Street, Room 215 Denver, CO 80203

RE: Juniper Quarry, Permit No. M-1982-141, Estimated Reclamation Costs Update

Task	Form Used	Change	Justification
01a	Demolish	-	Most scrap material removed from both sited. Only a few trailers remain
04a	Ripper	+	Larger compacted area needs ripped. 4 ac to 6 ac
05a	Loader	+	Larger disturbance 15 ac (including road) at 3" thick of topsoil. Previously estimated at 12 ac. Volume went form 4,840 CCY to 6,050 CCY
06a	Dozer	+	Updated volume to be handled from 4,840 CCY to 6,050 CCY
07a	Reveg		More disturbance needs seeded 12 ac to 15 ac
07a	Reveg	+	Add mulching, crimper, updated herbicide
08a	Blasting	-	Previously estimated at 1000 lft of highwall needs blasted, now estimated at 750 lft need blasted
09a	Dozer	-	Previously estimated at 500 lft needs blasting. Plus grading HW benches 500 lf x 25ft. Now no blasting required, instead dozer. Backfill 1400 lft @ 40ft H @ 1.5: to a 3:1 is 15,556 CCY
09b	Dozer	-	Less bench grading previously 1000 lft, now 750 lft
10a	Dozer	+	Lots of stockpiled and processing benches that would need graded. Approximated at 1500 lft averaging 40'H
11a	Ripper	+/-	Less site but more roads to be ripped, same area affected
12a	Loader	+	Larger disturbance 15 ac. At 3" thick of topsoil. Previously estimated at 15 ac. Volume went from 6,050 CCY to 10,890 CCY
13a	Dozer	+	Updated volume to be handled from 6,050 CCY to 10,890 CCY



14a	Reveg	+	More disturbance need seeded 15 ac to 27 ac
14a	Reveg	+	Add mulching, crimper, updated herbicide, more hours
15a	Mobilize	+	Add power mulcher
15a	Mobilize	+	Fleet size
16a	Mobilize	+	Secondary seeding mobilization required
	Project Management	-	Less hours overall because of larger fleet size. So superintendent cost decreased
	Project Management	+	Due to blasting engineering work may be necessary for slope stability.
	Project Management	+	Reclamation management % updated based on scale of project

Changes were based on field observations. Previous bond was calculated based on the worst case scenario of the approved reclamation plan. Actual disturbance is more than allowed in the approved plan.

Please feel free to contact me with any further questions. Amy Yeldell at the Division of Reclamation, Mining and Safety, 1313 Sherman St., Room 215, Denver, CO 80203. Direct contact can be made by phone at 970-254-8511 or via email at amy.yeldell@state.co.us

Sincerely,

Amy Yeldell

Environmental Protection Specialist Department of Natural Resources Division of Reclamation, Mining and Safety

Phone: (970) 254-8511 Fax: (970) 241-1516

Ec:

Russ Means, Senior EPS / Field Office Supervisor, Grand Junction DRMS

COST SUMMARY WORK

	4		
Task	decc	rint	ion:
1 03K	ucsu	11171	IVIII.

Review of bond post inspection

Site: Juniper Quarry

Permit Action: 2015-11 Inspection

Permit/Job#: M1982141

PROJECT IDENTIFICATION

Task #: 000 County:

State: Colorado

Moffat

Abbreviation:

None

Date: User:

12/8/2015 ACY

Filename: M141-000

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task		Form	Fleet	Task	
lask	Description	Used	Size	Hours	Cost
01a	Removal of mining equipment and debris	DEMOLISH	1	8.00	\$3,116.40
02a	AM1 Highwall Reduction	BLASTING	1	30.72	\$10,302.00
03a	AM1 Highwall reduction (grade HW)	DOZER	2	2.84	\$1,185.00
04a	AM1 Rip process area and access road	RIPPER	2	4.52	\$2,014.00
05a	AM1 Distribute topsoil throughout disturbed area	LOADER	2	9.63	\$2,784.00
06a	AM1 Spread topsoil	DOZER	2	4.13	\$1,725.00
07a	AM1 Revegetate disturbed area	REVEGE	1	24.00	\$25,494.00
08a	CN1 Highwall Reduction (Lower/North HW)	BLASTING	1	76.80	\$25,750.00
09a	CN1 Highwall reduction (grade upper/ south HW)	DOZER	2	13.24	\$5,531.00
09b	CN1 Highwall reduction (grade Lower/ north HW)	DOZER	2	9.45	\$3,950.00
10a	CN1 Grade various processing benches	DOZER	2	15.13	\$6,321.00
11a	CN1 Rip pit floor, process area and roads	RIPPER	2	3.89	\$1,735.00
12a	CN1 Distribute topsoil throughout disturbed area	LOADER	2	27.67	\$8,000.00
13a	CN1 Distribute topsoil throughout disturbed area	DOZER	2	7.43	\$3,105.00
14a	CN1 Revegetate disturbed area	REVEGE	1	35.00	\$45,889.00
15a	Mobilize reclamation crew and equipment	MOBILIZE	1	4.66	\$6,224.00
16a	Secondary Mob of reclamation crew and	MOBILIZE	1	1.33	\$199.00
	equipment		L		
		SUBTO	TALS:	278.44	\$153,324

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02
Performance bond: 1.05
Job superintendent: 139.22

Profit: 10.00

Total = _ TOTAL O & P =

Total = \$10,463.78 Total = \$15,332.40

\$1,609.90

O & P = \$30,503.22

Total = \$3,097.14

Total =

CONTRACT AMOUNT (direct + O & P) = \$183,827.22

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00 Total = 500.00

Engineering work and/or contract/bid preparation: 8.00 Total = \$14,706.18

Reclamation management and/or administration: 5.81 \$10,680.36

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$56,389.76

TOTAL BOND AMOUNT (direct + indirect) = \$209,713.76

DEMOLITION WORK

,	Task description:	Removal of	f mining equipm	ent and debris		
Site:	Juniper Quarry		Permit Action:	2015-11 Inspection	Permit/	Job#: <u>M1982141</u>
PROJE	CT IDENTIFICATION	<u>1</u>				
Task #:	01A	State:	Colorado		Abbreviation:	None
Date:	12/8/2015	County:	Moffat		Filename:	M141-01a
User:	ACY					
	Agency or organizat	ion name:	DRMS			

UNIT COSTS

Location adjustment: 91.30 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Trailer and misc metal in AM-1	8'W x 20'L x 10'H	Loading and 5 mile haul, salvage allowed - Steel frame structures	59.30	CY	\$9.48	\$562.16
Remove 10,000 gallon fuel tank	10,000 gallon	Haul tank to certified salvage dump - 9,000 to 12,000 gal. tank	1.00	EA	\$1,050.00	\$1,050.00
Remove steel trailers in CN-1	150 CY	Loading and 5 mile haul, salvage allowed - Steel frame structures	150.00	CY	\$9.48	\$1,422.00
Remove misc. refuse/debris in CN-1	40 CY	Loading and 5 mile haul, salvage allowed - Steel frame structures	40.00	CY	\$9.48	\$379.20

		Total Cost	
	Subtotal	(adjusted for	
Job Hours:8	.00 (unadjusted):	\$3,413.36 location):	\$3,116.40

SURFACE BLASTING WORK

Task description:

AM-1 Highwall Reduction

Site: Juniper Quarry

Permit Action: 2015-11 Inspection

Permit/Job#: M1982141

PROJECT IDENTIFICATION

Task #:

02A

State:

County:

Colorado

Abbreviation:

None

Date: User:

12/8/2015 ACY

Moffat

Filename:

M141-02a

Agency or organization name: DRMS

BLAST AREA DIMENSIONS

		QUANTITY	UNIT	
Blast Area Configuration:	Wedge-shaped mass (highwall reduction using balance	d cut/fill)	
Blasting Method Description:	Conventional surface blast (fragmentation only)			
Highwall	or Bench Face Angle:	0.00	h:1v	
I	Regraded Slope Angle:		h:1v	
High	wall or Bench Length:	300	feet	
Hig	hwall or Bench Width:	30	feet	
High	wall or Bench Height:	40.0	feet	
Depth to Ba	ase of Cut at Highwall:	20.0	feet	

BLAST AREA VOLUMES

	QUANTITY	UNIT
Total Volume of Dimensional Mass to be Shot:	3,333	cubic yards
Blast Volume to Subdrill Grade and Blast Pattern Lines:	3,603	cubic yards
Blast Volume to Finish Grade and Blast Pattern Lines:	2,963	cubic yards
Remaining Volume Required to be Re-Shot or Ripped:	370	cubic yards

BLAST AREA DESIGN

	QUANTITY	UNIT
Recommended Blasthole Diameter:	2.940	inches
Selected Blasthole Diameter:	4.000	inches
Subdrilling Allowance:	2.4	feet
Blasthole Depth:	11.7	feet
Density of Rock:	Average Density Rock (ANFO Basis)	rock density
Burden to Charge Diameter Ratio:	25	times diameter
Burden:	8.0	feet
Spacing to Burden Ratio:	1.3	times burden
Spacing:	10.0	feet
Cubic Yards of Rock per Blasthole:	41.48	cubic yards
Powder Factor Description:	High	rock strength
Powder Factor:	1.000	pounds/cu. yd.
Density of Blasting Agent:	1.10	grams/cc
Quantity of Explosives per Blasthole:	41.48	POUNDS
Height of Powder Column:	6.92	feet
Height of Stemming per Blasthole:	4.81	feet
Stemming to Burden Ratio:	0.60	times burden
Quantity of Stemming per Blasthole:	0.0156	cubic yards
Number of Rows:	3	rows
Number of Blastholes per Row:	30	holes per row
Total Number of Blastholes:	90	holes
Total Length of all Blastholes:	1,056	feet

BLASTING MATERIALS QUANTITIES

QUANTITY	UNIT
1.40	cubic yards
3,733	pounds
2,178	linear feet
1	cap(s)
90	caps
1	primer(s)
90	primers
1	delay(s)
93	delays
	1.40 3,733 2,178 1 90 1 90

HOURLY EQUIPMENT COST

Shift basis: 1 per day
Description

	Description
Drilling Equipment - Drill:	ATLAS COPCO ROC D7-11,4.0 in.
-Drill Pad Preparation:	Cat D8T - 8SU
Misc. Drill Support Equipment:	NA
Misc. Explosives Support Equipment:	NA
Explosives Delivery –Bulk Truck:	NA
-Cap Truck:	NA

Cost Breakdown:	Drilling Equipment	Drill Pad Preparation	Misc. Drill Support	Misc. Expl. Support	Explosives Bulk Truck	Delivery Cap Truck
	Drilling	Dozer				
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$49.55	\$62.67	NA	NA	NA	NA
Operating cost/hour:	\$82.27	\$108.22	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$0.00	\$38.01	NA	NA	NA	NA
Unit Subtotals:	\$131.83	\$208.90	\$0.00	\$0.00	\$0.00	\$0.00
Number of Units:	1	1	0	0	0	0
Group Subtotals:	\$131.83	\$208.90	\$0.00	\$0.00	\$0.00	\$0.00

Total work team cost/hour: \$340.73

MATERIALS COST

	Description	Unit	Unit Cost	Quantity	Total Cost
	Bulk ANFO high density (•	
Blasting Agent:	7,900-15,000 fps)	Pound	\$0.340	3733.333	\$1,269.33
	Aluminized ANFO booster				
	(electric or non-electric				
Primers or Boosters:	system)	Bag	\$11.777	90.000	\$1,059.93
	Electric cap, inst. (electric	,			
Blasting Caps:	systems)	Each	\$21.210	90.000	\$1,908.90
Det. Cord, fuse, or	Blasting wire, 12-14 gage				
wire:	(electric systems)	Linear foot	\$0.088	2178.000	\$191.66
	NO DELAY MATERIALS				
Delays:	REQUIRED	NA	\$0.000	93.000	\$0.00
	Expl. magazine - agent			V	
	(rental basis - meet MSHA				
Miscellaneous:	req.)	Day	\$6.106	0.000	\$0.00
Drill bits:	Bit life = 1,400	Linear feet	\$1,093.00	0.754	\$824.43

Total Materials Cost: \$5,254.25

DRILLING AND EXPLOSIVES PREPARATION TIME

Total Drilling Length:	1,056	linear feet
Unadjusted Drilling Rate:	112.00	feet/hour
Drilling Time:	14.81	hours

Job Condition Corrections:

Site Altitude:	6,600	feet
Altitude Adjustment:	0.95	(DRMS est.)
Job Efficiency Factor:	0.67	(CH. Exc. HB)
Adjusted Drilling Rate:	71.29	feet/hour
Explosives Prep. Time:	15.91	hours

JOB TIME AND COST

	e .		Total Job Time:	30.72	Hours
Unit cost:	\$2.859	per cu. yd.	Total Job Cost:	\$10,302	

BULLDOZER WORK

Task description: Juniper Quarry		Highwall reduction (g	2015-11 Inspection	Downit/Ioh#s	M100214
. Jumper Quarry		_ Permit Action:	2015-11 Inspection	_ Permit/Job#:	W1196214
PROJECT IDENT	TFICATIO	<u> N</u>			
Task #: 03A		State: Colorado		Abbreviation:	None
Date:12/8/20	15	County: Moffat		Filename:	M141-03a
User: ACY					
Agency or o	rganization n	ame: DRMS			
HOURLY EQUIP	MENT CO	<u>ST</u>			
Basic Machine:	Cat D8T - 85	SU			
Horsepower:	310				
	Semi-Univer	rsal	_		
_	NA				
	1 per day		_		
Data Source:	(CRG)				
Cost Breakdown:			In the second second		
			<u>Utilization %</u>		
Ownership Cost/Hou		\$62.67	NA 100		
Operating Cost/Hou		\$108.22	100		
Ripper op. Cost/Hor		\$0.00	0		
Operator Cost/Hor	ur:	\$38.01	NA		
Total unit Cost/Hour:	\$208.9	0			
Total Fleet Cost/Hour MATERIAL QUA	** \$417.8 NTITIES				
MATERIAL QUA Initial Volume: 3 Swell factor: 1	NTITIES 3,333 .345 3,483 LCY olume:	1	00 lft. x 40 ft. 0H:1V to	1.5H:1V	
MATERIAL OUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated volume of estimated set	NTITIES 3,333 .345 3,483 LCY olume: well factor:	Cut and fill approx. 3	00 lft. x 40 ft. 0H:1V to	1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sy	**************************************	Cut and fill approx. 3 Cat Handbook	00 lft. x 40 ft. 0H:1V to	1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sy	NTITIES 3,333 .345 3,483 LCY olume: well factor: JCTION e:	Cut and fill approx. 3 Cat Handbook	00 lft. x 40 ft. 0H:1V to	1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sy	NTITIES 3,333 .345 3,483 LCY olume: well factor: JCTION e:	Cut and fill approx. 3 Cat Handbook	00 lft. x 40 ft. 0H:1V to	1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sy	NTITIES 3,333 .345 3,483 LCY olume: well factor: UCTION e: oduction:	Cut and fill approx. 3 Cat Handbook		1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sv. HOURLY PRODU Average push distance Unadjusted hourly pro Materials consistency Average push gradien	NTITIES 3,333 .345 J.483 LCY olume: well factor: JCTION e: cduction: description:	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of		1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated volume of estimated set the state of t	NTITIES 3,333 .345 J.483 LCY olume: well factor: JCTION e: cduction: description:	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of		1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sv. HOURLY PRODU Average push distance Unadjusted hourly pro Materials consistency Average push gradien	### ##################################	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of		1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sv. HOURLY PRODU Average push distance Unadjusted hourly pro Materials consistency Average push gradien Average site altitude:	### ### ##############################	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of		1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated v. Source of estimated sy HOURLY PRODU Average push distance Unadjusted hourly pro Materials consistency Average push gradien Average site altitude: Material weight: Weight description: Job Condition Correct	### ### ##############################	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of the control of	or blasted 0.8	I.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated versus process of estimated services of estimated services push distance Unadjusted hourly process of estimated services push gradien Average push gradien Average site altitude: Material weight: Weight description: Job Condition Correct Opera	### ### ##############################	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of the company of	or blasted 0.8 Source (AVG.)	1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated versure of estimated set. HOURLY PRODU Average push distance Unadjusted hourly producted hourly producted hourly producted in the set of the set	### ### ##############################	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of the company of	Source (AVG.)	1.5H:1V	
MATERIAL QUA Initial Volume: 3 Swell factor: 1 Loose volume: 4 Source of estimated versure of estimated set. HOURLY PRODU Average push distance Unadjusted hourly product of the set of	### ### ##############################	Cut and fill approx. 3 Cat Handbook 50 feet 1,400.0 LCY/hr Rock, well ripped of the company of	or blasted 0.8 Source (AVG.)	1.5H:1V	

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.885	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5645

Adjusted unit production:

790.30 LCY/hr

Adjusted fleet production:

1580.6 LCY/hr

JOB TIME AND COST

Fleet size:

2 Dozer(s)

Unit cost:

\$0.264/LCY

Total job time:

2.84 Hours

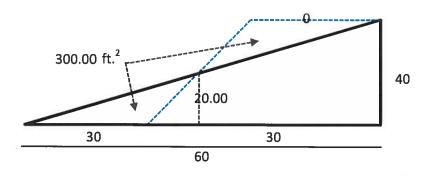
Total job cost: \$1,185

Highwall reduction - cut and fill

AM-1 Highwall reduction (grade HW)

	40.0	Highwall Height (ft.)
	300	Length of Highwall (lft.)
H:1V	0.0	Initial Slope
H:1V	2	Desired Slope
•	90,000	Volume of material to be moved (ft.3)
	3 333	Volume of material to be moved (vd 3)

All dimensions measured in feet Drawing not to scale



BULLDOZER RIPPING WORK

Task description	1: AM1 Rip process a	ii ca anu access	s i uau			
ite: Juniper Qua i	rry Permi	it Action: 201	5-11 Inspection	on Permit/	Job#: <u>M19</u>	82141
PROJECT ID	<u>ENTIFICATION</u>					
Task #:04		Colorado		Abbreviat	ion: None	
		Moffat		Filena	me: M14	1-04a
User: AC	CY					
Agency	y or organization name:DRM	<u>1S</u>				
HOURLY EQ	DUIPMENT COST					
Basic	Machine: Cat D8T - 8SU]	Horsepower:	310	
Ripper At	ttachment: 3-Shank Ripper			Shift Basis:	1 per day	
			I	Data Source:	(CRG)	
Cost Breakdown	<u>ı:</u>		1	~		
	Ownership Cost/Hour:	\$69.05	U	tilization % NA		
	Operating Cost/Hour:	\$108.22		100		
Rip	oper Operating Cost/Hour:	\$7.46		100		
	Operator Cost/Hour:	\$38.01		NA		
	Total Unit Cost/Hour:	\$222.73				
	Total Fleet Cost/Hour:	\$445.46				
MATEDIAI (QUANTITIES					
		Selected	estimating me	ethod: Area		
Alternate Metho	ds:					
or NTA						
c: NA a: 6.00		Volume: NA epth (ft): 2.00 Field Estimates	0	BCY Volume: 19,360 Earth digitizing	NA)	ВСҮ
a: 6.00 HOURLY PR	acres Rip De Source of estimated quantity:	epth (ft): 2.00	0	Volume: 19,360		BCY
a: 6.00	acres Rip De Source of estimated quantity:	Field Estima	0	Volume: 19,360		BCY
a: 6.00 HOURLY PR	acres Rip De Source of estimated quantity: ODUCTION Seismic Velocit	epth (ft): 2.00 Field Estimates ty:	ates & Google	Volume: 19,366 Earth digitizing		BCY
a: 6.00 HOURLY PROSeismic:	acres Rip De Source of estimated quantity: ODUCTION Seismic Velocit Average Ripping Dept	epth (ft): 2.00 Field Estimates ty: th:	nates & Google NA 2.56	Volume: 19,360 Earth digitizing feet/second mph		BCY
a: 6.00 HOURLY PROSeismic:	acres Rip De Source of estimated quantity: ODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt	epth (ft): 2.00 Field Estimates ty: th: th:	NA 2.56 7.08	Volume: 19,360 Earth digitizing feet/second mph degrees		BCY
a: 6.00 HOURLY PROSeismic:	acres Rip De Source of estimated quantity: ODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt	epth (ft): 2.00 Field Estimate ty: th: th: th:	NA 2.56 7.08 300.00	Volume: 19,360 Earth digitizing feet/second mph degrees feet		BCY
a: 6.00 HOURLY PROSeismic:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee	th: th: ed:	NA 2.56 7.08 300.00 88.00	Feet/second mph degrees feet feet		BCY
a: 6.00 HOURLY PROSeismic:	acres Rip De Source of estimated quantity: ODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt	th: th: ed: epth (ft): 2.00	NA 2.56 7.08 300.00	Volume: 19,360 Earth digitizing feet/second mph degrees feet		BCY
a: 6.00 HOURLY PR Seismic: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Tim	th: th: ed: epth (ft): 2.00	NA 2.56 7.08 300.00 88.00 0.25	Feet/second mph degrees feet feet feet feet		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Tim Production per unit are	th: th: th: ed: ea:	NA 2.56 7.08 300.00 88.00 0.25	Feet/second mph degrees feet feet feet feet		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Time Production per unit are	th: th: th: ed: ne: ea:	NA 2.56 7.08 300.00 88.00 0.25 0.800	feet/second mph degrees feet feet feet feet acres/hour		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Time Production per unit are Correction Factors nadjusted Hourly Unit Production	th: th: th: ed: ea:	NA 2.56 7.08 300.00 88.00 0.25 0.800	Feath digitizing feet/second mph degrees feet feet feet feet acres/hour Acres/hr		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Tim Production per unit are Correction Factors nadjusted Hourly Unit Production Site Altitude Altitude Act Job Efficience	ty: th: th: ed: ea: on: de: dj:	NA 2.56 7.08 300.00 88.00 0.25 0.800 6,600 1.00 0.83	feet/second mph degrees feet feet feet acres/hour Acres/hr feet		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Time Production per unit are Correction Factors nadjusted Hourly Unit Production Site Altitude Altitude Ac	ty: th: th: ed: ea: on: de: dj:	NA 2.56 7.08 300.00 88.00 0.25 0.800 6,600 1.00	feet/second mph degrees feet feet feet feet acres/hour Acres/hr feet (CAT HB)		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Time Production per unit are Correction Factors nadjusted Hourly Unit Production Site Altitude Altitude Act Job Efficience Net Correction	ty: th: th: th: ed: ea: on: de: ey: on:	NA 2.56 7.08 300.00 88.00 0.25 0.800 6,600 1.00 0.83	feet/second mph degrees feet feet feet acres/hour Acres/hr feet (CAT HB) (1 shift/day)		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Tim Production per unit are Correction Factors nadjusted Hourly Unit Production Site Altitude Altitude Act Job Efficience	ty: ty: th: t	NA 2.56 7.08 300.00 88.00 0.25 0.800 6,600 1.00 0.83 0.83	feet/second mph degrees feet feet feet acres/hour Acres/hr feet (CAT HB) (1 shift/day) multiplier		BCY
a: 6.00 HOURLY PROSEISMIC: Area:	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Time Production per unit are Correction Factors Inadjusted Hourly Unit Production Site Altitude Altitude Act Job Efficience Net Correction Adjusted Hourly Unit Pr Adjusted Hourly Fleet Pr	ty: ty: th: t	NA 2.56 7.08 300.00 88.00 0.25 0.800 6,600 1.00 0.83 0.83 0.66	feet/second feet/second mph degrees feet feet feet acres/hour Acres/hr feet (CAT HB) (1 shift/day) multiplier Acres/hr		BCY
a: 6.00 HOURLY PROSEISMIC: Area: Job Condition Country Ur	acres Rip De Source of estimated quantity: CODUCTION Seismic Velocit Average Ripping Dept Average Ripping Widt Average Ripping Lengt Average Dozer Spee Average Maneuver Time Production per unit are Correction Factors Inadjusted Hourly Unit Production Site Altitude Altitude Act Job Efficience Net Correction Adjusted Hourly Unit Pr Adjusted Hourly Fleet Pr	th: th: th: ed: ne: ea: on: coduction: coduction:	NA 2.56 7.08 300.00 88.00 0.25 0.800 6,600 1.00 0.83 0.83 0.66	feet/second feet/second mph degrees feet feet feet acres/hour Acres/hr feet (CAT HB) (1 shift/day) multiplier Acres/hr		BCY

WHEEL LOADER – LOAD AND CARRY WORK

Task description:

AM1 Distribute topsoil throughout disturbed area

Site: Juniper Quarry

Permit Action: 2015-11 Inspection

Permit/Job#: M1982141

PROJECT IDENTIFICATION

Task #:

05A

State:

Colorado

Abbreviation:

None

Date:

12/8/2015

County: Moffat Filename:

M141-05a

User: **ACY**

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:

CAT 972H

Horsepower:

287

Attachment 1:

ROPS Cab

Shift Basis: Data Source: 1 per day (CRG)

Cost Breakdown:

Ownership Cost/Hour: Operating Cost/Hour:

\$38.44 \$68.95 \$37.13 Utilization % NA 100 NA

Operator Cost/Hour: Total Unit Cost/Hour:

\$144.52

Total Fleet Cost/Hour:

\$289.04

MATERIAL QUANTITIES

Initial volume:

CCY

Swell factor: 1.000

Loose volume:

6,050 Source of estimated volume: **LCY**

15 ac. disturbance x 3"

Source of estimated swell factor:

Cat Handbook

HOURLY PRODUCTION

Loader Cycle Time:

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

0.525

minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Not Cycle Time Adjustments	0.010	minutas

Net Cycle Time Adjustment: Adjusted Basic Cycle Time: 0.515

minutes minutes

Rolling Resistance - Road Conditions

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

Return:

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

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res.	Travel Time (minutes)	Source
Haul Route:	200	0.00	5.00	5.00	0.1844	(Cat HB)
Return Route:	200	0.00	5.00	5.00	0.1664	(Cat HB)

			Total Travel Tir Total Cycle Tir		0.3508 0.8658	minutes minutes
Load Bucket Capacity						
Rated Capacity Bucket Fill Factor		LCY (hea	ped) terial - uniform ag	gregates to	o 1/8" (95-100	0%) 0.975
Adjusted Capacity	5.46	LCY				
Job Condition Correction Site Altitude: <u>6600</u> feet	<u>Factors</u>					
		Source				
Altitude Adj: _	1.00	(CAT HB)			
Job Efficiency: _	0.83	(1 shift/day	<u>/) </u>			
Net Correction:	0.83	multiplier				
Una	djusted Hourly Unit l	Production:	378.36	LCY/H	our	
A	djusted Hourly Unit I	Production:	314.04	LCY/H	our	
Ac	ljusted Hourly Fleet l	Production:	628.08	LCY/H	our	
JOB TIME AND COS	<u>ST</u>					
Fleet size: 2	Loader(s)		Total job time: _		9.63	Hours
Unit cost:\$0.4	60 /LCY		Total job cost:	\$.	2,784	_

BULLDOZER WORK

	AM1 Spread top	SOII			
Juniper Quarry	Per	mit Action:	2015-11 Inspection	Permit/Job#:	M1982141
PROJECT IDENTIF	<u>ICATION</u>				
Task #:06A	State:	Colorado		Abbreviation:	None
Date: 12/8/2015	County:	Moffat		Filename:	M141-06a
User: ACY					
Agency or orga	nization name: _DI	RMS			
HOURLY EQUIPME	ENT COST				
The second secon	t D8T - 8SU				
Horsepower: 310			2) =-		
	mi-Universal		-		
Attachment: NA			•		
	er day				
Data Source: (Cl	RG)		-		
Cost Breakdown:					
		Į.	Utilization %		
Ownership Cost/Hour:	\$62.67		NA		
Operating Cost/Hour:	\$108.22		100		
Ripper op. Cost/Hour:	\$0.00		0		
Operator Cost/Hour:	\$38.01		NA		
Total unit Cost/Hour:	\$208.90				
MATERIAL QUANT Initial Volume:6,05	50				
MATERIAL QUANT Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05	FITIES 50 50 60 LCY				
Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05 Source of estimated volume	FITIES 50 50 50 LCY me: Task 05a				
MATERIAL QUANT Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05 Source of estimated volus Source of estimated swel	FITIES 50 50 60 LCY me: Task 05a Cat Hand				
MATERIAL QUANT Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05 Source of estimated volumes Source of estimated swel HOURLY PRODUCT	FITIES 50 50 50 LCY me: Task 05a Cat Hand				
MATERIAL QUANT Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05 Source of estimated volumes Source of estimated swell HOURLY PRODUCT Average push distance:	FITIES 50 50 50 LCY me: Task 05a Cat Hand FION 100 feet	book			
Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05 Source of estimated volus Source of estimated swel HOURLY PRODUCT Average push distance: Unadjusted hourly product	Task 05a Cat Hand	book			
Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05 Source of estimated volu: Source of estimated swel HOURLY PRODUCT Average push distance: Unadjusted hourly product Materials consistency des	Task 05a Cat Hand	/hr			
Initial Volume: Swell factor: Loose volume: Source of estimated volumes Source of estimated swel HOURLY PRODUCT Average push distance: Unadjusted hourly product Materials consistency des Average push gradient: Average site altitude:	### CITIES ### 100	/hr			
Initial Volume: 6,05 Swell factor: 1.00 Loose volume: 6,05 Source of estimated volumes Source of estimated swell HOURLY PRODUCT Average push distance: Unadjusted hourly product Materials consistency des Average push gradient: Average site altitude: Material weight:	TITIES	/hr			
Initial Volume: Swell factor: Loose volume: Source of estimated volumes Source of estimated sweles HOURLY PRODUCT Average push distance: Unadjusted hourly product Materials consistency des Average push gradient: Average site altitude: Material weight: Weight description: Job Condition Correction	Task 05a Cat Hand	/hr stockpile 1.2	Source		
Initial Volume: Swell factor: Loose volume: Source of estimated volumes Source of estimated swell HOURLY PRODUCT Average push distance: Unadjusted hourly product Materials consistency dest Average push gradient: Average site altitude: Material weight: Weight description: Job Condition Correction Operator	Task 05a Cat Hand	/hr stockpile 1.2	(AVG.)		
Initial Volume: Swell factor: Loose volume: Source of estimated volumes HOURLY PRODUCT Average push distance: Unadjusted hourly product Materials consistency dest Average site altitude: Material weight: Weight description: Job Condition Correction Operator Material consist	Task 05a	/hr stockpile 1.2 750 200	(AVG.) (CAT HB)		
Swell factor: 1.00 Loose volume: 6,05 Source of estimated volumes Source of estimated swel HOURLY PRODUCT Average push distance: Unadjusted hourly product Materials consistency dest Average push gradient: Average site altitude: Material weight: Weight description: Job Condition Correction Operator Material consist Dozing me	### CITIES ### 100 feet ###	/hr stockpile 1.2	(AVG.)		

(FND-RF)
(CAT HB)
(CAT HB)
(CAT HB)
(PAT)

Net correction: 0.8593

Adjusted unit production:

732.64 LCY/hr

Adjusted fleet production:

1465.28 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost:

\$0.285/LCY

Total job time: 4.13 Hours

Total job cost: \$1,725

REVEGETATION WORK

Task description:		AM1 Revegetate disturbed a	rea		
Site:	Juniper Quarry	Permit Action:	2015-11 Inspection	Permit/Job#:	M1982141

PROJECT IDENTIFICATION

Task #:07AState:ColoradoAbbreviation:NoneDate:12/8/2015County:MoffatFilename:M141-07a

User: ACY

Agency or organization name: DRMS

FERTILIZING

Materials

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

Application

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

TILLING

Description		Cost /Acre
Chisel plowing {DMG}		\$88.58
	359	
	Total Tilling Cost/Acre	\$88.58

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	6.00	19.42	\$42.48
Thickspike Wheatgrass - Critana	5.50	19.44	\$28.44
Western Wheatgrass - Arriba	8.00	20.20	\$29.44
Needle and Thread	7.50	19.80	\$352.43
Flax, Lewis Blue	1.00	6.63	\$16.52
Winter Fat	1.00	2.55	\$32.69
Bluebunch Wheatgrass - Goldar	4.00	12.86	\$22.00
Totals Seed Mix	33.00	100.91	\$523.99

Application

Description		Cost /Acre
Drill seeding (DRMS Cost Data)		\$88.20
	Total Seed Application Cost/Acre	\$88.20

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$265.00	\$530.00
Herbicide - Glyphosate (Journey)@ 1.0 pt/ac	1.00	ACRE	\$1.53	\$1.53
Total Mulch Materials Cost/Acre				\$531.53

Application

Description		Cost /Acre
Crimping, with tractor {DMG survey data}		\$65.89
Weed spray, truck, non-aquatic area, nox. [DMG]		\$61.49
	Total Mulch Application Cost/Acre	\$127.38

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
		То	tals Nursery Stoo	ek Cost / Acre	\$0.00

JOB TIME AND COST

No. of Acres: 15 Cost /Acre: \$1,359.68 Cost /Acre*: \$1,359.68

Estimated Failure Rate: 25% Constitution Con

Initial Job Cost: \$20,395.20 Reseeding Job Cost: \$5,098.80
Total Job Cost: \$25,494

Job Hours: **24.00**

SURFACE BLASTING WORK

Task description:

CN-1 Highwall Reduction (Lower/North HW)

Site: Juniper Quarry Permit Action: 2015-11 Inspection Permit/Job#: M1982141

PROJECT IDENTIFICATION

Task #: 08A State: Colorado Abbreviation: None
Date: 12/9/2015 County: Moffat Filename: M141-08a

User: ACY

Agency or organization name: DRMS

BLAST AREA DIMENSIONS

		QUANTITY	UNIT
Blast Area Configuration:	Wedge-shaped mass (highwall reduction using balance	ed cut/fill)
Blasting Method Description:	Conventional surface	blast (fragmentation only)	
Highwall	or Bench Face Angle:	0.00	h:1v
Ţ.	Regraded Slope Angle:	1.50	h:1v
High	wall or Bench Length:	750	feet
High	hwall or Bench Width:	30	feet
High	wall or Bench Height:	40.0	feet
Depth to Ba	ase of Cut at Highwall:	20.0	feet

BLAST AREA VOLUMES

	QUANTITY	UNIT
Total Volume of Dimensional Mass to be Shot:	8,333	cubic yards
Blast Volume to Subdrill Grade and Blast Pattern Lines:	9,007	cubic yards
Blast Volume to Finish Grade and Blast Pattern Lines:	7,407	cubic yards
Remaining Volume Required to be Re-Shot or Ripped:	926	cubic yards

BLAST AREA DESIGN

	QUANTITY	UNIT
Recommended Blasthole Diameter:	2.940	inches
Selected Blasthole Diameter:	4.000	inches
Subdrilling Allowance:	2.4	feet
Blasthole Depth:	11.7	feet
Density of Rock:	Average Density Rock (ANFO Basis)	rock density
Burden to Charge Diameter Ratio:	25	times diameter
Burden:	8.0	feet
Spacing to Burden Ratio:	1.3	times burden
Spacing:	10.0	feet
Cubic Yards of Rock per Blasthole:	41.48	cubic yards
Powder Factor Description:	High	rock strength
Powder Factor:	1.000	pounds/cu. yd.
Density of Blasting Agent:	1.10	grams/cc
Quantity of Explosives per Blasthole:	41.48	POUNDS
Height of Powder Column:	6.92	feet
Height of Stemming per Blasthole:	4.81	feet
Stemming to Burden Ratio:	0.60	times burden
Quantity of Stemming per Blasthole:	0.0156	cubic yards
Number of Rows:	3	rows
Number of Blastholes per Row:	75	holes per row
Total Number of Blastholes:	225	holes
Total Length of all Blastholes:	2,640	feet

BLASTING MATERIALS QUANTITIES

QUANTITY	UNIT
3.50	cubic yards
9,333	pounds
5,405	linear feet
1	cap(s)
225	caps
1	primer(s)
225	primers
1	delay(s)
228	delays
	3.50 9,333 5,405 1 225 1 225 1

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Dillit Gubib. I put uu j
Description
ATLAS COPCO ROC D7-11,4.0 in.
Cat D8T - 8SU
NA
NA
NA
NA

	Drilling	Drill Pad	Misc. Drill	Misc. Expl.	Explosives	Delivery
Cost Breakdown:	Equipment	Preparation	Support	Support	Bulk Truck	Cap Truck
	Drilling	Dozer				
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	\$49.55	\$62.67	NA	NA	NA	NA
Operating cost/hour:	\$82.27	\$108.22	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$0.00	\$38.01	NA	NA	NA	NA
Unit Subtotals:	\$131.83	\$208.90	\$0.00	\$0.00	\$0.00	\$0.00
Number of Units:	1	1	0	0	0	0
Group Subtotals:	\$131.83	\$208.90	\$0.00	\$0.00	\$0.00	\$0.00

Total work team cost/hour: \$340.73

MATERIALS COST

	Description	Unit	Unit Cost	Quantity	Total Cost
Diani.	Bulk ANFO high density (***	2222	
Blasting Agent:	7,900-15,000 fps)	Pound	\$0.340	9333.333	\$3,173.33
	Aluminized ANFO booster				
	(electric or non-electric				
Primers or Boosters:	system)	Bag	\$11.777	225.000	\$2,649.83
	Electric cap, inst. (electric				
Blasting Caps:	systems)	Each	\$21.210	225.000	\$4,772.25
Det. Cord, fuse, or	Blasting wire, 12-14 gage				
wire:	(electric systems)	Linear foot	\$0.088	5405.400	\$475.68
	NO DELAY MATERIALS	3.0			
Delays:	REQUIRED	NA	\$0.000	228.000	\$0.00
	Expl. magazine - agent				
	(rental basis - meet MSHA				
Miscellaneous:	req.)	Day	\$6.106	0.000	\$0.00
Drill bits:	Bit life = 1,400	Linear feet	\$1,093.00	1.886	\$2,061.09

Total Materials Cost: \$13,132.18

DRILLING AND EXPLOSIVES PREPARATION TIME

Total Drilling Length:	2,640	linear feet
Unadjusted Drilling Rate:	112.00	feet/hour
Drilling Time:	37.03	hours

Job Condition Corrections:

Site Altitude:	6,600	feet
Altitude Adjustment:	0.95	(DRMS est.)
Job Efficiency Factor:	0.67	(CH. Exc. HB)
Adjusted Drilling Rate:	71.29	feet/hour
Explosives Prep. Time:	39.78	hours

JOB TIME AND COST

			Total Job Time:	76.81	Hours
Unit cost:	\$2.859	per cu. yd.	Total Job Cost:	\$25,750	

BULLDOZER WORK

User: AC	3/2015	ON State: County:	Colorado Moffat		Abbreviation:	Naur
Date: 12/4 User: AC Agency HOURLY EQU Basic Machine	3/2015 Y				Abbreviation:	Mans
User: AC Agency HOURLY EQU Basic Machine	Y	County:	Moffat		-	None
Agency HOURLY EQU Basic Machine			1,101141		Filename:	M141-09a
HOURLY EQU Basic Machine	or organization			8		
Basic Machine		name: Dl	RMS			
	JIPMENT CO	<u>OST</u>				
Horsepower		BSU		_		
Blade Type		ersal		<u></u>		
Attachment						
Shift Basis Data Source				==2		
	(CRG)					
Cost Breakdown:			74	_		
~		* · · · · ·		Utilization %		
Ownership Cost		\$62.67		NA 100		
Operating Cost Ripper op. Cost		\$108.22		100		
** *		\$0.00		5/11/5/2011/5/2-5/		
Operator Cost	Hour:	\$38.01		NA		
MATERIAL Q Initial Volume: Swell factor:	15,556 1.345		_			
Loose volume:	20,923 LCY					
Source of estimate Source of estimate	ed swell factor:	Cut and i		400 lft. x 40ft.		
HOURLY PRO	DUCTION					
Average push dist	ance:	50 feet				
Unadjusted hourly	production:	1,400.0 LC	Y/hr			
Materials consiste	ncy description	: Rock,	well ripped o	r blasted 0.8		
Average push gra	dient: -30 %)				
Average site altitu		feet	_			
Material weight:	2,600	lbs/LCY			— 1	
Weight description	n: Lime	stone - Broke	en			
Job Condition Co		^	750	Source		
				` ` `		
iviaterial						
			1.1(.)(.)	(CALLES		
	zing method: Visibility:		.000	(GEN.) (AVG.)		
Weight description Job Condition Co O	n: Lime	stone - Broke	.750 .800	Source (AVG.) (CAT HB)		

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.885	(CAT HB)
Blade type:	1.000	(PAT)

Net correction:

0.5645

Adjusted unit production:

790.30 LCY/hr

Adjusted fleet production:

1580.6 LCY/hr

JOB TIME AND COST

Fleet size:

2 Dozer(s)

Unit cost:

\$0.264/LCY

Total job time:

13.24 Hours

Total job cost:

\$5,531

Highwall reduction - cut and fill

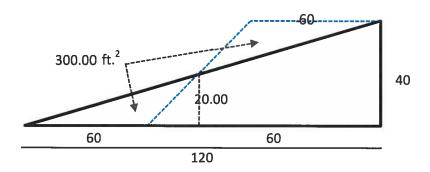
CN-1 Highwall reduction (grade Upper/south HW)

Highwall Height (ft.) 40.0	
Length of Highwall (lft.) 1400	
Initial Slope	1.5	H:1V
Desired Slope	3	H:1V
Volume of material to be moved (ft. 3	420,000	

Volume of material to be moved (yd. ³)

15,556

All dimensions measured in feet Drawing not to scale



BULLDOZER WORK

Juniper Quarry	Permit Action:	2015-11 Inspection	Permit/Job#:	M198214
PROJECT IDENTIFICATION	<u>1</u>			
Task #: 09B	State: Colorado		Abbreviation:	None
Date: 12/8/2015	County: Moffat		Filename:	M141-09b
User: ACY			_	1,1111 0,55
Agency or organization na	me: DRMS			
HOURLY EQUIPMENT COS	<u>r</u>			
Basic Machine: Cat D8T - 8SU	J			
Horsepower: 310				
Blade Type: Semi-Universa	al			
Attachment: NA		-		
Shift Basis: 1 per day				
Data Source: (CRG)		_		
Cost Breakdown:		1 TT:11 .1 0		
0 1: 0 477	¢(0, (7	<u>Utilization %</u>		
Ownership Cost/Hour:	\$62.67	NA 100		
Operating Cost/Hour:	\$108.22	100		
Ripper op. Cost/Hour:	\$0.00	0		
Operator Cost/Hour:	\$38.01	NA		
Total unit Cost/Hour: \$208.90 Total Fleet Cost/Hour: \$417.81				
MATERIAL QUANTITIES				
Initial Volume: 11,111				
Swell factor: 1.345				
Loose volume: 14,944 LCY				
	Cut and fill approx. 7: Cat Handbook	50 lft. x 40 ft.		
Source of estimated swell factor.	Cat Halldbook			
HOURLY PRODUCTION				
<u> </u>	feet			
Unadjusted hourly production:1,	400.0 LCY/hr			
Materials consistency description:	Rock, well ripped o	or blasted 0.8		
Average push gradient: -30 %				
Average site altitude: 6,600 fee	et			
Material weight: 2,600 lbs	/LCY	E-41		
Weight description: Limeston	ne - Broken		2/C	
Job Condition Correction Factor		Source		
Operator Skill:	0.750	(AVG.)		
	0.750 0.800 1.000			

Visibility:

Job efficiency:

1.000

0.830

(AVG.)

(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.885	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5645

Adjusted unit production:

790.30 LCY/hr

Adjusted fleet production:

1580.6 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost:

\$0.264/LCY

Total job time:

9.45 Hours

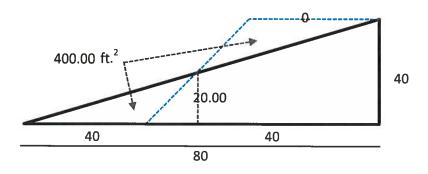
Total job cost: \$3,950

Highwall reduction - cut and fill

CN-1 Highwall reduction (grade Lower/north HW)

<u> </u>			. •
Highwall H	eight (ft.)	40.0	
Length of High	wall (lft.)	750	
Init	ial Slope	0.0	H:1V
Desir	ed Slope	2	H:1V
Volume of material to be mo	oved (ft. ³) 3	00,000	
Volume of material to be mov	ved (yd. ³)	11,111	

All dimensions measured in feet Drawing not to scale



Dozing method:

Job efficiency:

Visibility:

1.000

1.000

0.830

(GEN.)

(AVG.)

(1 SHIFT/DAY)

BULLDOZER WORK

Task description: CN-1 Grade various processing benches Site: Juniper Quarry Permit Action: 2015-11 Inspection Permit/Job#: M1982141 PROJECT IDENTIFICATION Task #: 10A State: Colorado Abbreviation: None 12/8/2015 Date: Moffat M141-10a County: Filename: User: **ACY** Agency or organization name: DRMS HOURLY EQUIPMENT COST Basic Machine: Cat D8T - 8SU 310 Horsepower: Blade Type: Semi-Universal Attachment: NA Shift Basis: 1 per day Data Source: (CRG) Cost Breakdown: **Utilization** % Ownership Cost/Hour: \$62.67 NA Operating Cost/Hour: \$108.22 100 Ripper op. Cost/Hour: \$0.00 0 Operator Cost/Hour: \$38.01 NA Total unit Cost/Hour: \$208.90 Total Fleet Cost/Hour: \$417.81 **MATERIAL QUANTITIES** Initial Volume: 22,222 Swell factor: 1.345 Loose volume: 29,889 LCY Source of estimated volume: Grade benches, aprox 1500'L, avg 40' H Source of estimated swell factor: Cat Handbook **HOURLY PRODUCTION** Average push distance: 50 feet Unadjusted hourly production: 1,400.0 LCY/hr Materials consistency description: Consolidated stockpile 1.0 Average push gradient: -30 % Average site altitude: 6,600 feet Material weight: 2,600 lbs/LCY Weight description: Limestone - Broken Job Condition Correction Factor Source Operator Skill: 0.750 (AVG.) Material consistency: 1.000 (CAT HB)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.885	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7056

Adjusted unit production: 987.84 LCY/hr

Adjusted fleet production: 1975.68 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.211/LCY

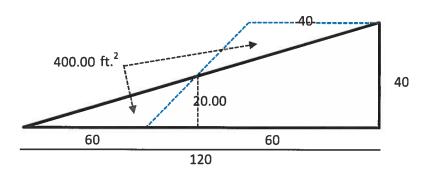
Total job time: 15.13 Hours
Total job cost: \$6,321

Highwall reduction - cut and fill

CN-1 Highwall reduction (grade Lower/north HW)

	40.0	hwall Height (ft.)	Hig
	1500	of Highwall (lft.)	Length
H:1V	1.0	Initial Slope	
H:1V	3	Desired Slope	
	600,000	o be moved (ft. ³)	Volume of material to
	22,222	be moved (yd. ³)	Volume of material to

All dimensions measured in feet Drawing not to scale



BULLDOZER RIPPING WORK

	Task description:	CN1 Rip pit floo	r, process ar	ea and roads			
Site	: Juniper Quarry	Per	mit Action:	2015-11 Inspec	ction Per	mit/Job#: _M	1982141
	PROJECT IDENT	TIFICATION					
	Task #: 11A Date: 12/8/20 User: ACY	State: County:	Colorado Moffat			viation: No ename: M1	ne 41-11a
		rganization name: DF	RMS				
	HOURLY EQUIP				100		
	Basic Mac				Horsepower:	310	
	Ripper Attachn			_	Shift Basis:	1 per da	у
					Data Source:	(CRG)	
	Cost Breakdown:			Ĩ	Utilization %		
	O	wnership Cost/Hour:	\$69	.05	NA		
		perating Cost/Hour:	\$108		100		
		perating Cost/Hour:	\$7.		100		
		Operator Cost/Hour: otal Unit Cost/Hour:	\$38 \$222		NA		
	To	otal Fleet Cost/Hour:	\$445				
	MATERIAL QUA				A		
	Alternate Methods:		3616	cted estimating	method: Area		
aiamia		Dow!	k Volume:	BT A	DCV	D.T.A.	
eismic: Area:	NA 5.00		k volume: _ Depth (ft):	NA 2.00	BCY Volume: 16	,133	BCY or CC
	Son	rce of estimated quantit	_				
	HOURLY PRODU	_			-g	-6	
		CHON					
	Seismic:	Seismic Velo	citv:	NA	feet/secon	d	
	Area:						
	Alea.	Average Ripping De	epth:	2.56	mph		
		Average Ripping W		7.08	degrees		
		Average Ripping Ler		200.00	feet		
		Average Dozer Sp		88.00	feet		
		Average Maneuver T		0.25	feet		
		Production per unit a	area:	0.773	acres/hou	•	
	Job Condition Correct						
	Unadju	sted Hourly Unit Produc	tion:	0.773	Acres/hr		
		Site Altit		6,600	feet		
		Altitude	-	1.00	(CAT HB	•	
		Job Efficie Net Correc		0.83	(1 shift/da multiplier	•	
		Adjusted Hourly Unit		0.64	Acres/hr		
		Adjusted Hourly Fleet		1.28	Acres/hr		
	JOB TIME AND C	COST					
	Fleet size:	2 Grader(s)		Total job time	e:3.	90	Hours
	Unit cost: \$3	47 092 Per acre		Total job cos	t. £1 /	735	

WHEEL LOADER – LOAD AND CARRY WORK

Task description:

CN1 Distribute topsoil throughout disturbed area

Site: Juniper Quarry

Permit Action: 2015-11 Inspection

Permit/Job#: M1982141

PROJECT IDENTIFICATION

Task #:

12A

State:

Colorado

Abbreviation:

None

Date: User:

12/8/2015 **ACY**

County: Moffat Filename:

M141-12a

Agency or organization name:

DRMS

HOURLY EQUIPMENT COST

Basic Machine:

CAT 972H

Horsepower:

287

Attachment 1: ROPS Cab

Shift Basis: Data Source: 1 per day (CRG)

Cost Breakdown:

Ownership Cost/Hour:

Operating Cost/Hour:

Utilization % \$38.44 NA \$68.95 100 \$37.13 NA

Operator Cost/Hour: Total Unit Cost/Hour:

\$144.52

Total Fleet Cost/Hour:

\$289.04

MATERIAL QUANTITIES

Initial volume:

CCY

Swell factor: 1.000

Loose volume:

10,890

LCY

Source of estimated volume:

27 ac. x 3"

Source of estimated swell factor:

Cat Handbook

HOURLY PRODUCTION

<u>Loader Cycle Time:</u>

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

0.525

minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment: Adjusted Basic Cycle Time: -0.0200.505

minutes minutes

Rolling Resistance - Road Conditions

Haul:

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

Return:

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

Haul and Return Time

	Length (feet)	Grade Res.	Rolling Res. (%)	Total Res.	Travel Time (minutes)	Source
Haul Route:	500	0.00	5.00	5.00	0.4611	(Cat HB)
Return Route:	500	0.00	5.00	5.00	0.4160	(Cat HB)

Total Travel Time: 0.8771 minutes Total Cycle Time: 1.3821 minutes **Load Bucket Capacity** Rated Capacity: 5.60 LCY (heaped) Bucket Fill Factor: 0.975 Loose material - uniform aggregates to 1/8" (95-100%) 0.975 Adjusted Capacity: 5.46 LCY Job Condition Correction Factors Site Altitude: 6600 feet Source Altitude Adj: 1.00 (CAT HB) Job Efficiency: 0.83 (1 shift/day) Net Correction: 0.83 multiplier Unadjusted Hourly Unit Production: 237.03 LCY/Hour Adjusted Hourly Unit Production: 196.74 LCY/Hour Adjusted Hourly Fleet Production: 393.48 LCY/Hour **JOB TIME AND COST** Fleet size: 2 Loader(s) Total job time: 27.68 Hours Unit cost: \$0.735 /LCY

Total job cost:

\$8,000

BULLDOZER WORK

•	-		hout disturbed area		
Juniper Quarry		Permit Action:	2015-11 Inspection	Permit/Job#:	M1982141
PROJECT IDEN	NTIFICATIO	<u>N</u>			
Task #: 13A		State: Colorado		Abbreviation:	None
Date: 12/8/		County: Moffat		Filename:	M141-13a
User: ACY					
Agency or	r organization n	ame: DRMS			
HOURLY EQUI	PMENT CO	<u>ST</u>			
Basic Machine:	Cat D8T - 85	SU	_		
Horsepower:	310				
Blade Type:	Semi-Univer	sal	5		
Attachment:	NA				
Shift Basis:	1 per day		70		
Data Source:	(CRG)		2		
Cost Breakdown:		Dest			
			Utilization %		
Ownership Cost/H		\$62.67	NA		
Operating Cost/H		\$108.22	100		
Ripper op. Cost/H		\$0.00	0		
Operator Cost/F	Hour:	\$38.01	NA		
Total unit Cost/Hou	¢200 0	n			
Total Fleet Cost/Ho					
	ANTITIES				
Initial Volume: Swell factor:	10,890				
Initial Volume: Swell factor: Loose volume:	10,890 1.000 10,890 LCY				
Initial Volume: Swell factor: Loose volume: Source of estimated	10,890 1.000 10,890 LCY	Task 12a			
Initial Volume: Swell factor: Loose volume:	10,890 1.000 10,890 LCY	Task 12a Cat Handbook			
Initial Volume: Swell factor: Loose volume: Source of estimated	10,890 1.000 10,890 LCY I volume:				
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated	10,890 1.000 10,890 LCY I volume: I swell factor:	Cat Handbook			
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distat	10,890 1.000 10,890 LCY I volume: I swell factor:	Cat Handbook			
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated	10,890 1.000 10,890 LCY I volume: I swell factor:	Cat Handbook			
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distat	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production:	Cat Handbook			
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distant Unadjusted hourly publication Materials consistent Average push gradi	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent: 0 %	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2			
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distant Unadjusted hourly p	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent: 6,600 f	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2			
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distant Unadjusted hourly published Materials consistent Average push gradi Average site altitud	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent:	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2			
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distar Unadjusted hourly p Materials consistent Average push gradi Average site altitud Material weight:	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent: 6,600 f 1,600 l	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2	Source		
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distar Unadjusted hourly p Materials consistent Average push gradi Average site altitud Material weight: Weight description: Job Condition Corre	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent: 0 % e: 6,600 f 1,600 l Top So ection Factor erator Skill:	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2	Source (AVG.)		
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distant Unadjusted hourly p Materials consistent Average push gradi Average site altitud Material weight: Weight description: Job Condition Corre Ope Material co	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent: 0 % e: 6,600 f 1,600 I Top So ection Factor trator Skill: consistency:	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2 eet bs/LCY il 0.750 1.200	(AVG.) (CAT HB)		
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distant Unadjusted hourly p Materials consistent Average push gradi Average site altitud Material weight: Weight description: Job Condition Corre Ope Material co	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent: 0 % e: 6,600 f 1,600 l Top So ection Factor crator Skill: onsistency: ng method:	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2 eet bs/LCY il 0.750 1.200 1.000	(AVG.) (CAT HB) (GEN.)		
Initial Volume: Swell factor: Loose volume: Source of estimated Source of estimated HOURLY PROI Average push distar Unadjusted hourly p Materials consistent Average push gradi Average site altitud Material weight: Weight description: Ope Material con Dozin	10,890 1.000 10,890 LCY I volume: I swell factor: DUCTION nce: production: cy description: ent: 0 % e: 6,600 f 1,600 I Top So ection Factor trator Skill: consistency:	Cat Handbook 100 feet 852.6 LCY/hr Loose stockpile 1.2 eet bs/LCY il 0.750 1.200	(AVG.) (CAT HB)		

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 732.64 LCY/hr

Adjusted fleet production: 1465.28 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.285/LCY

Total job time: 7.43 Hours

Total job cost: \$3,105

Cost /Acre

\$

\$0.00

REVEGETATION WORK

Juniper Quarry	Permit Ac	tion: _2015	-11 Inspection	Permit/Job	#: <u>M1982141</u>
OJECT IDENTIFICA	ATION				
Task #: 14A Date: 12/8/2015 User: ACY	State: Color County: Moff			Abbreviation: _ Filename: _	None M141-14a
Agency or organiza	ntion name: DRMS				
Agency or organiza RTILIZING terials	ntion name: DRMS	Units /			
Agency or organiza	ation name: DRMS	Units / Acre	Unit	Cost / Unit	Cost /Acre
Agency or organiza RTILIZING terials	ation name: DRMS		Unit	Cost / Unit	Cost /Acre

TILLING

Description

Description		Cost /Acre
Chisel plowing {DMG}		\$88.58
	Total Tilling Cost/Acre	\$88.58

Total Fertilizer Application Cost/Acre

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	6.00	19.42	\$42.48
Thickspike Wheatgrass - Critana	5.50	19.44	\$28.44
Western Wheatgrass - Arriba	8.00	20.20	\$29.44
Needle and Thread	7.50	19.80	\$352.43
Flax, Lewis Blue	1.00	6.63	\$16.52
Winter Fat	1.00	2.55	\$32.69
Bluebunch Wheatgrass - Goldar	4.00	12.86	\$22.00
Totals Seed Mix	33.00	100.91	\$523.99

Application

Description		Cost /Acre
Drill seeding (DRMS Cost Data)		\$88.20
	Total Seed Application Cost/Acre	\$88.20

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$265.00	\$530.00
Herbicide - Glyphosate (Journey)@ 1.0 pt/ac	1.00	ACRE	\$1.53	\$1.53
Total Mulch Materials Cost/Acre				\$531.53

Application

Description		Cost /Acre
Crimping, with tractor {DMG survey data}	-	\$65.89
Weed spray, truck, non-aquatic area, nox. [DMG]		\$61.49
	Total Mulch Application Cost/Acre	\$127.38

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
		Total	s Nursery Stoc	k Cost / Acre	\$0.00

JOB TIME AND COST

No. of Acres: <u>27</u> Cost /Acre: <u>\$1,359.68</u>

Estimated Failure Rate: 25% Cost /Acre*: \$1,359.68

*Selected Replanting Work Items: TILLING, SEEDING, MULCHING

Initial Job Cost: \$36,711.36

Reseeding Job Cost: \$9,177.84

Total Job Cost: \$45,889

Job Hours: 35.00

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: Mobilize reclamation crew and equipment

Site: Juniper Quarry

Permit Action: 2015-11 Inspection Permit/Job#: M1982141

PROJECT IDENTIFICATION

Task #: 15A State: Colorado Abbreviation: None

Date: 12/8/2015 County: Moffat Filename: M141-15a

User: ACY

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Truck Tractor Description:

Shift basis: 1 per day

CRC Data

Cost Data Source: CRG Data

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:	\$16.63	\$18.37	\$22.33
Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

NON ROADABLE EQUIPMENT:

Machine	Weight/	Owner ship	Haul Rig	Fleet	Haul Trip	Return Trip	DOT Permit
Description	Unit	Cost/hr/ unit	Cost/hr/uni	Size	Cost/hr/	Cost/hr/ fleet	Cost/ fleet
_	(TONS)		t		fleet		
Cat D8T - 8SU	53.08	\$65.28	\$125.45	2	\$381.46	\$250.90	\$500.00
CAT 972H	28.00	\$36.70	\$117.55	2	\$308.50	\$235.10	\$500.00
ATLAS COPCO	0.00	\$48.87	\$88.67	1	\$137.54	\$88.67	\$250.00
ROC D7-11,4.0 in.							

Subtotals: \$827.50 \$574.67 \$1,250.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$25.30	1	\$25.30	\$25.30
Drill/Broadcast Seeder with Tractor	\$75.35	1	\$75.35	\$75.35
Power Mulcher (Reinco M90)	\$48.76	1	\$48.76	\$48.76

Subtotals: \$149.41 \$149.41

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:

Total one-way travel distance:

Average Travel Speed:

CRAIG

30.00

miles

45.00

mph

Total Non-Roadable Mob/Demob Cost *

'* two round trips with haul rig:

Total Roadable Mob/Demob Cost **

** one round trip, no haul rig:

\$6,024.56

\$199.21

Transportation Cycle Time:

	Non-	
	Roadable	Roadable
	Equipment	Equipment
Haul Time (Hours):	0.67	0.67
Return Time (Hours):	0.67	0.67
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	2.33	1.33

JOB TIME AND COST

Total job time: 4.67 Hours

Total job cost: \$6,224

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: Secondary Mob of reclamation crew and equipment

Site: Juniper Quarry

Permit Action: 2015-11 Inspection Permit/Job#: M1982141

PROJECT IDENTIFICATION

Task #:16AState:ColoradoAbbreviation:NoneDate:12/8/2015County:MoffatFilename:M141-16a

User: ACY

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
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Operating Cost/Hour:	\$44.38	\$46.13	\$50.07
Operator Cost/Hour:	\$27.66	\$27.66	\$27.66
Helper Cost/Hour:	\$0.00	\$25.39	\$25.39
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/uni t	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
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Subtotals: \$0.00 \$0.00 \$0.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$25.30	1	\$25.30	\$25.30
Drill/Broadcast Seeder with Tractor	\$75.35	1	\$75.35	\$75.35
Power Mulcher (Reinco M90)	\$48.76	1	\$48.76	\$48.76

Subtotals: \$149.41 \$149.41

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:

Total one-way travel distance:
Average Travel Speed:

Total Non-Roadable Moh/Demoh Cost *

Total Non-Roadable Mob/Demob Cost *

'* two round trips with haul rig:

Total Roadable Mob/Demob Cost **

\$199.21

** one round trip, no haul rig:

Transportation Cycle Time:

	Non-	
	Roadable	Roadable
	Equipment	Equipment
Haul Time (Hours):	0.67	0.67
Return Time (Hours):	0.67	0.67
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	2.33	1.33

JOB TIME AND COST

Total job time:	1.33	Hours
Total job cost	\$100	