

Department of Natural Resources 1313 Sherman Street, Room 215 Denver, Colorado 80203

October 22, 2018

Bill Schenderlein Blue Earth Solutions, LLC P.O. Box 2427 Fort Collins, CO 80522

Re: Irwin/Thomas Mine, File No. M-2016-054, 112c Permit Application Adequacy Review No. 2, Bond Estimate for Proposed Operation

Mr. Schenderlein:

The Division of Reclamation, Mining and Safety (Division) has completed its adequacy review of your response submitted on October 19, 2018. The Division has calculated a reclamation bond (see enclosed estimate) for the proposed operation based on the mining and reclamation plans provided. Please review the enclosed estimate and submit any comments at your earliest convenience.

If the Division receives no comments from you by the application decision date of **October 31, 2018**, the application will be approved with the required financial warranty set at the amount provided in the estimate, \$2,747,911.00.

If you have any questions, you may contact me by telephone at 303-866-3567, ext. 8129, or by email at amy.eschberger@state.co.us.

Sincerely,

any Eschberger

Amy Eschberger Environmental Protection Specialist

Encl: Division's Bond Estimate

Ec: Christine Felz at: christine.felz@lafargeholcim.com

Michael Cunningham, DRMS at: michaela.cunningham@state.co.us



COST SUMMARY WORK

Task descri	ption:	Cost Summary				
te: <u>Irwin/Tl</u>	nomas Mine	Pe	rmit Action:	2018 Bond Estimate	Permit/Jol	o#: <u>M2016054</u>
PROJECT	IDENTIFIC	<u>CATION</u>				
Task #:	000	State:	Colorado		Abbreviation:	None
Date:	10/22/2018	County:	Boulder		Filename:	M054-000
Dute.						

TASK LIST (DIRECT COSTS)

Task		Form	Fleet	Task	G 4
	Description	Used	Size	Hours	Cost
001	Replace topsoil on prepared area ahead of mining	SCRAPER1	1	2.98	\$1,782.00
002	Backfill highwall to 3H:1V slopes	TRUCK1	1	83.95	\$61,740.00
003	Rough grade highwall backfill	DOZER	2	9.41	\$2,502.00
004	Replace topsoil on backfilled highwall	SCRAPER1	1	5.80	\$3,474.00
005	Final grade prepared area ahead of mining and highwall	DOZER	2	4.21	\$1,120.00
006	Slurry wall (10,200' x 25') installation + 3 months dewatering	NA	1	900.00	\$1,768,694.00
007	Replace topsoil on internal haul roads and main site entrance	SCRAPER1	1	7.78	\$4,656.00
008	Replace topsoil on scale house and staging areas	SCRAPER1	1	12.96	\$7,761.00
009	Replace topsoil on stockpile area	SCRAPER1	1	14.26	\$8,536.00
010	Rip roads, scale house area, and stockpile area	RIPPER	2	10.75	\$3,079.00
011	Final grade roads, scale house area, and stockpile area	DOZER	2	42.86	\$11,398.00
012	Revegetate 114.9 acres	REVEGE	1	115.00	\$192,334.00
013	Mobilization/Demobilization	MOBILIZE	1	24.80	\$70,912.00
		SUBTO	OTALS:	1234.76	\$2,137,988

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$43,187.36
Performance bond:	1.05	Total =	\$22,448.87
Job superintendent:	300.00	Total =	\$21,915.00
Profit:	10.00	Total =	\$213,798.80

TOTAL O & P = \$213,798.80 TOTAL O & P = \$301,350.03 CONTRACT AMOUNT (direct + O & P) = \$2,439,338.03

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00	
Engineering work and/or contract/bid preparation:	5.00	Total =	\$121,966.90	
Reclamation management and/or administration:	5.00		\$121,966.90	

CONTINGENCY: 3.00 Total = \$64,139.64

TOTAL INDIRECT COST = \$609,923.47

TOTAL BOND AMOUNT (direct + indirect) = \$2,747,911.47

SCRAPER TEAM WORK

Task description:	Replace top	soil on p	repared	area ahead of m	ining		
Site: Irwin/Thomas M	line	Permit	Action:	2018 Bond Estin	mate Per	mit/Job#: M20	016054
PROJECT IDEN	TIFICATION						
Task #: 001	S	tate: C	Colorado		Abbre	viation: None	e
Date: 10/22/	<u>/2018</u> Cou	nty: E	oulder		Fi	ename: M05	4-001
User: AME							
Agency or	organization name:	DRM	S				
HOURLY EQUI	<u>PMENT</u>			COSTSI	nift basis: 1 per c	la <u>y</u>	
				ent Description			
		craper:	Cat 637	'G			
Suppo	ort Equipment -Load	Dozer:	NA NA				
очро	-Dump	 -	NA				
Road Ma	aintenance – Motor C		CAT 16				
	-Water	Truck:	Water 7	Tanker, 3,500 Gal.	•		
Cost Breakdown:	Scraper Wor	k Team		Support Equip	oment	Maintenand	ce Equipment
	Scraper	Doz	er	Load Area	Dump Area	Motor Grade	
%Utilization-machine:	100		NA	NA	NA	100	0 100
Ownership cost/hour:	\$155.61		NA	NA	NA	\$77.19	9 \$12.39
Operating cost/hour:	\$166.86		NA	NA	NA	\$63.34	4 \$26.02
%Utilization-ripper:	NA		NA	NA	NA	50	0 NA
Ripper own. cost/hour:	NA		NA	NA	NA	\$4.0	7 \$0.00
Ripper op. cost/hour:	NA		NA	NA	NA	\$1.7	7 \$0.00
Operator cost/hour:	\$45.84		NA	NA	NA	\$45.64	\$0.00
Unit Subtotals:	\$368.30		NA	NA	NA	\$192.00	0 \$38.41
Number of Units:	1		0	0	0	-	1
Group Subtotals:	Work:	\$368	.30	Support:	\$0.00	Maint	: \$230.41
Total work team cos							
Initial volume:			CCY	Swell fact	or: 1.215		
Loose volume:	2,250		LCY				
	arce of estimated vol of estimated swell fa		Applicat Cat Hand	ion: 500' x 100' x dbook	1' deep		
HOIDI V DDAD	JICTION						
HOURLY PROD	OCHON			Caronar D	owl (volume) Bas	ic.	
M., 11 11.	1 (00 11 / 03/			-			LCV
Material weight: Material description:	1,600 lbs/LCY Top Soil			Struck 'Heaped'	Volume: 24.00 Volume: 34.00		LCY LCY
Rated Payload:	81,600 pounds			Average `			LCY
Payload Capacity:	51.00 LCY			Adjusted C			LCY

Site Altitude: 4930 feet

<u>C</u>	ycle	Time	e:

Scraper Loading Time: 0.80 Minutes Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

	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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	1.00	3.00	4.00	2394	0.28

Haul Time: **0.28** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	-1.00	3.00	2.00	2960	0.23

		(/ 0)	(/ 0)	(70)		` ′
300.00)	-1.00	3.00	2.00	2960	0.23
				Return Time:	0.23	minutes
			Total Scrap	er team cycle time:	1.91	minutes
			Adjusted	for job conditions:	756.13	LCY/Hour
			Selected N	umber of Scrapers:	1	Scraper(s)
	Adjuste	d single scrape	er team (unit)	hourly production:	756.13	LCY/Hour
	Adjusted n	nultiple scrape	r team (fleet)	hourly production:	756.13	LCY/Hour
Una Optimal Numbe	djusted unit pro r of Scrapers pe		910.99	LCY/Hour		
OB TIME AN	ID COST					
Fleet size:	1	Team(s)		Total job time:	2.98	Hours

J

Fleet size:	1	Team(s)	Total job time:	2.98	Hour
Unit cost:	\$0.792	/LCY	Total job cost:	\$1,782	

TRUCK/LOADER TEAM WORK

Task	descript	ion:	Backfill high	wall to	3H:1V s	lopes			
ite: <u>Irv</u>	vin/Tho	mas Mine		Permit	Action:	2018 Bond Es	stimate	Permit/Job#:	M2016054
<u>PRO</u>	JECT :	IDENTIFIC	CATION						
Ta	ısk #:	002	Stat	te: C	Colorado			Abbreviation:	None
]	Date:	10/22/2018	Count	ty: E	Boulder			Filename:	M054-002
1	User:	AME							
	Age		zation name: _	DRM	S				
	Age	ncy or organi	_	DRM	-	ipment Descrip		nift basis: 1 per day	
	Age	EQUIPMEN	_		-	ipment Descrip		nift basis: 1 per day	
	Age	EQUIPMEN	NT COST oader Team -Tr		Equi			nift basis: <u>1 per day</u>	
	Age	EQUIPMEN Truck L	NT COST oader Team -Tr	ruck:	Equi Cat 730	66H		nift basis: 1 per day	
	Age	EQUIPMEN Truck L	NT COST oader Team -Tr -Loa	ruck: ader: Area:	Equi Cat 730 CAT 96	66H		nift basis: 1 per day	
	Age	Truck L Support Equ	NT COST oader Team -Tr -Loa iipment -Load A	ruck: ader: Area: Area:	Equi Cat 730 CAT 96 Cat D67 NA CAT 16	Б6Н Г LGP	tion	nift basis: <u>1 per day</u>	

Cost Breakdown:	Truck/Loa	Truck/Loader Team		Equipment	Maintenance Equipment		
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck	
%Utilization-machine:	100	100	100	NA	100	100	
Ownership cost/hour:	\$57.82	\$39.42	\$50.71	NA	\$77.19	\$12.39	
Operating cost/hour:	\$44.78	\$45.86	\$42.03	NA	\$63.34	\$26.02	
%Utilization-riper:	NA	0	NA	NA	NA	NA	
Ripper own. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00	
Ripper op. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00	
Operator cost/hour:	\$25.65	\$36.13	\$40.23	NA	\$45.64	\$0.00	
Unit Subtotals:	\$128.24	\$121.40	\$132.97	NA	\$186.17	\$38.41	
Number of Units:	2	1	1	0	1	1	
Group Subtotals:	Work:	\$377.88	Support:	\$132.97	Maint:	\$224.58	

Total work team cost/hour: \$735.43

MATERIAL QUANTITIES

Initial volume: 33,350 CCY Swell factor: 1.125

Loose volume: 37,519 LCY

Source of estimated volume: Application: 1,500' L x 20' H

Source of estimated swell factor: Cat Handbook

Material Purchase Cost: \$0.00

Total Cost: \$0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight:2,650Pounds/LCYDescription:Decomposed rock - 25% Rock, 75% EarthRated Payload:62,000Pounds

Payload Capacity: 23.40 LCY

Truck Bed (volume) Basis:						
Struck Volume:	17.10 LC					
Heaped Volume:	22.10 LC					
Average Volume:	19.60 LC					
Adjusted Volume:	22.10 LC	ΣY				
Final	Truck Volume Ba	sed on Number of	Loader Passes:	22.00	LCY	
Loading Tool Capacity						
			Buck	et Size Class: N	ÍΑ	_
Rated Capacity:	5.000	LCY (heaped)				
Bucket Fill Factor:	1.100	Other - rock/dirt	mixtures (100-	-120%) 1.100		_
Adjusted Capacity:	5.500	LCY				
Job Condition Corrections:	-	Sit	e Altitude (ft.): 4	<u>930</u> 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				
	s. Job Condition R within this Basic R Material Descripti	tating: NA				
Cycle Time Elements (min.):	-	· · ·				
Load: NA		euver: NA		Dump: 0.100)	
Wheel and Track Loaders -	Unadjusted Basic	Loader Cycle Tin	ne (load, dump, n	naneuver): 0	.500 minu	ites
Cycle Time Factors				Factor (min.)	Source	
Material:	Material 1/8" to	3/4" diameter -0.0	2	-0.020	(Cat HB)	_
Stockpile:	Dumped by truc			0.020	(Cat HB)	_
Truck Ownership:	Common owner	ship of trucks and	loaders -0.04	-0.040	(Cat HB)	
Operation:	Constant operati			-0.040	(Cat HD)	=
Dump Target:		on -0.04		0.0.0	(Cat HB)	
Dump Target.	Nominal target (0.00		0.000	(Cat HB)	_ _ _
Dump Target.	Nominal target (0.00 Net Cycle Tim		0.000 -0.080	(Cat HB) minutes	
Dump Target.	Nominal target (0.00 Net Cycle Tim Adjusted Loade	er Cycle Time:	0.000 -0.080 0.420	(Cat HB) minutes minutes	
Dump Target.	Nominal target (0.00 Net Cycle Tim Adjusted Loade		0.000 -0.080	(Cat HB) minutes	- - -
Truck Cycle Time:	Nominal target (0.00 Net Cycle Tim Adjusted Loade	er Cycle Time:	0.000 -0.080 0.420	(Cat HB) minutes minutes	- - -
, -	•	0.00 Net Cycle Tim Adjusted Loade	er Cycle Time: me per Truck:	0.000 -0.080 0.420	(Cat HB) minutes minutes	Min
Truck Cycle Time:	: 0.60 : 1.360	0.00 Net Cycle Tim Adjusted Loade Net Load Ti	er Cycle Time: me per Truck: Adjusted Adjusted	0.000 -0.080 0.420 1.360	(Cat HB) minutes minutes minutes minutes	Min Min

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

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	1.00	3.00	4.00	1774	1.204

Haul Time: 1.204 minutes

Return Route:

rectarii re	ate.					
Seg#	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	-1.00	3.00	2.00	3040	0.739

Return Time: 0.739 minutes
Total Truck Cycle Time: 4.903 minutes

Loading Tool unit

Production 673.47 LCY/Hour Adjusted for job efficiency: 558.98 LCY/Hour Truck Unit Production

_____269.22 LCY/Hour Adjusted for job efficiency: ____223.46 LCY/Hour

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

Adjusted hourly truck team production: 446.91 LCY/Hour Adjusted single truck/loader team production: 446.91 LCY/Hour Adjusted multiple truck/loader team production: 446.91 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **83.95** Hours

Unit cost: \$1.646 /LCY Total job cost: **\$61,740**

BULLDOZER WORK

Permit Action: 2018 Bond Estimate Permit/Job/#. M201605- PROJECT IDENTIFICATION	Task description:	Rough gr	ade hig	hwall backf	ill		
Task #: 003	: _Irwin/Thomas Mine	<u>.</u>	Per	mit Action:	2018 Bond Estimate	Permit/Job#:	M2016054
Date: 10/22/2018	PROJECT IDENTI	FICATION					
Basic Machine: Cat D6T LGP	Date: 10/22/201	18 C				_	
Basic Machine:	Agency or org	anization nam	e: <u>DF</u>	RMS			
Basic Machine:	HOURLY EQUIPM	IENT COST					
Horsepower: Straight Straight NA							
Blade Type:					<u> </u>		
Shift Basis: Data Source: CCRG) Cost Breakdown: Ownership Cost/Hour: \$50.71 NA Operating Cost/Hour: \$42.03 100 Ripper own. Cost/Hour: \$0.00 NA Ripper op. Cost/Hour: \$0.00 NA Ripper op. Cost/Hour: \$40.23 NA Total unit Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$265.94 MATERIAL QUANTITIES Initial Volume: 3,610 Swell factor: 1.000 Loose volume: 3,610 LCY Source of estimated volume: Source of estimated swell factor: Cat Handbook HOURLY PRODUCTION Average push distance: 60 feet 409.6 LCY/hr Materials consistency description: Loose stockpile 1.2 Average push gradient: 5 % Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source (AVG.)		traight			<u> </u>		
Data Source: CCRG) Cost Breakdown: Ownership Cost/Hour: \$50.71 NA Operating Cost/Hour: \$42.03 100 Ripper own. Cost/Hour: \$0.00 NA Ripper oyn. Cost/Hour: \$0.00 0 Operator Cost/Hour: \$132.97 Total unit Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$265.94 MATERIAL QUANTITIES Initial Volume: 3,610 LCY Source of estimated volume: Source of estimated swell factor: Loose volume: 3,610 LCY Source of estimated swell factor: Cat Handbook HOURLY PRODUCTION Average push distance: Unadjusted hourly production: Loose stockpile 1.2 Average push gradient: 4,930 feet Materials consistency description: Loose stockpile 1.2 Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source Operator Skill: 0.750 Source	Attachment: N	A					
Cost Breakdown: S50.71	Shift Basis: 1	per day					
Ownership Cost/Hour: Operating Cost/Hour: State of State	Data Source: (0	CRG)					
Ownership Cost/Hour: Operating Cost/Hour: State of State	Cost Progledown						
Ownership Cost/Hour: \$42.03 100 Ripper own. Cost/Hour: \$0.00 NA Ripper op. Cost/Hour: \$0.00 0 Operator Cost/Hour: \$40.23 NA Total unit Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$40.23 NA MATERIAL QUANTITIES Initial Volume: 3,610 Swell factor: 1.000 Loose volume: 3,610 LCY Source of estimated volume: Source of estimated swell factor: Cat Handbook HOURLY PRODUCTION Average push distance: Unadjusted hourly production: 60 feet 409.6 LCY/hr Materials consistency description: Loose stockpile 1.2 Average push gradient: 5 % Application: 65 / National Stock of Stockpile 1.2 Average site altitude: 4,930 feet Ap30 feet Ap	COSt Dieakuowii.				Litilization %		
Operating Cost/Hour: Ripper own. Cost/Hour: Ripper op. Cost/Hour: S0.00 NA Ripper op. Cost/Hour: S0.00 Operator Cost/Hour: \$40.23 NA Total unit Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$265.94 MATERIAL QUANTITIES Initial Volume: Swell factor: Loose volume: 3,610 Swell factor: Loose volume: 3,610 LCY Source of estimated volume: Source of estimated swell factor: Cat Handbook HOURLY PRODUCTION Average push distance: Unadjusted hourly production: 409.6 LCY/hr Materials consistency description: Loose stockpile 1.2 Average push gradient: Average site altitude: 4,930 feet Material weight: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: O.750 Source Source Source ANA NA NA Average NA Average Surbal	Ownership Cost/Hour	•		\$50.71			
Ripper own. Cost/Hour: Ripper op. Cost/Hour: So.00 Operator Cost/Hour: Solo0 Operator Cost/Hour: Solo0 Solo0 Operator Cost/Hour: Solo0 Solo0 Operator Cost/Hour: Solo0 Solo0 Operator Cost/Hour: Solo0 Solo0 Operator Solo0 Ope						<u></u>	
Ripper op. Cost/Hour: Operator Cost/Hour: \$132.97 Total unit Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$265.94 MATERIAL QUANTITIES Initial Volume: Swell factor: 1.000 Loose volume: 3,610 LCY Source of estimated volume: Source of estimated volume: Source of estimated swell factor: HOURLY PRODUCTION Average push distance: Unadjusted hourly production: Materials consistency description: Loose stockpile 1.2 Average push gradient: Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: Source Source (AVG.)							
Operator Cost/Hour: \$132.97 Total unit Cost/Hour: \$265.94 MATERIAL QUANTITIES Initial Volume: 3,610 Swell factor: 1.000 Loose volume: 3,610 LCY Source of estimated volume: Source of estimated swell factor: Cat Handbook HOURLY PRODUCTION Average push distance: 60 feet Unadjusted hourly production: 409.6 LCY/hr Materials consistency description: Loose stockpile 1.2 Average push gradient: 5 % Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source [Average NA							
Total Unit Cost/Hour: \$132.97 Total Fleet Cost/Hour: \$265.94 MATERIAL QUANTITIES Initial Volume: 3,610 Swell factor: 1.000 Loose volume: 3,610 LCY Source of estimated volume: Source of estimated swell factor: Cat Handbook HOURLY PRODUCTION Average push distance: 60 feet Unadjusted hourly production: 409.6 LCY/hr Materials consistency description: Loose stockpile 1.2 Average push gradient: 5 % Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source of Source of Source of Source of Science of Source of Source of Source of Source of Science of Source of Science of Source of Science of Science of Source of Science of							
Total Fleet Cost/Hour: \$265.94 MATERIAL QUANTITIES Initial Volume: 3,610	Operator Cost/Hour	•		\$40.23	NA		
Source of estimated volume: Source of estimated swell factor: HOURLY PRODUCTION Average push distance: Unadjusted hourly production: Materials consistency description: Loose stockpile 1.2 Average push gradient: Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Application: 65' x 1,500' x 1' deep Cat Handbook Application: 65' x 1,500' x 1' deep Cat Handbook Loose stockpile 1.2 409.6 LCY/hr Loose stockpile 1.2 Source (AVG.)	Initial Volume: 3,6	510					
Source of estimated volume: Source of estimated swell factor: Application: 65' x 1,500' x 1' deep				_			
HOURLY PRODUCTION Average push distance: 60 feet Unadjusted hourly production: Loose stockpile 1.2 Materials consistency description: Loose stockpile 1.2 Average push gradient: 5 % Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source (AVG.)	Source of estimated vol	ume: A			00' x 1' deep		
Average push distance: 60 feet Unadjusted hourly production: 409.6 LCY/hr Materials consistency description: Loose stockpile 1.2 Average push gradient: 5 % Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source (AVG.)	Source of estimated swe	ell factor: C	at Hand	book			
Unadjusted hourly production: 409.6 LCY/hr Materials consistency description: Loose stockpile 1.2 Average push gradient: 5 % Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source (AVG.)	HOURLY PRODUC	CTION					
Average push gradient: 5 % Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 Source (AVG.)				/hr			
Average site altitude: 4,930 feet Material weight: 2,650 lbs/LCY Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 (AVG.)	Materials consistency d	escription:	Loose	stockpile 1.2			
Weight description: Decomposed rock - 25% Rock, 75% Earth Job Condition Correction Factor Operator Skill: 0.750 OVERAGE OV							
Job Condition Correction Factor Source Operator Skill: 0.750 (AVG.)	Material weight:	2,650 lbs/	LCY				
Operator Skill: 0.750 (AVG.)	Weight description:	Decompos	sed rock	- 25% Rock	, 75% Earth		
Material consistency: 1.200 (CAT HB)							
Dozing method: 1.000 (GEN.) Visibility: 1.000 (AVG.)							

Job efficiency:

0.830

(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4684

Adjusted unit production: 191.86 LCY/hr
Adjusted fleet production: 383.72 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.693/LCY

Total job time: 9.41 Hours
Total job cost: \$2,502

SCRAPER TEAM WORK

Task description:	Replace to	psoil on ba	ckfille	d highwall				
Site: Irwin/Thomas M	ine	Permit A	ction:	2018 Bond Esti	imate Per	mit/Job#: M	2016054	+
PROJECT IDEN Task #: 004 Date: 10/22/2 User: AME			lorado ulder			viation: No Molename: Mo	ne 054-004	
Agency or o	organization name:	DRMS						_
HOURLY EQUIP	PMENT_			COSTS	hift basis: 1 per d	l <u>ay</u>		
		Е	auipme	ent Description				
		Scraper:	Cat 637					<u> </u>
Suppo	rt Equipment -Loa		NA NA					_
	-Dum	p Area:	NA					_ _
Road Ma	intenance –Motor		CAT 1	6M Fanker, 3,500 Gal	1			_
	· · · · · · · · · · · · · · · · · · ·	Truck.	· · utci	runker, 3,300 Gu				_
Cost Breakdown:	Scraper Wo			Support Equi		Maintena		ipment Vater Truck
	Scraper	Dozei	r	Load Area	Dump Area	Motor Grad	ier w	rater Truck
%Utilization-machine:	100		NA	NA	NA		.00	100
Ownership cost/hour:	\$155.61		NA	NA	NA	\$77.		\$12.39
Operating cost/hour:	\$166.86		NA	NA NA	NA NA	\$63.		\$26.02
%Utilization-ripper:	NA NA		NA NA	NA NA	NA NA	\$4.	50	\$0.00
Ripper own. cost/hour: Ripper op. cost/hour:	NA NA		NA NA	NA NA	NA NA	\$1.		\$0.00
Operator cost/hour:	\$45.84		NA NA	NA NA	NA NA	\$45.		\$0.00
Unit Subtotals:	\$368.30		NA NA	NA NA	NA NA	\$192		\$38.4
Number of Units:	\$308.30 1		0	0	0	\$192.	1	Ψ30.4
Group Subtotals:	Work:	\$368.3		Support:	\$0.00	Mai		\$230.41
Total work team cost	/hour: <u>\$598.71</u>	70000		2.077	1			700000
Initial volume:	3,611	C	CY	Swell fac	tor: 1.215			
Loose volume:	4,387	L	CY					
	rce of estimated von		pplicat at Han	ion: 65' x 1,500' dbook	x 1' deep			_ _
HOURLY PROD	<u>UCTION</u>							
				Scraper B	owl (volume) Bas	<u>is:</u>		
Material weight:	1,600 lbs/LCY				Volume: 24.00		LCY	
Material description:	Top Soil			-	Volume: 34.00		LCY	
Rated Payload: Payload Capacity:	81,600 pounds 51.00 LCY			Average Adjusted (Volume: 29.00 Papacity: 29.00		LCY	

Site Altitude: 4930 feet

Scraper Loading Time: 0.80 Minutes Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

	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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	1.00	3.00	4.00	2394	0.28

Haul Time: **0.28** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	-1.00	3.00	2.00	2960	0.23

		(%)	(%)	(%)		(111111)
	300.00	-1.00	3.00	2.00	2960	0.23
				Return Time:	0.23	minutes
			Total Scraper	team cycle time:	1.91	minutes
			Adjusted for	or job conditions:	756.13	LCY/Hour
			Selected Nur	nber of Scrapers:	1	Scraper(s)
	Adjusted	d single scrap	er team (unit) h	ourly production:	756.13	LCY/Hour
	Adjusted m	ultiple scrap	er team (fleet) h	ourly production:	756.13	LCY/Hour
Optimal	Unadjusted unit prod Number of Scrapers pe			LCY/Hour		
OB TI	ME AND COST					
Fleet	size: 1	Team(s)	To	otal job time:	5.80	Hours

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Fleet size:	1	Team(s)	Total job time:	5.80	Hou
Unit cost:	\$0.792	/LCY	Total job cost:	\$3,474	

BULLDOZER WORK

Task description:	Final gra	ade prep	ared area a	head of mining and high	wall	
: Irwin/Thomas Mine		Per	mit Action:	2018 Bond Estimate	Permit/Job#:	M2016054
PROJECT IDENTIF	ICATION					
Task #: 005 Date: 10/22/2018 User: AME	3 (State: County:	Colorado Boulder		Abbreviation: Filename:	None M054-005
Agency or orga	nization nan	ne: DF	RMS			
HOURLY EQUIPMI	ENT COST	_				
Basic Machine: Ca	t D6T LGP					
Horsepower: 20						
· · · · · · · · · · · · · · · · · · ·	aight					
Attachment: NA				<u> </u>		
	er day					
Data Source: (C	RG)			<u> </u>		
Cost Breakdown:						
				<u>Utilization %</u>		
Ownership Cost/Hour:			\$50.71	NA		
Operating Cost/Hour:			\$42.03	100		
Ripper own. Cost/Hour:			\$0.00	NA		
Ripper op. Cost/Hour:			\$0.00	0		
Operator Cost/Hour:			\$40.23	NA		
Total unit Cost/Hour:	\$132.97					
Total Fleet Cost/Hour:	\$265.94					
MATERIAL QUANT						
Initial Volume: 2,73						
Swell factor: 1.00			_			
Loose volume: 2,73	32 LCY					
Source of estimated volu				500' x 0.5') + (500' x 100	' x 0.5')	
Source of estimated swel	1 factor:	Cat Hand	book			
HOURLY PRODUC	<u>TION</u>					
Average push distance: Unadjusted hourly produ		feet 2.1 LCY/	'hr			
Materials consistency de						
·	-	Loose	stockpile 1.2			
Average push gradient:	0 %					
Average site altitude:	4,930 feet	<u> </u>				
Material weight:	1,600 lbs/	I CV				
_		LCI			_	
Weight description:	Top Soil					
Job Condition Correction				Source		
Operator			750	(AVG.)		
Material consist			200	(CAT HB)		
Dozing me			100	(50% SL)		
Visi	hility	1	000	(AVG)		

Job efficiency:

0.830

(1 SHIFT/DAY)

Spoil pile:	0.700	(FND-MF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8271

Adjusted unit production: 324.31 LCY/hr
Adjusted fleet production: 648.62 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.410/LCY

Total job time: 4.21 Hours
Total job cost: \$1,120

SCRAPER TEAM WORK

Task description:	Replace to	psoil on in	ternal l	haul roads + mai	in site entrance			
Site: Irwin/Thomas M	ine	Permit A	Action:	2018 Bond Esti	mate Peri	mit/Job#:	M2016	054
PROJECT IDENT Task #: 007 Date: 10/22/2 User: AME	2018 Co	unty: Bo	olorado oulder			viation: _ ename: _	None M054-0	07
Agency or o	organization name:	DRMS						
HOURLY EQUIP	<u>PMENT</u>			COSTS	hift basis: 1 per d	ay		
				ent Description				
			Cat 637 NA	7G				
Suppo	rt Equipment -Loa		NA NA					
	-Dum	p Area:	NA					
Road Ma	intenance –Motor		CAT 10	5M Γanker, 3,500 Gal				
	vv ater	Truck.	water .	i anker, 3,300 Gai				
Cost Breakdown:	Scraper Wo			Support Equi				Equipment
	Scraper	Doze	r	Load Area	Dump Area	Motor (Grader	Water Truck
%Utilization-machine:	100		NA	NA	NA		100	100
Ownership cost/hour:	\$155.61		NA	NA	NA	;	\$77.19	\$12.39
Operating cost/hour:	\$166.86		NA	NA	NA		\$63.34	\$26.02
% Utilization-ripper:	NA		NA	NA	NA		50	NA to our
Ripper own. cost/hour:	NA		NA	NA NA	NA		\$4.07	\$0.00
Ripper op. cost/hour:	NA		NA	NA NA	NA NA		\$1.77	\$0.00
Operator cost/hour: Unit Subtotals:	\$45.84		NA NA	NA NA	NA NA		\$45.64	\$0.00
Number of Units:	\$368.30 1		NA 0	NA 0	NA 0	\$	192.00	\$38.4
Group Subtotals:	Work:	\$368.3		Support:	\$0.00		Maint:	\$230.41
Total work team cost	/hour: <u>\$598.71</u>	φ300.		Support	φοισσ		Traine	<u> </u>
Initial volume:	4,840		CCY	Swell fac	tor: 1.215			
Loose volume:	5,881	L	.CY					
	rce of estimated vo of estimated swell		Applicat Cat Han	ion: 3 ac x 1' dee dbook	p			
HOURLY PROD	<u>UCTION</u>			G	and (sale as) P	·		
				•	owl (volume) Bas	<u>18:</u>	_	
Material weight: Material description:	1,600 lbs/LCY Top Soil				Volume: 24.00 Volume: 34.00		LC	
Rated Payload:	81,600 pounds			Average			LC	
Payload Capacity:					Capacity: 29.00		LC	

Site Altitude: 4930 feet

Cvc	ا ما	Γin	10

 $\begin{array}{lll} \text{Scraper Loading Time:} & \underline{0.80} \text{ Minutes} \\ \text{Maneuver and Spread Time:} & \underline{0.60} \text{ Minutes} \\ \end{array}$

Job Condition Correction:

	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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	1.00	3.00	4.00	2394	0.28

Haul Time: **0.28** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	-1.00	3.00	2.00	2960	0.23

		(70)	(/0)	(/0)		` ′
1	300.00	-1.00	3.00	2.00	2960	0.23
				Return Time:	0.23	minutes
			Total Scraper	team cycle time:	1.91	minutes
			Adjusted for	or job conditions:	756.13	LCY/Hour
			Selected Nun	nber of Scrapers:	1	Scraper(s)
	Adjusted	l single scrap	er team (unit) ho	ourly production:	756.13	LCY/Hour
	Adjusted m	ultiple scrape	er team (fleet) ho	ourly production:	756.13	LCY/Hour
Optimal	Unadjusted unit prod Number of Scrapers pe			LCY/Hour		
JOB TI	ME AND COST					
Fleet	size: 1	Team(s)	То	tal job time:	7.78	Hours

Unit cost: \$0.792 /LCY Total job cost: \$4,656

SCRAPER TEAM WORK

Task # 008

Task description:	Replace tops	soil on scale hou	ıse + staging area	S		
Site: <u>Irwin/Thomas M</u>	ine	Permit Action:	2018 Bond Esti	mate Peri	mit/Job#: <u>M2016</u>	6054
PROJECT IDEN	TIFICATION					
Task #: 008 Date: 10/22/ User: AME		ate: Colorado nty: Boulder			viation: None ename: M054-0	008
	organization name:	DRMS				
HOURLY EQUI	PMENT		COSTS	nift basis: <u>1 per d</u>	<u>ay</u>	
		Equipm	ent Description			
		raper: Cat 63' Dozer: NA	7G			
Suppo	ort Equipment -Load	Area: NA				
Poed Me	-Dump aintenance –Motor G		6M			
Koau Ma	-Water		Tanker, 3,500 Gal	•		
Cost Breakdown:	Scraper Work	z Toom	Support Equip	amont	Maintananga	Equipment
Cost Breakdown:	Scraper Work	Dozer	Load Area	Dump Area	Maintenance Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	NA	100	100
Ownership cost/hour:	\$155.61	NA	NA	NA	\$77.19	\$12.39
Operating cost/hour:	\$166.86	NA	NA	NA	\$63.34	\$26.02
% Utilization-ripper:	NA	NA	NA	NA	50	NA
Ripper own. cost/hour:	NA	NA	NA	NA	\$4.07	\$0.00
Ripper op. cost/hour:	NA	NA	NA	NA	\$1.77	\$0.00
Operator cost/hour:	\$45.84	NA	NA	NA	\$45.64	\$0.00
Unit Subtotals:	\$368.30	NA	NA	NA	\$192.00	\$38.41
Number of Units:	1	0	0	0	1	1
Group Subtotals:	Work:	\$368.30	Support:	\$0.00	Maint:	\$230.41
Total work team cos	t/hour: \$598.71					
MATERIAL OIL						
MATERIAL QUA		COV	a 11.6	4.04#		
Initial volume: Loose volume:	8,067 9,801	CCY LCY	Swell fact	or: 1.215		
		 -				
	arce of estimated volution of estimated swell fa	11	tion: 5 ac x 1' deep dbook)		
HOURLY PROD	LICTION					
HOURLINOD	CIION		Scraper Bo	owl (volume) Bas	is:	
Material weight:	1,600 lbs/LCY		•	Volume: 24.00		CY
Material description:	Top Soil		Heaped T			CY
Rated Payload:	81,600 pounds		Average			CY
Payload Capacity:	51.00 LCY		Adjusted C		LO	CY

Site Altitude: 4930 feet

~ 1			
Cycl	e i	ľ'nπ	ıe:

Scraper Loading Time: 0.80 Minutes 0.60 Minutes Maneuver and Spread Time:

Job Condition Correction:

	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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	1.00	3.00	4.00	2394	0.28

Haul Time: 0.28 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	-1.00	3.00	2.00	2960	0.23

0.23 minutes Return Time: Total Scraper team cycle time: 1.91 minutes Adjusted for job conditions: 756.13 LCY/Hour Selected Number of Scrapers: 1 Scraper(s) Adjusted single scraper team (unit) hourly production: 756.13 LCY/Hour Adjusted multiple scraper team (fleet) hourly production: 756.13 LCY/Hour Unadjusted unit production/hour: 910.99 LCY/Hour Optimal Number of Scrapers per push dozer: **JOB TIME AND COST**

Fleet size: 1 Team(s) Total job time: 12.96 Hours Unit cost: __ \$0.792 /LCY Total job cost: **\$7,761**

SCRAPER TEAM WORK

Task description:	Replace to	osoil on	tockpile a	area				
Site: Irwin/Thomas M	ine	Permi	t Action:	2018 Bond Esti	mate Per	mit/Job#:	M2016	054
PROJECT IDEN	TIFICATION							
Task #: 009	S	tate:	Colorado		Abbre	viation:	None	
Date: $\frac{10/22}{2}$			Boulder				M054-0	09
User: AME								
Agency or o	organization name:	DRM	S					
HOURLY EQUIP	PMENT			COSTS	hift basis: 1 per c	la <u>y</u>		
			Equipme	ent Description				
-	-S	craper:	Cat 637					
	-	Dozer:	NA					
Suppo	ort Equipment -Load		NA					
Dood Mo	-Dump intenance –Motor (Area:	NA CAT 16	cM				
Koau Ma	-Water			οινι Fanker, 3,500 Gal				
	,, ater	Truck.	vv acer	<u> </u>	•			
Cost Breakdown:	Scraper Wor	k Team		Support Equip	pment	Maint	enance I	Equipment
	Scraper	Do	zer	Load Area	Dump Area	Motor C	rader	Water Truck
%Utilization-machine:	100		NA	NA	NA		100	100
Ownership cost/hour:	\$155.61		NA	NA	NA	\$	577.19	\$12.39
Operating cost/hour:	\$166.86		NA	NA	NA	\$	663.34	\$26.02
%Utilization-ripper:	NA		NA	NA	NA		50	NA
Ripper own. cost/hour:	NA		NA	NA	NA		\$4.07	\$0.00
Ripper op. cost/hour:	NA		NA	NA	NA		\$1.77	\$0.00
Operator cost/hour:	\$45.84		NA	NA	NA	\$	845.64	\$0.00
Unit Subtotals:	\$368.30		NA	NA	NA	\$1	92.00	\$38.41
Number of Units:	1		0	0	0		1	1
Group Subtotals:	Work:	\$368	3.30	Support:	\$0.00	ı	Maint:	\$230.41
Total work team cost	t/hour: \$598.71							
MATERIAL QUA	<u>ANTITIES</u>							
Initial volume:	8,873		CCY	Swell fact	tor: 1.215			
Loose volume:	10,781		LCY		-			
Sou	rce of estimated vo	lume:	Applicat	ion: 5.5 ac x 1' de	еер			
Source	of estimated swell f	actor:	Cat Hand					
HOURLY PROD	<u>UCTION</u>							
				Scraper Bo	owl (volume) Bas	is:		
Material weight:	1,600 lbs/LCY			Struck	Volume: 24.00		LC	ΣY
Material description:	Top Soil			Heaped			— LC	
Rated Payload:	81,600 pounds			Average	Volume: 29.00		LC	CY
Payload Capacity:	51.00 LCY			Adjusted C	Capacity: 29.00		LC	ĽΥ

Site Altitude: 4930 feet

Cycle Time:

Scraper Loading Time: 0.80 Minutes Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

	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: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	1.00	3.00	4.00	2394	0.28

Haul Time: 0.28 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	-1.00	3.00	2.00	2960	0.23

0.23 minutes Return Time: Total Scraper team cycle time: 1.91 minutes Adjusted for job conditions: 756.13 LCY/Hour Selected Number of Scrapers: Scraper(s) 1 Adjusted single scraper team (unit) hourly production: 756.13 LCY/Hour Adjusted multiple scraper team (fleet) hourly production: 756.13 LCY/Hour Unadjusted unit production/hour: 910.99 LCY/Hour Optimal Number of Scrapers per push dozer: JOB TIME AND COST Float ciza. Total job time 14 26 Toom(c) Hours

ricci sizc.	1	1 cam(s)	Total job time.	17.20	
Unit cost:	\$0.792	/LCY	Total job cost:	\$8,536	

BULLDOZER RIPPING WORK

	Task description	: Rip 1	roads, scale house area,	and stockpile a	area			
Site	: Irwin/Thoma	s Mine	Permit Action:	2018 Bond Es	stimate	Permit/Job#:	M2016	5054
	PROJECT ID	ENTIFICATI	<u>ON</u>					
	Task #: 01	0	State: Colorado		Δh	breviation:	None	
		/22/2018	County: Boulder			Filename:	M054-0	010
		ME						
	Agency	or organization	name: DRMS					
	HOURLY EQ	UIPMENT CO	<u>OST</u>					
	Basic	Machine: Cat	D6T LGP		Horsepower:		200	
	Ripper At	tachment: 3-S	hank Ripper	_	Shift Basis:		er day	
					Data Source:	(CRG)	
	Cost Breakdown	<u>:</u>						
					Utilization %			
		Ownership Co		\$50.71	NA	<u></u>		
		Operating Co		\$42.03	100	_		
		er Ownership Co		\$6.02	NA 100	_		
	Rip	per Operating Co		\$4.12	100	_		
		Operator Co Total Unit Co		\$40.23	NA			
				\$143.11				
		Total Fleet Co	ost/Hour: \$286	5.21				
	MATERIAL (<u>QUANTITIES</u>	Sele	cted estimating	g method: Ar	ea		
	Alternate Method	ds:						
Seismic:	NA		Bank Volume:	NA	BCY		NA	
Area:	13.50	acres	Rip Depth (ft):	2.00	Volume:	43,560		BCY or CCY
		Source of estin	nated quantity: Applica	ation: 13.5 ac i	n Aspect C			
	HOURLY PR	ODUCTION						
		<u>obcerron</u>						
	Seismic:		Seismic Velocity:	NA	feet/se	econd		
		,	Seisinic velocity.	IVA	1000/30	cond		
	Area:							
			ge Ripping Depth:	1.64	mph			
			e Ripping Width:	6.58	degree	es		
			e Ripping Length:age Dozer Speed:	400.00 88.00	feet feet			
			Maneuver Time:	0.25	feet			
		_	tion per unit area:	0.756	acres/	hour		
	Job Condition Co							
			Unit Production:	0.756	Acres	/hr		
	O1	juotea riourij						
			Site Altitude: Altitude Adj:	4,930 1.00	feet (CAT	HR)		
			Job Efficiency:	0.83	(CA1 (1 shift			
			Net Correction:	0.83	multip	•		
		A dineted	Hourly Unit Production:	0.63	Acres/hr			
			Hourly Fleet Production:	1.25	Acres/hr			
	JOB TIME A	•	,					
	Fleet size:	2	Grader(s)	Total job tin	ne:	10.76	Ľ	Iours
				· ·			I	iours
	Unit cost:	\$228.072	Per acre	Total job co	st:	\$3,079		

BULLDOZER WORK

Task description:	Final grade road	ls, scale hous	e area, and stockpile ar	ea	
: _Irwin/Thomas Mine	Per	mit Action: _	2018 Bond Estimate	Permit/Job#:	M2016054
PROJECT IDENTII	FICATION				
Task #: 011	State:	Colorado		Abbreviation:	None
Date: 10/22/201		Boulder		Filename:	M054-011
User: AME	<u> </u>			_	1,100 . 011
Agency or orga	anization name: DI	RMS			
HOURLY EQUIPM	ENT COST				
	at D6T LGP				
Horsepower: 20			-		
	raight		-		
Attachment: N	A				
Shift Basis: 1	per day				
Data Source: (C	CRG)				
Cost Breakdown:		İ			
		Φ50.71	<u>Utilization %</u>		
Ownership Cost/Hour:		\$50.71 \$42.03	NA 100		
Operating Cost/Hour: Ripper own. Cost/Hour:		\$0.00	NA		
Ripper op. Cost/Hour:		\$0.00	0		
		\$40.23			
Operator Cost/Hour:	-	\$40.23	NA		
MATERIAL QUAN Initial Volume: 10,	1111ES 890				
Swell factor: 1.0					
	890 LCY	_			
					
Source of estimated volu		on: 13.5 ac x	0.5' deep		
Source of estimated swe	ell factor: Cat Hand	book			
HOURLY PRODUC	<u>CTION</u>				
Average push distance:	200 feet				
Unadjusted hourly produ	uction: 153.6 LCY	/hr			
Materials consistency de	escription: Loose	stockpile 1.2			
Average push gradient:	0 %				
Average site altitude:	4,930 feet				
Material weight:	1,600 lbs/LCY			_	
Weight description:	Top Soil				
Job Condition Correction			Source		
Operator		750	(AVG.)		
Material consis		200	(CAT HB)		
Dozing m		100	(50% SL)		
		000	(AVG.)		
Job effic	eiency: 0.	830	(1 SHIFT/DAY)	

Spoil pile:	0.700	(FND-MF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8271

Adjusted unit production: 127.04 LCY/hr
Adjusted fleet production: 254.08 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$1.047/LCY

Total job time: 42.86 Hours
Total job cost: \$11,398

REVEGETATION WORK

Irwin/Thomas Mine	Per	rmit Action: 2018	Bond Estimate	Permit/Job#	#: <u>M201605</u> 4
ROJECT IDENTIFICA	ATION				
Task #: 012	State:	Colorado		Abbreviation:	None
Date: 10/22/2018	County:	Boulder		Filename:	M054-012
User: AME					
Agency or organiza	ation name: DR	RMS			
<u>ERTILIZING</u>					
aterials		Units /			
Description		Acre	Unit	Cost / Unit	Cost /Acre
6-6-6		667.00	pound	\$0.17	\$113.39
				Total Fertilizer Materials	
				Cost/Acre	\$113.39
pplication Description	W. I. V. G. 22. 0.1. 0.0	10.0100)		Cost/Acre	Cost /Acre
	MEANS 32 01 90.	.13 0120)		Cost/Acre	
Description	MEANS 32 01 90.		l Fertilizer App	Cost/Acre	Cost /Acre
Description Tractor towed spreader (N	MEANS 32 01 90.		l Fertilizer App		Cost /Acre \$34.72
Description Tractor towed spreader (N	MEANS 32 01 90.		l Fertilizer App		Cost /Acre \$34.72 \$34.72
Description Tractor towed spreader (N		Total	Fertilizer App		Cost /Acre \$34.72
Description Tractor towed spreader (N	EANS 32 91 13.23	Total	l Fertilizer App		Cost /Acre \$34.72 \$34.72 Cost /Acre

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alfalfa - Common	0.75	3.62	\$1.96
Blue Grama - Native	0.75	12.24	\$11.14
Intermediate Wheatgrass - Rush	3.00	6.40	\$11.52
Totals Seed Mix	4.50	22.26	\$24.62

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	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$576.00

Application

Description		Cost /Acre
Crimping, with tractor {DMG survey data}		\$68.78
Weed spray, hand, aquatic area, nox. [DMG]		\$175.00
	Total Mulch Application Cost/Acre	\$243.78

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:
 114.9
 Cost / Acre:
 \$1,609.77

 Estimated Failure Rate:
 25%
 Cost / Acre*:
 \$256.62

*Selected Replanting Work Items: SEEDING

Initial Job Cost: \$184,962.57

Reseeding Job Cost: \$7,371.41

Total Job Cost: \$192,334

115.00

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description:	Mobilization/Demo	obilization		
e: Irwin/Thomas Mine	Perm	it Action: 2018 F	Bond Estimate Per	rmit/Job#: <u>M2016054</u>
PROJECT IDENTIFICA	<u>TION</u>			
Task #: 013 Date: 10/22/2018 User: AME		Colorado Boulder	Abbrevia Filer	ation: None M054-013
Agency or organizat	ion name: DRM	IS		
EQUIPMENT TRANSPO	RT RIG COST			
			Shift basis Cost Data Source	r·/
Truck Tractor De	escription: GEN	ERIC ON-HIGHW	VAY TRUCK TRACTOR 400 HP (2ND HALF, 20	, 6X4, DIESEL POWERED, 006)
Truck Trailer De	escription:		NG GOOSENECK, DRO RAILER (25T, 50T, AND	•
Cost Breakdown:				
Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons	
Ownership Cost/Hour	: \$16.63	\$18.37	\$22.33	

\$46.13

\$27.66

\$25.39

\$117.55

\$50.07

\$27.66

\$25.39

\$125.45

NON ROADABLE EQUIPMENT:

Total Unit Cost/Hour:

Operating Cost/Hour:

Operator Cost/Hour:

Helper Cost/Hour:

\$44.38

\$27.66

\$0.00

\$88.67

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 637G	57.28	\$155.61	\$125.45	4	\$1,124.24	\$501.80	\$1,000.00
CAT 16M	28.73	\$77.19	\$117.55	2	\$389.48	\$235.10	\$500.00
Cat 730	25.19	\$57.82	\$88.67	2	\$292.98	\$177.34	\$500.00
CAT 966H	25.80	\$39.42	\$88.67	1	\$128.09	\$88.67	\$250.00
Cat D6T LGP	26.87	\$50.71	\$117.55	3	\$504.78	\$352.65	\$750.00
Cat D6T LGP	28.63	\$56.73	\$117.55	1	\$174.28	\$117.55	\$250.00

Subtotals: \$2,613.85 \$1,473.11 \$3,250.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 3,500 Gal.	\$38.41	2	\$76.82	\$76.82
Drill/Broadcast Seeder with Tractor	\$36.08	1	\$36.08	\$36.08

Subtotals:	\$112.90	\$112.90	
Subjoiats.	3112,90	3112,90	

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:

Total one-way travel distance:

Average Travel Speed:

LONGMONT

miles

20.00

mph

Transportation Cycle Time:

	Non-	
	Roadable	Roadable
	Equipment	Equipment
Haul Time (Hours):	0.20	0.20
Return Time (Hours):	0.20	0.20
Loading Time (Hours):	6.00	NA
Unloading Time (Hours):	6.00	NA
Subtotals:	12.40	0.40

JOB TIME AND COST

Total job cost: 24.80 Hours

Total job cost: \$70,912