



STATE OF  
COLORADO

Eschberger - DNR, Amy <amy.eschberger@state.co.us>

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## SO-01 Bond Estimate / Dawson Mine / M1977-392

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**Eschberger - DNR, Amy** <amy.eschberger@state.co.us>

Fri, Jun 18, 2021 at 6:09 PM

To: Harold Stickler <harold.stickler@generalshale.com>

Cc: "Jason.McGraw@generalshale.com" <jason.mcgraw@generalshale.com>, Sean Austin <saustin@brick.com>, Richard Murphy <rmurphy@brick.com>

Mr. Stickler,

I conducted an inspection of the Dawson Mine on 6/17 and have reassessed the required financial warranty for reclaiming the site in accordance with the approved plan.

Please take a look at the attached bond estimate and get any comments you might have to me within 2 weeks, by **July 2**.

If you have no comments or questions and accept the bond estimate as-is, please let me know as soon as you can.

Once I issue the surety increase for the new required financial warranty amount, General Shale Brick will have 60 days to post the bond. If we don't receive the bond by that deadline, the SO application is terminated and the current operator is issued the surety increase.

It's going to be a bit longer before I can get to writing the inspection report, but I wanted to go ahead and get the bond estimate to you now so you can be looking it over.

Feel free to reach out with any questions.

Thanks,

Amy Eschberger  
Environmental Protection Specialist



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

I am working remotely and can be reached at 303-945-9014.

O: 303.866.3567 x 8129 | F: 303.832.8106 | C: 303.945.9014  
1313 Sherman Street, Room 215, Denver, CO 80203  
[Amy.Eschberger@state.co.us](mailto:Amy.Eschberger@state.co.us) | <https://drms.colorado.gov>



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**M1977-392\_SO-01\_Bond-Estimate\_20210618.pdf**  
329K

## COST SUMMARY WORK

Task description: Cost Summary

Site: Dawson Mine

Permit Action: SO-01 2021

Permit/Job#: M1977392

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 6/18/2021

County: Elbert

Filename: M392-000

User: AME

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Push down material for East pit backfill	DOZER	1	52.13	\$16,996
002	Backfill East pit highwalls	DOZER	1	46.34	\$15,110
003	Haul topsoil to East pit	TRUCK1	1	5.54	\$4,321
004	Retopsoil East pit area - 2.15 ac	SCRAPER1	1	2.28	\$1,389
005	Revegetate East pit area - 2.15 ac	REVEGE	1	2.15	\$3,182
006	Rip West pit/stockpile area - 7.9 ac	RIPPER	1	10.64	\$3,746
007	Retopsoil West pit/stockpile area - 7.9 ac	SCRAPER1	1	7.08	\$6,581
008	Revegetate West pit/stockpile area - 7.9 ac	REVEGE	1	7.90	\$10,923
009	Interseed stockpile area North of access road	REVEGE	1	3.00	\$4,148
010	Mobilization/Demobilization	MOBILIZE	1	20.80	\$37,192
<b><u>SUBTOTALS:</u></b>				<b>157.86</b>	<b>\$103,588</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$2,092

Performance bond: 1.05

Total = \$1,088

Job superintendent: 50.00

Total = \$3,478

Profit: 10.00

Total = \$10,359

TOTAL O & P = \$17,016

CONTRACT AMOUNT (direct + O & P) = \$120,604

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): \$500

Total = \$500

Engineering work and/or contract/bid preparation: 4.25

Total = \$5,126

Reclamation management and/or administration: 5.00

\$6,030

CONTINGENCY: 0.00

Total = \$0

TOTAL INDIRECT COST = \$28,672

**TOTAL BOND AMOUNT (direct + indirect) = \$132,260**

**BULLDOZER WORK**Task description: **Push down material for East pit backfill**Site: **Dawson Mine** Permit Action: **SO-01 2021** Permit/Job#: **M1977392****PROJECT IDENTIFICATION**

Task #: 001 State: Colorado Abbreviation: None  
 Date: 6/18/2021 County: Elbert Filename: M392-001  
 User: AME

Agency or organization name: DRMS**HOURLY EQUIPMENT COST**

Basic Machine: Cat D9T - 9SU  
 Horsepower: 405  
 Blade Type: Semi-Universal  
 Attachment: NA  
 Shift Basis: 1 per day  
 Data Source: (CRG)

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$156.88</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$127.87</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$0.00</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>0</u>
Operator Cost/Hour:	<u>\$41.30</u>	<u>NA</u>

Total unit Cost/Hour: \$326.04  
 Total Fleet Cost/Hour: **\$326.04**

**MATERIAL QUANTITIES**

Initial Volume: 17,778  
 Swell factor: 1.250  
 Loose volume: **22,223 LCY**

Source of estimated volume: Use material from hill at north edge of pit  
 Source of estimated swell factor: Cat Handbook

**HOURLY PRODUCTION**

Average push distance: 250 feet  
 Unadjusted hourly production: 546.0 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: -5 %  
 Average site altitude: 5,980 feet

Material weight: 2,650 lbs/LCYWeight description: Decomposed rock - 25% Rock, 75% Earth**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	<u>1.000</u>	<u>(EXCL.)</u>
Material consistency:	<u>0.900</u>	<u>(CAT HB))</u>
Dozing method:	<u>1.200</u>	<u>(SLOT)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>
Job efficiency:	<u>0.830</u>	<u>(1 SHIFT/DAY)</u>

Spoil pile:	0.900	(SSD-FC)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7808

Adjusted unit production: 426.32 LCY/hr

Adjusted fleet production: **426.32** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.765/LCY

Total job time: **52.13** Hours

Total job cost: **\$16,996**

**BULLDOZER WORK**Task description: **Backfill East pit highwalls**Site: **Dawson Mine** Permit Action: **SO-01 2021** Permit/Job#: **M1977392****PROJECT IDENTIFICATION**

Task #: **002** State: **Colorado** Abbreviation: **None**  
 Date: **6/18/2021** County: **Elbert** Filename: **M392-002**  
 User: **AME**

Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**

Basic Machine: **Cat D9T - 9SU**  
 Horsepower: **405**  
 Blade Type: **Semi-Universal**  
 Attachment: **NA**  
 Shift Basis: **1 per day**  
 Data Source: **(CRG)**

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$156.88	NA
Operating Cost/Hour:	\$127.87	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$326.04**  
 Total Fleet Cost/Hour: **\$326.04**

**MATERIAL QUANTITIES**

Initial Volume: **17,778**  
 Swell factor: **1.000**  
 Loose volume: **17,778 LCY**

Source of estimated volume: **Use material from hill at north edge of pit, 20'H x 800'L**  
 Source of estimated swell factor: **Cat Handbook**

**HOURLY PRODUCTION**

Average push distance: **250 feet**  
 Unadjusted hourly production: **546.0 LCY/hr**

Materials consistency description: **Loose stockpile 1.2**

Average push gradient: **5 %**  
 Average site altitude: **5,980 feet**

Material weight: **2,650 lbs/LCY**Weight description: **Decomposed rock - 25% Rock, 75% Earth****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	1.000	(EXCL.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.900	(SSD-FC)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7026

Adjusted unit production: 383.62 LCY/hr

Adjusted fleet production: **383.62** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.850/LCY

Total job time: **46.34** Hours

Total job cost: **\$15,110**

**TRUCK/LOADER TEAM WORK**Task description: **Haul topsoil to East pit**Site: **Dawson Mine**Permit Action: **SO-01 2021**Permit/Job#: **M1977392****PROJECT IDENTIFICATION**Task #: **003**State: **Colorado**Abbreviation: **None**Date: **6/18/2021**County: **Elbert**Filename: **M392-003**User: **AME**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Shift basis: **1 per day**

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D6T LGP
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

**Cost Breakdown:****Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	100	100	100
Ownership cost/hour:	\$58.32	\$42.87	NA	\$71.95	\$55.79	\$14.71
Operating cost/hour:	\$49.78	\$53.22	NA	\$58.55	\$60.08	\$30.58
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$32.54	\$40.71	NA	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$140.64	\$136.79	NA	\$171.79	\$144.43	\$45.29
Number of Units:	2	1	0	1	1	1
Group Subtotals:	Work: \$418.07		Support: \$171.79		Maint: \$189.72	

Total work team cost/hour: **\$779.58****MATERIAL QUANTITIES**Initial volume: **1,735**

CCY

Swell factor: **1.215**Loose volume: **2,108**

LCY

Source of estimated volume: **Replace 6 in on 2.15 ac, 1,800 ft haul**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: **1,600**

Pounds/LCY

Description: **Top Soil**Rated Payload: **62,000**

Pounds

Payload Capacity: **38.75**

LCY

**Truck Bed (volume) Basis:**

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

Final Truck Volume Based on Number of Loader Passes: 22.00 LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	5.000	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	<b>5.500</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 5980 feet

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

**Loading Tool Cycle Time:** Number of Loading Tool Passes Required to Fill Truck: 4 passes

**Excavators and Front Shovels:**

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

Track Loaders – Material Description: \_\_\_\_\_

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.040	minutes
Adjusted Loader Cycle Time:		<b>0.460</b>	minutes
Net Load Time per Truck:		<b>1.480</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.600	Minutes
Truck Load Time:	1.480	Minutes	Adjusted for site altitude:	1.480	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.000	Minutes

**Truck Travel (Haul & Return) Time:**  
maintained 3.0

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,



## Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	5.00	3.00	8.00	902	2.044

Haul Time: **2.044** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	-5.00	3.00	-2.00	3080	0.637

Return Time: **0.637** minutesTotal Truck Cycle Time: **5.761** minutes

## Loading Tool unit

Production	<u>634.62</u>	LCY/Hour	Adjusted for job efficiency:	<u>526.73</u>	LCY/Hour
Truck Unit Production	<u>229.13</u>	LCY/Hour	Adjusted for job efficiency:	<u>190.18</u>	LCY/Hour

Optimal No. of Trucks:	<u>3</u>	Truck(s)	Selected Number of Trucks:	<u>2</u>	Truck(s)
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Adjusted hourly truck team production:	<u>380.35</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>380.35</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<b><u>380.35</u></b>	LCY/Hour

**JOB TIME AND COST**

Fleet size:	<u>1</u>	Team(s)	Total job time:	<b><u>5.54</u></b>	Hours
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Unit cost:	<u>\$2.050</u>	/LCY	Total job cost:	<b><u>\$4,321</u></b>
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**SCRAPER TEAM WORK**Task description: **Retopsoil East pit area - 2.15 ac**Site: **Dawson Mine**Permit Action: SO-01 2021Permit/Job#: M1977392**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 6/18/2021County: ElbertFilename: M392-004User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D6T LGP
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	50	50	50
Ownership cost/hour:	\$144.75	NA	NA	\$71.95	\$55.79	\$14.71
Operating cost/hour:	\$145.83	NA	NA	\$29.27	\$30.04	\$15.29
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$30.90	NA	NA	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$321.47	NA	NA	\$142.52	\$114.39	\$30.00
Number of Units:	1	0	0	1	1	1
Group Subtotals:	Work:	\$321.47	Support:	\$142.52	Maint:	\$144.39

Total work team cost/hour: **\$608.38****MATERIAL QUANTITIES**Initial volume: 1,735

CCY

Swell factor: 1.000Loose volume: 1,735

LCY

Source of estimated volume: Replace 6 in on 2.15 acSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</u>	Heaped Volume:	<u>34.00</u>	LCY
Rated Payload:	<u>81,600 pounds</u>	Average Volume:	<u>29.00</u>	LCY
Payload Capacity:	<u>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.70 MinutesJob Condition Correction:

Site Altitude: 5980 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	150.00	2.00	3.00	5.00	1343	0.18

Haul Time: 0.18 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	150.00	-2.00	3.00	1.00	2937	0.22

Return Time: 0.22 minutesTotal Scraper team cycle time: 1.90 minutesAdjusted for job conditions: 760.11 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 760.11 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 760.11 LCY/HourUnadjusted unit production/hour: 915.79 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 2.28 HoursUnit cost: \$0.800 /LCYTotal job cost: \$1,389

**REVEGETATION WORK**Task description: Revegetate East pit area - 2.15 acSite: Dawson MinePermit Action: SO-01 2021Permit/Job#: M1977392**PROJECT IDENTIFICATION**Task #: 005State: ColoradoAbbreviation: NoneDate: 6/18/2021County: ElbertFilename: M392-005User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	150.00	pound	\$0.34	\$50.25
Triple superphosphate, 0-46-0	110.00	pound	\$0.43	\$46.75
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$97.00</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$37.03
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$37.03</b>

**TILLING**

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

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	2.50	8.09	\$22.19
Sideoats Grama - Butte	1.80	5.91	\$16.20
Pubescent Wheatgrass - Luna	3.60	7.44	\$12.24
Western Wheatgrass - Arriba	6.40	16.16	\$41.60
<b>Totals Seed Mix</b>	<b>14.30</b>	<b>37.60</b>	<b>\$92.23</b>

**Application**

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Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	1.50	TON	\$301.00	\$451.50
<b>Total Mulch Materials Cost/Acre</b>				<b>\$451.50</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$101.93
<b>Total Mulch Application Cost/Acre</b>	<b>\$172.10</b>

**NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
<b>Totals Nursery Stock Cost / Acre</b>					<b>\$0.00</b>

**JOB TIME AND COST**

No. of Acres:	2.15	Cost /Acre:	\$1,382.62
Estimated Failure Rate:	30%	Cost /Acre*:	\$324.23
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	<b>\$2,972.63</b>		
Reseeding Job Cost:	<b>\$209.13</b>		
Total Job Cost:	<b>\$3,182</b>		
Job Hours:	<b>2.15</b>		

## BULLDOZER RIPPING WORK

Task description: Rip West pit/stockpile area - 7.9 ac

Site: Dawson Mine

Permit Action: SO-01 2021

Permit/Job#: M1977392

### PROJECT IDENTIFICATION

Task #: 006

State: Colorado

Abbreviation: None

Date: 6/18/2021

County: Elbert

Filename: M392-006

User: AME

Agency or organization name: DRMS

### HOURLY EQUIPMENT COST

Basic Machine: Cat D9T - 9SU

Ripper Attachment: 3-Shank Ripper

Horsepower: 405

Shift Basis: 1 per day

Data Source: (CRG)

#### Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$156.88	NA
Operating Cost/Hour:	\$127.87	100
Ripper Ownership Cost/Hour:	\$15.59	NA
Ripper Operating Cost/Hour:	\$10.23	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$351.87	
Total Fleet Cost/Hour:	<b>\$351.87</b>	

### MATERIAL QUANTITIES

Selected estimating method: Area

#### Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA  
Area: 7.90 acres Rip Depth (ft): 1.50 Volume: 19,118 BCY or CCY

Source of estimated quantity: DRMS

### HOURLY PRODUCTION

#### Seismic:

Seismic Velocity: NA feet/second

#### Area:

Average Ripping Depth: 2.63 feet/pass  
Average Ripping Width: 7.67 feet/pass  
Average Ripping Length: 550.00 feet/pass  
Average Dozer Speed: 88.00 feet/minute  
Average Maneuver Time: 0.25 minutes/pass  
Production per unit area: 0.894 acres/hour

#### Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.894 Acres/hr  
Site Altitude: 5,980 feet  
Altitude Adj: 1.00 (CAT HB)  
Job Efficiency: 0.83 (1 shift/day)  
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.74 Acres/hr

Adjusted Hourly Fleet Production: **0.74** Acres/hr

### JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **10.65** Hours

Unit cost: \$474.238 Per acre Total job cost: **\$3,746**

**SCRAPER TEAM WORK**Task description: **Retopsoil West pit/stockpile area - 7.9 ac**Site: **Dawson Mine**Permit Action: **SO-01 2021**Permit/Job#: **M1977392****PROJECT IDENTIFICATION**Task #: **007**State: **Colorado**Abbreviation: **None**Date: **6/18/2021**County: **Elbert**Filename: **M392-007**User: **AME**Agency or organization name: **DRMS****HOURLY EQUIPMENT**COSTShift basis: **1 per day**

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	Cat D6T LGP
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	50	50	50
Ownership cost/hour:	\$144.75	NA	NA	\$71.95	\$55.79	\$14.71
Operating cost/hour:	\$145.83	NA	NA	\$29.27	\$30.04	\$15.29
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$30.90	NA	NA	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$321.47	NA	NA	\$142.52	\$114.39	\$30.00
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$642.94	Support:	\$142.52	Maint:	\$144.39

Total work team cost/hour: **\$929.85****MATERIAL QUANTITIES**Initial volume: **6,373**

CCY

Swell factor: **1.215**Loose volume: **7,743**

LCY

Source of estimated volume: **Replace 6 in on 7.9 ac**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<b><u>1,600 lbs/LCY</u></b>	Struck Volume:	<b><u>24.00</u></b>	LCY
Material description:	<b><u>Top Soil</u></b>	Heaped Volume:	<b><u>34.00</u></b>	LCY
Rated Payload:	<b><u>81,600 pounds</u></b>	Average Volume:	<b><u>29.00</u></b>	LCY
Payload Capacity:	<b><u>51.00 LCY</u></b>	Adjusted Capacity:	<b><u>29.00</u></b>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.70 MinutesJob Condition Correction:

Site Altitude: 5980 feet

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

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	650.00	5.00	3.00	8.00	783	0.85

Haul Time: 0.85 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	650.00	-5.00	3.00	-2.00	2920	0.29

Return Time: 0.29 minutesTotal Scraper team cycle time: 2.64 minutesAdjusted for job conditions: 547.05 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,094.09 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,094.09 LCY/HourUnadjusted unit production/hour: 659.09 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 7.08 HoursUnit cost: \$0.850 /LCYTotal job cost: \$6,581



**REVEGETATION WORK**Task description: Revegetate West pit/stockpile area - 7.9 acSite: Dawson MinePermit Action: SO-01 2021Permit/Job#: M1977392**PROJECT IDENTIFICATION**Task #: 008State: ColoradoAbbreviation: NoneDate: 6/18/2021County: ElbertFilename: M392-008User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	150.00	pound	\$0.34	\$50.25
Triple superphosphate, 0-46-0	110.00	pound	\$0.43	\$46.75
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$97.00</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$37.03
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$37.03</b>

**TILLING**

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

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	2.50	8.09	\$22.19
Sideoats Grama - Butte	1.80	5.91	\$16.20
Pubescent Wheatgrass - Luna	3.60	7.44	\$12.24
Western Wheatgrass - Arriba	6.40	16.16	\$41.60
<b>Totals Seed Mix</b>	<b>14.30</b>	<b>37.60</b>	<b>\$92.23</b>

**Application**

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Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	1.50	TON	\$301.00	\$451.50
<b>Total Mulch Materials Cost/Acre</b>				<b>\$451.50</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$101.93
<b>Total Mulch Application Cost/Acre</b>	<b>\$172.10</b>

**NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
<b>Totals Nursery Stock Cost / Acre</b>					<b>\$0.00</b>

**JOB TIME AND COST**

No. of Acres:	7.9	Cost /Acre:	\$1,382.62
Estimated Failure Rate:	0%	Cost /Acre*:	\$324.23
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	<b>\$10,922.70</b>		
Reseeding Job Cost:	<b>\$0.00</b>		
Total Job Cost:	<b>\$10,923</b>		
Job Hours:	<b>7.90</b>		

**REVEGETATION WORK**Task description: Interseed stockpile area North of access roadSite: Dawson MinePermit Action: SO-01 2021Permit/Job#: M1977392**PROJECT IDENTIFICATION**Task #: 009State: ColoradoAbbreviation: NoneDate: 6/18/2021County: ElbertFilename: M392-009User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	150.00	pound	\$0.34	\$50.25
Triple superphosphate, 0-46-0	110.00	pound	\$0.43	\$46.75
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$97.00</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$37.03
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$37.03</b>

**TILLING**

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

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indian Ricegrass - Nespar	2.50	8.09	\$22.19
Sideoats Grama - Butte	1.80	5.91	\$16.20
Pubescent Wheatgrass - Luna	3.60	7.44	\$12.24
Western Wheatgrass - Arriba	6.40	16.16	\$41.60
<b>Totals Seed Mix</b>	<b>14.30</b>	<b>37.60</b>	<b>\$92.23</b>

**Application**

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Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	1.50	TON	\$301.00	\$451.50
<b>Total Mulch Materials Cost/Acre</b>				<b>\$451.50</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Power mulcher (MEANS 32 91 13.16 0350)	\$101.93
<b>Total Mulch Application Cost/Acre</b>	<b>\$172.10</b>

**NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
<b>Totals Nursery Stock Cost / Acre</b>					<b>\$0.00</b>

**JOB TIME AND COST**

No. of Acres:	3	Cost /Acre:	\$1,382.62
Estimated Failure Rate:	0%	Cost /Acre*:	\$324.23
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	<b>\$4,147.86</b>		
Reseeding Job Cost:	<b>\$0.00</b>		
Total Job Cost:	<b>\$4,148</b>		
Job Hours:	<b>3.00</b>		

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mobilization/Demobilization**Site: **Dawson Mine**Permit Action: **SO-01 2021**Permit/Job#: **M1977392****PROJECT IDENTIFICATION**Task #: **010**State: **Colorado**Abbreviation: **None**Date: **6/18/2021**County: **Elbert**Filename: **M392-010**User: **AME**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:**

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

**NON ROADABLE EQUIPMENT:**

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat 730	25.19	\$58.32	\$67.39	2	\$251.42	\$134.78	\$500.00
CAT 966H	25.80	\$42.87	\$67.39	1	\$110.26	\$67.39	\$500.00
CAT 16M	28.73	\$55.79	\$123.81	1	\$179.60	\$123.81	\$250.00
Cat D6T LGP	26.87	\$71.95	\$123.81	1	\$195.76	\$123.81	\$500.00
Cat D9T - 9SU	66.13	\$172.47	\$141.54	1	\$314.01	\$141.54	\$250.00
Cat 631G	52.50	\$144.75	\$141.54	2	\$572.58	\$283.08	\$500.00

Subtotals: **\$1,623.63** **\$874.41** **\$2,500.00****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.	\$45.29	1	\$45.29	\$45.29
Drill/Broadcast Seeder with Tractor	\$15.63	1	\$15.63	\$15.63
Power Mulcher (Bowie LD-90)	\$30.17	1	\$30.17	\$30.17

Subtotals: **\$91.09** **\$91.09**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>AURORA</u>	
Total one-way travel distance:	<u>60.00</u>	miles
Average Travel Speed:	<u>50.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$36,973.38</u>
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    \*\* two round trips with haul rig:

Total Roadable Mob/Demob Cost **	<u>\$218.62</u>
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    \*\* one round trip, no haul rig:

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>1.20</u>	<u>1.20</u>
Return Time (Hours):	<u>1.20</u>	<u>1.20</u>
Loading Time (Hours):	<u>4.00</u>	<u>NA</u>
Unloading Time (Hours):	<u>4.00</u>	<u>NA</u>
Subtotals:	<u>10.40</u>	<u>2.40</u>

**JOB TIME AND COST**

Total job time:	<u>20.80</u>	Hours
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Total job cost:	<u>\$37,192</u>
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