

## COST SUMMARY WORK

Task description: Cost Summary of Reclamation Tasks

Site: Fox #1 Clay Mine

Permit Action: AM03 Cost Estimate

Permit/Job#: M1977219

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 12/28/2017

County: Pueblo

Filename: M219-000

User: ERR

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Doze overburden (Zone 1) off highwall	DOZER	1	5.01	\$1,001.00
002	Backfill remaining highwall	SCRAPER1	1	34.27	\$86,966.00
003	Replace root zone material	SCRAPER1	1	6.37	\$16,159.00
004	Replace growth medium (topsoil)	SCRAPER1	1	3.13	\$7,938.00
005	Revegetate 40 acres	REVEGE	1	40.00	\$56,947.00
006	Mob/Demob of Reclamation Equipment	MOBILIZE	1	2.78	\$10,416.00
<b><u>SUBTOTALS:</u></b>				<b>91.56</b>	<b>\$179,427</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$3,624.43

Performance bond: 1.05

Total = \$1,883.98

Job superintendent: 0.00

Total = \$0.00

Profit: 10.00

Total = \$17,942.70

TOTAL O & P = \$23,451.11

CONTRACT AMOUNT (direct + O & P) = \$202,878.11

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 0.00

Total = 0.00

Engineering work and/or contract/bid preparation: 0.00

Total = \$0.00

Reclamation management and/or administration: 5.00

\$10,143.91

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$33,595.02

**TOTAL BOND AMOUNT (direct + indirect) = \$213,022.02**

**BULLDOZER WORK**Task description: **Doze overburden (Zone 1) off highwall**Site: **Fox #1 Clay Mine**Permit Action: AM03 Cost EstimatePermit/Job#: M1977219**PROJECT IDENTIFICATION**Task #: 001State: ColoradoAbbreviation: NoneDate: 12/28/2017County: PuebloFilename: M219-001User: ERRAgency or organization name: DRMS**HOURLY EQUIPMENT COST**

Basic Machine: Cat D8T - 8SU  
 Horsepower: 310  
 Blade Type: Semi-Universal  
 Attachment: 3-shank ripper  
 Shift Basis: 1 per day  
 Data Source: (CRG)

**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$83.81</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$66.17</u>	<u>100</u>
Ripper own.		
Cost/Hour:	<u>\$7.55</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$1.80</u>	<u>25</u>
Operator Cost/Hour:	<u>\$40.52</u>	<u>NA</u>
Total unit Cost/Hour:	<u>\$199.85</u>	
Total Fleet Cost/Hour:	<b><u>\$199.85</u></b>	

**MATERIAL QUANTITIES**

Initial Volume: 4,500  
 Swell factor: 1.330  
 Loose volume: **5,985 LCY**

Source of estimated volume: Application: 9' highwall to 3H:1V slopeSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**

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

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: -30 %  
 Average site altitude: 6,200 feet

Material weight: 2,900 lbs/LCYWeight description: Decomposed rock - 50% Rock, 50% Earth**Job Condition Correction Factor**Operator Skill: 0.750Source  
(AVG.)

Material consistency:	0.900	(CAT HB))
Dozing method:	1.200	(SLOT)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	1.000	(DOZ-OC)
Push gradient:	1.601	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8535

Adjusted unit  
production: 1,194.90 LCY/hr

Adjusted fleet  
production: **1194.9** LCY/hr

### **JOB TIME AND COST**

Fleet size: 1 Dozer(s)

Unit cost: \$0.167/LCY

Total job time: **5.01** Hours

Total job cost: **\$1,001**

**SCRAPER TEAM WORK**Task description: **Backfill remaining highwall**Site: **Fox #1 Clay Mine**Permit Action: AM03 Cost EstimatePermit/Job#: M1977219**PROJECT IDENTIFICATION**Task #: 002State: ColoradoAbbreviation: NoneDate: 12/28/2017County: PuebloFilename: M219-002User: ERRAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 140M
-Water Truck:	Water Tanker, 2,500 Gal.

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	100	100	50	50
Ownership cost/hour:	\$143.40	NA	\$83.81	\$83.81	\$35.08	\$7.88
Operating cost/hour:	\$153.53	NA	\$66.17	\$66.17	\$16.62	\$7.37
%Utilization-ripper:	NA	NA	25	25	25	NA
Ripper own. cost/hour:	NA	NA	\$7.55	\$7.55	\$1.99	\$0.00
Ripper op. cost/hour:	NA	NA	\$1.80	\$1.80	\$0.54	\$0.00
Operator cost/hour:	\$41.46	NA	\$40.52	\$40.52	\$38.16	\$0.00
Unit Subtotals:	\$338.39	NA	\$199.85	\$199.85	\$92.39	\$15.25
Number of Units:	6	0	1	1	1	1
Group Subtotals:	Work:	\$2,030.34	Support:	\$399.70	Maint:	\$107.64

Total work team cost/hour: **\$2,537.68****MATERIAL QUANTITIES**Initial volume: 108,000

CCY

Swell factor: 1.165Loose volume: **125,820**

LCY

Source of estimated volume: Application: 1000' L x 45' H to 3H:1V minus 4,500 CYSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 2,900 lbs/LCY  
 Material description: Decomposed rock - 50% Rock, 50% Earth  
 Rated Payload: 81,600 pounds  
 Payload Capacity: 28.14 LCY

Struck Volume: 24.00 LCY  
 Heaped Volume: 34.00 LCY  
 Average Volume: 29.00 LCY  
 Adjusted Capacity: **28.14** LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6200 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: Hard, smooth, stabilized, surfaced, watered, maintained 2.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-1.00	2.00	1.00	2952	0.48

Haul Time: 0.48 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	1.00	2.00	3.00	2949	0.41

Return Time: 0.41 minutesTotal Scraper team cycle time: 2.29 minutesAdjusted for job conditions: 611.91 LCY/HourSelected Number of Scrapers: 6 Scraper(s)Adjusted single scraper team (unit) hourly production: 3,671.45 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 3,671.45 LCY/HourUnadjusted unit production/hour: 737.24 LCY/Hour

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

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 34.27 HoursUnit cost: \$0.691 /LCYTotal job cost: \$86,966

**SCRAPER TEAM WORK**Task description: **Replace root zone material**Site: **Fox #1 Clay Mine**Permit Action: AM03 Cost EstimatePermit/Job#: M1977219**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 12/28/2017County: PuebloFilename: M219-003User: ERRAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 140M
-Water Truck:	Water Tanker, 2,500 Gal.

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	100	100	50	50
Ownership cost/hour:	\$143.40	NA	\$83.81	\$83.81	\$35.08	\$7.88
Operating cost/hour:	\$153.53	NA	\$66.17	\$66.17	\$16.62	\$7.37
%Utilization-ripper:	NA	NA	25	25	25	NA
Ripper own. cost/hour:	NA	NA	\$7.55	\$7.55	\$1.99	\$0.00
Ripper op. cost/hour:	NA	NA	\$1.80	\$1.80	\$0.54	\$0.00
Operator cost/hour:	\$41.46	NA	\$40.52	\$40.52	\$38.16	\$0.00
Unit Subtotals:	\$338.39	NA	\$199.85	\$199.85	\$92.39	\$15.25
Number of Units:	6	0	1	1	1	1
Group Subtotals:	Work:	\$2,030.34	Support:	\$399.70	Maint:	\$107.64

Total work team cost/hour: **\$2,537.68****MATERIAL QUANTITIES**Initial volume: 24,200

CCY

Swell factor: 1.000Loose volume: **24,200**

LCY

Source of estimated volume: Application: 6" root zoneSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

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

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

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 6200 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: Hard, smooth, stabilized, surfaced, watered, maintained 2.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-1.00	2.00	1.00	2952	0.47

Haul Time: 0.47 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	1.00	2.00	3.00	2949	0.41

Return Time: 0.41 minutesTotal Scraper team cycle time: 2.28 minutesAdjusted for job conditions: 633.42 LCY/HourSelected Number of Scrapers: 6 Scraper(s)Adjusted single scraper team (unit) hourly production: 3,800.53 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 3,800.53 LCY/HourUnadjusted unit production/hour: 763.16 LCY/Hour

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

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 6.37 HoursUnit cost: \$0.668 /LCYTotal job cost: \$16,159

**SCRAPER TEAM WORK**Task description: Replace growth medium (topsoil)Site: Fox #1 Clay MinePermit Action: AM03 Cost EstimatePermit/Job#: M1977219**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 12/28/2017County: PuebloFilename: M219-004User: ERRAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 140M
-Water Truck:	Water Tanker, 2,500 Gal.

**Cost Breakdown:**

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	100	100	50	50
Ownership cost/hour:	\$143.40	NA	\$83.81	\$83.81	\$35.08	\$7.88
Operating cost/hour:	\$153.53	NA	\$66.17	\$66.17	\$16.62	\$7.37
%Utilization-ripper:	NA	NA	25	25	25	NA
Ripper own. cost/hour:	NA	NA	\$7.55	\$7.55	\$1.99	\$0.00
Ripper op. cost/hour:	NA	NA	\$1.80	\$1.80	\$0.54	\$0.00
Operator cost/hour:	\$41.46	NA	\$40.52	\$40.52	\$38.16	\$0.00
Unit Subtotals:	\$338.39	NA	\$199.85	\$199.85	\$92.39	\$15.25
Number of Units:	6	0	1	1	1	1
Group Subtotals:	Work:	\$2,030.34	Support:	\$399.70	Maint:	\$107.64

Total work team cost/hour: \$2,537.68**MATERIAL QUANTITIES**Initial volume: 12,100

CCY

Swell factor: 1.000Loose volume: 12,100

LCY

Source of estimated volume: Application: 6" root zoneSource 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 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6200 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: Hard, smooth, stabilized, surfaced, watered, maintained 2.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-1.00	2.00	1.00	2952	0.43

Haul Time: 0.43 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	1.00	2.00	3.00	2949	0.41

Return Time: 0.41 minutesTotal Scraper team cycle time: 2.24 minutesAdjusted for job conditions: 644.73 LCY/HourSelected Number of Scrapers: 6 Scraper(s)Adjusted single scraper team (unit) hourly production: 3,868.39 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 3,868.39 LCY/HourUnadjusted unit production/hour: 776.79 LCY/Hour

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

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 3.13 HoursUnit cost: \$0.656 /LCYTotal job cost: \$7,938

**REVEGETATION WORK**Task description: Revegetate 40 acresSite: Fox #1 Clay MinePermit Action: AM03 Cost EstimatePermit/Job#: M1977219**PROJECT IDENTIFICATION**Task #: 005State: ColoradoAbbreviation: NoneDate: 12/28/2017County: PuebloFilename: M219-005User: ERRAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	121.00	pound	\$0.34	\$41.14
Triple superphosphate, 0-46-0	87.00	pound	\$0.43	\$37.41
			<b>Total Fertilizer Materials Cost/Acre</b>	<b>\$78.55</b>

**Application**

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$144.62
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$144.62</b>

**TILLING**

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.25	4.08	\$4.07
Sand Dropseed	0.03	3.58	\$0.33
Sideoats Grama - Butte	3.19	10.47	\$30.85
Western Wheatgrass - Arriba	7.20	18.18	\$58.18
Needlegrass, Green - Lodorm	0.48	1.99	\$2.34
<b>Totals Seed Mix</b>	<b>11.15</b>	<b>38.31</b>	<b>\$95.75</b>

**Application**

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}	2.00	TON	\$261.00	\$522.00
<b>Total Mulch Materials Cost/Acre</b>				<b>\$522.00</b>

**Application**

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
<b>Total Mulch Application Cost/Acre</b>	<b>\$66.02</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: 40 Cost /Acre: \$1,138.94  
 Estimated Failure Rate: 25% Cost /Acre\*: \$1,138.94  
 \*Selected Replanting Work Items: FERTILIZING,SEEDING,MULCHING

Initial Job Cost: **\$45,557.60**  
 Reseeding Job Cost: **\$11,389.40**  
 Total Job Cost: **\$56,947**  
 Job Hours: **40.00**

**EQUIPMENT MOBILIZATION/DEMOBILIZATION**Task description: **Mob/Demob of Reclamation Equipment**Site: **Fox #1 Clay Mine**Permit Action: **AM03 Cost Estimate**Permit/Job#: **M1977219****PROJECT IDENTIFICATION**Task #: **006**State: **Colorado**Abbreviation: **None**Date: **12/28/2017**County: **Pueblo**Filename: **M219-006**User: **ERR**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:	\$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 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 D8T - 8SU	53.08	\$91.36	\$125.45	2	\$433.62	\$250.90	\$250.00
Cat 637G	57.28	\$143.40	\$125.45	6	\$1,613.10	\$752.70	\$1,500.00
CAT 140M	16.68	\$37.07	\$88.67	1	\$125.74	\$88.67	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$12.22	\$88.67	1	\$100.89	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$7.03	\$88.67	1	\$95.70	\$88.67	\$250.00

Subtotals: **\$2,369.05** **\$1,269.61** **\$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, 2,500 Gal.	\$22.62	1	\$22.62	\$22.62

Subtotals: **\$22.62** **\$22.62**

**EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	<u>PUEBLO, CO</u>	
Total one-way travel distance:	<u>30.00</u>	miles
Average Travel Speed:	<u>55.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$10,390.88</u>
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    \*\* two round trips with haul rig:

Total Roadable Mob/Demob Cost **	<u>\$24.68</u>
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    \*\* one round trip, no haul rig:

**Transportation Cycle Time:**

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.55</u>	<u>0.55</u>
Return Time (Hours):	<u>0.55</u>	<u>0.55</u>
Loading Time (Hours):	<u>0.15</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.15</u>	<u>NA</u>
Subtotals:	<u>1.39</u>	<u>1.09</u>

**JOB TIME AND COST**

Total job time:	<u>2.78</u>	Hours
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Total job cost:	<u>\$10,416</u>
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