

COST SUMMARY WORK

Task description: Reclamation of Pino Pit

Site: Pino Pit

Permit Action: 2019 Inspection

Permit/Job#: M2000118

PROJECT IDENTIFICATION

Task #: 999

State: Colorado

Abbreviation: None

Date: 2/8/2019

County: Huerfano

Filename: M118-999

User: JPL

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade to 3H:1V Slope	DOZER	2	60.64	\$19,915.00
002	Replace Overburden	SCRAPER1	1	37.73	\$31,300.00
003	Replace 4" of top soil on 35 acres	SCRAPER1	1	14.49	\$11,932.00
004	Ripping 15 acres	RIPPER	2	11.88	\$3,978.00
005	Revegetation of 35 acres	REVEGE	1	40.00	\$56,030.00
006	Mobilization/Demobilization	MOBILIZE	1	3.71	\$6,827.00
<u>SUBTOTALS:</u>				168.45	\$129,982

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02
Performance bond: 1.05
Job superintendent: 84.22
Profit: 10.00

Total = \$2,625.64

Total = \$1,364.81

Total = \$6,152.27

Total = \$12,998.20

TOTAL O & P = \$23,140.92

CONTRACT AMOUNT (direct + O & P) = \$153,122.92

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00

Total = 500.00

Engineering work and/or contract/bid preparation: 4.25

Total = \$6,507.72

Reclamation management and/or administration: 5.00

\$7,656.15

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$37,804.79

TOTAL BOND AMOUNT (direct + indirect) = \$167,786.79

SCRAPER TEAM WORKTask description: Replace OverburdenSite: Pino PitPermit Action: 2019 InspectionPermit/Job#: M2000118**PROJECT IDENTIFICATION**Task #: 002State: ColoradoAbbreviation: NoneDate: 2/8/2019County: HuerfanoFilename: M118-002User: JPLAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	Cat D7R DS XR Series II
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	25	NA	NA	NA	NA
Ownership cost/hour:	\$155.61	\$61.41	NA	NA	NA	NA
Operating cost/hour:	\$166.86	\$13.55	NA	NA	NA	NA
%Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$6.02	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$31.05	\$41.52	NA	NA	NA	NA
Unit Subtotals:	\$353.51	\$122.51	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	\$829.53	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$829.53****MATERIAL QUANTITIES**Initial volume: 38,750

CCY

Swell factor: 1.250Loose volume: **48,438**

LCY

Source of estimated volume: Exhibit LSource 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	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	2.00	5.00	7.00	1362	0.51

Haul Time: 0.51 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	-2.00	5.00	3.00	2949	0.34

Return Time: 0.34 minutesTotal Scraper team cycle time: 2.25 minutesAdjusted for job conditions: 641.87 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,283.73 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,283.73 LCY/HourUnadjusted unit production/hour: 773.33 LCY/HourOptimal Number of Scrapers per push
dozer: _____**JOB TIME AND COST**Fleet size: 1 Team(s) Total job time: 37.73 HoursUnit cost: \$0.646 /LCY Total job cost: \$31,300

SCRAPER TEAM WORKTask description: Replace 4" of top soil on 35 acresSite: Pino PitPermit Action: 2019 InspectionPermit/Job#: M2000118**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 2/8/2019County: HuerfanoFilename: NoneUser: JPLAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	Cat D7R DS XR Series II
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	25	NA	NA	NA	NA
Ownership cost/hour:	\$155.61	\$61.41	NA	NA	NA	NA
Operating cost/hour:	\$166.86	\$13.55	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$31.05	\$41.52	NA	NA	NA	NA
Unit Subtotals:	\$353.51	\$116.49	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	\$823.51	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$823.51****MATERIAL QUANTITIES**Initial volume: 18,600

CCY

Swell factor: 1.000Loose volume: **18,600**

LCY

Source of estimated volume: Exhibit L and DRMS CalculationSource 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	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	2.00	5.00	7.00	1362	0.51

Haul Time: 0.51 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	600.00	-2.00	5.00	3.00	2949	0.34

Return Time: 0.34 minutesTotal Scraper team cycle time: 2.25 minutesAdjusted for job conditions: 641.87 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,283.73 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,283.73 LCY/HourUnadjusted unit production/hour: 773.33 LCY/HourOptimal Number of Scrapers per push
dozer: _____**JOB TIME AND COST**Fleet size: 1 Team(s) Total job time: 14.49 HoursUnit cost: \$0.641 /LCY Total job cost: \$11,932

BULLDOZER RIPPING WORKTask description: **Ripping 15 acres**Site: **Pino Pit** Permit Action: 2019 Inspection Permit/Job#: M2000118**PROJECT IDENTIFICATION**

Task #: 004 State: Colorado Abbreviation: None
 Date: 2/8/2019 County: Huerfano Filename: M118-004
 User: JPL

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

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

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$61.41</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$54.22</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$6.02</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$4.12</u>	<u>100</u>
Operator Cost/Hour:	<u>\$41.52</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$167.28</u>	
Total Fleet Cost/Hour:	<u>\$334.57</u>	

MATERIAL QUANTITIESSelected estimating method: Area**Alternate Methods:**

Seismic: NA Bank Volume: NA BCY NA
 Area: 15.00 acres Rip Depth (ft): 1.50 Volume: 36,300 BCY or CCY

Source of estimated quantity: Exhibit L**HOURLY PRODUCTION****Seismic:**Seismic Velocity: NA feet/second**Area:**

Average Ripping Depth: 2.45 mph
 Average Ripping Width: 6.50 degrees
 Average Ripping Length: 600.00 feet
 Average Dozer Speed: 88.00 feet
 Average Maneuver Time: 0.25 feet
 Production per unit area: 0.760 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.760 Acres/hr
 Site Altitude: 6,200 feet
 Altitude Adj: 1.00 (CAT HB)
 Job Efficiency: 0.83 (1 shift/day)
 Net Correction: 0.83 multiplier
 Adjusted Hourly Unit Production: 0.63 Acres/hr
 Adjusted Hourly Fleet Production: 1.26 Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s)Total job time: 11.89 HoursUnit cost: \$265.183 Per acreTotal job cost: \$3,978

REVEGETATION WORKTask description: Revegetation of 35 acresSite: Pino PitPermit Action: 2019 InspectionPermit/Job#: M2000118**PROJECT IDENTIFICATION**Task #: 005State: ColoradoAbbreviation: NoneDate: 2/8/2019County: HuerfanoFilename: M118-005User: JPLAgency 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	\$0.44	\$38.28
			Total Fertilizer Materials Cost/Acre	\$79.42

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$34.72
Total Fertilizer Application Cost/Acre	\$34.72

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$106.29
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$299.89

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Big Bluestem - Native	5.50	16.41	\$57.75
Little Bluestem - Native	3.00	17.91	\$48.39
Sideoats Grama - Vaughn	4.50	14.77	\$46.08
Yellow Sweet Clover - Madrid	3.50	20.89	\$10.12
Western Wheatgrass - Native	8.00	20.20	\$57.36
Totals Seed Mix	24.50	90.19	\$219.70

Application

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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
Total Mulch Application Cost/Acre	\$68.78

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:	35	Cost /Acre:	\$1,510.51
Estimated Failure Rate:	20%	Cost /Acre*:	\$451.70
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$52,867.85
Reseeding Job Cost:	\$3,161.90
Total Job Cost:	\$56,030
Job Hours:	40.00

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: Mobilization/DemobilizationSite: Pino PitPermit Action: 2019 InspectionPermit/Job#: M2000118**PROJECT IDENTIFICATION**Task #: 006State: ColoradoAbbreviation: NoneDate: 2/8/2019County: HuerfanoFilename: M118-006User: JPLAgency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**Shift basis: 1 per dayCost Data Source: CRG DataTruck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,
400 HP (2ND HALF, 2006)Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT
TRAILER (25T, 50T, AND 100T)**Cost Breakdown:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$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 D7R DS XR Series II	35.93	\$67.43	\$117.55	2	\$369.96	\$235.10	\$500.00
Cat 637G	57.28	\$155.61	\$125.45	2	\$562.12	\$250.90	\$500.00
Drill/Broadcast Seeder with Tractor	25.00	\$15.54	\$88.67	2	\$208.42	\$177.34	\$500.00

Subtotals: **\$1,140.50** **\$663.34** **\$1,500.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
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Subtotals: **\$0.00** **\$0.00**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	WALSENBURG	
Total one-way travel distance:	15.00	miles
Average Travel Speed:	35.00	mph

Total Non-Roadable Mob/Demob Cost *	\$6,827.15
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	\$0.00
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.43	0.43
Return Time (Hours):	0.43	0.43
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.86	0.86

JOB TIME AND COST

Total job time:	3.71	Hours
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Total job cost:	\$6,827
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