

COST SUMMARY WORK

Task description: Summary of reclamation tasks and costs

Site: Luke the Duke Gravel Pit

Permit Action: 110c application
review

Permit/Job#: M2013036

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 9/29/2014

County: La Plata

Filename: M036-000

User: WHE

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Highwall reduction from 1.5H:1V to 3H:1V	DOZER	1	3.79	\$823.00
002	General grading for 0.96 acres affected land	DOZER	1	1.50	\$330.00
004	Topsoil replacement at 6 inch depth	SCRAPER1	1	9.56	\$2,775.00
005	Revegetate 2.25 acres affected land	REVEGE	1	0.00	\$3,000.00
006	Haul reclamation equipment to and from job site	MOBILIZE	1	3.33	\$5,396.00
<u>SUBTOTALS:</u>				18.18	\$12,324

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02%

Total = \$248.94

Performance bond: 1.05%

Total = \$129.40

Job superintendent: 0.00 hrs

Total = \$0.00

Profit: 10.00%

Total = \$1,232.40

TOTAL O & P = \$1,610.74

CONTRACT AMOUNT (direct + O & P) = \$13,934.74

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%

\$696.74

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$2,307.48

TOTAL BOND AMOUNT (direct + indirect) = \$14,631.48

BULLDOZER WORKTask description: Highwall reduction from 1.5H:1V to 3H:1VSite: Luke the Duke Gravel PitPermit Action: 110c application
reviewPermit/Job#: M2013036**PROJECT IDENTIFICATION**Task #: 001State: ColoradoAbbreviation: NoneDate: 9/25/2014County: La PlataFilename: M036-001User: WHEAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8UHorsepower: 310Blade Type: UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$69.05	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$1.86	25
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$217.14Total Fleet Cost/Hour: \$217.14**MATERIAL QUANTITIES**Initial Volume: 2,592Swell factor: 1.124Loose volume: 2,913 LCYSource of estimated volume: See attached drawing, "Highwall Reduction"Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feetUnadjusted hourly production: 1,627.0 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: -15 %Average site altitude: 7,950 feetMaterial weight: 2,900 lbs/LCYWeight description: Sand and gravel - Dry**Job Condition Correction Factor**Operator Skill: 0.750Material consistency: 0.900**Source**(AVG.)(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:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4724

Adjusted unit production: 768.59 LCY/hr

Adjusted fleet production: 768.59 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.283/LCY

Total job time: 3.79 Hours
Total job cost: \$823

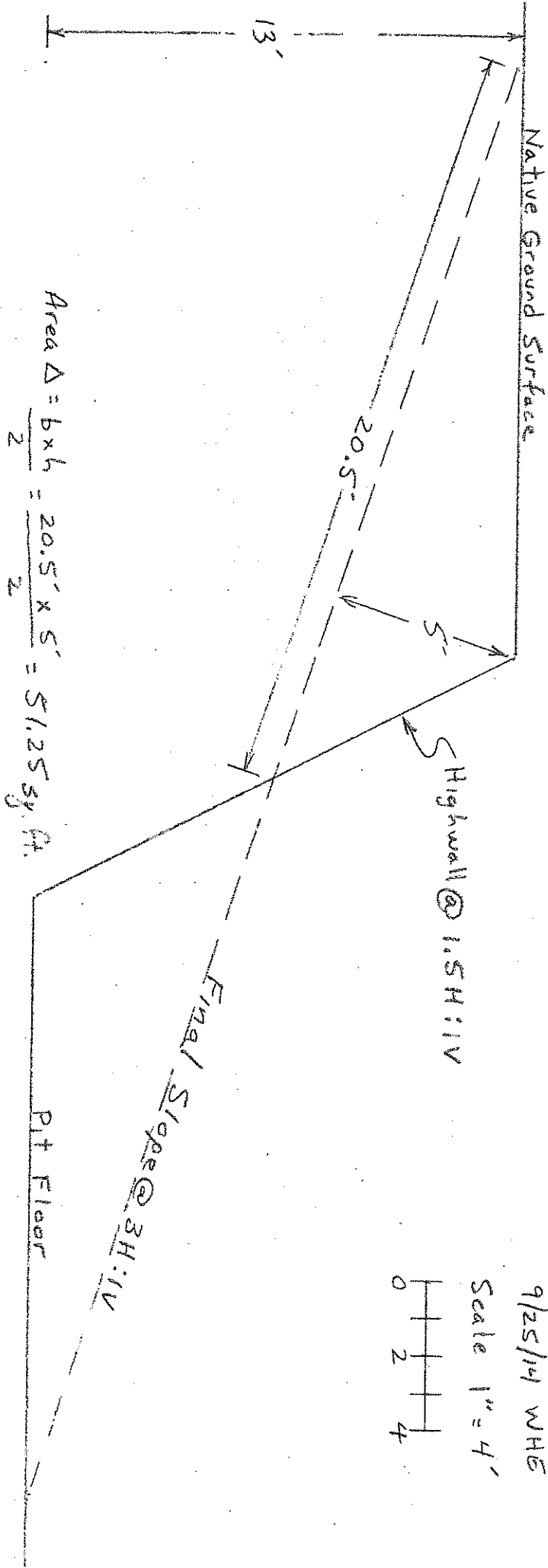
Highwall Reduction from 1.5H:1V to 3H:1V Balanced Cut and Fill

Luke the Duke

M-2013-036

9/25/14 WHE

Scale 1" = 4'



$$\text{Area } \Delta = \frac{b \times h}{2} = \frac{20.5' \times 5'}{2} = 51.25 \text{ sq. ft.}$$

Highwall Length = 1365.74' (taken from reclamation map, September 8, 2014)

$$\text{Material Quantity} = 51.25 \text{ sq. ft.} \times 1365.74' = 69,994.18 \text{ cu. ft.}$$

$$= 2,592.37 \text{ cu. yd.}$$

$$\text{Area of Slope} = 1365.74' \times 41' = 55,995.34 \text{ sq. ft.}$$

$$\text{Total affected land} = 97,936.65 \text{ sq. ft.}$$

$$\text{General Grading Task} = 97,936.65 \text{ sq. ft.} - 55,995.34 \text{ sq. ft.} = 41,941.31 \text{ sq. ft.}$$

$$= 0.96 \text{ acres}$$

BULLDOZER WORKTask description: General grading for 0.96 acres affected landSite: Luke the Duke Gravel PitPermit Action: 110c application
reviewPermit/Job#: M2013036PROJECT IDENTIFICATIONTask #: 002State: ColoradoAbbreviation: NoneDate: 9/25/2014County: La PlataFilename: M036-002User: WHEAgency or organization name: DRMSHOURLY EQUIPMENT COSTBasic Machine: Cat D8T - 8UHorsepower: 310Blade Type: UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$69.05	NA
Operating Cost/Hour:	\$108.22	100
Ripper op. Cost/Hour:	\$3.73	50
Operator Cost/Hour:	\$38.01	NA

Total unit Cost/Hour: \$219.00Total Fleet Cost/Hour: \$219.00MATERIAL QUANTITIESInitial Volume: 774Swell factor: 1.124Loose volume: 870 LCYSource of estimated volume: $(0.96\text{ac})(43560\text{sf/ac})(0.5'D) / 27 = 774.4 \text{ cy}$ Source of estimated swell factor: Cat HandbookHOURLY PRODUCTIONAverage push distance: 50 feetUnadjusted hourly production: 1,627.0 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: 0 %Average site altitude: 7,950 feetMaterial weight: 2,900 lbs/LCYWeight description: Sand and gravel - DryJob Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(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:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3554

Adjusted unit production: 578.24 LCY/hr

Adjusted fleet production: 578.24 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.379/LCY

Total job time: 1.50 Hours

Total job cost: \$330

SCRAPER TEAM WORKTask description: Topsoil replacement at 6 inch depthSite: Luke the Duke Gravel PitPermit Action: 110c application reviewPermit/Job#: M2013036PROJECT IDENTIFICATIONTask #: 004
Date: 9/29/2014
User: WHEState: Colorado
County: La PlataAbbreviation: None
Filename: M036-004Agency or organization name: DRMSHOURLY EQUIPMENTCOST Shift basis: 1 per day

Equipment Description	
-Scraper:	Cat 613C Series 2
-Dozer:	Cat D8T - 8U
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	50	NA	NA	NA	NA
Ownership cost/hour:	\$25.15	\$69.05	NA	NA	NA	NA
Operating cost/hour:	\$70.41	\$54.11	NA	NA	NA	NA
Ripper op. cost/hour:	NA	\$0.00	NA	NA	NA	NA
Operator cost/hour:	\$33.56	\$38.01	NA	NA	NA	NA
Unit Subtotals:	\$129.12	\$161.16	NA	NA	NA	NA
Number of Units:	1	1	0	0	0	0
Group Subtotals:	Work: \$290.28		Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: \$290.28MATERIAL QUANTITIESInitial volume: 1,815 CCY Swell factor: 1.000
Loose volume: 1,815 LCYSource of estimated volume: (2.25ac)(43560sf/ac)(0.5'D) / 27 = 1815 cy
Source of estimated swell factor: Cat HandbookHOURLY PRODUCTIONMaterial weight: 2,550 lbs/LCY
Material description: Earth - Dry packed
Rated Payload: 26,400 pounds
Payload Capacity: 10.35 LCYScraper Bowl (volume) Basis:Struck Volume: 8.90 LCY
Heaped Volume: 11.00 LCY
Average Volume: 9.95 LCY
Adjusted Capacity: 9.95 LCY

Cycle Time:

Scraper Loading Time: 0.90 Minutes
 Maneuver and Spread Time: 0.70 Minutes

Job Condition Correction:

Site Altitude: 7950 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, 1" tire penetration 4.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	700.00	-1.80	4.00	2.20	2031	0.52

Haul Time: 0.52 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	700.00	1.80	4.00	5.80	1742	0.49

Return Time: 0.49 minutes

Total Scraper team cycle time: 2.61 minutes
 Adjusted for job conditions: 189.85 LCY/Hour
 Selected Number of Scrapers: 1 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 189.85 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 189.85 LCY/Hour

Unadjusted unit production/hour: 228.74 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 9.56 HoursUnit cost: \$1.529 /LCY Total job cost: \$2,775

REVEGETATION WORKTask description: Revegetate 2.25 acres affected land
 Permit Action: 110c application review
 Site: Luke the Duke Gravel Pit Permit/Job#: M2013036
PROJECT IDENTIFICATION
 Task #: 005 State: Colorado Abbreviation: None
 Date: 9/29/2014 County: La Plata Filename: M036-005
 User: WHE
Agency or organization name: DRMSFERTILIZINGMaterials

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

Application

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

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$98.01
Total Tilling Cost/Acre	\$98.01

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Lovington	1.50	24.48	\$16.29
Indian Ricegrass - Native	4.00	12.95	\$26.96
Slender Wheatgrass - Native	2.00	7.30	\$4.50
Rabbitbrush, Rubber	0.50	7.45	\$18.30
Needle and Thread	1.20	3.17	\$56.39
Western Wheatgrass - Native	8.00	20.20	\$24.32
Winter Fat	2.00	5.10	\$65.38
Totals Seed Mix	19.20	80.65	\$212.14

Application

Description	Cost /Acre
Broadcast seeding [DMG]	\$261.28
Total Seed Application Cost/Acre	\$261.28

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	1.00	TON	\$265.00	\$265.00
Herbicide - Curtail @ 4.0 pt/ac	1.00	ACRE	\$16.24	\$16.24
Total Mulch Materials Cost/Acre				\$281.24

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$65.89
Power mulcher (MEANS 32 91 13.16 0250)	\$86.68
Weed spray, truck, non-aquatic area, nox. [DMG]	\$61.49
Total Mulch Application Cost/Acre	\$214.06

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: 2.25 Cost /Acre: \$1,066.73
 Estimated Failure Rate: 25% Cost /Acre*: \$1,066.73
 *Selected Replanting Work Items: TILLING,SEEDING,NURSERY,MULC
HING

Initial Job Cost: \$2,400.14
 Reseeding Job Cost: \$600.04
 Total Job Cost: \$3,000
 Job Hours: 0.00

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: Haul reclamation equipment to and from job site
 Permit Action: 110c application review
 Site: Luke the Duke Gravel Pit Permit/Job#: M2013036
PROJECT IDENTIFICATION
 Task #: 006 State: Colorado Abbreviation: None
 Date: 9/29/2014 County: La Plata Filename: M036-006
 User: WHE
Agency or organization name: DRMSEQUIPMENT TRANSPORT RIG COST
 Shift basis: 1 per day
 Cost Data Source: CRG Data
Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)Cost Breakdown:

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
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 - 8U	53.70	\$69.05	\$125.45	1	\$194.50	\$125.45	\$250.00
Car 613C Series 2	18.61	\$25.15	\$88.67	1	\$113.82	\$88.67	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$39.59	\$88.67	2	\$256.51	\$177.34	\$500.00
Power Mulcher (Reinco M90)	6.00	\$7.03	\$88.67	2	\$191.40	\$177.34	\$500.00
Subtotals:					\$756.23	\$568.80	\$1,500.00

ROADABLE EQUIPMENT:

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

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>DURANGO</u>	
Total one-way travel distance:	<u>15.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$5,395.81</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$0.00</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.33	0.33
Return Time (Hours):	0.33	0.33
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.67	0.67

JOB TIME AND COST

Total job time:	<u>3.33</u>	Hours
-----------------	-------------	-------

Total job cost:	<u>\$5,396</u>
-----------------	----------------