

August 30, 2018

Russell Larsen
Northwest Aggregates, Inc.
556 Struthers Ave
Grand Junction, CO 81501



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

1313 Sherman Street, Room 215
Denver, CO 80203

RE: Wand Pit, Permit No. M-2010-007, Reclamation Costs Update and Notice of Surety Increase (SI-2)

Dear Mr. Larsen:

In an effort to ensure the Financial Warranty for the above referenced site adequately reflects the actual current costs of fulfilling the requirements of the approved reclamation plan, the Colorado Division of Reclamation, Mining and Safety (Division) has updated the reclamation cost estimate (copy enclosed).

Division calculations estimate the cost to reclaim the above referenced site to be \$126,986.36 rounded up to \$126,990.00. This is an increase of \$15,162.00 over the \$111,828.00 currently held by the Division. This estimate is based on conditions observed during the July 10, 2018 inspection. ***Therefore, pursuant to Section 34-32.5-117(4) of the Colorado Land Reclamation Act, adequate Financial Warranty must be submitted to the Division within 60 days of the mailing date of this letter.*** The additional amount needs to be accepted prior to **Monday, October 29, 2018**. Please review the enclosed figures as soon as possible and contact our office if any calculation errors are noted.

Please make arrangements with Barbara Coria at the Division of Reclamation, Mining and Safety Denver Office, phone no. 303.866.3567, ext. 8148 for submittal of the financial warranty. Any questions regarding completion, execution and/or submittal of financial warranty forms should also be directed to Barbara Coria.

If you require additional information, or have questions or concerns, please feel free to contact me. Amy Yeldell at the Division of Reclamation, Mining and Safety, 1313 Sherman St., Room 215, Denver, CO 80203. Direct contact can be made by phone at 970-254-8511 or via email at amy.yeldell@state.co.us

Sincerely,

Amy Yeldell
Environmental Protection Specialist

Ec: Wally Erickson, Senior EPS, Grand Junction DRMS
Jon Muller, Kilgore Companies LLC
Enc: Financial Warranty Cost Estimate



COST SUMMARY WORK

Task description: Updated post inspection 7-10-2018

Site: Wand Pit

Permit Action: 2018-07

Permit/Job#: M2010007

PROJECT IDENTIFICATION

Task #: ACY

State: Colorado

Abbreviation: None

Date: 8/30/2018

County: Moffat

Filename: M007-ACY

User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
Reclamation of phase 1 pond (110) area south of access road					
01a	Dewater 110 Pit	PUMPING	1	95.94	\$8,009.00
02a	Transport backfill to slopes in 110 area	LOADER	2	34.29	\$9,338.00
03a	Shape slopes to 3:1 in 110 pit area	DOZER	2	8.61	\$3,592.00
04a	Transport topsoil to 110 area	LOADER	2	6.22	\$1,695.00
05a	Spread topsoil in 110 area	DOZER	2	1.26	\$524.00
06a	Reveg 110 area	REVEGE	1	5.00	\$3,813.00
Reclamation of phase 1 & 2 area north of access road					
07a	Dewater Phase 1/2 Pit	PUMPING	1	249.82	\$20,855.00
08a	Transport backfill to slopes in Phase 1/2	LOADER	2	88.95	\$24,221.00
09a	Shape slopes to 3:1 in Phase 1/2	DOZER	2	18.09	\$7,543.00
10a	Transport topsoil to Phase 1/2	LOADER	2	15.37	\$4,187.00
11a	Spread topsoil in Phase 1/2	DOZER	2	2.51	\$1,049.00
12a	Reveg Phase 1/2	REVEGE	1	10.00	\$7,627.00
13a	Initial Mobilization	MOBILIZE	1	2.57	\$6,109.00
14a	Secondary Mobilization	MOBILIZE	1	2.57	\$1,516.00
<u>SUBTOTALS:</u>				541.2	\$100,078

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Performance bond: 1.05

Job superintendent: 100.00

Profit: 10.00

Total = \$2,021.58

Total = \$1,050.82

Total = \$7,305.00

Total = \$10,007.80

TOTAL O & P = \$20,385.20

CONTRACT AMOUNT (direct + O & P) = \$120,463.20

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	<u>500.00</u>	Total =	<u>500.00</u>
Engineering work and/or contract/bid preparation:	<u>0.00</u>	Total =	<u>\$0.00</u>
Reclamation management and/or administration:	<u>5.00</u>		<u>\$6,023.16</u>

CONTINGENCY:	<u>0.00</u>	Total =	<u>\$0.00</u>
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TOTAL INDIRECT COST =	<u>\$26,908.36</u>
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TOTAL BOND AMOUNT (direct + indirect) =	<u>\$126,986.36</u>
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TOTAL BOND AMOUNT (Rounded) =	<u>\$126,990.00</u>
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PUMPING WORK

Task description: Dewater 110 Pit

Site: Wand Pit

Permit Action: 2018-07

Permit/Job#: M2010007

PROJECT IDENTIFICATION

Task #: 01A

State: Colorado

Abbreviation: None

Date: 8/30/2018

County: Moffat

Filename: M007-01a

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Centrifugal pump - 200M, 10 in.	2
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	2
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	2
Labor Unit 1:	Pump operator	1

Horsepower: 70

Shift Basis: 1 per day

Weight: 1.95

(US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$20.60	NA
Operating Cost/Hour:	\$35.08	100
Operator Cost/Hour:	\$27.80	NA
Total Unit Cost/Hour:	\$83.48	

Total Fleet Cost/Hour: \$83.48

PUMPING QUANTITIES

Initial Pond Volume:	<u>135.00</u>		Conversion factor:	<u>325850.5800</u>
Final Pond Volume:	<u>43,989,828.30</u>	gallons		
Total Pond Inflow Surface Area:	<u>20,000</u>	Sq. ft.	Unit inflow rate in gph/sq. ft.:	<u>0.3516</u>
Total Pond Inflow Volume per Hour:	<u>7,032.00</u>	gallons		

Source of estimated volume: Approx. 9 ac pond 15' depth

PUMPING TIME

Maximum Pump Capacity:	<u>200,000</u>	gph/pump
Estimated Suction Head:	<u>10</u>	feet
Estimated Discharge Head:	<u>5</u>	feet
Total Head:	<u>15</u>	feet
CPB Pump Capacity:	<u>201,000</u>	gph/pump
Site Altitude:	<u>6,200</u>	feet
Adjusted Pumping Capacity:	<u>402,000</u>	gph
Initial Unadjusted Pumping Time:	<u>109.43</u>	hours
Inflow during Initial Pumping:	<u>769,494</u>	gallons
Net Unadjusted Pumping Time:	<u>111.34</u>	Hours
Altitude Adjustment Factor:	<u>0.9400</u>	(3% rule)
Pump Efficiency Factor:	<u>0.9167</u>	(55 min./hr.)
Total Adjusted Pumping Time:	<u>95.94</u>	hours

JOB TIME AND COST

Total job time: 95.94 Hours

Unit cost: \$0.000179 /Gallon

Total job cost: \$8,009

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport backfill to slopes in 110 areaSite: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 02A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-02a
 User: ACY

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

Basic Machine: CAT 972H Horsepower: 287
 Attachment 1: ROPS Cab Shift Basis: 1 per day
 Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$44.67	NA
Operating Cost/Hour:	\$50.58	100
Operator Cost/Hour:	\$40.90	NA
Total Unit Cost/Hour:	\$136.15	
Total Fleet Cost/Hour:	\$272.30	

MATERIAL QUANTITIES

Initial volume: 14,815 CCY Swell factor: 1.125
 Loose volume: 16,667 LCY

Source of estimated volume: Previously accepted values
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTIONLoader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.525 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(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:		-0.020	minutes
Adjusted Basic Cycle Time:		0.505	minutes

Rolling Resistance – Road Conditions

Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0
 Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	350	0.00	5.00	5.00	0.3228	(Cat HB)
Return Route:	350	0.00	5.00	5.00	0.2912	(Cat HB)

Total Travel Time: 0.6140 minutes
 Total Cycle Time: 1.1190 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 0.975 Loose material - mixed moist aggregates (95-100%) 0.975
 Adjusted Capacity: 5.46 LCY

Job Condition Correction Factors

Site Altitude: 6200 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 292.77 LCY/Hour
 Adjusted Hourly Unit Production: 243.00 LCY/Hour
 Adjusted Hourly Fleet Production: 486.00 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 34.29 Hours
 Unit cost: \$0.560 /LCY Total job cost: \$9,338

BULLDOZER WORKTask description: Shape slopes to 3:1 in 110 pit areaSite: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 03A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-03a
 User: ACY

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

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

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$93.62</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$73.35</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>\$41.52</u>	<u>NA</u>

Total unit Cost/Hour: \$208.49
 Total Fleet Cost/Hour: **\$416.99**

MATERIAL QUANTITIES

Initial Volume: 7,408
 Swell factor: 1.125
 Loose volume: **8,334 LCY**

Source of estimated volume: Half of transported volume from task 02A
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Materials consistency description: Loose stockpile 1.2

Average push gradient: 15 %
 Average site altitude: 6,200 feet

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

		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.200</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.666	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3455

Adjusted unit production: 483.70 LCY/hr

Adjusted fleet production: **967.4** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.431/LCY

Total job time: **8.61** Hours

Total job cost: **\$3,592**

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport topsoil to 110 areaSite: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 04A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-04a
 User: ACY

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

Basic Machine: CAT 972H Horsepower: 287
 Attachment 1: ROPS Cab Shift Basis: 1 per day
 Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$44.67</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$50.58</u>	<u>100</u>
Operator Cost/Hour:	<u>\$40.90</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$136.15</u>	
Total Fleet Cost/Hour:	<u>\$272.30</u>	

MATERIAL QUANTITIES

Initial volume: 3,025 CCY Swell factor: 1.000
 Loose volume: 3,025 LCY

Source of estimated volume: Approx. 2.5 ac @ 9" depth
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTIONLoader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.525 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(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:		<u>-0.020</u>	minutes
Adjusted Basic Cycle Time:		<u>0.505</u>	minutes

Rolling Resistance – Road Conditions

Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0
 Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	350	0.00	5.00	5.00	0.3228	(Cat HB)
Return Route:	350	0.00	5.00	5.00	0.2912	(Cat HB)

Total Travel Time: 0.6140 minutes
 Total Cycle Time: 1.1190 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 0.975 Loose material - mixed moist aggregates (95-100%) 0.975
 Adjusted Capacity: 5.46 LCY

Job Condition Correction Factors

Site Altitude: 6200 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 292.77 LCY/Hour
 Adjusted Hourly Unit Production: 243.00 LCY/Hour
 Adjusted Hourly Fleet Production: 486.00 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 6.22 Hours
 Unit cost: \$0.560 /LCY Total job cost: \$1,695

BULLDOZER WORKTask description: Spread topsoil in 110 areaSite: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 05A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-05a
 User: ACY

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

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

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$93.62</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$73.35</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>\$41.52</u>	<u>NA</u>

Total unit Cost/Hour: \$208.49
 Total Fleet Cost/Hour: **\$416.99**

MATERIAL QUANTITIES

Initial Volume: 3,025
 Swell factor: 1.000
 Loose volume: **3,025 LCY**

Source of estimated volume: Approx. 2.5 ac @ 9"
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
 Average site altitude: 6,200 feet

Material weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.200</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>

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:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 1,203.02 LCY/hr

Adjusted fleet production: **2406.04** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.173/LCY

Total job time: **1.26** Hours

Total job cost: **\$524**

REVEGETATION WORKTask description: Reveg 110 areaSite: Wand PitPermit Action: 2018-07Permit/Job#: M2010007**PROJECT IDENTIFICATION**Task #: 06AState: ColoradoAbbreviation: NoneDate: 8/30/2018County: MoffatFilename: M007-06aUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

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)	\$106.29
Total Tilling Cost/Acre	\$106.29

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Orchardgrass - Paiute	0.30	3.72	\$1.11
Smooth Brome - Lincoln	1.60	5.33	\$6.98
Intermediate Wheatgrass - Oahe	2.50	5.34	\$9.83
Pubescent Wheatgrass - Luna	2.25	4.65	\$9.38
Sainfoin - Remont	2.50	1.09	\$8.10
Totals Seed Mix	9.15	20.12	\$35.40

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
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Herbicide - Glyphosate (Journey)@ 1.0 pt/ac	1.00	ACRE	\$4.26	\$4.26
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$583.07

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Power mulcher (MEANS 32 91 13.16 0350)	\$92.78
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$231.70

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
Cottonwood, Narrowleaf	5	Tubling, 10 cu. in. container {(MEANS)	\$1.98	\$2.40	\$9.90
Willow, Sandbar	5	Tubling, 10 cu. in. container {(MEANS)	\$4.38	\$2.40	\$21.90
Totals Nursery Stock Cost / Acre					\$31.80

JOB TIME AND COST

No. of Acres:	2.5	Cost /Acre:	\$1,220.26
Estimated Failure Rate:	25%	Cost /Acre*:	\$1,220.26
*Selected Replanting Work Items:	TILLING,SEEDING,NURSERY,MULCHING		
Initial Job Cost:	\$3,050.65		
Reseeding Job Cost:	\$762.66		
Total Job Cost:	\$3,813		
Job Hours:	5.00		

PUMPING WORK

Task description: Dewater Phase 1/2 Pit

Site: Wand Pit

Permit Action: 2018-07

Permit/Job#: M2010007

PROJECT IDENTIFICATION

Task #: 07A

State: Colorado

Abbreviation: None

Date: 8/30/2018

County: Moffat

Filename: M007-07a

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Centrifugal pump - 200M, 10 in.	2
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	2
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	2
Labor Unit 1:	Pump operator	1

Horsepower: 70

Shift Basis: 1 per day

Weight: 1.95

(US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$20.60	NA
Operating Cost/Hour:	\$35.08	100
Operator Cost/Hour:	\$27.80	NA
Total Unit Cost/Hour:	\$83.48	

Total Fleet Cost/Hour: \$83.48

PUMPING QUANTITIES

Initial Pond Volume:	345.00		Conversion factor:	325850.5800
Final Pond Volume:	112,418,450.10	gallons		
Total Pond Inflow Surface Area:	42,000	Sq. ft.	Unit inflow rate in gph/sq. ft.:	0.3516
Total Pond Inflow Volume per Hour:	14,767.20	gallons		

Source of estimated volume: Approx. 9 ac pond 15' depth

PUMPING TIME

Maximum Pump Capacity:	200,000	gph/pump
Estimated Suction Head:	10	feet
Estimated Discharge Head:	5	feet
Total Head:	15	feet
CPB Pump Capacity:	201,000	gph/pump
Site Altitude:	6,200	feet
Adjusted Pumping Capacity:	402,000	gph
Initial Unadjusted Pumping Time:	279.65	hours
Inflow during Initial Pumping:	4,129,616	gallons
Net Unadjusted Pumping Time:	289.92	Hours
Altitude Adjustment Factor:	0.9400	(3% rule)
Pump Efficiency Factor:	0.9167	(55 min./hr.)
Total Adjusted Pumping Time:	249.82	hours

JOB TIME AND COST

Total job time: **249.82** Hours

Unit cost: \$0.000179 /Gallon

Total job cost: **\$20,855**

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport backfill to slopes in Phase 1/2Site: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 08A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-08a
 User: ACY

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

Basic Machine: CAT 972H Horsepower: 287
 Attachment 1: ROPS Cab Shift Basis: 1 per day
 Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$44.67	NA
Operating Cost/Hour:	\$50.58	100
Operator Cost/Hour:	\$40.90	NA
Total Unit Cost/Hour:	\$136.15	
Total Fleet Cost/Hour:	\$272.30	

MATERIAL QUANTITIES

Initial volume: 31,111 CCY Swell factor: 1.125
 Loose volume: 35,000 LCY

Source of estimated volume: Previously accepted values
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTIONLoader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.525 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(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:		-0.020	minutes
Adjusted Basic Cycle Time:		0.505	minutes

Rolling Resistance – Road Conditions

Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0
 Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	500	0.00	5.00	5.00	0.4611	(Cat HB)
Return Route:	500	0.00	5.00	5.00	0.4160	(Cat HB)

Total Travel Time: 0.8771 minutes
 Total Cycle Time: 1.3821 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 0.975 Loose material - mixed moist aggregates (95-100%) 0.975
 Adjusted Capacity: 5.46 LCY

Job Condition Correction Factors

Site Altitude: 6200 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 237.03 LCY/Hour
 Adjusted Hourly Unit Production: 196.74 LCY/Hour
 Adjusted Hourly Fleet Production: 393.48 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 88.95 Hours
 Unit cost: \$0.692 /LCY Total job cost: \$24,221

BULLDOZER WORKTask description: Shape slopes to 3:1 in Phase 1/2Site: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 09A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-09a
 User: ACY

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

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

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$93.62</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$73.35</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>\$41.52</u>	<u>NA</u>

Total unit Cost/Hour: \$208.49
 Total Fleet Cost/Hour: **\$416.99**

MATERIAL QUANTITIES

Initial Volume: 15,556
 Swell factor: 1.125
 Loose volume: **17,501 LCY**

Source of estimated volume: Half of transported volume from task 08A
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Materials consistency description: Loose stockpile 1.2

Average push gradient: 15 %
 Average site altitude: 6,200 feet

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

		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.200</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.666	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3455

Adjusted unit production: 483.70 LCY/hr

Adjusted fleet production: **967.4** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.431/LCY

Total job time: **18.09** Hours

Total job cost: **\$7,543**

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport topsoil to Phase 1/2Site: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 10A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-10a
 User: ACY

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

Basic Machine: CAT 972H Horsepower: 287
 Attachment 1: ROPS Cab Shift Basis: 1 per day
 Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$44.67	NA
Operating Cost/Hour:	\$50.58	100
Operator Cost/Hour:	\$40.90	NA
Total Unit Cost/Hour:	\$136.15	
Total Fleet Cost/Hour:	\$272.30	

MATERIAL QUANTITIES

Initial volume: 6,050 CCY Swell factor: 1.000
 Loose volume: 6,050 LCY

Source of estimated volume: Approx. 5 ac @ 9" depth
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTIONLoader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.525 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(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:		-0.020	minutes
Adjusted Basic Cycle Time:		0.505	minutes

Rolling Resistance – Road Conditions

Haul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0
 Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	500	0.00	5.00	5.00	0.4611	(Cat HB)
Return Route:	500	0.00	5.00	5.00	0.4160	(Cat HB)

Total Travel Time: 0.8771 minutes
 Total Cycle Time: 1.3821 minutes

Load Bucket Capacity

Rated Capacity: 5.60 LCY (heaped)
 Bucket Fill Factor: 0.975 Loose material - mixed moist aggregates (95-100%) 0.975
 Adjusted Capacity: 5.46 LCY

Job Condition Correction Factors

Site Altitude: 6200 feet

		Source
Altitude Adj:	<u>1.00</u>	(CAT HB)
Job Efficiency:	<u>0.83</u>	(1 shift/day)
Net Correction:	<u>0.83</u>	multiplier

Unadjusted Hourly Unit Production: 237.03 LCY/Hour
 Adjusted Hourly Unit Production: 196.74 LCY/Hour
 Adjusted Hourly Fleet Production: 393.48 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 15.38 Hours
 Unit cost: \$0.692 /LCY Total job cost: \$4,187

BULLDOZER WORKTask description: Spread topsoil in Phase 1/2Site: Wand Pit Permit Action: 2018-07 Permit/Job#: M2010007**PROJECT IDENTIFICATION**

Task #: 11A State: Colorado Abbreviation: None
 Date: 8/30/2018 County: Moffat Filename: M007-11a
 User: ACY

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

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

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$93.62</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$73.35</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>\$41.52</u>	<u>NA</u>

Total unit Cost/Hour: \$208.49
 Total Fleet Cost/Hour: **\$416.99**

MATERIAL QUANTITIES

Initial Volume: 6,050
 Swell factor: 1.000
 Loose volume: **6,050 LCY**

Source of estimated volume: Approx. 5 ac @ 9"
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
 Average site altitude: 6,200 feet

Material weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.200</u>	<u>(CAT HB)</u>
Dozing method:	<u>1.000</u>	<u>(GEN.)</u>
Visibility:	<u>1.000</u>	<u>(AVG.)</u>

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:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 1,203.02 LCY/hr

Adjusted fleet production: **2406.04** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.173/LCY

Total job time: **2.51** Hours

Total job cost: **\$1,049**

REVEGETATION WORKTask description: **Reveg Phase 1/2**Site: **Wand Pit**Permit Action: 2018-07Permit/Job#: M2010007**PROJECT IDENTIFICATION**Task #: 12AState: ColoradoAbbreviation: NoneDate: 8/30/2018County: MoffatFilename: M007-12aUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

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)	\$106.29
Total Tilling Cost/Acre	\$106.29

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Orchardgrass - Paiute	0.30	3.72	\$1.11
Smooth Brome - Lincoln	1.60	5.33	\$6.98
Intermediate Wheatgrass - Oahe	2.50	5.34	\$9.83
Pubescent Wheatgrass - Luna	2.25	4.65	\$9.38
Sainfoin - Remont	2.50	1.09	\$8.10
Totals Seed Mix	9.15	20.12	\$35.40

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
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$2.81	\$2.81
Herbicide - Glyphosate (Journey)@ 1.0 pt/ac	1.00	ACRE	\$4.26	\$4.26
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$288.00	\$576.00
Total Mulch Materials Cost/Acre				\$583.07

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$68.78
Power mulcher (MEANS 32 91 13.16 0350)	\$92.78
Weed spray, truck, aquatic area, nox. [DMG]	\$70.14
Total Mulch Application Cost/Acre	\$231.70

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
Cottonwood, Narrowleaf	5	Tubling, 10 cu. in. container {(MEANS)}	\$1.98	\$2.40	\$9.90
Willow, Sandbar	5	Tubling, 10 cu. in. container {(MEANS)}	\$4.38	\$2.40	\$21.90
Totals Nursery Stock Cost / Acre					\$31.80

JOB TIME AND COST

No. of Acres: 5 Cost /Acre: \$1,220.26
 Estimated Failure Rate: 25% Cost /Acre*: \$1,220.26
 *Selected Replanting Work Items: TILLING,SEEDING,NURSERY,MULC
HING

Initial Job Cost: **\$6,101.30**
 Reseeding Job Cost: **\$1,525.33**
 Total Job Cost: **\$7,627**
 Job Hours: **10.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Initial Mobilization**Site: **Wand Pit**Permit Action: **2018-07**Permit/Job#: **M2010007****PROJECT IDENTIFICATION**

Task #: **13A** State: **Colorado** Abbreviation: **None**
 Date: **8/30/2018** County: **Moffat** Filename: **M007-13a**
 User: **ACY**

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:**

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
Centrifugal pump - 200M, 10 in.	1.95	\$10.30	\$88.67	1	\$98.97	\$88.67	\$250.00
CAT 972H	28.00	\$44.67	\$117.55	2	\$324.44	\$235.10	\$500.00
Cat D8T - 8SU	47.71	\$93.62	\$117.55	2	\$422.34	\$235.10	\$500.00
Drill/Broadcast Seeder with Tractor	25.00	\$15.54	\$88.67	1	\$104.21	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$8.33	\$88.67	1	\$97.00	\$88.67	\$250.00

Subtotals: **\$1,046.96** **\$736.21** **\$1,750.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$19.39	1	\$19.39	\$19.39

Subtotals: **\$19.39** **\$19.39**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: CRAIG, CO
 Total one-way travel distance: 5.00 miles
 Average Travel Speed: 35.00 mph

Total Non-Roadable Mob/Demob Cost * \$6,103.40
 * two round trips with haul rig:
 Total Roadable Mob/Demob Cost ** \$5.54
 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.14	0.14
Return Time (Hours):	0.14	0.14
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.29	0.29

JOB TIME AND COST

Total job time: 2.57 Hours

Total job cost: \$6,109

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Secondary Mobilization**Site: **Wand Pit**Permit Action: 2018-07Permit/Job#: M2010007**PROJECT IDENTIFICATION**Task #: 14AState: ColoradoAbbreviation: NoneDate: 8/30/2018County: MoffatFilename: M007-14aUser: ACYAgency 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
Drill/Broadcast Seeder with Tractor	25.00	\$15.54	\$88.67	1	\$104.21	\$88.67	\$250.00
Power Mulcher (Bowie LD-90)	6.00	\$8.33	\$88.67	1	\$97.00	\$88.67	\$250.00
Subtotals:					\$201.21	\$177.34	\$500.00

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$19.39	1	\$19.39	\$19.39
Subtotals:			\$19.39	\$19.39

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: CRAIG, CO
 Total one-way travel distance: 5.00 miles
 Average Travel Speed: 35.00 mph

Total Non-Roadable Mob/Demob Cost * \$1,510.58
 * two round trips with haul rig:
 Total Roadable Mob/Demob Cost ** \$5.54
 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.14	0.14
Return Time (Hours):	0.14	0.14
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.29	0.29

JOB TIME AND COST

Total job time: 2.57 Hours

Total job cost: \$1,516