



September 21, 2022

Richard Bower
Bower Brothers Construction, Inc.
595 Taylor St.
Craig, CO 81625

Re: Hertzog Pit (Permit No. M-1981-276)
Amendment No. 1 (AM-01)
Second Adequacy Review

Dear Mr. Bower:

After reviewing adequacy responses for AM-01 from Bower Brothers Construction, Inc., for the Hertzog Pit (Hertzog) the Division has the following comments:

Items 1 – 11 from the Division’s adequacy letter dated August 4, 2022 have been resolved. **No additional comments necessary.**

Rule 6.14.12 – Reclamation Costs

12. Division: *The Division has reviewed proposed Exhibit L for AM-01. After the review, it appears the proposed reclamation cost estimate provided was the original cost estimate for the Lay Creek Pit (formally Taylor Pit, M-2013-006). The tasks provided doesn’t appear to include the tasks associated with the Hertzog Pit as well as the additional 5 acres of affected area proposed with AM-01 associated with the Lay Creek Pit. Please update proposed Exhibit L to include the reclamation tasks and costs associated with the Hertzog Pit as well as additional 5 acres of affected proposed under AM-01.*

As requested with the Division’s August 4, 2022, tasks and costs associated with both the Lay Creek and Hertzog Pits have been provided. The total cost for both pits as provided total to \$44,682.00. The Division has conducted a reclamation cost estimate (RCE) of the proposed changes to the Hertzog Mine. The Division’s RCE estimates the costs associated with the Hertzog Pit should the work be performed by the Division. The total value of this RCE is **\$67,681.00** (see attached). This amount is \$22,999.00 more than the provided estimate under Hertzog Exhibit L. It should be noted that the Division currently holds two performance bonds for a total amount of \$52,054.00 which is less than the Division’s RCE associated with the Hertzog AM-01. The Division respectfully requests a response from Bower Brothers Construction Inc. with any questions regarding the cost estimate or an acceptance of the Division’s estimate.



If you have any questions, feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Zach Trujillo' in a cursive style.

Zach Trujillo
Environmental Protection Specialist
(303) 866-3567 ext. 8164
Zach.Trujillo@state.co.us

COST SUMMARY WORK

Task description: Reclaim Hertzog Mine

Site: Hertzog Pit

Permit Action: AM01

Permit/Job#: M1981276

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 8/3/2022

County: Moffat

Filename: M276-000

User: ZTT

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Transport Overburden - Lay Creek Pit	LOADER	2	15.99	\$4,252
002	Grade Overburden - Lay Creek Pit	DOZER	2	5.99	\$4,176
003	Transport Topsoil - Lay Creek Pit	LOADER	2	8.39	\$2,233
004	Grade Topsoil - Lay Creek Pit	DOZER	2	1.97	\$1,375
005	Revegetate Lay Creek Pit Area	REVEGE	1	7.50	\$8,691
006	Transport Overburden - Hertzog Pit	LOADER	2	18.39	\$4,890
007	Grade Overburden - Hertzog Pit	DOZER	2	6.89	\$4,802
008	Transport Topsoil - Hertzog Pit	LOADER	2	10.29	\$2,737
009	Grade Topsoil - Hertzog Pit	DOZER	2	2.42	\$1,686
010	Revegetate Hertzog Pit Area	REVEGE	1	7.50	\$8,691
011	Mobilization reclamation crew/equipment	MOBILIZE	1	4.40	\$5,035
<u>SUBTOTALS:</u>				89.73	\$48,568

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02
Performance bond: 1.05
Job superintendent: 87.54
Profit: 10.00

Total = \$981
Total = \$510
Total = \$6,577
Total = \$4,857

TOTAL O & P = \$12,925

CONTRACT AMOUNT (direct + O & P) = \$61,493

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): \$500
Engineering work and/or contract/bid preparation: 4.25
Reclamation management and/or administration: 5.00

Total = \$500
Total = \$2,613
Total = \$3,075

CONTINGENCY: 0.00

Total = \$0

TOTAL INDIRECT COST = \$19,113

TOTAL BOND AMOUNT (direct + indirect) = \$67,681

WHEEL LOADER – LOAD AND CARRY WORKTask description: **Transport Overburden - Lay Creek Pit**Site: **Hertzog Pit**Permit Action: **AM01**Permit/Job#: **M1981276****PROJECT IDENTIFICATION**Task #: **001**State: **Colorado**Abbreviation: **None**Date: **9/21/2022**County: **Moffat**Filename: **M276-001**User: **ZTT**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 966H**Attachment 1: **ROPS Cab**Horsepower: **262**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$49.15	NA
Operating Cost/Hour:	\$43.04	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$132.90	
Total Fleet Cost/Hour:	\$265.79	

MATERIAL QUANTITIESInitial volume: **8,000**

CCY

Swell factor: **1.000**Loose volume: **8,000**

LCY

Source of estimated volume: **Exh. L**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Loader Cycle Time:** Unadjusted Basic Cycle Time (load, dump, maneuver): **0.500** minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.070	minutes
Adjusted Basic Cycle Time:		0.430	minutes

Rolling Resistance – Road ConditionsHaul: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Return: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0****Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	300	0.00	8.00	8.00	0.3457	(Cat HB)
Return Route:	300	0.00	8.00	8.00	0.3199	(Cat HB)

Total Travel Time: 0.6655 minutes
 Total Cycle Time: 1.0955 minutes

Load Bucket Capacity

Rated Capacity: 5.00 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 5.50 LCY

Job Condition Correction Factors

Site Altitude: 6000 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: 301.22 LCY/Hour
 Adjusted Hourly Unit Production: 250.01 LCY/Hour
 Adjusted Hourly Fleet Production: 500.03 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 16.00 Hours
 Unit cost: \$0.532 /LCY Total job cost: \$4,252

BULLDOZER WORKTask description: **Grade Overburden - Lay Creek Pit**Site: **Hertzog Pit**Permit Action: **AM01**Permit/Job#: **M1981276****PROJECT IDENTIFICATION**Task #: **002**State: **Colorado**Abbreviation: **None**Date: **9/21/2022**County: **Moffat**Filename: **M276-002**User: **ZTT**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D9T - 9SU**Horsepower: **405**Blade Type: **Semi-Universal**Attachment: **3-shank ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$146.30	NA
Operating Cost/Hour:	\$141.41	100
Ripper own. Cost/Hour:	\$17.01	NA
Ripper op. Cost/Hour:	\$2.66	30
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$348.68**Total Fleet Cost/Hour: **\$697.35****MATERIAL QUANTITIES**Initial Volume: **8,000**Swell factor: **1.000**Loose volume: **8,000 LCY**Source of estimated volume: **Exhibit L**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **100 feet**Unadjusted hourly production: **1,243.2 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **-15 %**Average site altitude: **6,000 feet**Material weight: **2,550 lbs/LCY**Weight description: **Earth - Dry packed****Job 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	(SSD-AC)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5373

Adjusted unit production: 667.97 LCY/hr

Adjusted fleet production: **1335.94** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.522/LCY

Total job time: **5.99** Hours

Total job cost: **\$4,176**

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport Topsoil - Lay Creek PitSite: Hertzog PitPermit Action: AM01Permit/Job#: M1981276**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 9/21/2022County: MoffatFilename: M276-003User: ZTTAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 966HAttachment 1: ROPS CabHorsepower: 262Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$49.15	NA
Operating Cost/Hour:	\$43.04	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$132.90	
Total Fleet Cost/Hour:	\$265.79	

MATERIAL QUANTITIESInitial volume: 4,200

CCY

Swell factor: 1.000Loose volume: 4,200

LCY

Source of estimated volume: Exh. LSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.070	minutes
Adjusted Basic Cycle Time:		0.430	minutes

Rolling Resistance – Road ConditionsHaul: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0Return: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	300	0.00	8.00	8.00	0.3457	(Cat HB)
Return Route:	300	0.00	8.00	8.00	0.3199	(Cat HB)

Total Travel Time: 0.6655 minutes
 Total Cycle Time: 1.0955 minutes

Load Bucket Capacity

Rated Capacity: 5.00 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 5.50 LCY

Job Condition Correction Factors

Site Altitude: 6000 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: 301.22 LCY/Hour
 Adjusted Hourly Unit Production: 250.01 LCY/Hour
 Adjusted Hourly Fleet Production: 500.03 LCY/Hour

JOB TIME AND COST

Fleet size:	<u>2</u>	Loader(s)	Total job time:	<u>8.40</u>	Hours
Unit cost:	<u>\$0.532</u>	/LCY	Total job cost:	<u>\$2,233</u>	

BULLDOZER WORKTask description: GradeTopsoil - Lay Creek PitSite: Hertzog PitPermit Action: AM01Permit/Job#: M1981276**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 9/21/2022County: MoffatFilename: M276-004User: ZTTAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D9T - 9SUHorsepower: 405Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$146.30	NA
Operating Cost/Hour:	\$141.41	100
Ripper own. Cost/Hour:	\$17.01	NA
Ripper op. Cost/Hour:	\$2.66	30
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: \$348.68Total Fleet Cost/Hour: \$697.35**MATERIAL QUANTITIES**Initial Volume: 4,200Swell factor: 1.000Loose volume: 4,200 LCYSource of estimated volume: Exhibit LSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 100 feetUnadjusted hourly production: 1,243.2 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: -15 %Average site altitude: 6,000 feetMaterial weight: 1,600 lbs/LCYWeight description: Top Soil**Job 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	(SSD-AC)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8566

Adjusted unit production: 1,064.93 LCY/hr

Adjusted fleet production: **2129.86** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.327/LCY

Total job time: **1.97** Hours

Total job cost: **\$1,375**

REVEGETATION WORKTask description: Revegetate Lay Creek Pit AreaSite: Hertzog PitPermit Action: AM01Permit/Job#: M1981276**PROJECT IDENTIFICATION**Task #: 005State: ColoradoAbbreviation: NoneDate: 9/21/2022County: MoffatFilename: M276-005User: ZTTAgency 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)	\$117.18
Total Tilling Cost/Acre	\$117.18

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Orchardgrass - Shawnee	0.30	3.72	\$0.93
Crested Wheatgrass - Standard	2.50	11.48	\$10.38
Smooth Brome - Manchar	1.60	5.33	\$5.32
Intermediate Wheatgrass - Rush	2.50	5.34	\$7.00
Pubescent Wheatgrass - Luna	2.25	4.65	\$7.65
Totals Seed Mix	9.15	30.51	\$31.28

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	\$3.04	\$3.04
Total Mulch Materials Cost/Acre				\$3.04

Application

Description	Cost /Acre
Weed spray, truck, non-aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$62.72

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:	<u>15</u>	Cost /Acre:	<u>\$446.22</u>
Estimated Failure Rate:	<u>35%</u>	Cost /Acre*:	<u>\$380.46</u>
*Selected Replanting Work Items:	<u>TILLING,SEEDING</u>		
Initial Job Cost:	<u>\$6,693.30</u>		
Reseeding Job Cost:	<u>\$1,997.42</u>		
Total Job Cost:	<u>\$8,691</u>		
Job Hours:	<u>7.50</u>		

WHEEL LOADER – LOAD AND CARRY WORKTask description: **Transport Overburden - Hertzog Pit**Site: **Hertzog Pit**Permit Action: **AM01**Permit/Job#: **M1981276****PROJECT IDENTIFICATION**Task #: **006**State: **Colorado**Abbreviation: **None**Date: **9/21/2022**County: **Moffat**Filename: **M276-006**User: **ZTT**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 966H**Attachment 1: **ROPS Cab**Horsepower: **262**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$49.15	NA
Operating Cost/Hour:	\$43.04	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$132.90	
Total Fleet Cost/Hour:	\$265.79	

MATERIAL QUANTITIESInitial volume: **9,200**

CCY

Swell factor: **1.000**Loose volume: **9,200**

LCY

Source of estimated volume: **6" over 14.3 acres**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): **0.500** minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.070	minutes
Adjusted Basic Cycle Time:		0.430	minutes

Rolling Resistance – Road ConditionsHaul: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Return: **Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0****Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	300	0.00	8.00	8.00	0.3457	(Cat HB)
Return Route:	300	0.00	8.00	8.00	0.3199	(Cat HB)

Total Travel Time: 0.6655 minutes
 Total Cycle Time: 1.0955 minutes

Load Bucket Capacity

Rated Capacity: 5.00 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 5.50 LCY

Job Condition Correction Factors

Site Altitude: 6000 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: 301.22 LCY/Hour
 Adjusted Hourly Unit Production: 250.01 LCY/Hour
 Adjusted Hourly Fleet Production: 500.03 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 18.40 Hours
 Unit cost: \$0.532 /LCY Total job cost: \$4,890

BULLDOZER WORKTask description: **Grade Overburden - Hertzog Pit**Site: **Hertzog Pit** Permit Action: **AM01** Permit/Job#: **M1981276****PROJECT IDENTIFICATION**

Task #: **007** State: **Colorado** Abbreviation: **None**
 Date: **9/21/2022** County: **Moffat** Filename: **M276-007**
 User: **ZTT**

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

Basic Machine: **Cat D9T - 9SU**
 Horsepower: **405**
 Blade Type: **Semi-Universal**
 Attachment: **3-shank ripper**
 Shift Basis: **1 per day**
 Data Source: **(CRG)**

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$146.30	NA
Operating Cost/Hour:	\$141.41	100
Ripper own. Cost/Hour:	\$17.01	NA
Ripper op. Cost/Hour:	\$2.66	30
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$348.68**
 Total Fleet Cost/Hour: **\$697.35**

MATERIAL QUANTITIES

Initial Volume: **9,200**
 Swell factor: **1.000**
 Loose volume: **9,200 LCY**

Source of estimated volume: **Exhibit L**
 Source of estimated swell factor: **Cat Handbook**

HOURLY PRODUCTION

Average push distance: **100 feet**
 Unadjusted hourly production: **1,243.2 LCY/hr**

Materials consistency description: **Compacted fill or embankment 0.9**

Average push gradient: **-15 %**
 Average site altitude: **6,000 feet**

Material weight: **2,550 lbs/LCY**Weight description: **Earth - Dry packed****Job 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	(SSD-AC)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5373

Adjusted unit production: 667.97 LCY/hr

Adjusted fleet production: **1335.94** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.522/LCY

Total job time: **6.89** Hours

Total job cost: **\$4,802**

WHEEL LOADER – LOAD AND CARRY WORKTask description: Transport Topsoil - Hertzog PitSite: Hertzog PitPermit Action: AM01Permit/Job#: M1981276**PROJECT IDENTIFICATION**Task #: 008State: ColoradoAbbreviation: NoneDate: 9/21/2022County: MoffatFilename: M276-008User: ZTTAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 966HAttachment 1: ROPS CabHorsepower: 262Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$49.15	NA
Operating Cost/Hour:	\$43.04	100
Operator Cost/Hour:	\$40.71	NA
Total Unit Cost/Hour:	\$132.90	
Total Fleet Cost/Hour:	\$265.79	

MATERIAL QUANTITIESInitial volume: 5,150

CCY

Swell factor: 1.000Loose volume: 5,150

LCY

Source of estimated volume: Exh. LSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(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:		-0.070	minutes
Adjusted Basic Cycle Time:		0.430	minutes

Rolling Resistance – Road ConditionsHaul: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0Return: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	300	0.00	8.00	8.00	0.3457	(Cat HB)
Return Route:	300	0.00	8.00	8.00	0.3199	(Cat HB)

Total Travel Time: 0.6655 minutes
 Total Cycle Time: 1.0955 minutes

Load Bucket Capacity

Rated Capacity: 5.00 LCY (heaped)
 Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100
 Adjusted Capacity: 5.50 LCY

Job Condition Correction Factors

Site Altitude: 6000 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: 301.22 LCY/Hour
 Adjusted Hourly Unit Production: 250.01 LCY/Hour
 Adjusted Hourly Fleet Production: 500.03 LCY/Hour

JOB TIME AND COST

Fleet size: 2 Loader(s) Total job time: 10.30 Hours
 Unit cost: \$0.532 /LCY Total job cost: \$2,737

BULLDOZER WORKTask description: GradeTopsoil - Hertzog PitSite: Hertzog Pit Permit Action: AM01 Permit/Job#: M1981276**PROJECT IDENTIFICATION**

Task #: 009 State: Colorado Abbreviation: None
 Date: 9/21/2022 County: Moffat Filename: M276-009
 User: ZTT

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

Basic Machine: Cat D9T - 9SU
 Horsepower: 405
 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>\$146.30</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$141.41</u>	<u>100</u>
Ripper own. Cost/Hour:	<u>\$17.01</u>	<u>NA</u>
Ripper op. Cost/Hour:	<u>\$2.66</u>	<u>30</u>
Operator Cost/Hour:	<u>\$41.30</u>	<u>NA</u>

Total unit Cost/Hour: \$348.68
 Total Fleet Cost/Hour: **\$697.35**

MATERIAL QUANTITIES

Initial Volume: 5,150
 Swell factor: 1.000
 Loose volume: **5,150** LCY

Source of estimated volume: Exhibit L
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
 Unadjusted hourly production: 1,243.2 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: -15 %
 Average site altitude: 6,000 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>0.900</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	(SSD-AC)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8566

Adjusted unit production: 1,064.93 LCY/hr

Adjusted fleet production: **2129.86** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.327/LCY

Total job time: **2.42** Hours

Total job cost: **\$1,686**

REVEGETATION WORKTask description: Revegetate Hertzog Pit AreaSite: Hertzog PitPermit Action: AM01Permit/Job#: M1981276**PROJECT IDENTIFICATION**Task #: 010State: ColoradoAbbreviation: NoneDate: 9/21/2022County: MoffatFilename: M276-010User: ZTTAgency 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)	\$117.18
Total Tilling Cost/Acre	\$117.18

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Orchardgrass - Shawnee	0.30	3.72	\$0.93
Crested Wheatgrass - Standard	2.50	11.48	\$10.38
Smooth Brome - Manchar	1.60	5.33	\$5.32
Intermediate Wheatgrass - Rush	2.50	5.34	\$7.00
Pubescent Wheatgrass - Luna	2.25	4.65	\$7.65
Totals Seed Mix	9.15	30.51	\$31.28

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

Materials				
Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	1.00	ACRE	\$3.04	\$3.04
Total Mulch Materials Cost/Acre				\$3.04

Application

Description	Cost /Acre
Weed spray, truck, non-aquatic area, nox. [DMG]	\$62.72
Total Mulch Application Cost/Acre	\$62.72

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:	<u>15</u>	Cost /Acre:	<u>\$446.22</u>
Estimated Failure Rate:	<u>35%</u>	Cost /Acre*:	<u>\$380.46</u>
*Selected Replanting Work Items:	<u>TILLING,SEEDING</u>		
Initial Job Cost:	<u>\$6,693.30</u>		
Reseeding Job Cost:	<u>\$1,997.42</u>		
Total Job Cost:	<u>\$8,691</u>		
Job Hours:	<u>7.50</u>		