



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

April 20, 2022

Katie Todt
Lewicki and Associates, PLLC
3375 West Powers Circle
Littleton, CO 80123

**RE: Young Ranch Resource Quarry, File No. M-2021-009, 112 Construction Materials
Reclamation Permit Application, Adequacy Review No. 4 – Bond Estimate**

Ms. Todt:

The Division of Reclamation, Mining and Safety (Division) has completed its bond estimate (see enclosed) for the proposed operation based on the reclamation plan provided. Please review this estimate and provide any comments or questions you might have no later than April 29, 2022.

The Division estimates the required financial warranty for the proposed mine phase 1 disturbance to be in the amount of \$330,461.00. Please keep in mind, any proposed changes to the reclamation plan reviewed thus far may necessitate a revised bond estimate.

If you have any questions, you may contact me by telephone at 303-866-3567, ext. 8129 or by email at amy.eschberger@state.co.us.

Sincerely,

Amy Eschberger
Environmental Protection Specialist

Encl: Division's bond estimate, dated 4/20/2022

Cc: Ben Miller, Lewicki and Associates, PLLC
Robert L. Young Jr., Young Ranch Resource, LLC
Rob Zuber, DRMS
Zach Trujillo, DRMS
Michael Cunningham, DRMS



COST SUMMARY WORK

Task description: Cost Summary

Site: Young Ranch Resource
Quarry

Permit Action: Phase 1 Disturbance

Permit/Job#: M2021009

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 4/20/2022 County: Gilpin Filename: M009-000
User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Haul backfill material to quarry highwall	TRUCK1	1	28.34	\$23,391
002	Backfill quarry highwall to 2H:1V	EXCAVATE	1	15.46	\$3,014
003	Haul coarse rock to quarry highwall	TRUCK1	1	20.41	\$16,849
004	Place coarse rock cap on quarry highwall	EXCAVATE	1	8.64	\$1,684
005	Place growth medium on quarry highwall	SCRAPER1	1	5.40	\$8,093
006	Rip compacted area (1.7 acre)	RIPPER	1	2.51	\$658
006b	Single shank rip on WRL lifts	RIPPER	1	0.19	\$51
007	Grade active WRL lifts to 2.2H:1V	DOZER	2	5.78	\$2,733
008	Haul coarse rock to WRL slopes	TRUCK1	1	3.28	\$2,704
009	Place coarse rock cap on WRL slopes	EXCAVATE	1	1.06	\$207
010	Place growth medium on WRL slopes	SCRAPER1	1	0.97	\$1,448
011	Place growth medium on top WRL (1.7 ac)	SCRAPER1	1	1.94	\$2,912
012	Place growth medium on pit floor (26.7 ac)	SCRAPER1	1	21.27	\$31,862
013	Plant dry rangeland mix on 28.4 acres	REVEGE	1	14.20	\$32,457
014	Plant forest shrub mix on 7.3 acres	REVEGE	1	3.65	\$22,254
015	Plant tree tubelings on 7.3 acres	REVEGE	1	3.65	\$15,549
016	Mobilization/Demobilization	MOBILIZE	1	25.27	\$93,538
<u>SUBTOTALS:</u>				162.02	\$259,404

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$5,240
Performance bond:	1.05	Total =	\$2,724
Job superintendent:	121.00	Total =	\$8,716
Profit:	10.00	Total =	\$25,940
		TOTAL O & P =	\$42,620
		CONTRACT AMOUNT (direct + O & P) =	\$302,024

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	\$500	Total =	\$500
Engineering work and/or contract/bid preparation:	4.25	Total =	\$12,836
Reclamation management and/or administration:	5.00		\$15,101
		CONTINGENCY:	0.00
		Total =	\$0

TOTAL INDIRECT COST = \$71,057

TOTAL BOND AMOUNT (direct + indirect) = \$330,461

TRUCK/LOADER TEAM WORKTask description: **Haul backfill material to quarry highwall**Site: **Young Ranch Resource**
QuarryPermit Action: **Phase 1 Disturbance**Permit/Job#: **M2021009****PROJECT IDENTIFICATION**

Task #: **001** State: **Colorado** Abbreviation: **None**
 Date: **4/20/2022** County: **Gilpin** Filename: **M009-001**
 User: **AME**

Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Shift basis: **1 per day**

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:**Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	50	NA	50	50
Ownership cost/hour:	\$76.13	\$59.72	\$97.46	NA	\$70.80	\$17.15
Operating cost/hour:	\$52.75	\$55.20	\$48.82	NA	\$28.16	\$14.60
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00
Operator cost/hour:	\$32.54	\$40.71	\$41.30	NA	\$28.56	\$0.00
Unit Subtotals:	\$161.42	\$155.63	\$187.58	NA	\$127.51	\$31.75
Number of Units:	2	1	1	0	1	1
Group Subtotals:	Work: \$478.47		Support: \$187.58		Maint: \$159.26	

Total work team cost/hour: **\$825.31****MATERIAL QUANTITIES**

Initial volume: **11,574** CCY Swell factor: **1.060**
 Loose volume: **12,268** LCY

Source of estimated volume: **25 ft H x 500 ft L bench, vertical to 2H:1V**
 Source of estimated swell factor: **Cat Handbook**
 Material Purchase Cost: **\$0.00**
 Total Cost: **\$0.00**

HOURLY PRODUCTION**Truck Capacity:****Truck Payload (weight) Basis:**

Material weight: **2,850** Pounds/LCY
 Description: **Sand - Damp**
 Rated Payload: **62,000** Pounds

Payload Capacity: 21.75 LCY

Truck Bed (volume) Basis:

Struck Volume: 17.10 LCY
 Heaped Volume: 22.10 LCY
 Average Volume: 19.60 LCY
 Adjusted Volume: 21.75 LCY

Final Truck Volume Based on Number of Loader Passes: 18.50 LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity: 5.000 LCY (heaped)
 Bucket Fill Factor: 0.925 Loose material - 1/8" to 3/8" (90 - 95%) 0.925
 Adjusted Capacity: 4.625 LCY

Job Condition Corrections:

Site Altitude (ft.): 8200 feet

	Truck	Loader	Source
Altitude Adj:	0.900	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)

Net Correction: **0.747** **0.830**

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
 Selected Value within this Basic Rating: NA

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(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:		-0.100	minutes
Adjusted Loader Cycle Time:		0.400	minutes
Net Load Time per Truck:		1.300	minutes

Truck Cycle Time:

Truck Exchange Time:	<u>0.60</u>	Minutes	Adjusted for site altitude:	<u>0.667</u>	Minutes
Truck Load Time:	<u>1.300</u>	Minutes	Adjusted for site altitude:	<u>1.300</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.00</u>	Minutes	Adjusted for site altitude:	<u>1.111</u>	Minutes

Truck Travel (Haul & Return) Time:
maintained 3.0

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	2.00	3.00	5.00	1427	0.753

Haul Time: **0.753** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	-2.00	3.00	1.00	3060	0.426

Return Time: **0.426** minutesTotal Truck Cycle Time: **4.257** minutes

Loading Tool unit

Production	<u>564.41</u>	LCY/Hour	Adjusted for job efficiency:	<u>468.46</u>	LCY/Hour
Truck Unit Production	<u>260.76</u>	LCY/Hour	Adjusted for job efficiency:	<u>216.43</u>	LCY/Hour

Optimal No. of Trucks:	<u>2</u>	Truck(s)	Selected Number of Trucks:	<u>2</u>	Truck(s)
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Adjusted hourly truck team production:	<u>432.86</u>	LCY/Hour
Adjusted single truck/loader team production:	<u>432.86</u>	LCY/Hour
Adjusted multiple truck/loader team production:	<u>432.86</u>	LCY/Hour

JOB TIME AND COST

Fleet size:	<u>1</u>	Team(s)	Total job time:	<u>28.34</u>	Hours
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Unit cost:	<u>\$1.907</u>	/LCY	Total job cost:	<u>\$23,391</u>
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HYDRAULIC EXCAVATOR WORK

Task description: Backfill quarry highwall to 2H:1V

Site: Young Ranch Resource Quarry Permit Action: Phase 1 Disturbance Permit/Job#: M2021009

PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None
Date: 4/20/2022 County: Gilpin Filename: M009-002
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 336D L 10'-6" Stick Horsepower: 268
Attachment 1: ROPS Cab Weight (MT): 29.30
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$83.42</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$74.14</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.32</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$194.88</u>	
Total Fleet Cost/Hour:	<u>\$194.88</u>	

MATERIAL QUANTITIES

Initial volume: 11,574 CCY Swell factor: 1.000
Loose volume: 11,574 LCY

Source of estimated volume: 25 ft H x 500 ft L bench
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: EXCELLENT
Secondary Job Condition within Basic Description: EXCELLENT
Cycle Time Value: 0.205 minutes

Load Bucket Capacity

Rated Capacity: 3.33 LCY (heaped) Bucket Size Class: Large
Bucket Fill Factor: 0.925 Loose material - 1/8" to 3/8" (90 - 95%) 0.925
Adjusted Capacity: 3.08 LCY

Job Condition Correction Factors

Site Altitude: 8200 feet

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

Unadjusted Hourly Unit Production:	<u>901.54</u>	LCY/Hour
Adjusted Hourly Unit Production:	<u>748.28</u>	LCY/Hour
Adjusted Hourly Fleet Production:	<u>748.28</u>	LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 15.47 Hours
Unit cost: \$0.260 /LCY Total job cost: \$3,014

TRUCK/LOADER TEAM WORKTask description: **Haul coarse rock to quarry highwall**Site: **Young Ranch Resource**
QuarryPermit Action: **Phase 1 Disturbance**Permit/Job#: **M2021009****PROJECT IDENTIFICATION**

Task #: **003** State: **Colorado** Abbreviation: **None**
 Date: **4/20/2022** County: **Gilpin** Filename: **M009-003**
 User: **AME**

Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Shift basis: **1 per day**

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:**Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	50	NA	50	50
Ownership cost/hour:	\$76.13	\$59.72	\$97.46	NA	\$70.80	\$17.15
Operating cost/hour:	\$52.75	\$55.20	\$48.82	NA	\$28.16	\$14.60
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00
Operator cost/hour:	\$32.54	\$40.71	\$41.30	NA	\$28.56	\$0.00
Unit Subtotals:	\$161.42	\$155.63	\$187.58	NA	\$127.51	\$31.75
Number of Units:	2	1	1	0	1	1
Group Subtotals:	Work: \$478.47		Support: \$187.58		Maint: \$159.26	

Total work team cost/hour: **\$825.31****MATERIAL QUANTITIES**

Initial volume: **6,991** CCY Swell factor: **1.320**
 Loose volume: **9,228** LCY

Source of estimated volume: **Avg 8 inch depth x 6.5 ac**
 Source of estimated swell factor: **Cat Handbook**
 Material Purchase Cost: **\$0.00**
 Total Cost: **\$0.00**

HOURLY PRODUCTION**Truck Capacity:****Truck Payload (weight) Basis:**

Material weight: **2,800** Pounds/LCY
 Description: **Granite - Broken**
 Rated Payload: **62,000** Pounds

Payload Capacity: 22.14 LCY

Truck Bed (volume) Basis:

Struck Volume: 17.10 LCY
 Heaped Volume: 22.10 LCY
 Average Volume: 19.60 LCY
 Adjusted Volume: 22.10 LCY

Final Truck Volume Based on Number of Loader Passes: 20.00 LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity: 5.000 LCY (heaped)
 Bucket Fill Factor: 1.000 Rock - Well Blasted (95%-105%) 1.000
 Adjusted Capacity: 5.000 LCY

Job Condition Corrections:

Site Altitude (ft.): 8200 feet

	Truck	Loader	Source
Altitude Adj:	0.900	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)

Net Correction: **0.747** **0.830**

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
 Selected Value within this Basic Rating: NA

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 6" and over diameter 0.03	0.030	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(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:		-0.050	minutes
Adjusted Loader Cycle Time:		0.450	minutes
Net Load Time per Truck:		1.450	minutes

Truck Cycle Time:

Truck Exchange Time: 0.60 Minutes Adjusted for site altitude: 0.667 Minutes
 Truck Load Time: 1.450 Minutes Adjusted for site altitude: 1.450 Minutes
 Truck Maneuver and Dump Time: 1.00 Minutes Adjusted for site altitude: 1.111 Minutes

Truck Travel (Haul & Return) Time:
maintained 3.0

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	2.00	3.00	5.00	1427	0.753

Haul Time: **0.753** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	-2.00	3.00	1.00	3060	0.426

Return Time: **0.426** minutesTotal Truck Cycle Time: **4.407** minutes

Loading Tool unit
 Production 566.93 LCY/Hour Adjusted for job efficiency: 470.55 LCY/Hour
 Truck Unit Production 272.31 LCY/Hour Adjusted for job efficiency: 226.02 LCY/Hour
 Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 452.03 LCY/Hour
 Adjusted single truck/loader team production: 452.03 LCY/Hour
 Adjusted multiple truck/loader team production: **452.03** LCY/Hour

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: **20.41** HoursUnit cost: \$1.826 /LCY Total job cost: **\$16,849**

HYDRAULIC EXCAVATOR WORK

Task description: Place coarse rock cap on quarry highwall

Site: Young Ranch Resource Quarry Permit Action: Phase 1 Disturbance Permit/Job#: M2021009

PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None
Date: 4/20/2022 County: Gilpin Filename: M009-004
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 336D L 10'-6" Stick Horsepower: 268
Attachment 1: ROPS Cab Weight (MT): 29.30
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

	Utilization %
Ownership Cost/Hour: <u>\$83.42</u>	<u>NA</u>
Operating Cost/Hour: <u>\$74.14</u>	<u>100</u>
Operator Cost/Hour: <u>\$37.32</u>	<u>NA</u>
Total Unit Cost/Hour: <u>\$194.88</u>	
Total Fleet Cost/Hour: <u>\$194.88</u>	

MATERIAL QUANTITIES

Initial volume: 6,991 CCY Swell factor: 1.000
Loose volume: 6,991 LCY

Source of estimated volume: Avg 8 in depth x 6.5 ac

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: EXCELLENT
Secondary Job Condition within Basic Description: EXCELLENT
Cycle Time Value: 0.205 minutes

Load Bucket Capacity

Rated Capacity: 3.33 LCY (heaped) Bucket Size Class: Large
Bucket Fill Factor: 1.000 Rock - Well Blasted (95%-105%) 1.000
Adjusted Capacity: 3.33 LCY

Job Condition Correction Factors

Site Altitude: 8200 feet

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

Unadjusted Hourly Unit Production: 974.63 LCY/Hour
Adjusted Hourly Unit Production: 808.95 LCY/Hour
Adjusted Hourly Fleet Production: 808.95 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 8.64 Hours
Unit cost: \$0.241 /LCY Total job cost: \$1,684

SCRAPER TEAM WORKTask description: Place growth medium on quarry highwallSite: Young Ranch Resource
QuarryPermit Action: Phase 1 DisturbancePermit/Job#: M2021009**PROJECT IDENTIFICATION**Task #: 005
Date: 4/20/2022
User: AMEState: Colorado
County: GilpinAbbreviation: None
Filename: M009-005Agency 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 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	50	100	50	50
Ownership cost/hour:	\$218.34	NA	\$97.46	\$97.46	\$70.80	\$17.15
Operating cost/hour:	\$208.00	NA	\$48.82	\$97.63	\$28.16	\$14.60
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$30.90	NA	\$41.30	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$457.24	NA	\$187.58	\$236.39	\$127.51	\$31.75
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work:	\$914.48	Support:	\$423.97	Maint:	\$159.26

Total work team cost/hour: \$1,497.71**MATERIAL QUANTITIES**Initial volume: 5,243 CCY Swell factor: 1.215
Loose volume: 6,370 LCYSource of estimated volume: 6 in depth x 6.5 ac
Source 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 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 8200 feet

	Scraper	Push Dozer	Source
Altitude Adj:	0.980	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.813	NA	

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	2.00	3.00	5.00	1867	0.58

Haul Time: 0.58 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	-2.00	3.00	1.00	2963	0.42

Return Time: 0.42 minutesTotal Scraper team cycle time: 2.40 minutesAdjusted for job conditions: 589.43 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,178.85 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,178.85 LCY/HourUnadjusted unit production/hour: 725.00 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 5.40 HoursUnit cost: \$1.270 /LCYTotal job cost: \$8,093

BULLDOZER RIPPING WORK

Task description: Rip compacted area (1.7 acre)

Site: Young Ranch Resource Permit Action: Phase 1 Disturbance Permit/Job#: M2021009
Quarry

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 4/20/2022 County: Gilpin Filename: M009-006
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper Ownership Cost/Hour:	\$15.19	NA
Ripper Operating Cost/Hour:	\$9.94	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$261.52	
Total Fleet Cost/Hour:	\$261.52	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 1.70 acres Rip Depth (ft): 1.50 Volume: 4,114 BCY or CCY

Source of estimated quantity: 1.7 ac top WRL

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 2.56 feet/pass
Average Ripping Width: 7.08 feet/pass
Average Ripping Length: 400.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.813 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.813 Acres/hr
Site Altitude: 8,200 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.68 Acres/hr
Adjusted Hourly Fleet Production: **0.68** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **2.52** Hours

Unit cost: \$387.347 Per acre Total job cost: **\$658**

BULLDOZER RIPPING WORK

Task description: Single shank rip on WRL lifts

Site: Young Ranch Resource Permit Action: Phase 1 Disturbance Permit/Job#: M2021009
Quarry

PROJECT IDENTIFICATION

Task #: 006B State: Colorado Abbreviation: None
Date: 4/20/2022 County: Gilpin Filename: M009-006b
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 1-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper Ownership Cost/Hour:	\$19.34	NA
Ripper Operating Cost/Hour:	\$11.24	100
Operator Cost/Hour:	\$41.30	NA
Total Unit Cost/Hour:	\$266.97	
Total Fleet Cost/Hour:	\$266.97	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 0.10 acres Rip Depth (ft): 2.00 Volume: 323 BCY or CCY

Source of estimated quantity: Single shank rip at 10 ft intervals (x2 lifts)

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 3.71 feet/pass
Average Ripping Width: 5.56 feet/pass
Average Ripping Length: 300.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.628 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.628 Acres/hr
Site Altitude: 8,200 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.52 Acres/hr
Adjusted Hourly Fleet Production: **0.52** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **0.19** Hours

Unit cost: \$512.269 Per acre Total job cost: **\$51**

BULLDOZER WORKTask description: **Grade active WRL lifts to 2.2H:1V**Site: **Young Ranch Resource**
QuarryPermit Action: **Phase 1 Disturbance**Permit/Job#: **M2021009****PROJECT IDENTIFICATION**Task #: **007**
Date: **4/20/2022**
User: **AME**State: **Colorado**
County: **Gilpin**Abbreviation: **None**
Filename: **M009-007**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:	\$97.46	NA
Operating Cost/Hour:	\$97.63	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$41.30	NA

Total unit Cost/Hour: **\$236.39**
Total Fleet Cost/Hour: **\$472.78****MATERIAL QUANTITIES**Initial Volume: **8,334**
Swell factor: **1.060**
Loose volume: **8,834 LCY**Source of estimated volume: **50 ft H x 300 ft L bench (x2), 1H:1V to 2.2H:1V**
Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **100 feet**
Unadjusted hourly production: **852.6 LCY/hr**Materials consistency description: **Consolidated stockpile 1.0**Average push gradient: **-5 %**
Average site altitude: **8,200 feet**Material weight: **2,850 lbs/LCY**Weight description: **Sand - Damp****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	1.000	(EXCL.)
Material consistency:	1.000	(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:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.807	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8962

Adjusted unit production: 764.10 LCY/hr

Adjusted fleet production: **1528.2** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.309/LCY

Total job time: **5.78** Hours

Total job cost: **\$2,733**

TRUCK/LOADER TEAM WORKTask description: **Haul coarse rock to WRL slopes**Site: **Young Ranch Resource**
QuarryPermit Action: **Phase 1 Disturbance**Permit/Job#: **M2021009****PROJECT IDENTIFICATION**

Task #: **008** State: **Colorado** Abbreviation: **None**
 Date: **4/20/2022** County: **Gilpin** Filename: **M009-008**
 User: **AME**

Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Shift basis: **1 per day**

Equipment Description	
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

<u>Cost Breakdown:</u>	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	50	NA	50	50
Ownership cost/hour:	\$76.13	\$59.72	\$97.46	NA	\$70.80	\$17.15
Operating cost/hour:	\$52.75	\$55.20	\$48.82	NA	\$28.16	\$14.60
%Utilization-riper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	\$0.00	NA	\$0.00	\$0.00
Operator cost/hour:	\$32.54	\$40.71	\$41.30	NA	\$28.56	\$0.00
Unit Subtotals:	\$161.42	\$155.63	\$187.58	NA	\$127.51	\$31.75
Number of Units:	2	1	1	0	1	1
Group Subtotals:	Work: \$478.47		Support: \$187.58		Maint: \$159.26	

Total work team cost/hour: **\$825.31****MATERIAL QUANTITIES**

Initial volume: **861** CCY Swell factor: **1.320**
 Loose volume: **1,137** LCY

Source of estimated volume: **Avg 8 inch depth x 0.8 ac**
 Source of estimated swell factor: **Cat Handbook**
 Material Purchase Cost: **\$0.00**
 Total Cost: **\$0.00**

HOURLY PRODUCTION**Truck Capacity:****Truck Payload (weight) Basis:**

Material weight: **2,800** Pounds/LCY
 Description: **Granite - Broken**
 Rated Payload: **62,000** Pounds

Payload Capacity: 22.14 LCY**Truck Bed (volume) Basis:**

Struck Volume: 17.10 LCY
 Heaped Volume: 22.10 LCY
 Average Volume: 19.60 LCY
 Adjusted Volume: 22.10 LCY

Final Truck Volume Based on Number of Loader Passes: 20.00 LCY**Loading Tool Capacity**Bucket Size Class: NA

Rated Capacity: 5.000 LCY (heaped)
 Bucket Fill Factor: 1.000 Rock - Well Blasted (95%-105%) 1.000
 Adjusted Capacity: 5.000 LCY

Job Condition Corrections:Site Altitude (ft.): 8200 feet

	Truck	Loader	Source
Altitude Adj:	0.900	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.747	0.830	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes**Excavators and Front Shovels:**

Machine Cycle Time vs. Job Condition Rating: NA
 Selected Value within this Basic Rating: NA

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 6" and over diameter 0.03	0.030	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up 0.00	0.000	(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:		-0.050	minutes
Adjusted Loader Cycle Time:		0.450	minutes
Net Load Time per Truck:		1.450	minutes

Truck Cycle Time:

Truck Exchange Time: 0.60 Minutes Adjusted for site altitude: 0.667 Minutes
 Truck Load Time: 1.450 Minutes Adjusted for site altitude: 1.450 Minutes
 Truck Maneuver and Dump Time: 1.00 Minutes Adjusted for site altitude: 1.111 Minutes

Truck Travel (Haul & Return) Time:
maintained 3.0Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1860.00	4.00	3.00	7.00	1036	1.860

Haul Time: 1.860 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1860.00	-4.00	3.00	-1.00	3080	0.654

Return Time: 0.654 minutesTotal Truck Cycle Time: 5.742 minutes

Loading Tool unit

Production 566.93 LCY/Hour Adjusted for job efficiency: 470.55 LCY/Hour
Truck Unit Production 208.99 LCY/Hour Adjusted for job efficiency: 173.47 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 346.93 LCY/Hour
Adjusted single truck/loader team production: 346.93 LCY/Hour
Adjusted multiple truck/loader team production: 346.93 LCY/Hour

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 3.28 HoursUnit cost: \$2.379 /LCY Total job cost: \$2,704

HYDRAULIC EXCAVATOR WORK

Task description: Place coarse rock cap on WRL slopes

Site: Young Ranch Resource Quarry Permit Action: Phase 1 Disturbance Permit/Job#: M2021009

PROJECT IDENTIFICATION

Task #: 009 State: Colorado Abbreviation: None
Date: 4/20/2022 County: Gilpin Filename: M009-009
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 336D L 10'-6" Stick Horsepower: 268
Attachment 1: ROPS Cab Weight (MT): 29.30
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

	Utilization %
Ownership Cost/Hour: <u>\$83.42</u>	<u>NA</u>
Operating Cost/Hour: <u>\$74.14</u>	<u>100</u>
Operator Cost/Hour: <u>\$37.32</u>	<u>NA</u>
Total Unit Cost/Hour: <u>\$194.88</u>	
Total Fleet Cost/Hour: <u>\$194.88</u>	

MATERIAL QUANTITIES

Initial volume: 861 CCY Swell factor: 1.000
Loose volume: 861 LCY

Source of estimated volume: Avg 8 in depth x 0.8 ac
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: EXCELLENT
Secondary Job Condition within Basic Description: EXCELLENT
Cycle Time Value: 0.205 minutes

Load Bucket Capacity

Rated Capacity: 3.33 LCY (heaped) Bucket Size Class: Large
Bucket Fill Factor: 1.000 Rock - Well Blasted (95%-105%) 1.000
Adjusted Capacity: 3.33 LCY

Job Condition Correction Factors

Site Altitude: 8200 feet

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

Unadjusted Hourly Unit Production: 974.63 LCY/Hour
Adjusted Hourly Unit Production: 808.95 LCY/Hour
Adjusted Hourly Fleet Production: 808.95 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 1.06 Hours
Unit cost: \$0.241 /LCY Total job cost: \$207

SCRAPER TEAM WORKTask description: Place growth medium on WRL slopesSite: Young Ranch Resource
QuarryPermit Action: Phase 1 DisturbancePermit/Job#: M2021009**PROJECT IDENTIFICATION**Task #: 010
Date: 4/20/2022
User: AMEState: Colorado
County: GilpinAbbreviation: None
Filename: M009-010Agency 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 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	50	100	50	50
Ownership cost/hour:	\$218.34	NA	\$97.46	\$97.46	\$70.80	\$17.15
Operating cost/hour:	\$208.00	NA	\$48.82	\$97.63	\$28.16	\$14.60
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$30.90	NA	\$41.30	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$457.24	NA	\$187.58	\$236.39	\$127.51	\$31.75
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work: \$914.48		Support: \$423.97		Maint: \$159.26	

Total work team cost/hour: \$1,497.71**MATERIAL QUANTITIES**Initial volume: 645 CCY Swell factor: 1.215
Loose volume: 784 LCYSource of estimated volume: 6 in depth x 0.8 ac
Source 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 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 8200 feet

	Scraper	Push Dozer	Source
Altitude Adj:	0.980	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.813	NA	

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1860.00	4.00	3.00	7.00	1362	1.41

Haul Time: 1.41 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1860.00	-4.00	3.00	-1.00	2972	0.68

Return Time: 0.68 minutesTotal Scraper team cycle time: 3.49 minutesAdjusted for job conditions: 405.34 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 810.67 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 810.67 LCY/HourUnadjusted unit production/hour: 498.57 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 0.97 HoursUnit cost: \$1.847 /LCYTotal job cost: \$1,448

SCRAPER TEAM WORKTask description: Place growth medium on top WRL (1.7 ac)Site: Young Ranch Resource
QuarryPermit Action: Phase 1 DisturbancePermit/Job#: M2021009**PROJECT IDENTIFICATION**Task #: 011
Date: 4/20/2022
User: AMEState: Colorado
County: GilpinAbbreviation: None
Filename: M009-011Agency 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 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	50	100	50	50
Ownership cost/hour:	\$218.34	NA	\$97.46	\$97.46	\$70.80	\$17.15
Operating cost/hour:	\$208.00	NA	\$48.82	\$97.63	\$28.16	\$14.60
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$30.90	NA	\$41.30	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$457.24	NA	\$187.58	\$236.39	\$127.51	\$31.75
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work: \$914.48		Support: \$423.97		Maint: \$159.26	

Total work team cost/hour: \$1,497.71**MATERIAL QUANTITIES**Initial volume: 1,372 CCY Swell factor: 1.215
Loose volume: 1,667 LCYSource of estimated volume: 6 in depth x 1.7 ac
Source 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 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 8200 feet

	Scraper	Push Dozer	Source
Altitude Adj:	0.980	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.813	NA	

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1680.00	4.00	3.00	7.00	1362	1.28

Haul Time: 1.28 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1680.00	-4.00	3.00	-1.00	2972	0.62

Return Time: 0.62 minutesTotal Scraper team cycle time: 3.30 minutesAdjusted for job conditions: 428.67 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 857.35 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 857.35 LCY/HourUnadjusted unit production/hour: 527.27 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 1.94 HoursUnit cost: \$1.747 /LCYTotal job cost: \$2,912

SCRAPER TEAM WORKTask description: **Place growth medium on pit floor (26.7 ac)**Site: **Young Ranch Resource**
QuarryPermit Action: **Phase 1 Disturbance**Permit/Job#: **M2021009****PROJECT IDENTIFICATION**Task #: **012**
Date: **4/20/2022**
User: **AME**State: **Colorado**
County: **Gilpin**Abbreviation: **None**
Filename: **M009-012**Agency 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 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	50	100	50	50
Ownership cost/hour:	\$218.34	NA	\$97.46	\$97.46	\$70.80	\$17.15
Operating cost/hour:	\$208.00	NA	\$48.82	\$97.63	\$28.16	\$14.60
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	\$0.00	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$30.90	NA	\$41.30	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$457.24	NA	\$187.58	\$236.39	\$127.51	\$31.75
Number of Units:	2	0	1	1	1	1
Group Subtotals:	Work:	\$914.48	Support:	\$423.97	Maint:	\$159.26

Total work team cost/hour: **\$1,497.71****MATERIAL QUANTITIES**Initial volume: **21,538** CCY Swell factor: **1.215**
Loose volume: **26,169** LCYSource of estimated volume: **6 in depth x 26.7 ac**
Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	1,600 lbs/LCY	Struck Volume:	24.00	LCY
Material description:	Top Soil	Heaped Volume:	34.00	LCY
Rated Payload:	81,600 pounds	Average Volume:	29.00	LCY
Payload Capacity:	51.00 LCY	Adjusted Capacity:	29.00	LCY

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

Site Altitude: 8200 feet

	Scraper	Push Dozer	Source
Altitude Adj:	0.980	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.813	NA	

Travel Time:Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	2.00	3.00	5.00	1867	0.52

Haul Time: 0.52 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-2.00	3.00	1.00	2963	0.38

Return Time: 0.38 minutesTotal Scraper team cycle time: 2.30 minutesAdjusted for job conditions: 615.05 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,230.10 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,230.10 LCY/HourUnadjusted unit production/hour: 756.52 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 21.27 HoursUnit cost: \$1.218 /LCYTotal job cost: \$31,862

REVEGETATION WORKTask description: Plant dry rangeland mix on 28.4 acresSite: Young Ranch Resource
QuarryPermit Action: Phase 1 DisturbancePermit/Job#: M2021009**PROJECT IDENTIFICATION**

Task #: 013 State: Colorado Abbreviation: None
 Date: 4/20/2022 County: Gilpin Filename: M009-013
 User: AME

Agency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	61.00	pound	\$0.36	\$21.96
Triple superphosphate, 0-46-0	44.00	pound	\$0.46	\$20.24
			Total Fertilizer Materials Cost/Acre	\$42.20

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$38.77
Total Fertilizer Application Cost/Acre	\$38.77

TILLING

Description	Cost /Acre
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indiangrass - Cheyenne	1.90	5.79	\$21.47
Sand Lovegrass - Bend	0.20	6.89	\$2.85
Bluebunch Wheatgrass - Secar	5.20	16.71	\$56.55
Blue Grama - Native	0.90	14.69	\$12.35
Indian Ricegrass - Native	2.00	6.47	\$13.00
Little Bluestem - Native	1.40	8.36	\$18.99
Mountain Brome - Bromar	5.10	8.20	\$19.38
Bottlebrush Squirreltail	3.40	14.99	\$55.17

Sandberg Bluegrass - VNS	0.30	6.37	\$2.52
Thickspike Wheatgrass - Critana	4.20	14.85	\$28.88
Western Wheatgrass - Native	5.70	14.39	\$34.20
Needlegrass, Green - Lodorm	1.90	7.89	\$22.37
Prairie Junegrass	0.10	5.32	\$2.60
Flax, Lewis Blue	1.90	12.60	\$31.35
Yarrow, Western	0.10	6.08	\$4.18
Totals Seed Mix	34.30	149.60	\$325.86

Application

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}	0.50	TON	\$307.02	\$153.51
Total Mulch Materials Cost/Acre				\$153.51

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$71.57
Total Mulch Application Cost/Acre	\$71.57

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: 28.4 Cost /Acre: \$863.91
 Estimated Failure Rate: 50% Cost /Acre*: \$557.86
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: \$24,535.04
 Reseeding Job Cost: \$7,921.61
 Total Job Cost: \$32,457
 Job Hours: 14.20

REVEGETATION WORKTask description: Plant forest shrub mix on 7.3 acresSite: Young Ranch Resource
Quarry

Permit Action:

Phase 1 DisturbancePermit/Job#: M2021009**PROJECT IDENTIFICATION**Task #: 014State: ColoradoAbbreviation: NoneDate: 4/20/2022County: GilpinFilename: M009-014User: AMEAgency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	61.00	pound	\$0.36	\$21.96
Triple superphosphate, 0-46-0	44.00	pound	\$0.46	\$20.24
			Total Fertilizer Materials Cost/Acre	\$42.20

Application

Description	Cost /Acre
Hydro spreader (MEANS 32 01 90.13 0180)	\$188.18
Total Fertilizer Application Cost/Acre	\$188.18

TILLING

Description	Cost /Acre
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bitterbrush, Antelope	5.20	1.60	\$101.40
Currant, Wax	0.40	1.38	\$23.72
Mahogany, Mountain	2.20	2.98	\$80.97
Sumac, Skunkbrush	5.20	2.44	\$109.20
Rabbitbrush, Douglas	0.20	2.98	\$2.90
Totals Seed Mix	13.20	11.38	\$318.20

Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$965.73
Total Seed Application Cost/Acre	\$965.73

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	0.50	TON	\$307.02	\$153.51
Total Mulch Materials Cost/Acre				\$153.51

Application

Description	Cost /Acre
Hydromulching (MEANS 32 92 19.13 1100)	\$96.80
Total Mulch Application Cost/Acre	\$96.80

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: 7.3 Cost /Acre: \$1,764.62
 Estimated Failure Rate: 100% Cost /Acre*: \$1,283.93
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$12,881.73**
 Reseeding Job Cost: **\$9,372.69**
 Total Job Cost: **\$22,254**
 Job Hours: **3.65**

REVEGETATION WORKTask description: Plant tree tubelings on 7.3 acresSite: Young Ranch Resource
Quarry

Permit Action:

Phase 1 DisturbancePermit/Job#: M2021009**PROJECT IDENTIFICATION**Task #: 015State: ColoradoAbbreviation: NoneDate: 4/20/2022County: GilpinFilename: M009-015User: AMEAgency 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
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
			\$
Totals Seed Mix	0.00	0.00	\$0.00

Application

Description	Cost /Acre

	\$
Total Seed Application Cost/Acre	\$0.00

MULCHING and MISCELLANEOUS**Materials**

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

Application

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

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
Pine, Limber	150	Bare root seedling, 11-16 inch ht. (MEANS)	\$2.35	\$2.40	\$352.50
Pine, Lodgepole	150	Bare root seedling, 11-16 inch ht. (MEANS)	\$4.75	\$2.40	\$712.50
Totals Nursery Stock Cost / Acre					\$1,065.00

JOB TIME AND COST

No. of Acres: 7.3 Cost /Acre: \$1,065.00
 Estimated Failure Rate: 100% Cost /Acre*: \$1,065.00
 *Selected Replanting Work Items: NURSERY

Initial Job Cost: **\$7,774.50**
 Reseeding Job Cost: **\$7,774.50**
 Total Job Cost: **\$15,549**
 Job Hours: **3.65**

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization/Demobilization**Site: **Young Ranch Resource**
Quarry

Permit Action:

Phase 1 Disturbance

Permit/Job#: M2021009

PROJECT IDENTIFICATION

Task #: 016 State: Colorado Abbreviation: None
 Date: 4/20/2022 County: Gilpin Filename: M009-016
 User: AME

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:	\$21.28	\$37.94	\$47.67
Operating Cost/Hour:	\$26.55	\$50.48	\$56.21
Operator Cost/Hour:	\$20.54	\$20.54	\$20.54
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$68.37	\$132.49	\$147.95

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 730	25.19	\$76.13	\$68.37	4	\$578.00	\$273.48	\$1,000.00
CAT 966H	25.80	\$59.72	\$68.37	2	\$256.18	\$136.74	\$500.00
Cat D8T - 8SU	47.71	\$97.46	\$132.49	2	\$459.90	\$264.98	\$500.00
Cat D8T - 8SU (multi shank)	53.08	\$112.65	\$147.95	1	\$260.60	\$147.95	\$500.00
Cat D8T - 8SU (single shank)	52.21	\$116.80	\$147.95	1	\$264.75	\$147.95	\$250.00
CAT 16M	28.73	\$70.80	\$132.49	2	\$406.58	\$264.98	\$500.00
Cat 336D L 10'-6" Stick	32.23	\$83.42	\$132.49	1	\$215.91	\$132.49	\$500.00
Cat 637G	57.28	\$218.34	\$147.95	2	\$732.58	\$295.90	\$500.00
Drill/Broadcast Seeder with Tractor	25.00	\$7.98	\$68.37	1	\$76.35	\$68.37	\$500.00
Hydroseeder with Tractor	28.00	\$13.97	\$132.49	1	\$146.46	\$132.49	\$250.00

Subtotals: **\$3,397.31** **\$1,865.33** **\$5,000.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 3,500 Gal.	\$46.35	2	\$92.70	\$92.70
Light Duty Pickup, 4x4, 1 T. Crew	\$20.51	1	\$20.51	\$20.51

Subtotals: **\$113.21** **\$113.21**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:

AURORA

(Wagner Rental)

Total one-way travel distance: 45.00 miles

Average Travel Speed: 55.00 mph

Total Non-Roadable Mob/Demob Cost * \$93,352.41

* two round trips with haul rig:

Total Roadable Mob/Demob Cost ** \$185.25

** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.82	0.82
Return Time (Hours):	0.82	0.82
Loading Time (Hours):	5.50	NA
Unloading Time (Hours):	5.50	NA
Subtotals:	12.64	1.64

JOB TIME AND COST

Total job time: 25.27 Hours

Total job cost: \$93,538