

**STATE OF  
COLORADO****Reilley - DNR, Robin <robin.reilley@state.co.us>**

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## TR135 ADQ and Cost estimate

1 message

**Reilley - DNR, Robin** <robin.reilley@state.co.us>

Fri, Mar 29, 2024 at 2:32 PM

To: Graham Roberts &lt;graham.roberts@trappermine.com&gt;, Robin Reilley - DNR &lt;robin.reilley@state.co.us&gt;

Good Afternoon Mr. Roberts,

Please find attached the above referenced documents associated with TR135. I'm available to answer any questions that come up.

Sincerely

Robin Reilley, M.S. GISP  
Environmental Protection Specialist II



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

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Physical Address: 1313 Sherman Street St., Suite 215, Denver, CO 80203

Mailing Address: DRMS Room 215, 1001 E 62nd Ave, Denver, CO 80216

[robin.reilley@state.co.us](mailto:robin.reilley@state.co.us) | <http://mining.state.co.us>

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### 2 attachments

**ADQ\_TR135ADQ1.pdf**

310K

**CostEstimate\_TR135.pdf**

379K



Mr. Graham Roberts  
Environmental Supervisor  
Trapper Mine, Inc.  
P.O. Box 187  
Craig, Colorado 81626

29 March 2024

**Re: Trapper Mine Inc; Permit C1981010**  
**DRMS Preliminary Adequacy Review of Technical Revision TR135 L Pit K Knob Extension and East J Pit Dragline Cuts**

Dear Mr. Roberts:

The Division has completed its preliminary review of Trapper Mine's permit revision TR135 received by the Division on 28 February 2024. DRMS found the proposed revision complete on 8 March 2024. The proposed decision due date is 7 May 2023, 60 days from completeness. New disturbance of 50.8 acres was requested in the revision.

DRMS review comprises revised pages the following nine Maps and rules:

M1	M4	M4A	M6	M10A	M10B
M12	M13	M14A	3.02.2	4.14	4.27.2

DRMS understands that C Pit development has been permitted and that Trapper mine plans to refrain from opening C Pit during this permit term. Language to that intent is communicated in this application. However, Trapper Mine Inc. intends to retain references to C Pit operations in the permit text and associated maps.

**DRMS 29 March 2024**

**Rule 4.14 (2) Backfilling and Grading**

Comparing the PR11 and TR135 M12 maps DRMS observes that there is a slight shift in contours at the south end of the L Pit to the east and south. This shift in approximate original contour is evident through the pit to the 7150 contour. DRMS has posed some questions below regarding stability and hydrology. Once these items are found adequately addressed DRMS can comment on the shift in AOC.

DRMS notes some slight changes in a couple of West Panel drainage profiles from PR11 to TR135. DRMS has no adequacy concerns. DRMS notes that drainage profiles in the L Pit may not have changed as no updated drainage profiles were submitted for the L Pit.

- 1. Please inform DRMS should L Pit drainage profiles have changed relative to PR11.*



**DRMS 29 March 2024**

**Rule 4.27.2 Limited Variances**

In Permit Revision 9 (PR9) Trapper Mine Inc. was granted a variance from Approximate Original Contour in the L Pit as per Rules 2.06.4 and 2.06.5. As this TR135 application requests additional mining in the southeast portion of the pit and extension of the pit to the north, DRMS envisions the variance deviating from that originally permitted in PR9.

2. *Please discuss how or if the pit floor gradient may change given extension of the pit to the north.*
3. *Should the overall pit floor gradient change please also discuss the following with respect to stability:*
  - a. *Possible changes to backfill saturation of groundwater*
  - b. *Spoil depth variability*
  - c. *Increased area of weak underling strata.*

Trapper mine submitted a slope stability analysis in PR9.

4. *For the TR135 crosssections please indicate the associated slope stability safety factors for the expanded areas.*
5. *Pease inform DRMS of any increases in Drainage densityies and gradients in Flume Gulch and associated sub drainages with a discussion of sediment yield per acre.*

**DRMS 29 March 2024**

**Rule 3.02.2 Performance Bond**

DRMS understands that additional disturbance of 50.8 acres was requested for the TR135 application. DRMS's CIRCES cost estimate indicated the amount required for reclamation associated with TR135 to be \$6,546,947. Please find DRMS's Cost Estimate attached.

Please contact me with any questions. I am available to answer any questions that come up.

Sincerely,



Robin Reilley M.S. GISP  
Environmental Protection Specialist II  
[Robin.reilley@state.co.us](mailto:Robin.reilley@state.co.us)

## COST SUMMARY WORK

Task description: L Pit K Knob Extension East J Pit Dragline Cuts

Site: Trapper Mine

Permit Action: TR135

Permit/Job#: C1981010

### PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 3/12/2024

County: Moffat

Filename: C010-000

User: RAR

Agency or organization name: DRMS

### TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
091	Replace Topsoil JPE 1 to J East	SCRAPER1	1	24.80	\$136,013
091A	Replace Topsoil at L Pit K Knob L23-1 to K Knob	SCRAPER1	1	1.69	\$9,284
L15	Regrade L Pit K Knob (Truck/Excavator)	TRUCK1	4	474.59	\$4,274,450
L15A	Regrade Jennings Pit (Truck/Excavator)	TRUCK1	4	99.33	\$894,643
N16	Seed L Pit, K Nob: >6700 ft.-Rangeland with Shrubs	REVEGE	1	3.50	\$3,378
N19	Seed J Pit without shrubs (Range C)	REVEGE	1	66.00	\$17,159
<b><u>SUBTOTALS:</u></b>				<b>669.91</b>	<b>\$5,334,927</b>

### INDIRECT COSTS

#### OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$107,766

Performance bond: 1.05

Total = \$56,017

Job superintendent: 287.00

Total = \$18,678

Profit: 10.00

Total = \$533,493

TOTAL O & P = \$715,953

CONTRACT AMOUNT (direct + O & P) = \$6,050,880

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): \$500

Total = \$500

Engineering work and/or contract/bid preparation: 4.61

Total = \$278,946

Reclamation management and/or administration: 3.58

\$216,622

CONTINGENCY: 0.00

Total = \$0

TOTAL INDIRECT COST = \$1,212,020

**TOTAL BOND AMOUNT (direct + indirect) = \$6,546,947**

**SCRAPER TEAM WORK**Task description: Replace Topsoil JPE 1to J EastSite: Trapper MinePermit Action: TR135Permit/Job#: C1981010**PROJECT IDENTIFICATION**Task #: 091State: ColoradoAbbreviation: NoneDate: 3/12/2024County: MoffatFilename: C010-091User: RARAgency or organization name: DRMS**HOURLY EQUIPMENT**COST Shift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	Cat D10T - 10SU
-Dump Area:	Cat D10T - 10SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 2,500 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	50	50	60
Ownership cost/hour:	\$255.23	NA	\$178.69	\$178.69	\$212.21	\$11.35
Operating cost/hour:	\$280.59	NA	\$80.11	\$80.11	\$62.44	\$13.75
%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	\$21.12
Unit Subtotals:	\$566.72	NA	\$300.10	\$300.10	\$303.21	\$46.23
Number of Units:	8	0	1	1	1	1
Group Subtotals:	Work: \$4,533.76		Support: \$600.20		Maint: \$349.44	

Total work team cost/hour: \$5,483.40**MATERIAL QUANTITIES**Initial volume: 74,052

CCY

Swell factor: 1.000Loose volume: 74,052

LCY

Source of estimated volume: Appendix A, Table A-10.7Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 1,600 lbs/LCY  
 Material description: Top Soil  
 Rated Payload: 81,600 pounds  
 Payload Capacity: 51.00 LCY

Struck Volume: 24.00 LCY  
 Heaped Volume: 34.00 LCY  
 Average Volume: 29.00 LCY  
 Adjusted Capacity: 29.00 LCY

Cycle Time:

Scraper Loading Time: 1.00 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6400 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
2	400.00	6.25	4.00	10.25	922	0.46
3	764.00	-3.90	4.00	0.10	2965	0.36
4	1053.00	-6.70	4.00	-2.70	2972	0.42

Haul Time: 1.24 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
2	400.00	-6.25	4.00	-2.25	2972	0.19
3	764.00	3.90	4.00	7.90	1931	0.19
4	1053.00	6.70	4.00	10.70	1434	0.65

Return Time: 1.03 minutesTotal Scraper team cycle time: 3.87 minutesAdjusted for job conditions: 746.36 LCY/HourSelected Number of Scrapers: 8 Scraper(s)Adjusted single scraper team (unit) hourly production: 2,985.43 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 2,985.43 LCY/HourUnadjusted unit production/hour: 899.22 LCY/Hour

Optimal Number of Scrapers per push dozer: \_\_\_\_\_

**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 24.80 HoursUnit cost: \$1.837 /LCYTotal job cost: \$136,013

**SCRAPER TEAM WORK**Task description: Replace Topsoil at L Pit K Knob L23-1 to K KnobSite: Trapper MinePermit Action: TR135Permit/Job#: C1981010**PROJECT IDENTIFICATION**Task #: 091AState: ColoradoAbbreviation: NoneDate: 3/19/2024County: MoffatFilename: C010-091AUser: RARAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	NA
Support Equipment -Load Area:	Cat D10T - 10SU
-Dump Area:	Cat D10T - 10SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 2,500 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	50	50	60
Ownership cost/hour:	\$255.23	NA	\$178.69	\$178.69	\$212.21	\$11.35
Operating cost/hour:	\$280.59	NA	\$80.11	\$80.11	\$62.44	\$13.75
%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	\$21.12
Unit Subtotals:	\$566.72	NA	\$300.10	\$300.10	\$303.21	\$46.23
Number of Units:	8	0	1	1	1	1
Group Subtotals:	Work: \$4,533.76		Support: \$600.20		Maint: \$349.44	

Total work team cost/hour: \$5,483.40**MATERIAL QUANTITIES**Initial volume: 7,920

CCY

Swell factor: 1.000Loose volume: 7,920

LCY

Source of estimated volume: Appendix A, Table A-10.7Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight: 1,600 lbs/LCY  
 Material description: Top Soil  
 Rated Payload: 81,600 pounds  
 Payload Capacity: 51.00 LCY

Struck Volume: 24.00 LCY  
 Heaped Volume: 34.00 LCY  
 Average Volume: 29.00 LCY  
 Adjusted Capacity: 29.00 LCY

Cycle Time:

Scraper Loading Time: 1.00 Minutes  
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 6400 feet

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	NA	(CAT HB)
Job Efficiency:	0.830	NA	(CAT HB)
Net Correction:	0.830	NA	

Travel Time:Road Condition: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	732.00	-3.40	4.00	0.60	2952	0.41

Haul Time: 0.41 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	732.00	3.40	4.00	7.40	2240	0.46

Return Time: 0.46 minutesTotal Scraper team cycle time: 2.47 minutesAdjusted for job conditions: 1,169.39 LCY/HourSelected Number of Scrapers: 8 Scraper(s)Adjusted single scraper team (unit) hourly production: 4,677.57 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 4,677.57 LCY/HourUnadjusted unit production/hour: 1,408.91 LCY/HourOptimal Number of Scrapers per push  
dozer: \_\_\_\_\_**JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 1.69 HoursUnit cost: \$1.172 /LCYTotal job cost: \$9,284



**TRUCK/LOADER TEAM WORK**Task description: **Regrade L Pft K Knob (Truck/Excavator)**Site: **Trapper Mine**Permit Action: TR135Permit/Job#: C1981010**PROJECT IDENTIFICATION**Task #: L15State: ColoradoAbbreviation: NoneDate: 3/18/2024County: MoffatFilename: C010-L15User: RARAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	KOMATSU 830E
-Loader:	CAT 6090
Support Equipment -Load Area:	Cat D10T - 10SU
-Dump Area:	Cat D10T - 10SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 14,000 Gal.

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

	Truck	Shovel	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	25	25	25	50
Ownership cost/hour:	\$207.26	\$164.88	\$178.69	\$178.69	\$212.21	\$158.36
Operating cost/hour:	\$284.76	\$207.45	\$40.06	\$40.06	\$31.22	\$98.55
%Utilization-riper:	NA	0	15	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	\$26.20	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	\$1.83	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$34.42	\$37.32	\$41.30	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$526.44	\$409.65	\$261.87	\$260.05	\$271.99	\$256.91
Number of Units:	12	4	1	1	1	1
Group Subtotals:	Work: \$7,955.88		Support: \$521.92		Maint: \$528.90	

Total work team cost/hour: **\$9,006.70****MATERIAL QUANTITIES**Initial volume: 6,083,510

CCY

Swell factor: 1.000Loose volume: **6,083,510**

LCY

Source of estimated volume: TR135 Appendix A Table A-1.1Source of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$0.00Total Cost: \$0.00

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

Material weight:	3,300	Pounds/LCY
Description:	Decomposed rock - 75% Rock, 25% Earth	
Rated Payload:	492,200	Pounds
Payload Capacity:	149.15	LCY

**Truck Bed (volume) Basis:**

Struck Volume:	153.00	LCY
Heaped Volume:	192.00	LCY
Average Volume:	172.50	LCY
Adjusted Volume:	149.15	LCY

Final Truck Volume Based on Number of Loader Passes: **129.58** LCY

**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity:	58.900	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	<b>64.790</b>	LCY

**Job Condition Corrections:**

Site Altitude (ft.): 6400 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	<b>0.830</b>	<b>0.830</b>	

**Loading Tool Cycle Time:**

Number of Loading Tool Passes Required to Fill  
Truck: 2 passes

**Excavators and Front Shovels:**

Machine Cycle Time vs. Job Condition Rating: ABOVE AVERAGE

Selected Value within this Basic Rating: AVERAGE

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): NA minutes

Cycle Time Factors		Factor (min.)	Source
Material:	NA	NA	(Cat HB)
Stockpile:	NA	NA	(Cat HB)
Truck Ownership:	NA	NA	(Cat HB)
Operation:	NA	NA	(Cat HB)
Dump Target:	NA	NA	(Cat HB)
Net Cycle Time Adjustment:		NA	minutes
Adjusted Loader Cycle Time:		<b>0.498</b>	minutes
Net Load Time per Truck:		<b>0.996</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time:	<u>0.80</u>	Minutes	Adjusted for site altitude:	<u>0.800</u>	Minutes
Truck Load Time:	<u>0.996</u>	Minutes	Adjusted for site altitude:	<u>0.996</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.20</u>	Minutes	Adjusted for site altitude:	<u>1.200</u>	Minutes

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

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3711.00	-3.15	3.00	-0.15	3503	1.144

Haul Time: 1.144 minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3711.00	3.15	3.00	6.15	2853	1.901

Return Time: 1.901 minutes

Total Truck Cycle Time: 6.041 minutes

Loading Tool unit

Production 4,328.95 LCY/Hour

Adjusted for job efficiency: 3,593.03 LCY/Hour

Truck Unit Production

1,287.01 LCY/Hour

Adjusted for job efficiency: 1,068.21 LCY/Hour

Optimal No. of Trucks: 3 Truck(s)

Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 3,204.64 LCY/Hour

Adjusted single truck/loader team production: 3,204.64 LCY/Hour

Adjusted multiple truck/loader team production: 12,818.57 LCY/Hour

**JOB TIME AND COST**

Fleet size: 4 Team(s)

Total job time: 474.59 Hours

Unit cost: \$0.703 /LCY

Total job cost: \$4,274,450

**TRUCK/LOADER TEAM WORK**Task description: **Regrade Jennings Pit (Truck/Excavator)**Site: **Trapper Mine**Permit Action: TR135Permit/Job#: C1981010**PROJECT IDENTIFICATION**Task #: L15AState: ColoradoAbbreviation: NoneDate: 3/20/2024County: MoffatFilename: C010-L15AUser: RARAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	KOMATSU 830E
-Loader:	CAT 6090
Support Equipment -Load Area:	Cat D10T - 10SU
-Dump Area:	Cat D10T - 10SU
Road Maintenance –Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 14,000 Gal.

**Cost Breakdown:**

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Shovel	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	25	25	25	50
Ownership cost/hour:	\$207.26	\$164.88	\$178.69	\$178.69	\$212.21	\$158.36
Operating cost/hour:	\$284.76	\$207.45	\$40.06	\$40.06	\$31.22	\$98.55
%Utilization-riper:	NA	0	15	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	\$26.20	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	\$1.83	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$34.42	\$37.32	\$41.30	\$41.30	\$28.56	\$0.00
Unit Subtotals:	\$526.44	\$409.65	\$261.87	\$260.05	\$271.99	\$256.91
Number of Units:	12	4	1	1	1	1
Group Subtotals:	Work: \$7,955.88		Support: \$521.92		Maint: \$528.90	

Total work team cost/hour: **\$9,006.70****MATERIAL QUANTITIES**Initial volume: 1,227,754

CCY

Swell factor: 1.000Loose volume: **1,227,754**

LCY

Source of estimated volume: TR135 Appendix A Table A-1.1Source of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$0.00Total Cost: \$0.00

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

Material weight: 3,300 Pounds/LCY

Description: Decomposed rock - 75% Rock, 25% Earth

Rated Payload: 492,200 Pounds

Payload Capacity: 149.15 LCY

**Truck Bed (volume) Basis:**

Struck Volume: 153.00 LCY

Heaped Volume: 192.00 LCY

Average Volume: 172.50 LCY

Adjusted Volume: 149.15 LCY

Final Truck Volume Based on Number of Loader Passes: **129.58** LCY**Loading Tool Capacity**

Bucket Size Class: NA

Rated Capacity: 58.900 LCY (heaped)

Bucket Fill Factor: 1.100 Other - rock/dirt mixtures (100-120%) 1.100

Adjusted Capacity: **64.790** LCY**Job Condition Corrections:**

Site Altitude (ft.): 6400 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	<b>0.830</b>	<b>0.830</b>	

**Loading Tool Cycle Time:**Number of Loading Tool Passes Required to Fill Truck: **2** passes**Excavators and Front Shovels:**

Machine Cycle Time vs. Job Condition Rating: ABOVE AVERAGE

Selected Value within this Basic Rating: AVERAGE

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): NA minutes

Cycle Time Factors		Factor (min.)	Source
Material:	NA	NA	(Cat HB)
Stockpile:	NA	NA	(Cat HB)
Truck Ownership:	NA	NA	(Cat HB)
Operation:	NA	NA	(Cat HB)
Dump Target:	NA	NA	(Cat HB)
Net Cycle Time Adjustment:		NA	minutes
Adjusted Loader Cycle Time:		<b>0.498</b>	minutes
Net Load Time per Truck:		<b>0.996</b>	minutes

**Truck Cycle Time:**

Truck Exchange Time: 0.80 Minutes Adjusted for site altitude: 0.800 Minutes

Truck Load Time:	<u>0.996</u>	Minutes	Adjusted for site altitude:	<u>0.996</u>	Minutes
Truck Maneuver and Dump Time:	<u>1.20</u>	Minutes	Adjusted for site altitude:	<u>1.200</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	3448.00	-1.80	3.00	1.20	3503	1.633

Haul Time: **1.633** minutes

## Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	3448.00	1.80	3.00	4.80	3296	1.636

Return Time: **1.636** minutesTotal Truck Cycle Time: **6.265** minutes

## Loading Tool unit

Production 4,328.95 LCY/Hour      Adjusted for job efficiency: 3,593.03 LCY/Hour  
Truck Unit Production 1,240.99 LCY/Hour      Adjusted for job efficiency: 1,030.02 LCY/Hour

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

Adjusted hourly truck team production: 3,090.06 LCY/Hour  
Adjusted single truck/loader team production: 3,090.06 LCY/Hour  
Adjusted multiple truck/loader team production: **12,360.26** LCY/Hour

**JOB TIME AND COST**

Fleet size: 4 Team(s)      Total job time: **99.33** Hours

Unit cost: \$0.729 /LCY      Total job cost: **\$894,643**

**REVEGETATION WORK**Task description: Seed L Pit, K Nob: >6700 ft.-Rangeland with ShrubsSite: Trapper MinePermit Action: TR135Permit/Job#: C1981010**PROJECT IDENTIFICATION**Task #: N16State: ColoradoAbbreviation: NoneDate: 3/12/2024County: MoffatFilename: TR135User: RARAgency or organization name: DRMS**FERTILIZING****Materials**

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

**Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

**TILLING**

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arrowleaf Balsamroot	0.40	0.50	\$28.08
Beardless Wheatgrass - Whitmar	0.31	1.01	\$3.63
Bitterbrush, Antelope	4.40	1.35	\$85.80
Mountain Brome - Bromar	0.72	1.16	\$2.74
Great Basin Wildrye - Magnar	0.92	3.74	\$10.63
Kentucky Bluegrass - Ginger	0.06	2.96	\$0.19
Alfalfa - Ladak (inoculated)	0.10	0.48	\$0.26
Chokecherry	3.00	0.21	\$87.00
Burnett, Small (or Little) - Delar	0.40	0.51	\$1.00
Sheep Fescue - Covar	0.15	2.34	\$0.92



Milk Vetch, Cicer - Lutana	0.30	1.00	\$2.46
Slender Wheatgrass - San Luis	0.28	1.02	\$1.19
Streambank Wheatgrass - Sodar	0.26	0.85	\$1.48
Thickspike Wheatgrass - Critana	0.28	0.99	\$1.93
Western Wheatgrass - Arriba	0.38	0.96	\$2.47
Rabbitbrush, Rubber	0.26	3.87	\$16.72
Needlegrass, Green - Lodorm	0.24	1.00	\$2.83
Rose, Wood's	0.96	0.00	\$19.68
Sagebrush, Mountain or Big	0.07	3.70	\$1.38
Flax, Lewis Blue	0.30	1.99	\$4.95
Red Top	0.02	2.29	\$0.16
Sagebrush, Silver	0.10	1.94	\$3.10
Saltbush, Four Wing	0.62	0.85	\$7.75
Serviceberry	0.29	0.53	\$17.84
Snowberry, Mountain	0.58	1.00	\$29.29
Penstemon, Rocky Mountain	0.14	2.19	\$4.13
Yarrow, Western	0.07	4.26	\$2.93
Globemallow, Munro	0.08	0.91	\$7.00
Aster, Pacific	0.02	0.35	\$2.39
Goldeneye - Showy	0.08	0.92	\$4.80
<b>Totals Seed Mix</b>	15.79	44.87	<b>\$354.70</b>

**Application**

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

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

**Application**

Description	Cost /Acre
	\$
<b>Total Mulch Application Cost/Acre</b>	<b>\$0.00</b>

**NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
<b>Totals Nursery Stock Cost / Acre</b>					<b>\$0.00</b>

**JOB TIME AND COST**

No. of Acres:	4.9	Cost /Acre:	\$586.70
Estimated Failure Rate:	17.5%	Cost /Acre*:	\$586.70
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$2,874.83</b>
Reseeding Job Cost:	<b>\$503.10</b>
Total Job Cost:	<b>\$3,378</b>
Job Hours:	<b>3.50</b>

**REVEGETATION WORK**Task description: Seed J Pit without shrubs (Range C)Site: Trapper MinePermit Action: TR135Permit/Job#: C1981010**PROJECT IDENTIFICATION**Task #: N19State: ColoradoAbbreviation: NoneDate: 3/12/2024County: MoffatFilename: TR135User: RARAgency or organization name: DRMS**FERTILIZING****Materials**

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

**Application**

Description	Cost /Acre
	\$
<b>Total Fertilizer Application Cost/Acre</b>	<b>\$0.00</b>

**TILLING**

Description	Cost /Acre
	\$
<b>Total Tilling Cost/Acre</b>	<b>\$0.00</b>

**SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Arrowleaf Balsamroot	0.40	0.50	\$28.08
Beardless Wheatgrass - Whitmar	0.31	1.01	\$3.63
Mountain Brome - Bromar	0.72	1.16	\$2.74
Great Basin Wildrye - Magnar	0.92	3.74	\$10.63
Kentucky Bluegrass - Ginger	0.06	2.96	\$0.19
Alfalfa - Ladak (inoculated)	0.10	0.48	\$0.26
Burnett, Small (or Little) - Delar	0.40	0.51	\$1.00
Sheep Fescue - Covar	0.15	2.34	\$0.92
Milk Vetch, Cicer - Lutana	0.30	1.00	\$2.46
Slender Wheatgrass - San Luis	0.28	1.02	\$1.19

Streambank Wheatgrass - Sodar	0.26	0.85	\$1.48
Thickspike Wheatgrass - Critana	0.28	0.99	\$1.93
Western Wheatgrass - Arriba	0.38	0.96	\$2.47
Needlegrass, Green - Lodorm	0.24	1.00	\$2.83
Flax, Lewis Blue	0.30	1.99	\$4.95
Red Top	0.02	2.29	\$0.16
Penstemon, Rocky Mountain	0.14	2.19	\$4.13
Yarrow, Western	0.07	4.26	\$2.93
Globemallow, Munro	0.08	0.91	\$7.00
Aster, Pacific	0.02	0.35	\$2.39
Goldeneye - Showy	0.08	0.92	\$4.80
<b>Totals Seed Mix</b>	<b>5.51</b>	<b>31.41</b>	<b>\$86.15</b>

**Application**

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
<b>Total Seed Application Cost/Acre</b>	<b>\$232.00</b>

**MULCHING and MISCELLANEOUS****Materials**

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

**Application**

Description	Cost /Acre
	\$
<b>Total Mulch Application Cost/Acre</b>	<b>\$0.00</b>

**NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					\$
<b>Totals Nursery Stock Cost / Acre</b>					<b>\$0.00</b>

**JOB TIME AND COST**

No. of Acres:	45.9	Cost /Acre:	\$318.15
Estimated Failure Rate:	17.5%	Cost /Acre*:	\$318.15
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	<b>\$14,603.09</b>
Reseeding Job Cost:	<b>\$2,555.54</b>
Total Job Cost:	<b>\$17,159</b>
Job Hours:	<b>66.00</b>