



February 6, 2025

Scott Bakken
Energy Fuels Resources (USA) Inc.
225 Union Blvd, Suite 600
Lakewood, CO 80228

RE: Whirlwind Mine, Permit No. 2007-044, Technical Revision (TR-2), Adequacy Review-2

Dear Mr. Bakken:

The Division of Reclamation, Mining and Safety (Division) is in the process of reviewing the above referenced Technical Revision in order to ensure that it adequately satisfies the requirements of the Colorado Mine Land Reclamation Act (Act) and the associated Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for Hard Rock, Metal and Designated Mining Operations (Rules). During review of the material submitted, the Division determined that the following issue(s) of concern need to be adequately addressed before the Technical Revision can be considered for approval. Please provide the following:

Exhibit E - Reclamation Plan

1. Pages E-7 and E8. With regards to burying on place the three HDPE pipelines is any sort of capping measures required?
 - a. Provide documentation from BLM that you have approval for the pipelines to be buried in place for final reclamation.

Exhibit L - Reclamation Costs

2. What are the anticipated job hours associated with the following user provided items?
 - a. BH1 Whirlwind decline bulkhead
 - b. 01W Water treatment sludge disposal -paste backfill
 - c. 01W Water treatment liner disposal
 - d. 01W Disposal of ion exchanger units
3. Please clarify if the quote from WRT for \$10,000 was per ion exchanger, so \$20,000 for both on site, OR for the system and a total of \$10,000 for disposal of the system.



2/6/2025

Attached is a draft reclamation cost estimate. Total job hours and cost are subject to change based on adequacy responses. Please look it over and let the Division know if any errors exist.

Please submit your response(s) to the above listed issue(s) by February 12, 2025. in order to allow the Division sufficient time for review. If you cannot address the above issues by February 12, 2025 please request an extension to the decision due date to ensure adequate time for the Division to review materials. A decision due date of February 15, 2025, has been set. If any adequacy issues remain by the decision due date the Division may deny your request.

The Division will continue to review your Technical Revision and will contact you if additional information is needed. If you require additional information, or have questions or concerns, please feel free to contact me.

Sincerely,



Amy Yeldell

Environmental Protection Specialist

Enclosures:

Draft TR-2 Reclamation Cost Estimate

Bond table changes

Demo hours and equipment table

Ec:

Travis Marshall, Senior EPS, DRMS

Dawn Kolkman, Energy Fuels

Jennifer Whittington, BLM

COST SUMMARY WORK

Task description: Update tasks based on TR-2

Site: Whirlwind Mine

Permit Action: TR2

Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: ACY

State: Colorado

Abbreviation: None

Date: 2/6/2025

County: Mesa

Filename: M044-ACY

User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01P	Removal of structures from Packrat Portal	DEMOLISH	1	49.02	\$8,274
02p	Packrat-Seal Portal	MINESEAL	1	16.00	\$3,649
03P	Packrat Re-establish 3H: 1V Slopes	DOZER	1	18.61	\$6,321
04P	Packrat Pock 0.99 ac of slopes	EXCAVATE	1	25.11	\$13,044
05P	Packrat Spread available topsoil over pcking	EXCAVATE	1	2.96	\$1,539
06P	Packrat Cut/fil establish water bars on access rd	DOZER	1	7.00	\$2,377
07P	Packrat Reveg 0.99 ac @ portal and 0.95 ac of access rd	REVEGE	1	24.00	\$16,250
08P	Packrat Place obstruction boulders in place	LOADER	1	3.01	\$363
BH1	Whirlwind decline bulkhead construction	NA	1	1.00	\$465,340
01W	Whirlwind Demo of Structures at portal	DEMOLISH	1	150.00	\$138,227
02W	Whirlwind Replace 11K cu/yrds of ore in portal	LOADER	1	67.54	\$8,141
03W	Whirlwind Remove 18" of sub surface at ore pad	LOADER	1	7.98	\$962
04W	Whirlwind Backfill portal	MINESEAL	1	16.00	\$3,649
05W	Whirlwind Establish 3H: 1V Slopes on waste piles	DOZER	1	23.27	\$7,901
06W	Whirlwind Rip 7.41 ac of compacted areas	RIPPER	1	12.69	\$4,386
07W	Whirlwind Spread topsoil over 8.07 ac	DOZER	1	27.37	\$8,842
08W	Whirlwind Reveg 8.07 ac + topsoil area 1.82 ac	REVEGE	1	16.00	\$54,864
09W	Whirlwind Backfill Sediment Pond	DOZER	1	15.89	\$5,395
1WP	Seal 2 air shafts	MINESEAL	1	32.00	\$41,293
2WP	Seal 2 power drops	BOREHOLE	1	24.00	\$3,786
3WP	Remove power drop lines	DEMOLISH	1	8.00	\$363
4WP	Rip vent and power drop areas prior to topsoil	RIPPER	1	2.22	\$768
5WP	Push topsoil over vent and power pads	DOZER	1	2.56	\$826
6WP	Reveg 1.1 ac of vent and power pads	REVEGE	1	16.00	\$9,408
MB1	Initial Mobilization	MOBILIZE	1	8.00	\$15,387
MB2	Secondary Mobilization	MOBILIZE	1	8.00	\$3,425
<u>SUBTOTALS:</u>				584.23	\$824,780

INDIRECT COSTS**OVERHEAD AND PROFIT:**

Liability insurance:	2.02	Total =	\$16,661
Performance bond:	1.05	Total =	\$8,660
Job superintendent:	292.12	Total =	\$23,156
Profit:	10.00	Total =	\$82,478
		TOTAL O & P =	\$130,955
		CONTRACT AMOUNT (direct + O & P) =	\$955,735

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	\$500	Total =	\$500
Engineering work and/or contract/bid preparation:	4.25	Total =	\$40,619
Reclamation management and/or administration:	5.00		\$47,787
CONTINGENCY: 3.00		Total =	\$24,743

TOTAL INDIRECT COST = \$244,604

TOTAL BOND AMOUNT (direct + indirect) = \$1,069,384

DEMOLITION WORK

Task description: Removal of structures from Packrat Portal

Site: Whirlwind Mine

Permit Action: TR2

Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 01P

State: Colorado

Abbreviation: None

Date: 2/6/2025

County: Mesa

Filename: M044-01P

User: ACY

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 90.70 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Load out bins-load	12x12x22	Loading and 2 mile haul, no salvage - Machine loading	5.00	CY	\$21.15	\$105.75
shop doors	12x8	Hauling only, per mile, 12-18 CY truck - 50 mph average speed	120.00	MI	\$4.43	\$532.02
retaining wall	30' x 8'	Concrete retaining wall, 8' high, no reinforcing	300.00	LF	\$24.05	\$7,215.00
Load out footers	3' x 2' Dia	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 50 ft. push	48.00	LF	\$14.21	\$682.05
Load out Bins- haul	120 mi	Hauling only, per mile, 12-18 CY truck - 50 mph average speed	120.00	MI	\$4.43	\$532.02
Load out bins - dump fee	5 CY	Dump fees - Building construction materials.	5.00	CY	\$11.10	\$55.50

Job Hours: 49.02

Subtotal
(unadjusted): \$9,122.34

Total Cost
(adjusted for location): \$8,273.96

SAFEGUARDING UNDERGROUND OPENINGS

Task description: **Packrat-Seal Portal**

Site: **Whirlwind Mine** Permit Action: TR2 Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 02P State: Colorado Abbreviation: None
Date: 2/6/2025 County: Mesa Filename: M044-02p
User: ACY

Agency or organization name: DRMS

UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Pakckrat Portal	12 x 10	Adit closure - backfilling (per opening)	1.00	EA	\$3,649.41	\$3,649.41

Job Hours: **16.00**

Total Cost: **\$3,649.41**

BULLDOZER WORKTask description: **Packrat Re-establish 3H: 1V Slopes**Site: **Whirlwind Mine**Permit Action: **TR2**Permit/Job#: **M2007044****PROJECT IDENTIFICATION**Task #: **03P**State: **Colorado**Abbreviation: **None**Date: **2/6/2025**County: **Mesa**Filename: **M044-03P**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**Horsepower: **310**Blade Type: **Semi-Universal**Attachment: **3-shank ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$14.53	NA
Ripper op. Cost/Hour:	\$1.99	25
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$339.58**Total Fleet Cost/Hour: **\$339.58****MATERIAL QUANTITIES**Initial Volume: **3,200**Swell factor: **1.335**Loose volume: **4,272 LCY**Source of estimated volume: **Reclamation Plan**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **100 feet**Unadjusted hourly production: **852.6 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **15 %**Average site altitude: **6,800 feet**Material weight: **2,550 lbs/LCY**Weight description: **Sandstone****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	(FND-RF)
Push gradient:	0.666	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2692

Adjusted unit production: 229.52 LCY/hr

Adjusted fleet production: **229.52** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$1.480/LCY

Total job time: **18.61** Hours

Total job cost: **\$6,321**

HYDRAULIC EXCAVATOR WORK

Task description: Packrat Pock 0.99 ac of slopes

Site: Whirlwind Mine

Permit Action: TR2

Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 04P

State: Colorado

Abbreviation: None

Date: 2/6/2025

County: Mesa

Filename: M044-04P

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 320D L 9'-6" Stick

Attachment 1: ROPS Cab

Horsepower: 148

Weight (MT): 21.55

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$244.29</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$218.49</u>	<u>100</u>
Operator Cost/Hour:	<u>\$56.64</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$519.42</u>	
Total Fleet Cost/Hour:	<u>\$519.42</u>	

MATERIAL QUANTITIES

Initial volume: 3,750

CCY

Swell factor: 1.000

Loose volume: 3,750

LCY

Source of estimated volume: Reclamation Plan

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: SEVERE

Cycle Time Value: 0.312 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 1.54 LCY (heaped)

Bucket Fill Factor: 0.675 Rock - Well blasted (60% - 75%) 0.675

Adjusted Capacity: 1.04 LCY

Job Condition Correction Factors

Site Altitude: 6800 feet

		Source
Altitude Adj:	<u>0.90</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.75</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 199.90 LCY/Hour

Adjusted Hourly Unit Production: 149.33 LCY/Hour

Adjusted Hourly Fleet Production: 149.33 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 25.11 Hours

Unit cost: \$3.478 /LCY Total job cost: \$13,044

HYDRAULIC EXCAVATOR WORK

Task description: Packrat Spread available topsoil over pcking

Site: Whirlwind Mine

Permit Action: TR2

Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 05P

State: Colorado

Abbreviation: None

Date: 2/6/2025

County: Mesa

Filename: M044-05P

User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 320D L 9'-6" Stick

Attachment 1: ROPS Cab

Horsepower: 148

Weight (MT): 21.55

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$244.29</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$218.49</u>	<u>100</u>
Operator Cost/Hour:	<u>\$56.64</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$519.42</u>	
Total Fleet Cost/Hour:	<u>\$519.42</u>	

MATERIAL QUANTITIES

Initial volume: 672

CCY

Swell factor: 1.125

Loose volume: 756

LCY

Source of estimated volume: Reclamation Plan

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

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

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.284 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity: 1.54 LCY (heaped)

Bucket Fill Factor: 1.050 Moist loam or sandy clay (100% - 110%) 1.050

Adjusted Capacity: 1.62 LCY

Job Condition Correction Factors

Site Altitude: 6800 feet

		Source
Altitude Adj:	<u>0.90</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.75</u>	<u>multiplier</u>

Unadjusted Hourly Unit Production: 341.62 LCY/Hour

Adjusted Hourly Unit Production: 255.19 LCY/Hour

Adjusted Hourly Fleet Production: 255.19 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 2.96 Hours

Unit cost: \$2.035 /LCY Total job cost: \$1,539

BULLDOZER WORKTask description: **Packrat Cut/fil establish water bars on access rd**Site: **Whirlwind Mine**Permit Action: **TR2**Permit/Job#: **M2007044****PROJECT IDENTIFICATION**Task #: **06P**State: **Colorado**Abbreviation: **None**Date: **2/6/2025**County: **Mesa**Filename: **M044-06P**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**Horsepower: **310**Blade Type: **Semi-Universal**Attachment: **3-shank ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$14.53	NA
Ripper op. Cost/Hour:	\$1.99	25
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$339.58**Total Fleet Cost/Hour: **\$339.58****MATERIAL QUANTITIES**Initial Volume: **1,597**Swell factor: **1.430**Loose volume: **2,284 LCY**Source of estimated volume: **Reclamation Plan**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **100 feet**Unadjusted hourly production: **852.6 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **-10 %**Average site altitude: **6,800 feet**Material weight: **3,300 lbs/LCY**Weight description: **Decomposed rock - 75% Rock, 25% Earth****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	(FND-RF)
Push gradient:	1.225	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.697	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3827

Adjusted unit production: 326.29 LCY/hr

Adjusted fleet production: **326.29** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$1.041/LCY

Total job time: **7.00** Hours

Total job cost: **\$2,377**

REVEGETATION WORKTask description: Packrat Reveg 0.99 ac @ portal and 0.95 ac of access rdSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 07PState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-07PUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

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

Application

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

TILLING

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

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.60	9.79	\$17.19
Indian Ricegrass - Paloma	2.80	9.06	\$57.49
Crested Wheatgrass - Nordan	2.00	9.18	\$10.63
Pubescent Wheatgrass - Luna	4.00	8.26	\$20.02
Slender Wheatgrass - Pryor	2.60	9.49	\$16.07
Milk Vetch, Cicer - Lutana	0.40	1.33	\$3.92
Western Wheatgrass - Arriba	3.60	9.09	\$32.52
Needle and Thread	3.20	8.45	\$260.57
Flax, Lewis Blue	1.00	6.63	\$42.30

Saltbush, Four Wing	4.00	5.51	\$79.49
Penstemon, Palmer	0.20	4.42	\$15.59
Totals Seed Mix	24.40	81.23	\$555.78

Application

Description	Cost /Acre
Broadcast seeding [DMG]	\$272.56
Total Seed Application Cost/Acre	\$272.56

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	1.00	TON	\$492.78	\$492.78
Herbicide - Curtail @ 4.0 pt/ac	1.00	ACRE	\$36.14	\$36.14
Total Mulch Materials Cost/Acre				\$528.92

Application

Description	Cost /Acre
Hand spread, 1" deep (MEANS 32 91 13.16 0200)	\$4,017.20
Weed spray, hand, non-aquatic area, nox. [DMG]	\$209.61
Total Mulch Application Cost/Acre	\$4,226.81

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: 1.94 Cost /Acre: \$5,584.07
 Estimated Failure Rate: 50% Cost /Acre*: \$5,584.07
 *Selected Replanting Work Items: SEEDING,MULCHING
 Initial Job Cost: \$10,833.10
 Reseeding Job Cost: \$5,416.55
 Total Job Cost: \$16,250
 Job Hours: 24.00

WHEEL LOADER – LOAD AND CARRY WORKTask description: **Packrat Place obstruction boulders in place**Site: **Whirlwind Mine**Permit Action: **TR2**Permit/Job#: **M2007044****PROJECT IDENTIFICATION**Task #: **08P**State: **Colorado**Abbreviation: **None**Date: **2/6/2025**County: **Mesa**Filename: **M044-08P**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **CAT 938H**Attachment 1: **ROPS Cab**Horsepower: **172**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$32.87	NA
Operating Cost/Hour:	\$31.02	100
Operator Cost/Hour:	\$56.64	NA
Total Unit Cost/Hour:	\$120.53	
Total Fleet Cost/Hour:	\$120.53	

MATERIAL QUANTITIESInitial volume: **250**

CCY

Swell factor: **1.667**Loose volume: **417**

LCY

Source of estimated volume: **Reclamation Plan**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): **0.483** minutes

Cycle Time Factors		Factor (min.)	Source
Material:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.040	minutes
Adjusted Basic Cycle Time:		0.523	minutes

Rolling Resistance – Road ConditionsHaul: **Rutted dirt, little maintenance, no water, 2" tire penetration 5.0**Return: **Rutted dirt, little maintenance, no water, 2" tire penetration 5.0****Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	200	6.00	5.00	11.00	0.2803	(Cat HB)
Return Route:	600	-9.00	5.00	-4.00	0.4621	(Cat HB)

Total Travel Time: 0.7424 minutes
 Total Cycle Time: 1.2649 minutes

Load Bucket Capacity

Rated Capacity: 3.90 LCY (heaped)
 Bucket Fill Factor: 0.900 Other - soil, boulders, roots (80 -100%) 0.900
 Adjusted Capacity: 3.51 LCY

Job Condition Correction Factors

Site Altitude: 6800 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: 166.49 LCY/Hour
 Adjusted Hourly Unit Production: 138.19 LCY/Hour
 Adjusted Hourly Fleet Production: 138.19 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 3.02 Hours
 Unit cost: \$0.872 /LCY Total job cost: \$363

DEMOLITION WORK

Task description: Whirlwind Demo of Structures at portal

Site: Whirlwind Mine

Permit Action: TR2

Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 01W

State: Colorado

Abbreviation: None

Date: 2/6/2025

County: Mesa

Filename: M044-01W

User: ACY

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 90.70 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Water treatment sludge disposal	40 CY yds	USER PROVIDED ITEM	40.00	CY	\$2,125.00	\$85,000.00
Chain link fence	6' H x 1100 LF	Fencing, chain link, including posts and fabric - to 6 ft. high	1,100.00	LF	\$3.02	\$3,322.00
Barbed wire fence	3 strand	Fencing, barbed wire, - 3 strand	2,500.00	LF	\$1.82	\$4,550.00
Water treatment liner disposal	7000 sq/ft	USER PROVIDED ITEM	7,000.00	SF	\$6.50	\$45,500.00
Shop Building	40' x 50'	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 60 mile haul	222.00	CF	\$0.76	\$168.85
Shop slab	40' x 50' x 6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	3,000.00	SF	\$1.24	\$3,719.10
Used Oil pad	8' x 10' x 4"	Demo. and on-site disposal in excavated pit, 4 in. thick - Max. 200 ft. push	80.00	SF	\$0.83	\$66.12
Aux. Slab	4' x 6' x 6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	24.00	SF	\$1.24	\$29.75
Ore pad sump	6' x 6' x 6"	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	36.00	SF	\$1.24	\$44.63
Disposal of Ion Exchanger Units	TR2	USER PROVIDED ITEM	1.00	EA	\$10,000.00	\$10,000.00

Job Hours: 150.00

Subtotal
(unadjusted): \$152,400.45

Total Cost
(adjusted for location): \$138,227.21

WHEEL LOADER – LOAD AND CARRY WORKTask description: Whirlwind Replace 11K cu/yds of ore in portalSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 02WState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-02WUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 938HAttachment 1: ROPS CabHorsepower: 172Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$32.87	NA
Operating Cost/Hour:	\$31.02	100
Operator Cost/Hour:	\$56.64	NA
Total Unit Cost/Hour:	\$120.53	
Total Fleet Cost/Hour:	\$120.53	

MATERIAL QUANTITIESInitial volume: 11,000

CCY

Swell factor: 1.000Loose volume: 11,000

LCY

Source of estimated volume: Accepted estimateSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Mixed material 0.02	0.020	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		-0.020	minutes
Adjusted Basic Cycle Time:		0.463	minutes

Rolling Resistance – Road ConditionsHaul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	300	0.00	5.00	5.00	0.2749	(Cat HB)
Return Route:	300	0.00	5.00	5.00	0.2465	(Cat HB)

Total Travel Time: 0.5214 minutes
 Total Cycle Time: 0.9839 minutes

Load Bucket Capacity

Rated Capacity: 3.90 LCY (heaped)
 Bucket Fill Factor: 0.825 Blasted rock - avg. blasted (75 - 90%) 0.825
 Adjusted Capacity: 3.22 LCY

Job Condition Correction Factors

Site Altitude: 6800 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: 196.21 LCY/Hour
 Adjusted Hourly Unit Production: 162.85 LCY/Hour
 Adjusted Hourly Fleet Production: 162.85 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: 67.55 Hours
 Unit cost: \$0.740 /LCY Total job cost: \$8,141

WHEEL LOADER – LOAD AND CARRY WORKTask description: Whirlwind Remove 18" of sub surface at ore padSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 03WState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-03WUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: CAT 938HAttachment 1: ROPS CabHorsepower: 172Shift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$32.87	NA
Operating Cost/Hour:	\$31.02	100
Operator Cost/Hour:	\$56.64	NA
Total Unit Cost/Hour:	\$120.53	
Total Fleet Cost/Hour:	\$120.53	

MATERIAL QUANTITIESInitial volume: 1,210

CCY

Swell factor: 1.215Loose volume: 1,470

LCY

Source of estimated volume: Reclamation PlanSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4" to 6" diameter 0.00	0.000	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Operation:	Inconsistent operation 0.04	0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
Net Cycle Time Adjustment:		0.040	minutes
Adjusted Basic Cycle Time:		0.523	minutes

Rolling Resistance – Road ConditionsHaul: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0Return: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0**Haul and Return Time**

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	200	0.00	5.00	5.00	0.1833	(Cat HB)
Return Route:	200	0.00	5.00	5.00	0.1643	(Cat HB)

Total Travel Time: 0.3476 minutes
 Total Cycle Time: **0.8701** minutes

Load Bucket Capacity

Rated Capacity: 3.90 LCY (heaped)
 Bucket Fill Factor: 0.825 Blasted rock - avg. blasted (75 - 90%) 0.825
 Adjusted Capacity: **3.22** LCY

Job Condition Correction Factors

Site Altitude: 6800 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: 221.87 LCY/Hour
 Adjusted Hourly Unit Production: 184.15 LCY/Hour
 Adjusted Hourly Fleet Production: **184.15** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Loader(s) Total job time: **7.98** Hours
 Unit cost: \$0.654 /LCY Total job cost: **\$962**

SAFEGUARDING UNDERGROUND OPENINGS

Task description: **Whirlwind Backfill portal**

Site: **Whirlwind Mine** Permit Action: TR2 Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 04W State: Colorado Abbreviation: None
Date: 2/6/2025 County: Mesa Filename: M044-04W
User: ACY

Agency or organization name: DRMS

UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Whirlwind Portal	10' x 12'	Adit closure - backfilling (per opening)	1.00	EA	\$3,649.41	\$3,649.41

Job Hours: **16.00**

Total Cost: **\$3,649.41**

BULLDOZER WORKTask description: Whirlwind Establish 3H: 1V Slopes on waste pilesSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 05WState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-05WUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: 3-shank ripperShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$14.53	NA
Ripper op. Cost/Hour:	\$1.99	25
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: \$339.58Total Fleet Cost/Hour: **\$339.58****MATERIAL QUANTITIES**Initial Volume: 4,000Swell factor: 1.335Loose volume: **5,340 LCY**Source of estimated volume: Previous calcSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 100 feetUnadjusted hourly production: 852.6 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: 15 %Average site altitude: 6,800 feetMaterial weight: 2,550 lbs/LCYWeight description: Sandstone**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	(FND-RF)
Push gradient:	0.666	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2692

Adjusted unit production: 229.52 LCY/hr

Adjusted fleet production: **229.52** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$1.480/LCY

Total job time: **23.27** Hours

Total job cost: **\$7,901**

BULLDOZER RIPPING WORK

Task description: Whirlwind Rip 7.41 ac of compacted areas

Site: Whirlwind Mine Permit Action: TR2 Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 06W State: Colorado Abbreviation: None
Date: 2/6/2025 County: Mesa Filename: M044-06W
User: ACY

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:	<u>\$173.32</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$109.71</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$14.53</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$7.95</u>	<u>100</u>
Operator Cost/Hour:	<u>\$40.04</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$345.55</u>	
Total Fleet Cost/Hour:	<u>\$345.55</u>	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 7.41 acres Rip Depth (ft): 2.50 Volume: 29,887 BCY or CCY

Source of estimated quantity: Reclamation Plan

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>1.00</u>	<u>feet/pass</u>
Average Ripping Width:	<u>7.08</u>	<u>feet/pass</u>
Average Ripping Length:	<u>100.00</u>	<u>feet/pass</u>
Average Dozer Speed:	<u>88.00</u>	<u>feet/minute</u>
Average Maneuver Time:	<u>0.25</u>	<u>minutes/pass</u>
Production per unit area:	<u>0.703</u>	<u>acres/hour</u>

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	<u>0.703</u>	<u>Acres/hr</u>
Site Altitude:	<u>6,800</u>	<u>feet</u>
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>

Adjusted Hourly Unit Production: 0.58 Acres/hr
Adjusted Hourly Fleet Production: 0.58 Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: 12.69 Hours

Unit cost: \$591.852 Per acre Total job cost: \$4,386

BULLDOZER WORKTask description: Whirlwind Spread topsoil over 8.07 acSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 07WState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-07WUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	25
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: \$323.07Total Fleet Cost/Hour: \$323.07**MATERIAL QUANTITIES**Initial Volume: 15,324Swell factor: 1.000Loose volume: 15,324 LCYSource of estimated volume: Reclamation Plan E-15Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 100 feetUnadjusted hourly production: 852.6 LCY/hrMaterials consistency description: Partly consolidated stockpile 1.1Average push gradient: -15 %Average site altitude: 6,800 feetMaterial weight: 2,550 lbs/LCYWeight description: Earth - Dry packed**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.6567

Adjusted unit production: 559.90 LCY/hr

Adjusted fleet production: **559.9** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.577/LCY

Total job time: **27.37** Hours

Total job cost: **\$8,842**

REVEGETATION WORKTask description: Whirlwind Reveg 8.07 ac + topsoil area 1.82 acSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 08WState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-08WUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

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

Application

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

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$117.61
Total Tilling Cost/Acre	\$117.61

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.60	9.79	\$17.19
Indian Ricegrass - Paloma	2.80	9.06	\$57.49
Crested Wheatgrass - Nordan	2.00	9.18	\$10.63
Pubescent Wheatgrass - Luna	4.00	8.26	\$20.02
Slender Wheatgrass - Pryor	2.60	9.49	\$16.07
Milk Vetch, Cicer - Lutana	0.40	1.33	\$3.92
Western Wheatgrass - Arriba	3.60	9.09	\$32.52
Needle and Thread	3.20	8.45	\$260.57
Flax, Lewis Blue	1.00	6.63	\$42.30
Saltbush, Four Wing	4.00	5.51	\$79.49

Penstemon, Palmer	0.20	4.42	\$15.59
Totals Seed Mix	24.40	81.23	\$555.78

Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$1,359.07
Total Seed Application Cost/Acre	\$1,359.07

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - Curtail @ 4.0 pt/ac	1.00	ACRE	\$36.14	\$36.14
Hydromulch, 1 ton/ac. rate {Materials Only}	1.00	ACRE	\$1,459.26	\$1,459.26
Total Mulch Materials Cost/Acre				\$1,495.40

Application

Description	Cost /Acre
NA-mulch application incl. with hydroseeding	\$0.00
Weed spray, hand, non-aquatic area, nox. [DMG]	\$209.61
Total Mulch Application Cost/Acre	\$209.61

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:	9.89	Cost /Acre:	\$3,737.47
Estimated Failure Rate:	50%	Cost /Acre*:	\$3,619.86
*Selected Replanting Work Items:	SEEDING,MULCHING		
Initial Job Cost:	\$36,963.58		
Reseeding Job Cost:	\$17,900.21		
Total Job Cost:	\$54,864		
Job Hours:	16.00		

BULLDOZER WORKTask description: **Whirlwind Backfill Sediment Pond**Site: **Whirlwind Mine**Permit Action: **TR2**Permit/Job#: **M2007044****PROJECT IDENTIFICATION**Task #: **09W**State: **Colorado**Abbreviation: **None**Date: **2/6/2025**County: **Mesa**Filename: **M044-09W**User: **ACY**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8SU**Horsepower: **310**Blade Type: **Semi-Universal**Attachment: **3-shank ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$14.53	NA
Ripper op. Cost/Hour:	\$1.99	25
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: **\$339.58**Total Fleet Cost/Hour: **\$339.58****MATERIAL QUANTITIES**Initial Volume: **4,608**Swell factor: **1.165**Loose volume: **5,368 LCY**Source of estimated volume: **Reclamation Plan**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **100 feet**Unadjusted hourly production: **852.6 LCY/hr**Materials consistency description: **Compacted fill or embankment 0.9**Average push gradient: **-5 %**Average site altitude: **6,800 feet**Material weight: **2,900 lbs/LCY**Weight description: **Decomposed rock - 50% Rock, 50% Earth****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	(FND-RF)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3963

Adjusted unit production: 337.89 LCY/hr

Adjusted fleet production: **337.89 LCY/hr**

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$1.005/LCY

Total job time: **15.89 Hours**

Total job cost: **\$5,395**

SAFEGUARDING UNDERGROUND OPENINGS

Task description: **Seal 2 air shafts**

Site: **Whirlwind Mine** Permit Action: TR2 Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 1WP State: Colorado Abbreviation: None
Date: 2/6/2025 County: Mesa Filename: M044-1WP
User: ACY

Agency or organization name: DRMS

UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Air shaft	6' dia	Shaft closure - monolithic plug (per opening)	2.00	EA	\$20,646.59	\$41,293.18

Job Hours: **32.00**

Total Cost: **\$41,293.18**

BOREHOLE SEALING WORK

Task description: Seal 2 power drops

Site: Whirlwind Mine

Permit Action: TR2

Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 2WP

State: Colorado

Abbreviation: None

Date: 2/6/2025

County: Mesa

Filename: M044-2WP

User: ACY

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Seal Power drop holes	USER PROVIDED ITEM	6	5	2.00	EA	\$1,250.00	\$2,500.00
Plug W-1	Portland cement grout - 2 in. (labor, equip, materials)	2	150	150.00	LF	\$8.57	\$1,285.65

Job Hours: 24.00

Total Cost: \$3,786.00

DEMOLITION WORK

Task description: Remove power drop lines

Site: Whirlwind Mine

Permit Action: TR2

Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 3WP

State: Colorado

Abbreviation: None

Date: 2/6/2025

County: Mesa

Filename: M044-3WP

User: ACY

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 90.70 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
power drops for mine	200 LF of cable	USER PROVIDED ITEM	200.00	LF	\$2.00	\$400.00

Job Hours: 8.00

Subtotal
(unadjusted): \$400.00

Total Cost
(adjusted for location): \$362.80

BULLDOZER RIPPING WORK

Task description: Rip vent and power drop areas prior to topsoil

Site: Whirlwind Mine Permit Action: TR2 Permit/Job#: M2007044

PROJECT IDENTIFICATION

Task #: 4WP State: Colorado Abbreviation: None
Date: 2/6/2025 County: Mesa Filename: M044-4WP
User: ACY

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:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper Ownership Cost/Hour:	\$14.53	NA
Ripper Operating Cost/Hour:	\$7.95	100
Operator Cost/Hour:	\$40.04	NA
Total Unit Cost/Hour:	\$345.55	
Total Fleet Cost/Hour:	\$345.55	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 1.10 acres Rip Depth (ft): 2.00 Volume: 3,549 BCY or CCY

Source of estimated quantity: Reclamation Plan

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth: 1.00 feet/pass
Average Ripping Width: 7.08 feet/pass
Average Ripping Length: 50.00 feet/pass
Average Dozer Speed: 88.00 feet/minute
Average Maneuver Time: 0.25 minutes/pass
Production per unit area: 0.596 acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.596 Acres/hr
Site Altitude: 6,800 feet
Altitude Adj: 1.00 (CAT HB)
Job Efficiency: 0.83 (1 shift/day)
Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.49 Acres/hr
Adjusted Hourly Fleet Production: **0.49** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **2.22** Hours

Unit cost: \$698,580 Per acre Total job cost: **\$768**

BULLDOZER WORKTask description: Push topsoil over vent and power padsSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 5WPState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-5WPUser: ACYAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$173.32	NA
Operating Cost/Hour:	\$109.71	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$40.04	NA

Total unit Cost/Hour: \$323.07Total Fleet Cost/Hour: \$323.07**MATERIAL QUANTITIES**Initial Volume: 1,769Swell factor: 1.000Loose volume: 1,769 LCYSource of estimated volume: Reclamation PlanSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 50 feetUnadjusted hourly production: 1,400.0 LCY/hrMaterials consistency description: Partly consolidated stockpile 1.1Average push gradient: 0 %Average site altitude: 6,800 feetMaterial weight: 2,550 lbs/LCYWeight description: Earth - Dry packed**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4941

Adjusted unit production: 691.74 LCY/hr

Adjusted fleet production: **691.74** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.467/LCY

Total job time: **2.56** Hours

Total job cost: **\$826**

REVEGETATION WORKTask description: Reveg 1.1 ac of vent and power padsSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: 6WPState: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-6WPUser: ACYAgency or organization name: DRMS**FERTILIZING****Materials**

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

Application

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

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$117.61
Total Tilling Cost/Acre	\$117.61

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	0.60	9.79	\$17.19
Indian Ricegrass - Paloma	2.80	9.06	\$57.49
Crested Wheatgrass - Nordan	2.00	9.18	\$10.63
Pubescent Wheatgrass - Luna	4.00	8.26	\$20.02
Slender Wheatgrass - Pryor	2.60	9.49	\$16.07
Milk Vetch, Cicer - Lutana	0.40	1.33	\$3.92
Western Wheatgrass - Arriba	3.60	9.09	\$32.52
Needle and Thread	3.20	8.45	\$260.57
Flax, Lewis Blue	1.00	6.63	\$42.30
Saltbush, Four Wing	4.00	5.51	\$79.49

Penstemon, Palmer	0.20	4.42	\$15.59
Totals Seed Mix	24.40	81.23	\$555.78

Application

Description	Cost /Acre
Broadcast seeding [DMG]	\$272.56
Total Seed Application Cost/Acre	\$272.56

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	1.00	TON	\$492.78	\$492.78
Herbicide - Curtail @ 4.0 pt/ac	1.00	ACRE	\$36.14	\$36.14
Total Mulch Materials Cost/Acre				\$528.92

Application

Description	Cost /Acre
Hand spread, 1" deep (MEANS 32 91 13.16 0200)	\$4,017.20
Weed spray, hand, non-aquatic area, nox. [DMG]	\$209.61
Total Mulch Application Cost/Acre	\$4,226.81

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: 1.1 Cost /Acre: \$5,701.68
 Estimated Failure Rate: 50% Cost /Acre*: \$5,701.68
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: **\$6,271.85**
 Reseeding Job Cost: **\$3,135.92**
 Total Job Cost: **\$9,408**
 Job Hours: **16.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Initial Mobilization**Site: **Whirlwind Mine**Permit Action: **TR2**Permit/Job#: **M2007044****PROJECT IDENTIFICATION**Task #: **MB1**State: **Colorado**Abbreviation: **None**Date: **2/6/2025**County: **Mesa**Filename: **M044-MB1**User: **ACY**Agency or organization name: **DRMS****EQUIPMENT TRANSPORT RIG COST**Shift basis: **1 per day**Cost Data Source: **CRG Data**Truck Tractor Description: **GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,
400 HP (2ND HALF, 2006)**Truck Trailer Description: **GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT
TRAILER (25T, 50T, AND 100T)****Cost Breakdown:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$10.44	\$22.18	\$23.94
Operating Cost/Hour:	\$26.48	\$54.55	\$55.65
Operator Cost/Hour:	\$22.52	\$22.52	\$22.52
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$59.44	\$122.78	\$125.64

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D8T - 8SU	53.08	\$187.85	\$125.64	1	\$313.49	\$125.64	\$250.00
Cat 315D L 8'-6" Stick	19.05	\$244.29	\$59.44	1	\$303.73	\$59.44	\$250.00
CAT 938H	16.34	\$32.87	\$59.44	1	\$92.31	\$59.44	\$250.00
Hydroseeder with Tractor	28.00	\$45.21	\$122.78	1	\$167.99	\$122.78	\$250.00
CAT 246C	3.58	\$39.42	\$59.44	1	\$98.86	\$59.44	\$250.00
Cat 320D L 9'-6" Stick	23.70	\$244.29	\$59.44	1	\$303.73	\$59.44	\$250.00
CAT 450E	9.80	\$78.06	\$59.44	1	\$137.50	\$59.44	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$41.02	\$59.44	1	\$100.46	\$59.44	\$250.00

Subtotals: **\$1,518.07** **\$605.06** **\$2,000.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Flatbed Truck, 4x2, 30K GVW	\$78.53	1	\$78.53	\$78.53
Water Tanker, 3,500 Gal.	\$92.81	1	\$92.81	\$92.81

Generic 12-18 cy, 6x4	\$114.77	2	\$229.54	\$229.54
Light Duty Pickup, 4x4, 1 T. Crew	\$81.06	2	\$162.12	\$162.12
Light Duty Pickup, 4x4, 3/4 T.	\$97.64	1	\$97.64	\$97.64

Subtotals:

\$660.64**\$660.64**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>60.00</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$13,405.53</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$1,981.92</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>1.50</u>	<u>1.50</u>
Return Time (Hours):	<u>1.50</u>	<u>1.50</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>4.00</u>	<u>3.00</u>

JOB TIME AND COST

Total job time:	<u>8.00</u>	Hours
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Total job cost:	<u>\$15,387</u>
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EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: Secondary MobilizationSite: Whirlwind MinePermit Action: TR2Permit/Job#: M2007044**PROJECT IDENTIFICATION**Task #: MB2State: ColoradoAbbreviation: NoneDate: 2/6/2025County: MesaFilename: M044-MB2User: ACYAgency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**Shift basis: 1 per dayCost Data Source: CRG DataTruck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,
400 HP (2ND HALF, 2006)Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT
TRAILER (25T, 50T, AND 100T)**Cost Breakdown:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$10.44	\$22.18	\$23.94
Operating Cost/Hour:	\$26.48	\$54.55	\$55.65
Operator Cost/Hour:	\$22.52	\$22.52	\$22.52
Helper Cost/Hour:	\$0.00	\$23.53	\$23.53
Total Unit Cost/Hour:	\$59.44	\$122.78	\$125.64

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
Hydroseeder with Tractor	28.00	\$45.21	\$122.78	1	\$167.99	\$122.78	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$41.02	\$59.44	1	\$100.46	\$59.44	\$250.00

Subtotals: **\$268.45** **\$182.22** **\$500.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 1 T. Crew	\$81.06	1	\$81.06	\$81.06
Light Duty Pickup, 4x4, 3/4 T.	\$97.64	1	\$97.64	\$97.64

Subtotals: **\$178.70** **\$178.70**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>60.00</u>	miles
Average Travel Speed:	<u>40.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$2,888.91</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$536.10</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>1.50</u>	<u>1.50</u>
Return Time (Hours):	<u>1.50</u>	<u>1.50</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>4.00</u>	<u>3.00</u>

JOB TIME AND COST

Total job time:	<u>8.00</u>	Hours
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Total job cost:	<u>\$3,425</u>
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Bond table changes TR-2

General Assumptions:

- Inflationary updates on all task for 2024 pricing
- Includes new Linkan water treatment system (TR-2)
- Whirlwind Bulkhead cost avg of 3 quotes provided under TR-2
- No Packrat contingency bulkhead since only surface was affected to date
- Updated user provided items
- Demo job hours and equipment used summarized on attached sheet.

Below is a table which summarizes the input changes made from CS-1 to TR-2. This table does not account for inflation or unit cost changes. Corresponding changes are also highlighted on the bond calculation.

Task	Form Used	Description
BH1	N/A	Avg Cost = \$465,340 Iron Woman = \$575,000, Thirsty Bird = \$202,183, RAM = \$619,730
01P	Demo	Adjust total job hours - see attached sheet
02P	Mineseal	No Changes
03P	Dozer	No Changes
04P	Excavate	Switch to 320D since used for Demo
05P	Excavate	Switch to 320D since used for Demo
06P	Dozer	No Changes
07P	Reveg	No Changes
08P	Loader	No Changes
01W	Demo	Update user provided costs Adjusted total job hours – see attached sheet



		<p>Water Treatment Sludge Disposal: 19CY generated, using past backfill becomes 40 CY. Quote Thirsty Bird \$85,000</p> <p>Water Treatment Liner Disposal: \$45,500 remove liner and haul to offsite landfill</p> <p>Add Disposal of Ion Exchanger Units : Quote from WRT \$10,000</p>
02W	Loader	No Changes
03W	Loader	No Changes
04W	Mineseal	No Changes
05W	Dozer	No Changes
06W	Ripper	No Changes
07W	Dozer	<p>15,324 CY</p> <p>Correct volume based on pg. E-15</p>
08W	Reveg	<p>Include seeding of spread topsoil footprint. Add 1.82 ac for total of 9.89 ac. Update method to hydro seeding and hydro mulch Pg E-16</p> <p>Reduced job hrs. based on seeding method</p>
09W	Dozer	No Changes
1WP	Mineseal	No Changes
2WP	Borehole	<p>Use quotes for plugging power drops</p> <p>Thirsty Bird Quote \$2,500</p> <p>Add-Monitoring Well abandonment 2" PVC ~150 ft deep</p>
3WP	Demo	<p>Update user provided costs</p> <p>Thirsty Bird Quote \$2 per LF pf wire</p> <p>3" HDPE , 2" HDPE, 6" HDPE ????</p>
4WP	Ripper	No Changes
5WP	Dozer	No Changes
6WP	Reveg	No Changes
MB1	Mob	Updated for equipment used
MB2	Mob	No Changes

Indirect	No Changes
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Please feel free to contact me with any further questions. Amy Yeldell at the Division of Reclamation, Mining and Safety, Rm 215, 1001 E 62nd Ave, Denver CO 80216. Direct contact can be made by phone at 303-866-3567 Ext 8183 or via email at amy.yeldell@state.co.us

Sincerely,



Amy Yeldell
Environmental Protection Specialist

Ec:
Travis Marshall, Senior EPS, Grand Junction DRMS

Job Demo Hours										
01P										
Task	Quantity	Unit	Min Hrs	Max Hrs	Crew		Crew			
Load Out bins - load	5	CY	0.33	0.33	B-17		B-17	Loader - 450E	Dump Truck, 8 C.Y., 220 H.P.	
Shop doors	120	MI	7.2	7.2	B-34B		B-34B	Dump Truck, 12 C.Y., 400 H.P.		
Retaining wall	300	LF	32.1	32.1	B-13K		B-13K	Excavator - 315D		
Load Out bins - load	48	LF	2.19	2.23	CIRCES 16		CIRCES 16	Dozer - D8	Excavator - 320D	Excavator - 315D
Load Out bins -haul	120	MI	7.2	7.2	B-34B		B-34B	Dump Truck, 12 C.Y., 400 H.P.		
Load Out bins - Dump fee	5	CY	-	-	-		-	-	-	-
Total			49.02	49.06						
01W										
Task	Quantity	Unit	Min Hrs	Max Hrs	Crew		Crew			
Water Treatment Sludge Dis	40	CY	?	?	?		?			
Chain link fence	1,100	LF	50.6	50.6	B-6		B-6	Loader - 450E		
Barbed wire finc	2,500	LF	92.5	92.5	-		-	-		
Water treatement liner disp	7,000	SqFt	?	?	?		?			
Shop building	222	CF	0.12	0.14	B-3		B-3	Track Loader - 963D		
Shop slab	3,000	SF	6.67	7.25	CIRCES 16		CIRCES 16	Dozer - D8	Excavator - 320D	Excavator - 315D
Used oil pad	80	SF	0.18	0.2	CIRCES 16		CIRCES 16	Dozer - D8	Excavator - 320D	Excavator - 315D
Aux. slab	24	SF	0.05	0.06	CIRCES 16		CIRCES 16	Dozer - D8	Excavator - 320D	Excavator - 315D
Ore pad sump	36	SF	0.08	0.09	CIRCES 16		CIRCES 16	Dozer - D8	Excavator - 320D	Excavator - 315D
Disposal of ion exchanges	1	EA	?	?	?		?			
Total			150.20	150.84						