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

February 25, 2021

Aaron Bivens
Bivens Trucking & Excavating, Inc.
862 W. Willox Ln
Ft. Collins, CO 80524

Re: Bivens Pit, Permit No. M-1985-184, Technical Revision No. 2 (TR-02)
Adequacy Review No. 2 - Bond Estimate

Mr. Bivens:

The Division of Reclamation, Mining and Safety (Division) has completed its 2nd adequacy review of the materials submitted for your Technical Revision application (TR-02).

After reviewing your adequacy response submitted via email on February 24, 2021, the Division has completed a bond estimate (see enclosed) for the Reclamation Plan #1 proposed in this application. The Division estimates the required financial warranty for the site to be in the amount of $38,542.00, which is less than the currently held amount of $40,000.00. This means a financial warranty increase will not be required for TR-02 approval. Please review the enclosed estimate and submit any comments or your acceptance by the application decision date of **March 12, 2021**.

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

Amy Eschberger
Environmental Protection Specialist

Encl: Division's bond estimate

Cc: Tim Gerken, Telesto Solutions, Inc.
Michael Cunningham, DRMS

COST SUMMARY WORK

Task description: **Cost Summary**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-000
User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade 1,101 feet new shoreline to 3H:1V	DOZER	1	5.51	$1,054
002	Place topsoil on 0.25 acre new shoreline	DOZER	1	3.51	$671
003	Revegetate 0.25 acre new shoreline	REVEGE	1	0.25	$327
004	Grade 1.0 acre parking area	DOZER	1	3.32	$669
005	Apply 6 inches road base on 1.0 acre parking area	LOADER	1	8.17	$671
006	Grade 1.3 acre road	DOZER	1	5.14	$1,036
007	Apply 6 inches road base on 1.3 acre road	LOADER	1	10.59	$870
008	Replace topsoil on 3.0 acres	SCRAPER1	1	13.97	$9,500
009	Revegetate 3.0 acres	REVEGE	1	3.00	$3,926
010	Mobilization/Demobilization	MOBILIZE	1	6.35	$8,896
011	Demo truck scale and dispose of in pond	DEMOLISH	1	3.00	$1,120
		SUBTOTALS:		**62.81**	**$28,740**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$581
Performance bond:	1.05	Total =	$302
Job superintendent:	40.00	Total =	$2,782
Profit:	10.00	Total =	$2,874
		TOTAL O & P =	$6,538
		CONTRACT AMOUNT (direct + O & P) =	$35,278

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$0	Total =	$0
Engineering work and/or contract/bid preparation:	4.25	Total =	$1,499
Reclamation management and/or administration:	5.00		$1,764
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$9,802
		TOTAL BOND AMOUNT (direct + indirect) =	**$38,542**

BULLDOZER WORK

Task description: **Grade 1,101 feet new shoreline to 3H:1V**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #:	001	State:	Colorado	Abbreviation:	None
Date:	2/25/2021	County:	Larimer	Filename:	M184-001
User:	AME				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D7R DS Series II LGP
Horsepower:	240
Blade Type:	Straight
Attachment:	NA
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$76.61	NA
Operating Cost/Hour:	$74.78	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: $191.43
Total Fleet Cost/Hour: **$191.43**

MATERIAL QUANTITIES

Initial Volume:	2,294
Swell factor:	1.250
Loose volume:	**2,868** LCY

Source of estimated volume: 1,101 ft L x 15 ft H (5 ft above and 10 ft below waterline)
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 800.0 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: -5 %
Average site altitude: 4,995 feet

Material weight: 2,650 lbs/LCY

Weight description: Decomposed rock - 25% Rock, 75% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(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:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.6507

Adjusted unit production: 520.56 LCY/hr
Adjusted fleet production: **520.56** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.368/LCY

Total job time: **5.51** Hours
Total job cost: **$1,054**

BULLDOZER WORK

Task description: **Place topsoil on 0.25 acre new shoreline**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #:	002	State:	Colorado	Abbreviation:	None
Date:	2/25/2021	County:	Larimer	Filename:	M184-002
User:	AME				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D7R DS Series II LGP
Horsepower:	240
Blade Type:	Straight
Attachment:	NA
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$76.61	NA
Operating Cost/Hour:	$74.78	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: $191.43
Total Fleet Cost/Hour: **$191.43**

MATERIAL QUANTITIES

Initial Volume:	400
Swell factor:	1.215
Loose volume:	**486** LCY

Source of estimated volume: 0.25 ac x 1 ft depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 400 feet
Unadjusted hourly production: 180.4 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: -5 %
Average site altitude: 4,995 feet

Material weight: 1,600 lbs/LCY

Weight description: Top Soil

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.700	(FND-MF)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.7685

Adjusted unit production: 138.64 LCY/hr
Adjusted fleet production: **138.64** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $1.381/LCY

Total job time: **3.51** Hours
Total job cost: **$671**

REVEGETATION WORK

Task description: **Revegetate 0.25 acre new shoreline**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 003 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-003
User: AME

Agency 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)	$107.16
Weed control spraying (MEANS 31 31 16.13 3100)	$193.60
Total Tilling Cost/Acre	**$300.76**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.30	11.71	$8.54
Switchgrass - Blackwell	1.20	10.72	$13.80
Slender Wheatgrass - Native	2.90	10.59	$13.41
Tall Wheatgrass - Jose	3.60	6.53	$12.15
Totals Seed Mix	8.00	39.54	**$47.91**

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}	2.00	TON	$301.00	$602.00
Total Mulch Materials Cost/Acre				**$602.00**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$70.17
Total Mulch Application Cost/Acre	**$70.17**

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: 0.25
Estimated Failure Rate: 20%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $1,252.84
Cost /Acre*: $279.91

Initial Job Cost: **$313.21**
Reseeding Job Cost: **$14.00**
Total Job Cost: **$327**
Job Hours: **0.25**

BULLDOZER WORK

Task description: **Grade 1.0 acre parking area**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #:	004	State:	Colorado	Abbreviation:	None
Date:	2/25/2021	County:	Larimer	Filename:	M184-004
User:	AME				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D7R DS Series II LGP
Horsepower:	240
Blade Type:	Straight
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$76.61	NA
Operating Cost/Hour:	$74.78	100
Ripper own. Cost/Hour:	$7.60	NA
Ripper op. Cost/Hour:	$2.66	50
Operator Cost/Hour:	$40.04	NA

Total unit Cost/Hour: $201.68
Total Fleet Cost/Hour: **$201.68**

MATERIAL QUANTITIES

Initial Volume:	810
Swell factor:	1.000
Loose volume:	**810** LCY

Source of estimated volume: 1.0 ac x 6 in depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 70 feet
Unadjusted hourly production: 613.3 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 4,995 feet

Material weight: 2,850 lbs/LCY

Weight description: Gravel - Dry (1/4"“-2"“diam.)

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.600	(FND-SF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.807	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3979

Adjusted unit production: 244.03 LCY/hr
Adjusted fleet production: **244.03** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.826/LCY

Total job time: **3.32** Hours
Total job cost: **$669**

WHEEL LOADER – LOAD AND CARRY WORK

Task description: **Apply 6 inches road base on 1.0 acre parking area**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 005 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-005
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 924H Horsepower: 128
Attachment 1: ROPS Cab Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$20.95	NA
Operating Cost/Hour:	$25.17	100
Operator Cost/Hour:	$35.97	NA
Total Unit Cost/Hour:	$82.08	

Total Fleet Cost/Hour: $82.08

MATERIAL QUANTITIES

Initial volume: 810 CCY Swell factor: 1.060
Loose volume: **859** LCY

Source of estimated volume: 1.0 ac x 6 in depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.475 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4” to 6” diameter 0.00	0.000	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(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:	-0.060	minutes
	Adjusted Basic Cycle Time:	0.415	minutes

Rolling Resistance – Road Conditions

Haul: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0
Return: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	500	1.00	3.00	4.00	0.3174	(Cat HB)
Return Route:	500	-1.00	3.00	2.00	0.2466	(Cat HB)

Total Travel Time:	0.5639	minutes
Total Cycle Time:	**0.9789**	minutes

Load Bucket Capacity

Rated Capacity:	2.70	LCY (heaped)
Bucket Fill Factor:	0.875	Loose material - 1" and over (85 - 90%) 0.875
Adjusted Capacity:	**2.36**	LCY

Job Condition Correction Factors
Site Altitude: 4995 feet

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

Unadjusted Hourly Unit Production:	144.81	LCY/Hour
Adjusted Hourly Unit Production:	120.19	LCY/Hour
Adjusted Hourly Fleet Production:	**120.19**	LCY/Hour

JOB TIME AND COST

Fleet size:	1	Loader(s)	Total job time:	**7.14**	Hours
Unit cost:	$0.683	/LCY	Total job cost:	**$586**	

BULLDOZER WORK

Task description: **Grade 1.3 acre road**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #:	006	State:	Colorado	Abbreviation:	None
Date:	2/25/2021	County:	Larimer	Filename:	M184-006
User:	AME				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D7R DS Series II LGP
Horsepower:	240
Blade Type:	Straight
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$76.61	NA
Operating Cost/Hour:	$74.78	100
Ripper own. Cost/Hour:	$7.60	NA
Ripper op. Cost/Hour:	$2.66	50
Operator Cost/Hour:	$40.04	NA

Total unit Cost/Hour: $201.68
Total Fleet Cost/Hour: **$201.68**

MATERIAL QUANTITIES

Initial Volume:	1,050
Swell factor:	1.000
Loose volume:	**1,050** LCY

Source of estimated volume: 1.3 ac x 6 in depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 70 feet
Unadjusted hourly production: 613.3 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 4,995 feet

Material weight: 3,400 lbs/LCY

Weight description: Gravel - Wet (1/4"“-2"“diam.)

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.600	(FND-SF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.676	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3333

Adjusted unit production: 204.41 LCY/hr
Adjusted fleet production: **204.41** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.987/LCY

Total job time: **5.14** Hours
Total job cost: **$1,036**

WHEEL LOADER – LOAD AND CARRY WORK

Task description: **Apply 6 inches road base on 1.3 acre road**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 007 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-007
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 924H Horsepower: 128
Attachment 1: ROPS Cab Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$20.95	NA
Operating Cost/Hour:	$25.17	100
Operator Cost/Hour:	$35.97	NA
Total Unit Cost/Hour:	$82.08	

Total Fleet Cost/Hour: $82.08

MATERIAL QUANTITIES

Initial volume: 1,050 CCY Swell factor: 1.060
Loose volume: **1,113** LCY

Source of estimated volume: 1.0 ac x 6 in depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Loader Cycle Time: Unadjusted Basic Cycle Time (load, dump, maneuver): 0.475 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 3/4” to 6” diameter 0.00	0.000	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(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:	-0.060	minutes
	Adjusted Basic Cycle Time:	0.415	minutes

Rolling Resistance – Road Conditions

Haul: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0
Return: Firm, smooth, rolling, dirt/lt. surfaced, watered, maintained 3.0

Haul and Return Time

	Length (feet)	Grade Res. (%)	Rolling Res. (%)	Total Res. (%)	Travel Time (minutes)	Source
Haul Route:	500	1.00	3.00	4.00	0.3174	(Cat HB)
Return Route:	500	-1.00	3.00	2.00	0.2466	(Cat HB)

Total Travel Time:	0.5639	minutes
Total Cycle Time:	**0.9789**	minutes

Load Bucket Capacity

Rated Capacity:	2.70	LCY (heaped)
Bucket Fill Factor:	0.875	Loose material - 1" and over (85 - 90%) 0.875
Adjusted Capacity:	**2.36**	LCY

Job Condition Correction Factors
Site Altitude: 4995 feet

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

Unadjusted Hourly Unit Production:	144.81	LCY/Hour
Adjusted Hourly Unit Production:	120.19	LCY/Hour
Adjusted Hourly Fleet Production:	**120.19**	LCY/Hour

JOB TIME AND COST

Fleet size:	1	Loader(s)	Total job time:	**9.26**	Hours
Unit cost:	$0.683	/LCY	Total job cost:	**$760**	

SCRAPER TEAM WORK

Task description: **Replace topsoil on 3.0 acres**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 008 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-008
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 627G
-Dozer:	NA
Support Equipment -Load Area:	Cat D7R DS Series II LGP
-Dump Area:	NA
Road Maintenance –Motor Grader:	CAT 14M
-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	75	NA	100	100
Ownership cost/hour:	$109.10	NA	$76.61	NA	$65.89	$10.06
Operating cost/hour:	$150.55	NA	$56.09	NA	$58.96	$18.78
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	$0.00	NA	$0.00	$0.00
Ripper op. cost/hour:	NA	NA	$0.00	NA	$0.00	$0.00
Operator cost/hour:	$47.07	NA	$40.04	NA	$46.87	$0.00
Unit Subtotals:	$306.71	NA	$172.73	NA	$171.73	$28.84
Number of Units:	1	0	1	0	1	1
Group Subtotals:	Work:	$306.71	Support:	$172.73	Maint:	$200.57

Total work team cost/hour: **$680.01**

MATERIAL QUANTITIES

Initial volume: 4,840 CCY Swell factor: 1.215
Loose volume: **5,881** LCY

Source of estimated volume: 3.0 ac x 1 ft depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 1,600 lbs/LCY
Material description: Top Soil
Rated Payload: 52,800 pounds
Payload Capacity: 33.00 LCY

Scraper Bowl (volume) Basis:

Struck Volume: 15.70 LCY
Heaped Volume: 22.00 LCY
Average Volume: 18.85 LCY
Adjusted Capacity: **18.85** LCY

Cycle Time:

Scraper Loading Time: 0.70 Minutes
Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction: Site Altitude: 4995 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: 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	900.00	1.00	3.00	4.00	2665	0.51

Haul Time: **0.51** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	900.00	-1.00	3.00	2.00	2905	0.42

Return Time: **0.42** minutes

Total Scraper team cycle time: **2.23** minutes
Adjusted for job conditions: 420.96 LCY/Hour
Selected Number of Scrapers: 1 Scraper(s)
Adjusted single scraper team (unit) hourly production: 420.96 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **420.96** LCY/Hour

Unadjusted unit production/hour: 507.17 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **13.97** Hours

Unit cost: $1.615 /LCY Total job cost: **$9,500**

REVEGETATION WORK

Task description: **Revegetate 3.0 acres**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 009 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-009
User: AME

Agency 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)	$107.16
Weed control spraying (MEANS 31 31 16.13 3100)	$193.60
Total Tilling Cost/Acre	**$300.76**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.30	11.71	$8.54
Switchgrass - Blackwell	1.20	10.72	$13.80
Slender Wheatgrass - Native	2.90	10.59	$13.41
Tall Wheatgrass - Jose	3.60	6.53	$12.15
Totals Seed Mix	8.00	39.54	**$47.91**

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}	2.00	TON	$301.00	$602.00
Total Mulch Materials Cost/Acre				**$602.00**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$70.17
Total Mulch Application Cost/Acre	**$70.17**

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: 3
Estimated Failure Rate: 20%
*Selected Replanting Work Items: SEEDING

Cost /Acre: $1,252.84
Cost /Acre*: $279.91

Initial Job Cost: **$3,758.52**
Reseeding Job Cost: **$167.95**
Total Job Cost: **$3,926**
Job Hours: **3.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilization/Demobilization**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 010 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-010
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:	$17.20	$29.63	$38.69
Operating Cost/Hour:	$26.56	$47.02	$55.69
Operator Cost/Hour:	$23.63	$23.63	$23.63
Helper Cost/Hour:	$0.00	$23.53	$23.53
Total Unit Cost/Hour:	$67.39	$123.81	$141.54

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 D7R DS Series II LGP	38.49	$84.21	$123.81	1	$208.02	$123.81	$250.00
Cat D7R DS Series II LGP	34.57	$76.61	$123.81	1	$200.42	$123.81	$250.00
CAT 924H	12.69	$20.95	$67.39	1	$88.34	$67.39	$250.00
Cat 627G	41.80	$109.10	$123.81	1	$232.91	$123.81	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$6.72	$67.39	1	$74.11	$67.39	$250.00
CAT 14M	23.57	$65.89	$67.39	1	$133.28	$67.39	$250.00
Subtotals:					**$937.08**	**$573.60**	**$1,500.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	$28.84	1	$28.84	$28.84
Subtotals:			**$28.84**	**$28.84**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	FORT COLLINS	
Total one-way travel distance:	4.00	miles
Average Travel Speed:	45.00	mph

Total Non-Roadable Mob/Demob Cost *	$8,891.05
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	$5.13
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.09	0.09
Return Time (Hours):	0.09	0.09
Loading Time (Hours):	1.50	NA
Unloading Time (Hours):	1.50	NA
Subtotals:	3.18	0.18

JOB TIME AND COST

Total job time:	**6.36**	Hours
Total job cost:	**$8,896**	

DEMOLITION WORK

Task description: **Demo truck scale and dispose of in pond**

Site: **Bivens Pit** Permit Action: TR-2 Bond Estimate Permit/Job#: M1985184

PROJECT IDENTIFICATION

Task #: 011 State: Colorado Abbreviation: None
Date: 2/25/2021 County: Larimer Filename: M184-011
User: AME

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 89.40 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Truck scale demo	50 ft x 15 ft	Demo. and on-site disposal in existing pit, 12 in. thick - Max. 10,000 ft. haul	750.00	SF	$1.67	$1,252.50

Job Hours: **3.00** **Subtotal (unadjusted)**: **$1,252.50** **Total Cost (adjusted for location)**: **$1,119.74**