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

1313 Sherman Street, Room 215
Denver, CO 80203

August 16, 2019

Forrest Luke
Williams Fork Mining Company
P.O. Box 187
Craig, CO 81626

RE: Williams Fork Pit, Permit No. M-1984-168, Technical Revision (TR-7) Approval

Dear Mr. Luke:

On August 16, 2019 the Division of Reclamation, Mining and Safety (Division) approved the Technical Revision request (TR-7) submitted on April 15, 2019, addressing the following:

Add existing phases within existing permit area

The terms of the TR-7 approved by the Division are hereby incorporated into Permit No. M-1984-168. All other conditions and requirements of the permit remain in full force and effect.

The estimated liability amount of *$137,389* exceeds the *$ 123,400* Financial Warranty currently held for this site. If you have not already done so, please submit additional bond in the amount of *$ 13,989*. Please review the enclosed figures as soon as possible and contact our office if any calculation errors are noted. The revision will not be final until the bond is approved by the Division.

If you require additional information, or have questions or concerns, please feel free to contact me. Amy Yeldell at the Division of Reclamation, Mining and Safety, 1313 Sherman St., Room 215, Denver, CO 80203. 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

Amy Yeldell
Environmental Protection Specialist

Cc: Travis Marshall, Senior EPS, Grand Junction DRMS

COST SUMMARY WORK

Task description: **TR-7 Update**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: ACY State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-ACY
User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Removal of on-site structures	DEMOLISH	1	16.00	$974
02a	Pump south lake	PUMPING	1	264.19	$17,059
03a	Transport Overburden	SCRAPER1	1	18.83	$22,129
03b	Grade banks of south lake	DOZER	2	7.99	$3,635
04a	Rip access road and stockpile areas	RIPPER	2	3.11	$1,534
05a	Transport topsoil	SCRAPER1	1	38.55	$45,311
05b	Place topsoil	DOZER	2	8.10	$3,685
06a	Revegetate disturbed areas	REVEGE	1	24.00	$11,999
07a	Mobilization of reclamation crew and equipment	MOBILIZE	1	2.57	$4,441
07b	Secondary mobilization of reclamation crew and equipment	MOBILIZE	1	2.57	$737
		SUBTOTALS:		**385.91**	**$111,504**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$2,252
Performance bond:	1.05	Total =	$1,171
Job superintendent:	61.86	Total =	$4,292
Profit:	10.00	Total =	$11,150
		TOTAL O & P =	$18,866
		CONTRACT AMOUNT (direct + O & P) =	$130,370

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$500	Total =	$500
Engineering work and/or contract/bid preparation:	0.00	Total =	$0
Reclamation management and/or administration:	5.00		$6,519
CONTINGENCY:	0.00	Total =	$0
		TOTAL INDIRECT COST =	$25,885
		TOTAL BOND AMOUNT (direct + indirect) =	**$137,389**

DEMOLITION WORK

Task description: **Removal of on-site structures**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 01A State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-01a
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
Scale house	8 x 8 x 8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 10,000 ft. haul	512.00	CF	$0.19	$96.26
Scale house concrete footers	60 x 10	Demo. and on-site disposal in existing pit, 1.0 ft. x 2 ft. - Max. 10,000 ft. haul	140.00	LF	$3.59	$502.98
Scale	60 x 10 x 2	Loading and 5 mile haul, salvage allowed - Steel frame structures	45.00	CY	$10.55	$474.75

Job Hours: 16.00 **Subtotal (unadjusted): $1,073.99** **Total Cost (adjusted for location): $974.11**

PUMPING WORK

Task description: **Pump south lake**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 02A State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-02a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Submersible pump - 460v, 6 in.	2
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	4
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	2
Labor Unit 1:	Pump operator	1

Horsepower: 60
Shift Basis: 1 per day
Weight: 0.45 (US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$17.84	NA
Operating Cost/Hour:	$19.08	100
Operator Cost/Hour:	$27.65	NA
Total Unit Cost/Hour:	$64.57	

Total Fleet Cost/Hour: $64.57

PUMPING QUANTITIES

Initial Pond Volume: 67,439,640.00
Final Pond Volume: **67,439,640.00** gallons
Total Pond Inflow Surface Area: 1 Sq. ft.
Total Pond Inflow Volume per Hour: 0.00 gallons

Conversion factor: 1.0000
Unit inflow rate in gph/sq. ft.: 0.0000

Source of estimated volume: TR-7 provided

PUMPING TIME

Maximum Pump Capacity:	130,000	gph/pump
Estimated Suction Head:	30	feet
Estimated Discharge Head:	10	feet
Total Head:	40	feet
CPB Pump Capacity:	117,000	gph/pump
Site Altitude:	6,150	feet

Adjusted Pumping Capacity:	234,000	gph
Initial Unadjusted Pumping Time:	288.20	hours
Inflow during Initial Pumping:	0	gallons
Net Unadjusted Pumping Time:	288.20	Hours
Altitude Adjustment Factor:	1.0000	(3% rule)
Pump Efficiency Factor:	0.9167	(55 min./hr.)
Total Adjusted Pumping Time:	264.20	hours

JOB TIME AND COST

Total job time: **264.20** Hours

Unit cost: $0.000253 /Gallon Total job cost: **$17,059**

Description									Cumulative
From South Pond to North Pond	Day	Date	Time	GPM	Elapsed Time		GPM	Gallons Pumped	Gallons Pumped
Pumping started from south pond into north pond	Monday	7/15/2019	15:10	4500	8.83				
	Tuesday	7/16/2019		4500	24.00				
Intake pipe collapsed (down appr 2 hours)	Wednesda	7/17/2019	9:30	4500	9.50	42.33	4500	11,429,100	
Pump Started back up	Wednesda	7/17/2019	11:30	2900	12.50				
Shut pump off	Thursday	7/18/2019	21:00	2900	21.00	33.50	2900	5,829,000	17,258,100
Started pump	Friday	7/19/2019	10:26	2900	13.57				
Pumping	Saturday	7/20/2019		2900	24.00				
Shut pump off	Sunday	7/21/2019	10:30	2900	10.50	48.07	2900	8,364,180	25,622,280
Started pump	Monday	7/22/2019	9:35	2900	9.58				
Shut pump off	Monday	7/22/2019	18:00	2900	8.00	8	2900	1,392,000	27,014,280
Pump off	Tuesday	7/23/2019	0	0					
Started pump	Wednesda	7/24/2019	8:00	2900					
Pump off	Wednesda	7/24/2019	19:00	2900	11.00	11	2900	1,914,000	28,928,280
Pump off	Thursday	7/25/2019	0	0					
Started pump	Saturday	7/27/2019	15:30	2900					
Status check	Tuesday	7/30/2019	7:30	2400	64.00		2400	9,216,000	38,144,280
Shut pump off	Tuesday	7/30/2019	18:00	2400	10.50		2400	1,512,000	39,656,280
Started pump	Wednesda	8/1/2019	7:00	2400					
Shut pump off	Monday	8/5/2019	12:00	2400	77.00		2400	11,088,000	50,744,280

	Tons	Tons/cyd	cyds	Cu. Ft.	Gal/Cu.Ft.	Additional Gallons
Volume of gravel anticipated to be removed (Creating additional volume of water)	124,000	1.5	82,667	2,232,000	7.48	16,695,360

Total South Pond Volume after mining	16,695,360	+	50,744,280	=	67,439,640	Estimated volume of future South Pond

	South Pond Elevation	Incremental Delta	Depth of South pond	Tim of Survey
7/18/2019	6139.112			9:25
7/19/2019	6138.847	-0.265		10:26
7/22/2019	6136.628	-2.219		9:35
7/23/2019	6136.352	-0.276		9:41
7/24/2019	6136.324	-0.028		11:21
7/25/2019	6136.108	-0.216		12:00
7/26/2019	6136.149	0.041		11:18
7/29/2019	6134.095	-2.054		14:23
7/30/2019	6133.129	-0.966		11:25
7/31/2019	6132.765	-0.364		10:08
8/1/2019	6131.693	1.072		10:18
8/5/2019	6130.000	1.693	**9.112**	

Approx. pond bottom from Drone Survey
Could not access water due to mud

Pumped out of South poond

SCRAPER TEAM WORK

Task description: **Transport Overburden**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 03A State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-03a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D8T - 8SU
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	15	NA	NA	NA
Ownership cost/hour:	$174.06	$103.86	$103.86	NA	NA	NA
Operating cost/hour:	$190.35	$82.26	$12.34	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$0.00	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	$0.00	NA	NA	NA
Operator cost/hour:	$30.86	$41.24	$41.24	NA	NA	NA
Unit Subtotals:	$395.26	$227.36	$157.44	NA	NA	NA
Number of Units:	2	1	1	0	0	0
Group Subtotals:	Work:	$1,017.88	Support:	$157.44	Maint:	$0.00

Total work team cost/hour: **$1,175.32**

MATERIAL QUANTITIES

Initial volume: 18,086 CCY Swell factor: 1.050
Loose volume: **18,990** LCY

Source of estimated volume: Mine Plan
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Material weight: 3,400 lbs/LCY
Material description: Sand and gravel - Wet
Rated Payload: 81,600 pounds
Payload Capacity: 24.00 LCY

Scraper Bowl (volume) Basis:

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

Cycle Time:

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

Job Condition Correction: Site Altitude: 6140 feet

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

Travel Time:

Road Condition: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	450.00	0.00	8.00	8.00	1131	0.45

Haul Time: **0.45** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	450.00	0.00	8.00	8.00	1931	0.32

Return Time: **0.32** minutes

Total Scraper team cycle time: **2.37** minutes
Adjusted for job conditions: 1,008.61 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,008.61 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,008.61** LCY/Hour

Unadjusted unit production/hour: 1,215.19 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **18.83** Hours

Unit cost: $1.165 /LCY Total job cost: **$22,129**

BULLDOZER WORK

Task description: **Grade banks of south lake**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #:	03B	State:	Colorado	Abbreviation:	None
Date:	8/13/2019	County:	Moffat	Filename:	M168-03b
User:	ACY				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	NA
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$103.86	NA
Operating Cost/Hour:	$82.26	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.24	NA

Total unit Cost/Hour: $227.36
Total Fleet Cost/Hour: **$454.72**

MATERIAL QUANTITIES

Initial Volume:	9,043
Swell factor:	1.000
Loose volume:	**9,043** LCY

Source of estimated volume: Half of 18,086 transported vol
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 6,140 feet

Material weight: 3,400 lbs/LCY

Weight description: Sand and gravel - Wet

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(SSD-AC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.676	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4040

Adjusted unit production: 565.60 LCY/hr
Adjusted fleet production: **1131.2** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.402/LCY

Total job time: **7.99** Hours
Total job cost: **$3,635**

BULLDOZER RIPPING WORK

Task description: **Rip access road and stockpile areas**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 04A State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-04a
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:	$103.86	NA
Operating Cost/Hour:	$82.26	100
Ripper Ownership Cost/Hour:	$10.43	NA
Ripper Operating Cost/Hour:	$8.38	100
Operator Cost/Hour:	$41.24	NA
Total Unit Cost/Hour:	$246.17	

Total Fleet Cost/Hour: **$492.33**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 4.00 acres Rip Depth (ft): 2.00 Volume: 12,907 BCY or CCY

Source of estimated quantity: Mine maps and onsite observations

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	2.56	feet/pass
Average Ripping Width:	7.08	feet/pass
Average Ripping Length:	200.00	feet/pass
Average Dozer Speed:	88.00	feet/minute
Average Maneuver Time:	0.25	minutes/pass
Production per unit area:	0.773	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.773 Acres/hr

Site Altitude:	6,140	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.64 Acres/hr
Adjusted Hourly Fleet Production: **1.28** Acres/hr

JOB TIME AND COST

Fleet size: 2 Grader(s) Total job time: **3.12** Hours

Unit cost: $383.620 Per acre Total job cost: **$1,534**

SCRAPER TEAM WORK

Task description: **Transport topsoil**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 05A State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-05a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 637G w/push-pull
-Dozer:	Cat D8T - 8SU
Support Equipment -Load Area:	Cat D8T - 8SU
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	15	NA	NA	NA
Ownership cost/hour:	$174.06	$103.86	$103.86	NA	NA	NA
Operating cost/hour:	$190.35	$82.26	$12.34	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$0.00	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	$0.00	NA	NA	NA
Operator cost/hour:	$30.86	$41.24	$41.24	NA	NA	NA
Unit Subtotals:	$395.26	$227.36	$157.44	NA	NA	NA
Number of Units:	2	1	1	0	0	0
Group Subtotals:	Work:	$1,017.88	Support:	$157.44	Maint:	$0.00

Total work team cost/hour: **$1,175.32**

MATERIAL QUANTITIES

Initial volume: 39,000 CCY Swell factor: 1.215
Loose volume: **47,385** LCY

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

HOURLY PRODUCTION

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

Scraper Bowl (volume) Basis:

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: 6140 feet

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

Travel Time:

Road Condition: Soft, rutted dirt, no maintenance or water, 4" tire penetration 8.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	450.00	0.00	8.00	8.00	1131	0.43

Haul Time: **0.43** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	450.00	0.00	8.00	8.00	1931	0.32

Return Time: **0.32** minutes

Total Scraper team cycle time: **2.35** minutes
Adjusted for job conditions: 1,229.11 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 1,229.11 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **1,229.11** LCY/Hour

Unadjusted unit production/hour: 1,480.85 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **38.55** Hours

Unit cost: $0.956 /LCY Total job cost: **$45,311**

BULLDOZER WORK

Task description: **Place topsoil**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 05B State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-05b
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: NA
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$103.86	NA
Operating Cost/Hour:	$82.26	100
Ripper own. Cost/Hour:	$0.00	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$41.24	NA

Total unit Cost/Hour: $227.36
Total Fleet Cost/Hour: **$454.72**

MATERIAL QUANTITIES

Initial Volume: 19,500
Swell factor: 1.000
Loose volume: **19,500** LCY

Source of estimated volume: Half of 39,000 transported vol
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 6,140 feet

Material weight: 1,600 lbs/LCY

Weight description: Top Soil

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(SSD-AC)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.8593

Adjusted unit production: 1,203.02 LCY/hr
Adjusted fleet production: **2406.04** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: $0.189/LCY

Total job time: **8.10** Hours
Total job cost: **$3,685**

REVEGETATION WORK

Task description: **Revegetate disturbed areas**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 06A State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-06a
User: ACY

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)	$101.93
Total Tilling Cost/Acre	**$101.93**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.05	1.95	$1.42
Hardstem Bulrush	0.33	3.07	$49.40
Kentucky Bluegrass - Lato	0.08	3.95	$0.27
Nebraska Sedge	0.26	5.45	$43.29
Western Wheatgrass - Native	1.53	3.86	$9.18
Needlegrass, Green - Lodorm	0.48	1.99	$5.65
Sage, Fringed	0.02	1.67	$0.82
Flax, Lewis Blue	0.30	1.99	$4.95
Red Top	0.03	3.44	$0.24
Sagebrush, Silver	0.15	2.91	$4.65

Tufted Hairgrass	0.07	4.02	$0.77
Penstemon, Rocky Mountain	0.31	4.86	$9.15
Yarrow, White	0.05	3.18	$2.00
Basin Wildrye - Trailhead	0.67	2.72	$10.32
Creeping Foxtail	0.15	3.44	$0.74
Globemallow, Munro	0.09	1.02	$7.88
Aster, Pacific	0.03	0.52	$3.59
Totals Seed Mix	4.60	50.05	**$154.31**

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**
Herbicide - Tordon 22K @ 1.0 pt/ac	1.00	ACRE	$12.15	$12.15
Total Mulch Materials Cost/Acre				**$12.15**

Application

Description	**Cost /Acre**
Weed spray, truck, aquatic area, nox. [DMG]	$68.50
Total Mulch Application Cost/Acre	**$68.50**

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: 17.5 Cost /Acre: $568.89
Estimated Failure Rate: 25% Cost /Acre*: $466.96
*Selected Replanting Work Items: SEEDING,MULCHING

Initial Job Cost: **$9,955.58**
Reseeding Job Cost: **$2,042.95**
Total Job Cost: **$11,999**
Job Hours: **24.00**

Williams Fork Pit Seed Requirements

Forrest Luke

August 15, 2019

Species	Scientific Name	Rate PLS/ Sq-Ft		Required PLS/ Acre*[1]		Species Specific PLS/ Lb*[2]		Required Lbs of PLS/Acre		PLS Cost/ Lb*[3]		PLS Cost/ Acre
Western Wheatgrass	*Agropyron smithii*	4.0	=	174,240	/	114,000	=	1.53	*	$6.00	=	$9.17
Red Top	*Agrostis alba*	3.0	=	130,680	/	4,990,000	=	0.03	*	$7.88	=	$0.21
Creeping Foxtail	*Alopecurus arundinaceus*	3.0	=	130,680	/	900,000	=	0.15	*	$4.95	=	$0.72
Nebraska Sedge	*Carex nebraskensis*	3.0	=	130,680	/	500,000	=	0.26	*	$166.50	=	$43.52
Tufted Hairgrass	*Deschampsia caespitosa*	4.0	=	174,240	/	2,500,000	=	0.07	*	$11.03	=	$0.77
Basin Wildrye	*Elymus cinereus*	2.0	=	87,120	/	130,000	=	0.67	*	$15.41	=	$10.33
Kentucky Bluegrass	*Poa pratensis*	4.0	=	174,240	/	2,175,000	=	0.08	*	$3.35	=	$0.27
Hardstem Bulrush	*Scirpus acutus*	3.0	=	130,680	/	400,000	=	0.33	*	$149.70	=	$48.91
Alkali Sacaton	*Sporobolous airoides*	2.0	=	87,120	/	1,750,000	=	0.05	*	$28.48	=	$1.42
Green Needlegrass	*Stipa viridula*	2.0	=	87,120	/	180,000	=	0.48	*	$11.78	=	$5.70
Yarrow	*Achillea millefolium*	3.0	=	130,680	/	2,770,000	=	0.05	*	$40.00	=	$1.89
Pacific Aster	*Aster chilensis*	2.0	=	87,120	/	2,650,000	=	0.03	*	$119.50	=	$3.93
Lewis Flax	*Linum lewisii*	2.0	=	87,120	/	293,000	=	0.30	*	$16.50	=	$4.91
Rocky Mtn Penstemon	*Penstemon strictus*	2.0	=	87,120	/	285,000	=	0.31	*	$29.50	=	$9.02
Munro Globemallow	*Sphaeralcea munroana*	1.0	=	43,560	/	500,000	=	0.09	*	$87.50	=	$7.62
Silver Sagebrush	*Artemisia cana*	3.0	=	130,680	/	850,000	=	0.15	*	$31.00	=	$4.77
Fringed Sagebrush	*Artemisia frigida*	2.0	=	87,120	/	4,500,000	=	0.02	*	$133.50	=	$2.58
										Cost/Acre		**$155.72**

*[1] There are 43,560 sq-ft in an acre.

*[2] PLS per pound taken from our seed dealer reference manual, Stevenson Intermountain Seed, Inc.

*3 Based on DRMS CIRCES costs.

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Mobilization of reclamation crew and equipment**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 07A State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-07a
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:	$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 637G w/push-pull	59.59	$174.06	$141.54	1	$315.60	$141.54	$250.00
Cat D8T - 8SU	53.08	$114.29	$141.54	2	$511.66	$283.08	$250.00
Submersible pump - 460v, 6 in.	0.45	$8.24	$67.39	1	$75.63	$67.39	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$18.15	$67.39	1	$85.54	$67.39	$250.00
Subtotals:					**$988.43**	**$559.40**	**$1,000.00**

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	$76.23	1	$76.23	$76.23
Subtotals:			**$76.23**	**$76.23**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	CRAIG, CO	
Total one-way travel distance:	5.00	miles
Average Travel Speed:	35.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$4,419.10
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$21.78

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.14	0.14
Return Time (Hours):	0.14	0.14
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.29	0.29

JOB TIME AND COST

Total job time:	**2.57**	Hours
Total job cost:	**$4,441**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Secondary mobilization of reclamation crew and equipment**

Site: **Williams Fork Pit** Permit Action: TR-7 Permit/Job#: M1984168

PROJECT IDENTIFICATION

Task #: 07B State: Colorado Abbreviation: None
Date: 8/13/2019 County: Moffat Filename: M168-07b
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:	$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
Drill/Broadcast Seeder with Tractor	25.00	$18.15	$67.39	1	$85.54	$67.39	$250.00
Subtotals:					**$85.54**	**$67.39**	**$250.00**

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	$76.23	1	$76.23	$76.23
Subtotals:			**$76.23**	**$76.23**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	CRAIG, CO	
Total one-way travel distance:	5.00	miles
Average Travel Speed:	35.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$714.77	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$21.78	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.14	0.14
Return Time (Hours):	0.14	0.14
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.29	0.29

JOB TIME AND COST

Total job time:	**2.57**	Hours
Total job cost:	**$737**	