March 30, 2018

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

1313 Sherman Street, Room 215
Denver, CO 80203

Russell Larsen
Grand Junction Concrete Pipe Co.
556 Struthers Ave.
Grand Junction, CO 81501

RE: South Fruita Gravel Pit, Permit No. M-1981-243, Reclamation Costs Update and Notice of Surety Increase (SI-5)

Dear Mr. Larsen:

In an effort to ensure the Financial Warranty for the above referenced site adequately reflects the actual current costs of fulfilling the requirements of the approved reclamation plan, the Colorado Division of Reclamation, Mining and Safety (Division) has updated the reclamation cost estimate (copy enclosed).

Division calculations estimate the cost to reclaim the above referenced site to be *$200,334.96* rounded up to *$200,340.00*. This is an increase of ***$18,863.33*** over the *$181,476.67* currently held by the Division. This estimate is based on conditions observed during the March 20, 2018 inspection. ***Therefore, pursuant to Section 34–32.5–117(4) of the Colorado Land Reclamation Act, adequate Financial Warranty must be submitted to the Division within 60 days of the mailing date of this letter.*** The additional amount needs to be accepted prior to **Tuesday, May 29, 2018**. Please review the enclosed figures as soon as possible and contact our office if any calculation errors are noted.

Please make arrangements with Barbara Coria at the Division of Reclamation, Mining and Safety Denver Office, phone no. 303.866.3567, ext. 8148 for submittal of the financial warranty. Any questions regarding completion, execution and/or submittal of financial warranty forms should also be directed to Barbara Coria.

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 970-254-8511 or via email at amy.yeldell@ state.co.us

Sincerely,

Amy Yeldell

Amy Yeldell
Environmental Protection Specialist
Department of Natural Resources
Division of Reclamation, Mining and Safety
Phone: (970) 254-8511

Ec: Russ Means, Senior EPS, Grand Junction DRMS
Jon Muller, Grand Junction Concrete Pipe Co.
Enc: Financial Warranty Cost Estimate

COST SUMMARY WORK

Task description: **Post Inspection Update**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: ACY State: Colorado Abbreviation: None
Date: 3/27/2018 County: Mesa Filename: M243-acy
User: ACY

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
Lower Pond					
01a	Push riprap into pond	DOZER	1	21.80	$4,365.00
02a	Reveg lower pond stockpile area	REVEGE	1	12.00	$11,170.00
Karp Property					
03a	Dewater Karp Pond	PUMPING	1	94.85	$10,134.00
04a	Grade Karp Pond Highwalls	DOZER	1	20.24	$4,052.00
05a	Rip stockpile/processing area of Karp Pond	RIPPER	1	14.80	$3,039.00
06a	Place 6" topsoil over Karp Pond area	SCRAPER1	1	19.31	$17,377.00
07a	Reveg Karp Pond	REVEGE	1	20.00	$27,418.00
Arcuby Property					
08a	Dewater Arcuby Pond	PUMPING	1	161.34	$12,634.00
09a	Demo structures	DEMOLISH	1	8.00	$1,109.25
10a	Grade Karp Pond Highwalls	DOZER	1	8.68	$1,738.00
11a	Rip stockpile/processing area of Arcuby Pond	RIPPER	1	21.81	$4,478.00
12a	Place 6" topsoil over Arcuby Pond area	SCRAPER1	1	24.03	$21,624.00
13a	Reveg Arcuby Pond	REVEGE	1	32.00	$34,121.00
14a	Initial Mobilization	MOBILIZE	1	2.88	$6,696.00
15a	Secondary Mobilization	MOBILIZE	1	2.88	$1,581.00
		SUBTOTALS:		**464.62**	**$161,536**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$3,263.03
Performance bond:	1.05	Total =	$1,696.13
Job superintendent:	105.00	Total =	$7,670.25
Profit:	10.00	Total =	$16,153.60
		TOTAL O & P =	$28,783.01
		CONTRACT AMOUNT (direct + O & P) =	$190,319.01

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	0.00	Total =	$0.00
Reclamation management and/or administration:	5.00		$9,515.95
CONTINGENCY:	0.00	Total =	$0.00
		TOTAL INDIRECT COST =	$38,798.96
		TOTAL BOND AMOUNT (direct + indirect) =	**$200,334.96**
		TOTAL BOND AMOUNT (Rounded) =	**$200,340.00**

BULLDOZER WORK

Task description: **Push riprap into pond**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 01A State: Colorado Abbreviation: None
Date: 3/27/2018 County: Mesa Filename: M243-01a
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:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$2.16	30
Operator Cost/Hour:	$40.52	NA

Total unit Cost/Hour: $200.22
Total Fleet Cost/Hour: **$200.22**

MATERIAL QUANTITIES

Initial Volume: 2,500
Swell factor: 1.000
Loose volume: **2,500** LCY

Source of estimated volume: Division of Reclamation, Mining & Safety
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 200 feet
Unadjusted hourly production: 491.9 LCY/hr

Materials consistency description: Rock, poorly ripped or blasted 0.6

Average push gradient: 0 %
Average site altitude: 4,600 feet

Material weight: 2,950 lbs/LCY

Weight description: Traprock - broken

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.600	(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:	0.780	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2331

Adjusted unit production: 114.66 LCY/hr
Adjusted fleet production: **114.66** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $1.746/LCY

Total job time: **21.80** Hours
Total job cost: **$4,365**

REVEGETATION WORK

Task description: **Reveg lower pond stockpile area**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 02A State: Colorado Abbreviation: None
Date: 3/27/2018 County: Mesa Filename: M243-02a
User: ACY

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.27	$81.00
			Total Fertilizer Materials Cost/Acre	**$81.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$106.29
Total Tilling Cost/Acre	**$106.29**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.05	1.95	$1.42
Indian Ricegrass - Paloma	3.12	10.10	$30.42
Crested Wheatgrass - Ephraim	1.50	6.89	$5.51
Canby Bluegrass - Canbar	0.45	9.57	$4.28
Galleta	3.00	10.95	$74.10
Saltbush, Four Wing	1.00	1.38	$12.50
Totals Seed Mix	9.12	40.83	**$128.22**

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 - 2,4D @ 1.0 pt/ac	1.00	ACRE	$2.74	$2.74
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$524.74**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$66.02
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Weed spray, truck, aquatic area, nox. [DMG]	$68.50
Total Mulch Application Cost/Acre	**$233.84**

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: 5.5
Estimated Failure Rate: 40%
*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MULCHING

Cost /Acre: $1,450.71
Cost /Acre*: $1,450.71

Initial Job Cost: **$7,978.91**
Reseeding Job Cost: **$3,191.56**
Total Job Cost: **$11,170**
Job Hours: **12.00**

PUMPING WORK

Task description: **Dewater Karp Pond**

Site: **S Fruita Grav Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 03A State: Colorado Abbreviation: None
Date: 3/27/2018 County: Mesa Filename: M243-03a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Centrifugal pump - 200M, 10 in.	3
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	9
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	3
Labor Unit 1:	Pump operator	1

Horsepower: 70
Shift Basis: 1 per day
Weight: 1.95
(US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$27.69	NA
Operating Cost/Hour:	$50.61	100
Operator Cost/Hour:	$28.53	NA
Total Unit Cost/Hour:	$106.83	

Total Fleet Cost/Hour: $106.83

PUMPING QUANTITIES

Initial Pond Volume: 144.00
Final Pond Volume: **46,922,483.52** gallons
Total Pond Inflow Surface Area: 418,176 Sq. ft.
Total Pond Inflow Volume per Hour: 73,515.34 gallons

Conversion factor: 325850.5800
Unit inflow rate in gph/sq. ft.: 0.1758

Source of estimated volume: 9.6 ac pond 15’ Deep, bottom inflow

PUMPING TIME

Maximum Pump Capacity:	200,000	gph/pump
Estimated Suction Head:	15	feet
Estimated Discharge Head:	15	feet
Total Head:	30	feet
CPB Pump Capacity:	168,000	gph/pump
Site Altitude:	4,600	feet

Adjusted Pumping Capacity:	504,000	gph
Initial Unadjusted Pumping Time:	93.10	hours
Inflow during Initial Pumping:	6,844,290	gallons
Net Unadjusted Pumping Time:	106.68	Hours
Altitude Adjustment Factor:	0.9700	(3% rule)
Pump Efficiency Factor:	0.9167	(55 min./hr.)
Total Adjusted Pumping Time:	94.86	hours

JOB TIME AND COST

Total job time: **94.86** Hours

Unit cost: $0.000188 /Gallon Total job cost: **$10,134**

BULLDOZER WORK

Task description: **Grade Karp Pond Highwalls**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #:	04A	State:	Colorado	Abbreviation:	None
Date:	3/29/2018	County:	Mesa	Filename:	M243-04a
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:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$2.16	30
Operator Cost/Hour:	$40.52	NA

Total unit Cost/Hour: $200.22
Total Fleet Cost/Hour: **$200.22**

MATERIAL QUANTITIES

Initial Volume:	6,875
Swell factor:	1.180
Loose volume:	**8,113** LCY

Source of estimated volume: 400 LF 15' H to 5:1 and 1600LF 15' H to 3:1 from vertical
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: Rock, poorly ripped or blasted 0.6

Average push gradient: 0 %
Average site altitude: 4,600 feet

Material weight: 2,400 lbs/LCY

Weight description: Clay and gravel - Dry

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.600	(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:	0.958	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2863

Adjusted unit production: 400.82 LCY/hr
Adjusted fleet production: **400.82** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.500/LCY

Total job time: **20.24** Hours
Total job cost: **$4,052**

BULLDOZER RIPPING WORK

Task description: **Rip stockpile/processing area of Karp Pond**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 05A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-05a
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:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper Ownership Cost/Hour:	$7.55	NA
Ripper Operating Cost/Hour:	$7.21	100
Operator Cost/Hour:	$40.52	NA
Total Unit Cost/Hour:	$205.26	

Total Fleet Cost/Hour: **$205.26**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 9.50 acres Rip Depth (ft): 2.00 Volume: 30,653 BCY or CCY

Source of estimated quantity: Annual Report Map and field estimates

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	2.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	200.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.773	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.773 Acres/hr

Site Altitude:	4,600	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: **0.64** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **14.80** Hours

Unit cost: $319.867 Per acre Total job cost: **$3,039**

SCRAPER TEAM WORK

Task description: **Place 6" topsoil over Karp Pond area**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 06A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-06a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 627G w/push-pull
-Dozer:	Cat D8T - 8SU
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
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	NA	100	NA	NA
Ownership cost/hour:	$99.75	$83.81	NA	$83.81	NA	NA
Operating cost/hour:	$118.23	$66.17	NA	$66.17	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$41.46	$40.52	NA	$40.52	NA	NA
Unit Subtotals:	$259.44	$190.50	NA	$190.50	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$709.38	Support:	$190.50	Maint:	$0.00

Total work team cost/hour: **$899.88**

MATERIAL QUANTITIES

Initial volume: 10,890 CCY Swell factor: 1.215
Loose volume: **13,231** LCY

Source of estimated volume: 4 ac around pond (TR-3), 9.5 ac processing area 6" thick
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: 0.90 Minutes
Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction: Site Altitude: 4600 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: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	5.00	5.00	2218	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	5.00	5.00	2814	0.57

Return Time: **0.57** minutes

Total Scraper team cycle time: **2.74** minutes
Adjusted for job conditions: 685.20 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 685.20 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **685.20** LCY/Hour

Unadjusted unit production/hour: 825.55 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **19.31** Hours

Unit cost: $1.313 /LCY Total job cost: **$17,377**

REVEGETATION WORK

Task description: **Reveg Karp Pond**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 07A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-07a
User: ACY

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.27	$81.00
			Total Fertilizer Materials Cost/Acre	**$81.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$106.29
Total Tilling Cost/Acre	**$106.29**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.05	1.95	$1.42
Indian Ricegrass - Paloma	3.12	10.10	$30.42
Crested Wheatgrass - Ephraim	1.50	6.89	$5.51
Canby Bluegrass - Canbar	0.45	9.57	$4.28
Galleta	3.00	10.95	$74.10
Saltbush, Four Wing	1.00	1.38	$12.50
Totals Seed Mix	9.12	40.83	**$128.22**

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 - 2,4D @ 1.0 pt/ac	1.00	ACRE	$2.74	$2.74
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$524.74**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$66.02
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Weed spray, truck, aquatic area, nox. [DMG]	$68.50
Total Mulch Application Cost/Acre	**$233.84**

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:	13.5	Cost /Acre:	$1,450.71
Estimated Failure Rate:	40%	Cost /Acre*:	$1,450.71
*Selected Replanting Work Items:	FERTILIZING,TILLING,SEEDING,MULCHING		

Initial Job Cost:	**$19,584.59**
Reseeding Job Cost:	**$7,833.83**
Total Job Cost:	**$27,418**
Job Hours:	**20.00**

DEMOLITION WORK

Task description: **Demo structures**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 09A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-09a
User: ACY

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 95.50 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Remove scale foundation	70' L x 12' W	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	164.00	LF	$5.86	$961.04
Remove scale house	10' L x 14' W x 8' H	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	1,120.00	CF	$0.18	$200.48

Job Hours: 8.00 **Subtotal (unadjusted): $1,161.52** **Total Cost (adjusted for location): $1,109.25**

BULLDOZER WORK

Task description: **Grade Karp Pond Highwalls**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 10A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-10a
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:

		Utilization %
Ownership Cost/Hour:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper own. Cost/Hour:	$7.55	NA
Ripper op. Cost/Hour:	$2.16	30
Operator Cost/Hour:	$40.52	NA

Total unit Cost/Hour: $200.22
Total Fleet Cost/Hour: **$200.22**

MATERIAL QUANTITIES

Initial Volume: 2,948
Swell factor: 1.180
Loose volume: **3,479** LCY

Source of estimated volume: 400 LF 15' H to 5:1 and 300LF 15' H to 3:1 from vertical
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: Rock, poorly ripped or blasted 0.6

Average push gradient: 0 %
Average site altitude: 4,600 feet

Material weight: 2,400 lbs/LCY

Weight description: Clay and gravel - Dry

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.600	(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:	0.958	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2863

Adjusted unit production: 400.82 LCY/hr
Adjusted fleet production: **400.82** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.500/LCY

Total job time: **8.68** Hours
Total job cost: **$1,738**

BULLDOZER RIPPING WORK

Task description: **Rip stockpile/processing area of Arcuby Pond**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 11A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-11a
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:	$83.81	NA
Operating Cost/Hour:	$66.17	100
Ripper Ownership Cost/Hour:	$7.55	NA
Ripper Operating Cost/Hour:	$7.21	100
Operator Cost/Hour:	$40.52	NA
Total Unit Cost/Hour:	$205.26	

Total Fleet Cost/Hour: **$205.26**

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 14.00 acres Rip Depth (ft): 2.00 Volume: 45,173 BCY or CCY

Source of estimated quantity: Annual Report Map and field estimates

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	2.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	200.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.773	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.773 Acres/hr

Site Altitude:	4,600	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: **0.64** Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **21.82** Hours

Unit cost: $319.867 Per acre Total job cost: **$4,478**

SCRAPER TEAM WORK

Task description: **Place 6" topsoil over Arcuby Pond area**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 12A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-12a
User: ACY

Agency or organization name: DRMS

HOURLY EQUIPMENT

COSTShift basis: 1 per day

	Equipment Description
-Scraper:	Cat 627G w/push-pull
-Dozer:	Cat D8T - 8SU
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
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	NA	100	NA	NA
Ownership cost/hour:	$99.75	$83.81	NA	$83.81	NA	NA
Operating cost/hour:	$118.23	$66.17	NA	$66.17	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$41.46	$40.52	NA	$40.52	NA	NA
Unit Subtotals:	$259.44	$190.50	NA	$190.50	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$709.38	Support:	$190.50	Maint:	$0.00

Total work team cost/hour: **$899.88**

MATERIAL QUANTITIES

Initial volume: 13,552 CCY Swell factor: 1.215
Loose volume: **16,466** LCY

Source of estimated volume: 2.8 ac around pond (TR-3), 14 ac processing area 6" thick
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: 0.90 Minutes
Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction: Site Altitude: 4600 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: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	5.00	5.00	2218	0.67

Haul Time: **0.67** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	0.00	5.00	5.00	2814	0.57

Return Time: **0.57** minutes

Total Scraper team cycle time: **2.74** minutes
Adjusted for job conditions: 685.20 LCY/Hour
Selected Number of Scrapers: 2 Scraper(s)
Adjusted single scraper team (unit) hourly production: 685.20 LCY/Hour
Adjusted multiple scraper team (fleet) hourly production: **685.20** LCY/Hour

Unadjusted unit production/hour: 825.55 LCY/Hour
Optimal Number of Scrapers per push dozer:

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **24.03** Hours

Unit cost: $1.313 /LCY Total job cost: **$21,624**

REVEGETATION WORK

Task description: **Reveg Arcuby Pond**

Site: **South Fruita Gravel Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 13A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-13a
User: ACY

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
6-24-24, 10-20-10, 15-15-15	300.00	pound	$0.27	$81.00
			Total Fertilizer Materials Cost/Acre	**$81.00**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$144.62
Total Fertilizer Application Cost/Acre	**$144.62**

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	$106.29
Total Tilling Cost/Acre	**$106.29**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.05	1.95	$1.42
Indian Ricegrass - Paloma	3.12	10.10	$30.42
Crested Wheatgrass - Ephraim	1.50	6.89	$5.51
Canby Bluegrass - Canbar	0.45	9.57	$4.28
Galleta	3.00	10.95	$74.10
Saltbush, Four Wing	1.00	1.38	$12.50
Totals Seed Mix	9.12	40.83	**$128.22**

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 - 2,4D @ 1.0 pt/ac	1.00	ACRE	$2.74	$2.74
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$261.00	$522.00
Total Mulch Materials Cost/Acre				**$524.74**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$66.02
Power mulcher (MEANS 32 91 13.16 0350)	$99.32
Weed spray, truck, aquatic area, nox. [DMG]	$68.50
Total Mulch Application Cost/Acre	**$233.84**

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: 16.8
Estimated Failure Rate: 40%
*Selected Replanting Work Items: FERTILIZING,TILLING,SEEDING,MULCHING

Cost /Acre: $1,450.71
Cost /Acre*: $1,450.71

Initial Job Cost: **$24,371.93**
Reseeding Job Cost: **$9,748.77**
Total Job Cost: **$34,121**
Job Hours: **32.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Initial Mobilization**

Site: **S Fruita Grav Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 14A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-14a
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:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

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	$91.36	$125.45	2	$433.62	$250.90	$500.00
Cat 627G w/push-pull	43.48	$99.75	$117.55	2	$434.60	$235.10	$500.00
Drill/Broadcast Seeder with Tractor	25.00	$12.22	$88.67	1	$100.89	$88.67	$250.00
Power Mulcher (Bowie LD-90)	6.00	$7.03	$88.67	1	$95.70	$88.67	$250.00
Centrifugal pump - 200M, 10 in.	1.95	$8.43	$88.67	1	$97.10	$88.67	$250.00
Subtotals:					**$1,161.91**	**$752.01**	**$1,750.00**

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	$47.96	1	$47.96	$47.96
Subtotals:			**$47.96**	**$47.96**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	GRAND JUNCTION, CO	
Total one-way travel distance:	10.00	miles
Average Travel Speed:	45.00	mph

Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$6,674.45
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$21.32

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.22	0.22
Return Time (Hours):	0.22	0.22
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.44	0.44

JOB TIME AND COST

Total job time:	**2.89**	Hours
Total job cost:	**$6,696**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Secondary Mobilization**

Site: **S Fruita Grav Pit** Permit Action: 2018-03 Permit/Job#: M1981243

PROJECT IDENTIFICATION

Task #: 15A State: Colorado Abbreviation: None
Date: 3/29/2018 County: Mesa Filename: M243-15a
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:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

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	$12.22	$88.67	1	$100.89	$88.67	$250.00
Power Mulcher (Bowie LD-90)	6.00	$7.03	$88.67	1	$95.70	$88.67	$250.00
Subtotals:					**$196.59**	**$177.34**	**$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	$47.96	1	$47.96	$47.96
Subtotals:			**$47.96**	**$47.96**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	GRAND JUNCTION, CO	
Total one-way travel distance:	10.00	miles
Average Travel Speed:	45.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$1,559.37	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$21.32	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.22	0.22
Return Time (Hours):	0.22	0.22
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	1.44	0.44

JOB TIME AND COST

Total job time:	**2.89**	Hours
Total job cost:	**$1,581**	

M-1981-243

2015

Pumping	Approx. 15.3 ac @ 15' deep
Grade	Approx 7,500 LF of 3:1 250 LF of 5:1
Ripper	32.2 ac
Topsoil	32.2 ac 6" thick
Reveg	32.2 ac w/ 40% failure * No weed treatment
Mob	No pump or secondary

2018

	KARP	Arcuby	
Pump	9.6 ac	15.2 ac @ 15' deep	→ 24.8 ac
Grade	1,600 LF	300 LF @ 3:1	→ 5,739 LF
	400 LF	400 LF @ 5:1	→ 800 LF
	+ Push riprap (7,000 sqft ~10' tall)		→ 2500 cy
Ripper	9.5 ac	14 ac	→ 23.5 ac
Topsoil	slopes 4 ac	2.8 ac	→ 6.8 ac → 30.5
	Flat 9.5 ac	14 ac	→ 23.5 ac
Reveg	13.5 ac	16.8 ac	→ 30.5 ac w/ 40% failure
	+ weed treatment		
+ Demo	Scale & scale house		
Mob	+ Pumps & secondary		

$181,476.67 → $200,334.96