



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

1313 Sherman Street, Room 215
Denver, CO 80203

February 1, 2017

Troy Campbell
Coffey Engineering
4045 St. Cloud Drive, Suite 180
Loveland, CO 80538

RE: Arkins Park Quarries; DRMS File No. M-1985-212; Adequacy Review No. 2 (AM03)

Dear Mr. Campbell,

The Division has identified several other comments and questions that must be addressed prior to the Division's decision due date. **Please be advised that if you are unable to satisfactorily address any concerns identified in this review before the decision date, it will be your responsibility to request an extension of the review period. If there are outstanding issues that have not been adequately addressed prior to the end of the review period, and no extension has been requested, the Division will deny this application.**

6.4.6 Exhibit F – Reclamation Plan Map

1. The Reclamation Plan Map contains labels and outlines which pertain to the Mining Plan. The purpose of the Reclamation Plan Map is to show the expected physical appearance of the reclaimed lands. Please revise the Reclamation Plan Map so that any labels or outlines which are related to the Mining Plan have been removed.

6.4.12 Exhibit L – Reclamation Costs

2. The Division has determined the financial warranty amount required to complete reclamation at the Arkins Park Quarries is \$216,534.00. This is \$14,951.00 above the reclamation cost estimate provided by the Operator. Please review the enclosed reclamation cost estimate and notify the Division of any errors.

6.5 Geotechnical Stability Exhibit

3. In order to satisfy the requirements of Rule 6.5(4), the Division requests the Operator commit to completing a blasting report for each shot. The report must be retained by the Operator for at least 3 years and be available for inspection by the Division on demand. The record shall contain the following data:
 - a) Location, date and time of blast;
 - b) Name, signature, and license number of blaster-in-charge;



Mr. Campbell
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- c) Identification, direction and distance in feet, from the nearest blast hole to the nearest potentially affected structure, such as any dwelling, school, church, or community or institutional building either:
 - i. Not located in permit area; or
 - ii. Not owned nor leased by the person who conducts the mining operations.
- d) Weather conditions, including temperature, wind direction, and approximate velocity;
- e) Type of material blasted;
- f) Sketches of the blast pattern including number of holes, burden, spacing, and delay pattern. Sketches shall also show decking, if holes are decked to achieve different delay times within a hole;
- g) Diameter and depth of holes;
- h) Types of explosives used;
- i) Total weight of explosives used per hole and maximum weight of explosives per 8-millisecond period;
- j) Initiation system;
- k) Type and length of stemming;
- l) Mats or other protections used;
- m) Type of delay detonator and delay periods used;
- n) Number of persons in the blasting crew; and
- o) Seismographic records, including:
 - i. Type of instrument, sensitivity, and the calibration signal of the gain setting or certification an annual calibration;
 - ii. Exact location of instrument and the date, time and its distance from the blast;
 - iii. Name of the person taking the reading;
 - iv. Name of the person and firm analyzing the seismographic record;
 - v. The vibration level recorded.

As previously mentioned, if you are unable to provide satisfactory responses to any inadequacies prior to February 16, 2017, **it will be your responsibility to request an extension of time to allow for continued review of this application.** If there are still unresolved issues when the decision date arrives and no extension has been requested, the application will be denied.

If you have any questions, please contact me at (303)866-3567 x8116.

Sincerely,



Michael A. Cunningham
Environmental Protection Specialist

Enclosure

CC: Wally Erickson, DRMS
Neil Sprague, Arkins Park Stone Corp.
Arlis Sprague, Arkins Park Stone Corp.

COST SUMMARY WORK

Task description: Cost Summary

Site: Arkins Park Quarries

Permit Action: 2017 Bond Calculation

Permit/Job#: M1985212

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 2/1/2017

County: Larimer

Filename: M212-000

User: MAC

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Replacing overburden/waste rock	DOZER	12	24.97	\$60,264.00
002	Replacing Topsoil	DOZER	1	75.92	\$15,268.00
003	Rip storage areas	RIPPER	1	65.08	\$14,002.00
004	Revegetate Active Mining Areas	REVEGE	1	20.00	\$85,999.00
005	Equipment Mobilization/Demobilization	MOBILIZE	1	1.80	\$852.00
006	Remove Sediment Tank	NA	0	0.00	\$5,000.00
007	Remove Fuled Tank	NA	0	0.00	\$1,000.00
<u>SUBTOTALS:</u>				187.77	\$182,385

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$3,684.18

Performance bond: 1.05

Total = \$1,915.04

Job superintendent: 0.00

Total = \$0.00

Profit: 10.00

Total = \$18,238.50

TOTAL O & P = \$23,837.72

CONTRACT AMOUNT (direct + O & P) = \$206,222.72

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 0.00

Total = 0.00

Engineering work and/or contract/bid preparation: 0.00

Total = \$0.00

Reclamation management and/or administration: 5.00

\$10,311.14

CONTINGENCY: 0.00

Total = \$0.00

TOTAL INDIRECT COST = \$34,148.86

TOTAL BOND AMOUNT (direct + indirect) = \$216,533.86

TOTAL BOND AMOUNT (rounded up) = \$216,534.00

BULLDOZER WORKTask description: Replacing overburden/waste rockSite: Arkins Park QuarriesPermit Action: 2017 Bond CalculationPermit/Job#: M1985212**PROJECT IDENTIFICATION**Task #: 001State: ColoradoAbbreviation: NoneDate: 2/1/2017County: LarimerFilename: M212-001User: MACAgency 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:	\$82.01	NA
Operating Cost/Hour:	\$79.23	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$39.87	NA

Total unit Cost/Hour: \$201.11Total Fleet Cost/Hour: \$2,413.37**MATERIAL QUANTITIES**Initial Volume: 56,283Swell factor: 1.000Loose volume: 56,283 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource 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: 20 %Average site altitude: 5,480 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:	0.545	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2203

Adjusted unit production: 187.83 LCY/hr

Adjusted fleet production: 2253.96 LCY/hr

JOB TIME AND COST

Fleet size: 12 Dozer(s)

Unit cost: \$1.071/LCY

Total job time: 24.97 Hours

Total job cost: \$60,264

BULLDOZER WORKTask description: **Replacing Topsoil**Site: **Arkins Park Quarries**Permit Action: **2017 Bond Calculation**Permit/Job#: **M1985212****PROJECT IDENTIFICATION**Task #: **002**State: **Colorado**Abbreviation: **None**Date: **2/1/2017**County: **Larimer**Filename: **M212-002**User: **MAC**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:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$82.01	NA
Operating Cost/Hour:	\$79.23	100
Ripper own. Cost/Hour:	\$0.00	NA
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$39.87	NA

Total unit Cost/Hour: **\$201.11**Total Fleet Cost/Hour: **\$201.11****MATERIAL QUANTITIES**Initial Volume: **11,696**Swell factor: **1.215**Loose volume: **14,211 LCY**Source of estimated volume: **Division of Reclamation, Mining & Safety**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **400 feet**Unadjusted hourly production: **183.3 LCY/hr**Materials consistency description: **Consolidated stockpile 1.0**Average push gradient: **-20 %**Average site altitude: **5,480 feet**Material weight: **1,600 lbs/LCY**Weight description: **Top Soil****Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(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:	1.426	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 1.0212

Adjusted unit production: 187.19 LCY/hr

Adjusted fleet production: 187.19 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$1.074/LCY

Total job time: 75.92 Hours

Total job cost: \$15,268

BULLDOZER RIPPING WORK

Task description: Rip storage areas

Site: Arkins Park Quarries

Permit Action: 2017 Bond Calculation

Permit/Job#: M1985212

PROJECT IDENTIFICATION

Task #: 003

State: Colorado

Abbreviation: None

Date: 2/1/2017

County: Larimer

Filename: M212-003

User: MAC

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>\$82.01</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$79.23</u>	<u>100</u>
Ripper Ownership Cost/Hour:	<u>\$8.40</u>	<u>NA</u>
Ripper Operating Cost/Hour:	<u>\$5.62</u>	<u>100</u>
Operator Cost/Hour:	<u>\$39.87</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$215.13</u>	
Total Fleet Cost/Hour:	<u>\$215.13</u>	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 38.00 acres

Rip Depth (ft): 1.00

Volume: 61,307 BCY or CCY

Source of estimated quantity: DRMS Estimate

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>2.56</u>	<u>mph</u>
Average Ripping Width:	<u>7.08</u>	<u>degrees</u>
Average Ripping Length:	<u>100.00</u>	<u>feet</u>
Average Dozer Speed:	<u>88.00</u>	<u>feet</u>
Average Maneuver Time:	<u>0.25</u>	<u>feet</u>
Production per unit area:	<u>0.703</u>	<u>acres/hour</u>

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.703 Acres/hr

Site Altitude: 5,480 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

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: 65.09 Hours

Unit cost: \$368.471 Per acre Total job cost: \$14,002

REVEGETATION WORKTask description: **Revegetate Active Mining Areas**Site: **Arkins Park Quarries**Permit Action: **2017 Bond Calculation**Permit/Job#: **M1985212****PROJECT IDENTIFICATION**Task #: **004**State: **Colorado**Abbreviation: **None**Date: **2/1/2017**County: **Larimer**Filename: **M212-004**User: **MAC**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
	\$
Total Tilling Cost/Acre	\$0.00

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Indiangrass - Cheyenne	0.80	2.44	\$7.37
Switchgrass - Blackwell	0.80	7.14	\$4.34
Big Bluestem - Native	0.64	1.91	\$6.29
Priarie Dropseed	0.48	5.30	\$110.55
Blue Grama - Native	1.60	26.12	\$16.59
Indian Ricegrass - Native	1.28	4.14	\$8.64
Sand Dropseed	0.16	19.10	\$1.12
Little Bluestem - Native	1.60	9.55	\$22.90
Sideoats Grama - Vaughn	2.24	7.35	\$25.22

Slender Wheatgrass - Native	1.60	5.84	\$3.60
Western Wheatgrass - Native	2.40	6.06	\$7.32
Needlegrass, Green - Lodorm	0.80	3.32	\$4.32
Totals Seed Mix	14.40	98.29	\$218.26

Application

Description	Cost /Acre
Broadcast seeding [DMG]	\$261.80
Total Seed Application Cost/Acre	\$261.80

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Hay, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$265.00	\$530.00
Total Mulch Materials Cost/Acre				\$530.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$66.02
Total Mulch Application Cost/Acre	\$66.02

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
Juniper, Rocky Mountain	6	Container, 1 gallon (MEANS)	\$24.13	\$0.00	\$144.78
Pine, Ponderosa	6	Container, 1 gallon (MEANS)	\$24.13	\$0.00	\$144.78
Totals Nursery Stock Cost / Acre					\$289.56

JOB TIME AND COST

No. of Acres:	54.4	Cost /Acre:	\$1,365.64
Estimated Failure Rate:	20%	Cost /Acre*:	\$1,076.08
*Selected Replanting Work Items:	SEEDING, MULCHING		
Initial Job Cost:	\$74,290.82		
Reseeding Job Cost:	\$11,707.75		
Total Job Cost:	\$85,999		
Job Hours:	20.00		

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Equipment Mobilization/Demobilization**Site: **Arkins Park Quarries**Permit Action: **2017 Bond Calculation**Permit/Job#: **M1985212****PROJECT IDENTIFICATION**Task #: **005**State: **Colorado**Abbreviation: **None**Date: **2/1/2017**County: **Larimer**Filename: **M212-005**User: **MAC**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	\$90.41	\$125.45	1	\$215.86	\$125.45	\$250.00

Subtotals: **\$215.86** **\$125.45** **\$250.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
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Subtotals: **\$0.00** **\$0.00**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>LOVELAND</u>	
Total one-way travel distance:	<u>7.00</u>	miles
Average Travel Speed:	<u>35.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$852.38</u>
** two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$0.00</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.20</u>	<u>0.20</u>
Return Time (Hours):	<u>0.20</u>	<u>0.20</u>
Loading Time (Hours):	<u>0.25</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.25</u>	<u>NA</u>
Subtotals:	<u>0.90</u>	<u>0.40</u>

JOB TIME AND COST

Total job time:	<u>1.80</u>	Hours
Total job cost:	<u>\$852</u>	