



COLORADO

**Division of Reclamation,
Mining and Safety**

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

September 21, 2015

Derek Garben
ARS Sand and Gravel Company
8505 W Mountain View Ln.
Littleton, CO 80125

**Re: ARS Sand and Gravel, DRMS File No. M-1980-020
Reclamation Permit Amendment Application No. 5 (AM-05)
Second Adequacy Review**

Dear Mr. Garben:

The Division of Reclamation, Mining, and Safety (Division) has reviewed your submittal received on September 8, 2015, in which you provided a response to the Division's adequacy review letter dated June 18, 2015. Responses are fully adequate for the following comments: 1 through 28, and we provided new comments, which are 29, 30, and 31.

EXHIBIT E - Reclamation Plan (Rule 6.4.5):

- 29) In the response provided to question 3, the Applicant/Operator identified cheatgrass and common bindweed as present vegetative cover within portions of the permitted site. Both cheatgrass and bindweed are state listed noxious weed species. Rule 3.1.10(6) requires operators to implement weed control methods to control/eradicate noxious weed species within the affected lands. Please explain how noxious weed species are being treated on the affected lands.

EXHIBIT L - Reclamation Costs (Rule 6.4.12):

- 30) Please see the enclosed reclamation cost estimate. The Division used the best available information, from; previous permitting actions, site observations, and information provided in your September 8, 2015, response, to estimate the required financial warranty. Please review the enclosed reclamation cost estimate, please provide any comments you may have.



September 21, 2015

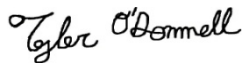
General Questions and Comments

- 31) For clarification the Division has attempted to recreate the permit boundary expanded through AM-05. Figure 1 (enclosed) was created based on the Division's understanding of the proposed permit boundary detailed in AM-05, which encompass 114.06 acres. Please confirm that Figure 1 accurately represents the 114.06 acres outlined in AM-05. If Figure 1 doesn't adequately delineate the proposed permit boundary in AM-05 please notify the Division of the discrepancy.

This concludes the Division's preliminary adequacy review of this application. This letter shall not be construed to mean that there are no other technical deficiencies in your application. Other issues may arise as additional information is supplied. The decision date for this amendment application is September 23, 2015. As previously mentioned, if you are unable to provide satisfactory responses to any inadequacies prior to this date, 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 need additional information please contact me at the Division of Reclamation, Mining and Safety, 1313 Sherman St., Room 215, Denver, CO 80203, by telephone at 303-866-3567, extension 8131, or by email at Tyler.ODonnell@state.co.us.

Sincerely,



Tyler O'Donnell
Environmental Protection Specialist

Enclosure: Reclamation Cost Estimate
Figure 1

cc: Wally Erickson, DRMS

COST SUMMARY WORK

Task description: Reclaim ARS sand and gravel Pit

Site: ARS sand and Gravel

Permit Action: AM05

Permit/Job#: M1980020

PROJECT IDENTIFICATION

Task #: 999

State: Colorado

Abbreviation: None

Date: 9/18/2015

County: Douglas

Filename: M020-999

User: TOD

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade all slopes to 3H:1V or flatter	DOZER	1	36.54	\$8,140.00
002	Spread 3 inches of topsoil	SCRAPER1	1	47.52	\$18,280.00
003	Revegetation of 60 acres of current affected land	REVEGE	1	118.00	\$34,638.00
004	Mobilization/Demobilization	MOBILIZE	1	3.45	\$3,261.00
<u>SUBTOTALS:</u>				205.51	\$ \$64,319

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$1,299.24
Performance bond:	1.05	Total =	\$675.35
Job superintendent:	40.00	Total =	\$3,006.40
Profit:	10.00	Total =	\$6,431.90
		TOTAL O & P =	\$11,412.89
		CONTRACT AMOUNT (direct + O & P) =	\$75,731.89

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	0.00	Total =	0.00
Engineering work and/or contract/bid preparation:	4.25	Total =	\$3,218.61
Reclamation management and/or administration:	5.00		\$3,786.59
		CONTINGENCY:	0.00
		Total =	\$0.00
		TOTAL INDIRECT COST =	\$18,418.09
		TOTAL BOND AMOUNT (direct + indirect) =	\$82,737.09

BULLDOZER WORKTask description: **Grade all slopes to 3H:1V or flatter**Site: **ARS sand and Gravel**Permit Action: **AM05**Permit/Job#: **M1980020****PROJECT IDENTIFICATION**Task #: **001**State: **Colorado**Abbreviation: **None**Date: **9/18/2015**County: **Douglas**Filename: **M020-001**User: **TOD**Agency or organization name: **DRMS****HOURLY EQUIPMENT COST**Basic Machine: **Cat D8T - 8U**Horsepower: **310**Blade Type: **Universal**Attachment: **3-shank ripper**Shift Basis: **1 per day**Data Source: **(CRG)****Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$69.05	NA
Operating Cost/Hour:	\$107.59	100
Ripper op. Cost/Hour:	\$7.31	100
Operator Cost/Hour:	\$38.85	NA

Total unit Cost/Hour: **\$222.80**Total Fleet Cost/Hour: **\$222.80****MATERIAL QUANTITIES**Initial Volume: **18,645**Swell factor: **1.060**Loose volume: **19,764 LCY**Source of estimated volume: **Lenght of highwall west: 4475 ft avg H: 15ft avg slope 2H:1V**Source of estimated swell factor: **Cat Handbook****HOURLY PRODUCTION**Average push distance: **75 feet**Unadjusted hourly production: **1,155.6 LCY/hr**Materials consistency description: **Dry, non-cohesive 0.8**Average push gradient: **-5 %**Average site altitude: **5,575 feet**Material weight: **2,400 lbs/LCY**Weight description: **Sand - Dry, loose****Job Condition Correction Factor**

Operator Skill:	0.750	<u>Source</u> (AVG.)
Material consistency:	0.800	(CAT HB)

Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.958	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4681

Adjusted unit
production: 540.94 LCY/hr
Adjusted fleet
production: **540.94** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.412/LCY

Total job time: **36.54** Hours
Total job cost: **\$8,140**

SCRAPER TEAM WORKTask description: Spread 3 inches of topsoilSite: ARS sand and GravelPermit Action: AM05Permit/Job#: M1980020**PROJECT IDENTIFICATION**Task #: 002State: ColoradoAbbreviation: NoneDate: 9/18/2015County: DouglasFilename: M020-002User: TODAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 637G
-Dozer:	NA
Support Equipment -Load Area:	NA
-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	NA	NA	NA	NA	NA
Ownership cost/hour:	\$107.02	NA	NA	NA	NA	NA
Operating cost/hour:	\$238.65	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$39.02	NA	NA	NA	NA	NA
Unit Subtotals:	\$384.69	NA	NA	NA	NA	NA
Number of Units:	1	0	0	0	0	0
Group Subtotals:	Work:	\$384.69	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$384.69****MATERIAL QUANTITIES**Initial volume: 21,377

CCY

Swell factor: 1.230Loose volume: **26,293**

LCY

Source of estimated volume: Currently 53 acres of affected landSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**

Scraper Bowl (volume) Basis:

Material weight:	<u>2,100 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Earth - Loam</u>	Heaped Volume:	<u>34.00</u>	LCY
Rated Payload:	<u>81,600 pounds</u>	Average Volume:	<u>29.00</u>	LCY
Payload Capacity:	<u>38.86 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:

Scraper Loading Time: 0.80 Minutes
 Maneuver and Spread Time: 0.60 Minutes

Job Condition Correction:

Site Altitude: 5575 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: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1160.00	-2.00	4.00	2.00	2939	0.61

Haul Time: 0.61 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1160.00	2.00	4.00	6.00	2638	0.60

Return Time: 0.60 minutesTotal Scraper team cycle time: 2.61 minutesAdjusted for job conditions: 553.33 LCY/HourSelected Number of Scrapers: 1 Scraper(s)Adjusted single scraper team (unit) hourly production: 553.33 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 553.33 LCY/HourUnadjusted unit production/hour: 666.67 LCY/HourOptimal Number of Scrapers per push dozer: **JOB TIME AND COST**Fleet size: 1 Team(s)Total job time: 47.52 HoursUnit cost: \$0.695 /LCYTotal job cost: \$18,280

REVEGETATION WORKTask description: Revegetation of 60 acres of current affected landSite: ARS sand and GravelPermit Action: AM05Permit/Job#: M1980020**PROJECT IDENTIFICATION**Task #: 003
Date: 9/18/2015
User: TODState: Colorado
County: DouglasAbbreviation: None
Filename: M020-003Agency 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)	\$98.01
Total Tilling Cost/Acre	\$98.01

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Sand Dropseed	0.50	59.69	\$3.49
Russian Wildrye - Vinal	1.00	4.02	\$3.71
Smooth Brome - Lincoln	6.00	19.97	\$7.98
Yellow Sweet Clover - Madrid	0.50	2.98	\$1.28
Western Wheatgrass - Native	3.00	7.58	\$9.12
Totals Seed Mix	11.00	94.24	\$25.58

Application

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Description	Cost /Acre
Broadcast seeding [DMG]	\$261.28
Total Seed Application Cost/Acre	\$261.28

MULCHING and MISCELLANEOUS**Materials**

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

Application

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

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: 60 Cost /Acre: \$384.87
 Estimated Failure Rate: 50% Cost /Acre*: \$384.87
 *Selected Replanting Work Items: TILLING,SEEDING

Initial Job Cost: **\$23,092.20**
 Reseeding Job Cost: **\$11,546.10**
 Total Job Cost: **\$34,638**
 Job Hours: **118.00**

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: Mobilization/DemobilizationSite: ARS sand and GravelPermit Action: AM05Permit/Job#: M1980020**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 9/18/2015County: DouglasFilename: M020-004User: TODAgency or organization name: DRMS**EQUIPMENT TRANSPORT RIG COST**Shift basis: 1 per dayCost Data Source: CRG DataTruck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED,
400 HP (2ND HALF, 2006)Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT
TRAILER (25T, 50T, AND 100T)**Cost Breakdown:**

Available Rig Capacities	0-25 Tons	26-50 Tons	51+ Tons
Ownership Cost/Hour:	\$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 - 8U	53.70	\$69.05	\$125.45	1	\$194.50	\$125.45	\$250.00
Cat 637G	57.28	\$107.02	\$125.45	1	\$232.47	\$125.45	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$39.59	\$88.67	1	\$128.26	\$88.67	\$250.00

Subtotals: **\$555.23** **\$339.57** **\$750.00****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>DENVER</u>	
Total one-way travel distance:	<u>20.00</u>	miles
Average Travel Speed:	<u>55.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$3,261.22</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>0.36</u>	<u>0.36</u>
Return Time (Hours):	<u>0.36</u>	<u>0.36</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>1.73</u>	<u>0.73</u>

JOB TIME AND COST



Total job time:	<u>3.45</u>	Hours
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Total job cost:	<u>\$3,261</u>
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Figure 1:

Division's understanding of the proposed permit boundary detailed in AM-05, which encompass 114.06 acres.

Legend

-  M1980020 ARS Sand and Gravel AM-05 114.06 acres
-  N Roxborough Park Rd

