



May 18, 2020

Brad Fancher
Loveland Ready-Mix Concrete, Inc.
P.O. Box 299
Loveland, CO 80539-0229

RE: Larimer Pit, Permit No. M-1974-069, Technical Revision No. 3 (TR-03), Adequacy Review No. 1

Mr. Fancher:

The Division of Reclamation, Mining and Safety (Division) has completed its adequacy review of your Technical Revision application (TR-03) and has the following comments:

- 1) Because you have demonstrated the proposed pond sizes to be left for reclamation will be compliant with the Division of Water Resources with regard to the amount of exposed groundwater to remain at the site, the Division has made the following revisions to the bond estimate sent on March 24, 2020:
 - a) *Task 009 – Backfill 0.75 acre Cell 5* has been removed.
 - b) *Task 021 – Backfill 4.5 acres Cell 20* has been removed.
 - c) *Task 030 – Mobilization/Demobilization* has been revised to remove two haul trucks and one loader from the “Non Roadable Equipment” section.
- 2) The Division’s revised bond estimate (see enclosed) shows the required financial warranty for reclaiming the site in accordance with the reclamation plan proposed in TR-03 to be in the amount of \$583,931.000. This is \$37,131.00 more than the currently held amount of \$546,800.00. Therefore, upon approval of TR-03, the surety increase issued on March 24, 2020 (SI-02) will be vacated, and a new surety increase will be issued for the amount listed above.

The decision date for TR-03 is currently set for **May 25, 2020**. Please review the revised bond estimate and submit any comments to the Division by the decision date. If the Division receives no comments from you by the decision date, and no extension has been requested by that time, TR-03 will be approved and a new notice of surety increase will be issued in the amount of \$37,131.00. You will have 60 days from the date of the notice to post the additional required financial warranty.

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.



May 18, 2020
Brad Fancher
Loveland Ready-Mix Concrete, Inc.
Page 2 of 2

Sincerely,

A handwritten signature in blue ink that reads "Amy Eschberger". The signature is written in a cursive, flowing style.

Amy Eschberger
Environmental Protection Specialist

Encl: Division's revised bond estimate

Cc: Stephanie Fancher-English, Loveland Ready-Mix Concrete, Inc.
Michael Cunningham, DRMS

COST SUMMARY WORK

Task description: Cost Summary

Site: Larimer Pit

Permit Action: 1/16/2020 Inspection

Permit/Job#: M1974069

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: Rev 5/18/2020

County: Larimer

Filename: M069-000

User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
002	Grade Cell 14 backfill slopes	DOZER	1	8.59	\$1,942
003	Retopsoil Cell 14 backfill area	SCRAPER1	1	9.60	\$12,097
004	Revegetate Cell 14 backfill area	REVEGE	1	11.60	\$26,706
005	Weed control in Cell 18	REVEGE	1	2.00	\$387
006	Interseed Cell 19	REVEGE	1	2.60	\$3,321
007	Revegetate Cell 8	REVEGE	1	15.00	\$35,713
008	Revegetate Cell 7 southern shoreline	REVEGE	1	2.50	\$5,386
010	Retopsoil Cell 5 backfill area	SCRAPER1	1	0.93	\$1,172
011	Revegetate Cell 5 backfill area	REVEGE	1	3.80	\$8,546
013	Retopsoil Cell 6 backfill area	SCRAPER1	1	1.11	\$1,398
014	Revegetate Cell 6 backfill area	REVEGE	1	3.65	\$8,208
015	Backfill 0.25 acre pit south of Cell 6	TRUCK1	1	20.55	\$14,497
016	Retopsoil 1.35 acre pit area south of Cell 6	SCRAPER1	1	1.39	\$1,754
017	Revegetate 1.35 acre pit area south of Cell 6	REVEGE	1	1.35	\$3,036
018	Rip 2.7 acre storage area south of Cell 5	RIPPER	1	4.34	\$1,065
019	Retopsoil 2.7 acre storage area south of Cell 5	SCRAPER1	1	2.51	\$3,162
020	Revegetate 2.7 acre storage area south of Cell 5	REVEGE	1	2.70	\$6,072
022	Retopsoil 4.5 acres Cell 20	SCRAPER1	1	3.95	\$4,981
023	Revegetate 6.5 acres Cell 20	REVEGE	1	6.50	\$14,617
024	Backfill Cell 21 overburden (from AM-3)	SCRAPER1	1	35.04	\$27,486
025	Shalestone lining Cell 21 (from AM-3)	SCRAPER1	1	6.37	\$4,997
026	Retopsoil Cell 21 (from AM-3)	SCRAPER1	1	1.58	\$1,243
027	Final grading Cell 21 (from AM-3)	GRADER	1	13.86	\$2,837
028	Revegetate 28 acres Cell 21 (from AM-3)	REVEGE	1	28.00	\$62,968
029	Compact/QC OB Lining Cell 21 - 55,000cy (from AM-3)	NA	1	16.00	\$165,000
030	Mobilization/Demobilization	MOBILIZE	1	16.26	\$40,211
<u>SUBTOTALS:</u>				221.78	\$458,802

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02
 Performance bond: 1.05
 Job superintendent: 220.00
 Profit: 10.00

Total = \$9,268

Total = \$4,817

Total = \$15,266

Total = \$45,880

TOTAL O & P =	<u>\$75,231</u>
CONTRACT AMOUNT (direct + O & P) =	<u>\$534,033</u>

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	<u>\$500</u>	Total =	<u>\$500</u>
Engineering work and/or contract/bid preparation:	<u>4.25</u>	Total =	<u>\$22,696</u>
Reclamation management and/or administration:	<u>5.00</u>		<u>\$26,702</u>

CONTINGENCY:	<u>0.00</u>	Total =	<u>\$0</u>
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TOTAL INDIRECT COST =	<u>\$125,129</u>
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TOTAL BOND AMOUNT (direct + indirect) =	<u>\$583,931</u>
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BULLDOZER WORKTask description: **Grade Cell 14 backfill area**Site: **Larimer Pit** Permit Action: **1/16/2020 Inspection** Permit/Job#: **M1974069****PROJECT IDENTIFICATION**

Task #: **002** State: **Colorado** Abbreviation: **None**
 Date: **2/19/2020** County: **Larimer** Filename: **M069-002**
 User: **AME**

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:	\$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:	\$39.98	NA
Total unit Cost/Hour:	\$226.10	
Total Fleet Cost/Hour:	\$226.10	

MATERIAL QUANTITIES

Initial Volume: **10,000**
 Swell factor: **1.165**
 Loose volume: **11,650 LCY**

Source of estimated volume: **Backfilled eastern slope = 1,200 ft L x 15 ft H**
 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: **Partly consolidated stockpile 1.1**

Average push gradient: **-5 %**
 Average site altitude: **5,000 feet**

Material weight: **2,900 lbs/LCY**Weight description: **Decomposed rock - 50% Rock, 50% Earth****Job Condition Correction Factor****Source**

Operator Skill:	1.000	(EXCL.)
Material consistency:	1.100	(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:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.9687

Adjusted unit
production: 1,356.18 LCY/hr
Adjusted fleet
production: **1356.18** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: \$0.167/LCY

Total job time: **8.59** Hours
Total job cost: **\$1,942**

SCRAPER TEAM WORKTask description: Retopsoil Cell 14 backfill areaSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-003User: AMEAgency 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:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	100	100
Ownership cost/hour:	\$162.02	NA	NA	\$103.86	\$82.71	\$13.51
Operating cost/hour:	\$184.64	NA	NA	\$82.26	\$70.09	\$28.95
%Utilization-ripper:	NA	NA	NA	NA	100	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$4.44	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$3.92	\$0.00
Operator cost/hour:	\$45.58	NA	NA	\$39.98	\$45.39	\$0.00
Unit Subtotals:	\$392.24	NA	NA	\$226.10	\$206.54	\$42.46
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$784.48	Support:	\$226.10	Maint:	\$249.00

Total work team cost/hour: \$1,259.58**MATERIAL QUANTITIES**Initial volume: 9,357

CCY

Swell factor: 1.215Loose volume: 11,369

LCY

Source of estimated volume: 11.6 ac x 6 in depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 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: 5000 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	1.00	3.00	4.00	2394	0.58

Haul Time: 0.58 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1000.00	-1.00	3.00	2.00	2960	0.46

Return Time: 0.46 minutes

Total Scraper team cycle time: 2.44 minutes
 Adjusted for job conditions: 591.89 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,183.77 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,183.77 LCY/Hour

Unadjusted unit production/hour: 713.11 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 9.60 HoursUnit cost: \$1.064 /LCY Total job cost: \$12,097

REVEGETATION WORKTask description: Revegetate Cell 14 backfill areaSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 004State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-004User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Total Tilling Cost/Acre	\$94.63

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	\$70.17
Weed spray, truck, aquatic area, annuals [DMG]	\$27.30
Weed spray, truck, aquatic area, nox. [DMG]	\$68.50
Total Mulch Application Cost/Acre	\$165.97

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:	11.6	Cost /Acre:	\$1,934.30
Estimated Failure Rate:	20%	Cost /Acre*:	\$1,839.67
*Selected Replanting Work Items:	SEEDING,MULCHING		
Initial Job Cost:	\$22,437.88		
Reseeding Job Cost:	\$4,268.03		
Total Job Cost:	\$26,706		
Job Hours:	11.60		

REVEGETATION WORKTask description: Weed control in Cell 18Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 005State: ColoradoAbbreviation: NoneDate: Rev 3/20/2020County: LarimerFilename: M069-005User: AMEAgency 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
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$193.60

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
			\$
Totals Seed Mix	0.00	0.00	\$0.00

Application

Description	Cost /Acre
	\$

Total Seed Application Cost/Acre	\$0.00
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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: 2
 Estimated Failure Rate: 0%
 *Selected Replanting Work Items: NONE

Cost /Acre: \$193.60
 Cost /Acre*: \$0.00

Initial Job Cost: **\$387.20**
 Reseeding Job Cost: **\$0.00**
 Total Job Cost: **\$387**
 Job Hours: **2.00**

REVEGETATION WORKTask description: Interseed Cell 19Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 006State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-006User: AMEAgency 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
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$193.60

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

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:	2.6	Cost /Acre:	\$1,277.30
Estimated Failure Rate:	0%	Cost /Acre*:	\$1,083.70
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	\$3,320.98
Reseeding Job Cost:	\$0.00
Total Job Cost:	\$3,321
Job Hours:	2.60

REVEGETATION WORKTask description: Revegetate Cell 8Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 007State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-007User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27

Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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:	15	Cost /Acre:	\$2,032.10
Estimated Failure Rate:	20%	Cost /Acre*:	\$1,743.87
*Selected Replanting Work Items:	SEEDING,MULCHING		
Initial Job Cost:	\$30,481.50		
Reseeding Job Cost:	\$5,231.61		
Total Job Cost:	\$35,713		
Job Hours:	15.00		

REVEGETATION WORKTask description: Revegetate Cell 7 southern shorelineSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 008State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-008User: AMEAgency 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
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$193.60

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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: 2.5 Cost /Acre: \$1,937.47
 Estimated Failure Rate: 20% Cost /Acre*: \$1,083.70
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$4,843.68**
 Reseeding Job Cost: **\$541.85**
 Total Job Cost: **\$5,386**
 Job Hours: **2.50**

SCRAPER TEAM WORKTask description: Retopsoil Cell 5 backfill areaSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 010State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-010User: AMEAgency 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:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	100	100
Ownership cost/hour:	\$162.02	NA	NA	\$103.86	\$82.71	\$13.51
Operating cost/hour:	\$184.64	NA	NA	\$82.26	\$70.09	\$28.95
%Utilization-ripper:	NA	NA	NA	NA	100	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$4.44	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$3.92	\$0.00
Operator cost/hour:	\$45.58	NA	NA	\$39.98	\$45.39	\$0.00
Unit Subtotals:	\$392.24	NA	NA	\$226.10	\$206.54	\$42.46
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$784.48	Support:	\$226.10	Maint:	\$249.00

Total work team cost/hour: \$1,259.58**MATERIAL QUANTITIES**Initial volume: 807

CCY

Swell factor: 1.215Loose volume: 981

LCY

Source of estimated volume: 1 ac x 6 in depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Scraper Bowl (volume) Basis:

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 LCY</u>	Adjusted Capacity:	<u>29.00</u>	LCY

Cycle Time:Scraper Loading Time: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 5000 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1400.00	1.00	3.00	4.00	2394	0.74

Haul Time: 0.74 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1400.00	-1.00	3.00	2.00	2960	0.60

Return Time: 0.60 minutesTotal Scraper team cycle time: 2.74 minutesAdjusted for job conditions: 527.08 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,054.16 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,054.16 LCY/HourUnadjusted unit production/hour: 635.04 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 0.93 HoursUnit cost: \$1.195 /LCYTotal job cost: \$1,172

REVEGETATION WORKTask description: Revegetate Cell 5 backfill areaSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 011State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-011User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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: 3.8 Cost /Acre: \$2,032.10
 Estimated Failure Rate: 20% Cost /Acre*: \$1,083.70
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$7,721.98**
 Reseeding Job Cost: **\$823.61**
 Total Job Cost: **\$8,546**
 Job Hours: **3.80**

SCRAPER TEAM WORKTask description: Retopsoil Cell 6 backfill areaSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 013State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-013User: AMEAgency 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:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	100	100
Ownership cost/hour:	\$162.02	NA	NA	\$103.86	\$82.71	\$13.51
Operating cost/hour:	\$184.64	NA	NA	\$82.26	\$70.09	\$28.95
%Utilization-ripper:	NA	NA	NA	NA	100	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$4.44	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$3.92	\$0.00
Operator cost/hour:	\$45.58	NA	NA	\$39.98	\$45.39	\$0.00
Unit Subtotals:	\$392.24	NA	NA	\$226.10	\$206.54	\$42.46
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$784.48	Support:	\$226.10	Maint:	\$249.00

Total work team cost/hour: \$1,259.58**MATERIAL QUANTITIES**Initial volume: 807

CCY

Swell factor: 1.215Loose volume: 981

LCY

Source of estimated volume: 1 ac x 6 in depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Scraper Bowl (volume) Basis:

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 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: 5000 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2100.00	1.00	3.00	4.00	2394	1.04

Haul Time: 1.04 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2100.00	-1.00	3.00	2.00	2960	0.83

Return Time: 0.83 minutes

Total Scraper team cycle time: 3.27 minutes
 Adjusted for job conditions: 441.65 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 883.30 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 883.30 LCY/Hour

Unadjusted unit production/hour: 532.11 LCY/Hour
 Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 1.11 HoursUnit cost: \$1.426 /LCY Total job cost: \$1,398

REVEGETATION WORKTask description: Revegetate Cell 6 backfill areaSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 014State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-014User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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: 3.65 Cost /Acre: \$2,032.10
 Estimated Failure Rate: 20% Cost /Acre*: \$1,083.70
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$7,417.17**
 Reseeding Job Cost: **\$791.10**
 Total Job Cost: **\$8,208**
 Job Hours: **3.65**

TRUCK/LOADER TEAM WORKTask description: Backfill 0.25 acre pit south of Cell 6Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 015State: ColoradoAbbreviation: NoneDate: Rev 3/20/2020County: LarimerFilename: M069-015User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Cat 730
-Loader:	CAT 966H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:**Truck/Loader Team****Support Equipment****Maintenance Equipment**

	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
% Utilization-machine:	100	100	NA	75	100	100
Ownership cost/hour:	\$58.61	\$41.17	NA	\$103.86	\$82.71	\$13.51
Operating cost/hour:	\$48.24	\$50.45	NA	\$61.70	\$70.09	\$28.95
% Utilization-ripper:	NA	0	NA	NA	NA	NA
Ripper own. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Ripper op. cost/hour:	NA	\$0.00	NA	\$0.00	\$0.00	\$0.00
Operator cost/hour:	\$24.79	\$35.93	NA	\$39.98	\$45.39	\$0.00
Unit Subtotals:	\$131.63	\$127.54	NA	\$205.54	\$198.18	\$42.46
Number of Units:	1	1	0	1	1	1
Group Subtotals:	Work: \$259.17		Support: \$205.54		Maint: \$240.64	

Total work team cost/hour: \$705.35**MATERIAL QUANTITIES**Initial volume: 4,033

CCY

Swell factor: 1.125Loose volume: 4,537

LCY

Source of estimated volume: Op: 0.25 ac x 10 ftSource of estimated swell factor: Cat HandbookMaterial Purchase Cost: \$0.00Total Cost: \$0.00**HOURLY PRODUCTION****Truck Capacity:**Truck Payload (weight) Basis:Material weight: 2,650 Pounds/LCYDescription: Decomposed rock - 25% Rock, 75% EarthRated Payload: 62,000 PoundsPayload Capacity: 23.40 LCY

Truck Bed (volume) Basis:

Struck Volume:	17.10	LCY
Heaped Volume:	22.10	LCY
Average Volume:	19.60	LCY
Adjusted Volume:	22.10	LCY

Final Truck Volume Based on Number of Loader Passes: 22.00 LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	5.000	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	5.500	LCY

Job Condition Corrections:

Site Altitude (ft.): 5000 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

Loading Tool Cycle Time:

Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
 Selected Value within this Basic Rating: NA

Track Loaders – Material Description: _____

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.500 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material up to 1/8" diameter	0.02	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high and up	0.00	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders	-0.04	(Cat HB)
Operation:	Constant operation	-0.04	(Cat HB)
Dump Target:	Nominal target	0.00	(Cat HB)
Net Cycle Time Adjustment:		-0.060	minutes
Adjusted Loader Cycle Time:		0.440	minutes
Net Load Time per Truck:		1.420	minutes

Truck Cycle Time:

Truck Exchange Time:	0.60	Minutes	Adjusted for site altitude:	0.600	Minutes
Truck Load Time:	1.420	Minutes	Adjusted for site altitude:	1.420	Minutes
Truck Maneuver and Dump Time:	1.00	Minutes	Adjusted for site altitude:	1.000	Minutes

Truck Travel (Haul & Return) Time:
maintained 3.0

Road Condition: Firm, smooth, rolling, dirt/lt. surfaced, watered,

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	1.00	3.00	4.00	1774	1.204

Haul Time: **1.204** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	-1.00	3.00	2.00	3040	0.739

Return Time: **0.739** minutesTotal Truck Cycle Time: **4.963** minutes

Loading Tool unit
 Production 653.47 LCY/Hour Adjusted for job efficiency: 542.38 LCY/Hour
 Truck Unit Production
265.97 LCY/Hour Adjusted for job efficiency: 220.75 LCY/Hour
 Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 220.75 LCY/Hour
 Adjusted single truck/loader team production: 220.75 LCY/Hour
 Adjusted multiple truck/loader team production: **220.75** LCY/Hour

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: **20.55** HoursUnit cost: \$3.195 /LCY Total job cost: **\$14,497**

SCRAPER TEAM WORKTask description: Retopsoil 1.35 acre pit area south of Cell 6Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 016State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-016User: AMEAgency 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:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	100	100
Ownership cost/hour:	\$162.02	NA	NA	\$103.86	\$82.71	\$13.51
Operating cost/hour:	\$184.64	NA	NA	\$82.26	\$70.09	\$28.95
%Utilization-ripper:	NA	NA	NA	NA	100	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$4.44	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$3.92	\$0.00
Operator cost/hour:	\$45.58	NA	NA	\$39.98	\$45.39	\$0.00
Unit Subtotals:	\$392.24	NA	NA	\$226.10	\$206.54	\$42.46
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$784.48	Support:	\$226.10	Maint:	\$249.00

Total work team cost/hour: \$1,259.58**MATERIAL QUANTITIES**Initial volume: 1,089

CCY

Swell factor: 1.215Loose volume: 1,323

LCY

Source of estimated volume: 1.35 ac x 6 in depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 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: 5000 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	1.00	3.00	4.00	2394	0.91

Haul Time: 0.91 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1800.00	-1.00	3.00	2.00	2960	0.73

Return Time: 0.73 minutes

Total Scraper team cycle time: 3.04 minutes
 Adjusted for job conditions: 475.07 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 950.13 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 950.13 LCY/Hour

Unadjusted unit production/hour: 572.37 LCY/Hour
 Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 1.39 HoursUnit cost: \$1.326 /LCY Total job cost: \$1,754

REVEGETATION WORKTask description: Revegetate 1.35 acre pit area south of Cell 6Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 017State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-017User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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: 1.35 Cost /Acre: \$2,032.10
 Estimated Failure Rate: 20% Cost /Acre*: \$1,083.70
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$2,743.34**
 Reseeding Job Cost: **\$292.60**
 Total Job Cost: **\$3,036**
 Job Hours: **1.35**

BULLDOZER RIPPING WORK

Task description: Rip 2.7 acre storage area south of Cell 5

Site: Larimer Pit

Permit Action: 1/16/2020 Inspection

Permit/Job#: M1974069

PROJECT IDENTIFICATION

Task #: 018

State: Colorado

Abbreviation: None

Date: 2/19/2020

County: Larimer

Filename: M069-018

User: AME

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:	\$39.98	NA
Total Unit Cost/Hour:	\$244.91	
Total Fleet Cost/Hour:	\$244.91	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA

Bank Volume: NA

BCY NA

Area: 2.70 acres

Rip Depth (ft): 2.00

Volume: 8,712

BCY or CCY

Source of estimated quantity: 2.7 ac compacted storage area

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>2.56</u>	feet/pass
Average Ripping Width:	<u>7.08</u>	feet/pass
Average Ripping Length:	<u>150.00</u>	feet/pass
Average Dozer Speed:	<u>88.00</u>	feet/minute
Average Maneuver Time:	<u>0.25</u>	minutes/pass
Production per unit area:	<u>0.748</u>	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.748 Acres/hr

Site Altitude: 5,000 feet

Altitude Adj: 1.00 (CAT HB)

Job Efficiency: 0.83 (1 shift/day)

Net Correction: 0.83 multiplier

Adjusted Hourly Unit Production: 0.62 Acres/hr

Adjusted Hourly Fleet Production: 0.62 Acres/hr

JOB TIME AND COST

Fleet size: 1

Grader(s)

Total job time: 4.35 Hours

Unit cost: \$394.263

Per acre

Total job cost: \$1,065

SCRAPER TEAM WORKTask description: Retopsoil 2.7 acre storage area south of Cell 5Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 019State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-019User: AMEAgency 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:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

	Scraper Work Team		Support Equipment		Maintenance Equipment	
	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	100	100
Ownership cost/hour:	\$162.02	NA	NA	\$103.86	\$82.71	\$13.51
Operating cost/hour:	\$184.64	NA	NA	\$82.26	\$70.09	\$28.95
%Utilization-ripper:	NA	NA	NA	NA	100	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$4.44	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$3.92	\$0.00
Operator cost/hour:	\$45.58	NA	NA	\$39.98	\$45.39	\$0.00
Unit Subtotals:	\$392.24	NA	NA	\$226.10	\$206.54	\$42.46
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work:	\$784.48	Support:	\$226.10	Maint:	\$249.00

Total work team cost/hour: \$1,259.58**MATERIAL QUANTITIES**Initial volume: 2,178

CCY

Swell factor: 1.215Loose volume: 2,646

LCY

Source of estimated volume: 2.7 ac x 6 in depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 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: 5000 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1400.00	1.00	3.00	4.00	2394	0.74

Haul Time: 0.74 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1400.00	-1.00	3.00	2.00	2960	0.60

Return Time: 0.60 minutes

Total Scraper team cycle time: 2.74 minutes
 Adjusted for job conditions: 527.08 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,054.16 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,054.16 LCY/Hour

Unadjusted unit production/hour: 635.04 LCY/Hour
 Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 2.51 HoursUnit cost: \$1.195 /LCY Total job cost: \$3,162

REVEGETATION WORKTask description: Revegetate 2.7 acre storage area south of Cell 5Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 020State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-020User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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:	<u>2.7</u>	Cost /Acre:	<u>\$2,032.10</u>
Estimated Failure Rate:	<u>20%</u>	Cost /Acre*:	<u>\$1,083.70</u>
*Selected Replanting Work Items:	<u>SEEDING</u>		
Initial Job Cost:	<u>\$5,486.67</u>		
Reseeding Job Cost:	<u>\$585.20</u>		
Total Job Cost:	<u>\$6,072</u>		
Job Hours:	<u>2.70</u>		

SCRAPER TEAM WORKTask description: **Retopsoil 4.5 acres Cell 20**Site: **Larimer Pit**Permit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 022State: ColoradoAbbreviation: NoneDate: Rev 3/20/2020County: LarimerFilename: M069-022User: AMEAgency 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:	Cat D8T - 8SU
Road Maintenance -Motor Grader:	CAT 16M
-Water Truck:	Water Tanker, 3,500 Gal.

Cost Breakdown:

Scraper Work Team

Support Equipment

Maintenance Equipment

	Scraper	Dozer	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	NA	NA	100	100	100
Ownership cost/hour:	\$162.02	NA	NA	\$103.86	\$82.71	\$13.51
Operating cost/hour:	\$184.64	NA	NA	\$82.26	\$70.09	\$28.95
%Utilization-ripper:	NA	NA	NA	NA	100	NA
Ripper own. cost/hour:	NA	NA	NA	\$0.00	\$4.44	\$0.00
Ripper op. cost/hour:	NA	NA	NA	\$0.00	\$3.92	\$0.00
Operator cost/hour:	\$45.58	NA	NA	\$39.98	\$45.39	\$0.00
Unit Subtotals:	\$392.24	NA	NA	\$226.10	\$206.54	\$42.46
Number of Units:	2	0	0	1	1	1
Group Subtotals:	Work: \$784.48		Support: \$226.10		Maint: \$249.00	

Total work team cost/hour: **\$1,259.58****MATERIAL QUANTITIES**Initial volume: 3,630

CCY

Swell factor: 1.215Loose volume: **4,410**

LCY

Source of estimated volume: 4.5 ac x 6 in depthSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION****Scraper Bowl (volume) Basis:**

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

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: 0.80 MinutesManeuver and Spread Time: 0.60 MinutesJob Condition Correction:

Site Altitude: 5000 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	1.00	3.00	4.00	2394	0.66

Haul Time: 0.66 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1200.00	-1.00	3.00	2.00	2960	0.53

Return Time: 0.53 minutesTotal Scraper team cycle time: 2.59 minutesAdjusted for job conditions: 557.61 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,115.21 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,115.21 LCY/HourUnadjusted unit production/hour: 671.81 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 3.95 HoursUnit cost: \$1.129 /LCYTotal job cost: \$4,981

REVEGETATION WORKTask description: Revegetate 6.5 acres Cell 20Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 023State: ColoradoAbbreviation: NoneDate: Rev 3/20/2020County: LarimerFilename: M069-023User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27
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Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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: 6.5 Cost /Acre: \$2,032.10
 Estimated Failure Rate: 20% Cost /Acre*: \$1,083.70
 *Selected Replanting Work Items: SEEDING

Initial Job Cost: **\$13,208.65**
 Reseeding Job Cost: **\$1,408.81**
 Total Job Cost: **\$14,617**
 Job Hours: **6.50**

SCRAPER TEAM WORKTask description: **Backfill Cell 21 overburden (from AM-3)**Site: **Larimer Pit**Permit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 024State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-024User: AMEAgency 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:	\$162.02	NA	NA	NA	NA	NA
Operating cost/hour:	\$184.64	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$45.58	NA	NA	NA	NA	NA
Unit Subtotals:	\$392.24	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$784.48	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$784.48****MATERIAL QUANTITIES**Initial volume: 55,000

CCY

Swell factor: 1.000Loose volume: **55,000**

LCY

Source of estimated volume: Operator EstimateSource 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>Shale</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: 5010 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	2.00	3.00	5.00	1867	0.24

Haul Time: 0.24 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	-2.00	3.00	1.00	2963	0.20

Return Time: 0.20 minutes

Total Scraper team cycle time: 1.84 minutes
 Adjusted for job conditions: 784.89 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,569.78 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,569.78 LCY/Hour

Unadjusted unit production/hour: 945.65 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 35.04 HoursUnit cost: \$0.500 /LCY Total job cost: \$27,486

SCRAPER TEAM WORKTask description: Shalestone lining Cell 21 (from AM-3)Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 025State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-025User: AMEAgency 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:	\$162.02	NA	NA	NA	NA	NA
Operating cost/hour:	\$184.64	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$45.58	NA	NA	NA	NA	NA
Unit Subtotals:	\$392.24	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$784.48	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$784.48****MATERIAL QUANTITIES**Initial volume: 10,000

CCY

Swell factor: 1.000Loose volume: **10,000**

LCY

Source of estimated volume: Operator EstimateSource 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>Shale</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: 5010 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	2.00	3.00	5.00	1867	0.24

Haul Time: 0.24 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	-2.00	3.00	1.00	2963	0.20

Return Time: 0.20 minutes

Total Scraper team cycle time: 1.84 minutes
 Adjusted for job conditions: 784.89 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,569.78 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,569.78 LCY/Hour

Unadjusted unit production/hour: 945.65 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 6.37 HoursUnit cost: \$0.500 /LCY Total job cost: \$4,997

SCRAPER TEAM WORKTask description: Retopsoil Cell 21 (from AM-3)Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 026State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-026User: AMEAgency 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:	\$162.02	NA	NA	NA	NA	NA
Operating cost/hour:	\$184.64	NA	NA	NA	NA	NA
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	NA	NA
Ripper op. cost/hour:	NA	NA	NA	NA	NA	NA
Operator cost/hour:	\$45.58	NA	NA	NA	NA	NA
Unit Subtotals:	\$392.24	NA	NA	NA	NA	NA
Number of Units:	2	0	0	0	0	0
Group Subtotals:	Work:	\$784.48	Support:	\$0.00	Maint:	\$0.00

Total work team cost/hour: **\$784.48****MATERIAL QUANTITIES**Initial volume: 2,500

CCY

Swell factor: 1.000Loose volume: **2,500**

LCY

Source of estimated volume: Operator EstimateSource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Scraper Bowl (volume) Basis:

Material weight:	<u>1,600 lbs/LCY</u>	Struck Volume:	<u>24.00</u>	LCY
Material description:	<u>Top Soil</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>51.00 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: 5010 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 3.0Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	2.00	3.00	5.00	1867	0.23

Haul Time: 0.23 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	250.00	-2.00	3.00	1.00	2963	0.20

Return Time: 0.20 minutes

Total Scraper team cycle time: 1.83 minutes
 Adjusted for job conditions: 789.18 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,578.36 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,578.36 LCY/Hour

Unadjusted unit production/hour: 950.82 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 1.58 HoursUnit cost: \$0.497 /LCY Total job cost: \$1,243

MOTOR GRADER WORK

Task description: Final grading Cell 21 (from AM-3)

Site: Larimer Pit

Permit Action: 1/16/2020 Inspection

Permit/Job#: M1974069

PROJECT IDENTIFICATION

Task #: 027 State: Colorado Abbreviation: None
Date: 2/19/2020 County: Larimer Filename: M069-027
User: AME

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 16M Horsepower: 297
Ripper Attachment: Multi-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$82.71	NA
Operating Cost/Hour:	\$70.09	100
Ripper Ownership Cost/Hour:	\$4.44	NA
Ripper Operating Cost/Hour:	\$1.96	50
Operator Cost/Hour:	\$45.39	NA
Total Unit Cost/Hour:	\$204.58	
Total Fleet Cost/Hour:	\$204.58	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 27.00 acres

Source of estimated acreage: Operator Estimate

HOURLY PRODUCTION

Average Grader Speed: 1.50 mph
Selected Application: Finish grading (0-2.5 mph) - 1.5
Selected Blade Angle: 30 degrees
Effective Blade Length: 13.90 feet
Width of blade overlap per pass: 2.00 feet
Net grading or ripping width per pass: 11.90 feet
Unadjusted Hourly Unit Production: 2.1636 acres/hour

Job Condition Correction Factors

Site Altitude: 5010 feet

Altitude Adj:	<u>1.00</u>	Source
Job Efficiency:	<u>0.90</u>	(CAT HB)
Net Correction:	<u>0.9000</u>	(1sh/d, fav.)
		multiplier

Adjusted Hourly Unit Production: 1.9473 acres/Hour
Adjusted Hourly Fleet Production: **1.9473** acres/Hour

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **13.87** Hours

Unit cost: \$105.06 per acre Total job cost: **\$2,837**

REVEGETATION WORKTask description: Revegetate 28 acres Cell 21 (from AM-3)Site: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**Task #: 028State: ColoradoAbbreviation: NoneDate: 2/19/2020County: LarimerFilename: M069-028User: AMEAgency 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
Chisel plowing {DMG}	\$94.63
Weed control spraying (MEANS 31 31 16.13 3100)	\$193.60
Total Tilling Cost/Acre	\$288.23

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Hachita	1.00	16.32	\$15.98
Indian Ricegrass - Nespar	1.00	3.24	\$8.88
Blue Wildrye - Arlington or Elkton	1.00	3.44	\$6.66
Little Bluestem - Cimarron	1.00	5.97	\$12.48
Sandberg Bluegrass - VNS	1.00	21.24	\$8.40
Slender Wheatgrass - Pryor	1.00	3.65	\$4.25
Needle and Thread	1.00	2.64	\$41.85
Needlegrass, Green - Lodorm	1.00	4.16	\$11.78
Prairie Junegrass	1.00	53.15	\$26.00

Totals Seed Mix	9.00	113.81	\$136.27

Application

Description	Cost /Acre
Hydro seeding (MEANS 32 92 19.14 0200)	\$947.43
Total Seed Application Cost/Acre	\$947.43

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$295.00	\$590.00
Total Mulch Materials Cost/Acre				\$590.00

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:	28	Cost /Acre:	\$2,032.10
Estimated Failure Rate:	20%	Cost /Acre*:	\$1,083.70
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	\$56,898.80		
Reseeding Job Cost:	\$6,068.72		
Total Job Cost:	\$62,968		
Job Hours:	28.00		

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: Mobilization/DemobilizationSite: Larimer PitPermit Action: 1/16/2020 InspectionPermit/Job#: M1974069**PROJECT IDENTIFICATION**

Task #: 030 State: Colorado Abbreviation: None
 Date: Rev 5/18/2020 County: Larimer Filename: M069-030
 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 D8T - 8SU	53.08	\$114.29	\$141.54	2	\$511.66	\$283.08	\$1,000.00
CAT 16M	28.73	\$87.15	\$123.81	2	\$421.92	\$247.62	\$500.00
Cat 637G	57.28	\$162.02	\$141.54	2	\$607.12	\$283.08	\$500.00
CAT 966H	25.80	\$41.17	\$67.39	1	\$108.56	\$67.39	\$500.00
Cat 730	25.19	\$58.61	\$67.39	2	\$252.00	\$134.78	\$500.00
Hydroseeder with Tractor	28.00	\$23.59	\$123.81	1	\$147.40	\$123.81	\$500.00

Subtotals: **\$2,048.66** **\$1,139.76** **\$3,500.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 3,500 Gal.	\$42.46	1	\$42.46	\$42.46
Light Duty Pickup, 4x4, 3/4 T.	\$12.96	1	\$12.96	\$12.96

Subtotals: **\$55.42** **\$55.42**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: LOVELAND
 Total one-way travel distance: 3.00 miles
 Average Travel Speed: 45.00 mph

Total Non-Roadable Mob/Demob Cost * \$40,203.68
 ** two round trips with haul rig:
 Total Roadable Mob/Demob Cost ** \$7.39
 ** one round trip, no haul rig:

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.07	0.07
Return Time (Hours):	0.07	0.07
Loading Time (Hours):	4.00	NA
Unloading Time (Hours):	4.00	NA
Subtotals:	8.13	0.13

JOB TIME AND COST

Total job time: 16.27 Hours

Total job cost: \$40,211