



MINERALS PROGRAM INSPECTION REPORT
PHONE: (303) 866-3567

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

MINE NAME: Fort Lyon - State Pit No. 1	MINE/PROSPECTING ID#: M-2001-097	MINERAL: Limestone (general)	COUNTY: Bent
INSPECTION TYPE: Monitoring	INSPECTOR(S): Amy Eschberger	INSP. DATE: September 11, 2019	INSP. TIME: 13:15
OPERATOR: The Fort Lyon Canal Company	OPERATOR REPRESENTATIVE: Brad Owens	TYPE OF OPERATION: 112c - Construction Regular Operation	

REASON FOR INSPECTION: Normal I&E Program	BOND CALCULATION TYPE: Complete Bond	BOND AMOUNT: \$24,700.00
DATE OF COMPLAINT: NA	POST INSP. CONTACTS: None	JOINT INSP. AGENCY: None
WEATHER: Clear	INSPECTOR'S SIGNATURE: 	SIGNATURE DATE: October 7, 2019

The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.

INSPECTION TOPIC: Financial Warranty

PROBLEM: The currently held financial warranty is not adequate to reclaim the site in accordance with the approved reclamation plan. This is a failure to maintain the proper financial warranty amount to complete reclamation of the affected lands pursuant to C.R.S. 34-32.5-117(4)(b) and Rule 4.2.1(1).

CORRECTIVE ACTIONS: The Division has re-evaluated the required financial warranty for reclaiming the site in accordance with the approved reclamation plan (see enclosed cost estimate). On the corrective action date, the Division will send the operator a notice of surety increase for the amount provided in the cost estimate. The operator will have 60 days from the date on the surety increase notice to post the additional financial warranty. If the operator wishes to reduce the required amount, the operator will need to complete reclamation on site and provide evidence to the Division this was done by the corrective action date. Such evidence should include photo documentation and a detailed description of the work that was completed.

CORRECTIVE ACTION DUE DATE: November 6, 2019

OBSERVATIONS

This was a normal monitoring inspection of the Fort Lyon – State Pit No. 1 (Permit No. M-2001-097) conducted by Amy Eschberger of the Division of Reclamation, Mining and Safety (Division). Mr. Brad Owens represented the operator during the inspection. The site is located approximately 4.5 miles northeast of McClave, CO in Bent County. The site can be accessed from the east off Co Rd 34. The site is situated approximately 450 feet from the Fort Lyons Canal. The affected lands and mineral rights are owned by the Colorado State Land Board (CSLB). **Photos 1-24** taken during the inspection are included with this report.

This is a 112c operation permitted for 44.5 acres (see enclosed Exhibit C Mining Plan Map) to mine limestone for maintenance of the operator's Fort Lyons Canal and associated road system. The operator was required to obtain a permit for this site in 2001 after the Mined Land Reclamation Board found the operator to be mining without a permit. According to the permit file, the operation had been mining the site since 1996, and upon renewal of its lease agreement with the CSLB, realized that obtaining a mining permit for the operation was a condition of the lease. The operator self-reported its findings and worked with the Division to obtain compliance for the operation. At that time, the Division estimated approximately 7 acres had been disturbed.

The approved mining plan includes expanding the existing pit eastward, disturbing no more than 10 acres at any time prior to conducting reclamation of disturbed areas. The limestone deposit is encountered within a few feet of the land surface. Approximately 1-2 feet of overburden and 1-2 feet of topsoil will be salvaged prior to mining and stored separately on site for use in reclamation. The operation is not expected to directly affect surface water or groundwater systems. No explosives will be used by the operation. The approved post-mining land use for the site is rangeland. The approved reclamation plan includes grading all disturbed slopes to 3H:1V or flatter, replacing the salvaged overburden and topsoil, and revegetating the site with a rangeland grass seed mixture recommended by the local Soil Conservation Service.

At the time of the inspection, the weather was clear, warm, and dry. A permit sign was posted at the main site entrance off of Co Rd 34. The corners of the approved permit boundary were marked with metal stakes. The site was not active during the inspection and no equipment was stored on site. However, according to the operator, the site is active every year (extraction and/or hauling off from stockpiled material), in accordance with its intermittent status approved under Technical Revision No. 1 in 2013. The pit is accessed from its southwestern corner from an existing ranch road. The access road constructed off the existing ranch road is included in the permit area.

At this time, disturbance at the site is limited to the far western edge of the approved permit area. The Division estimates current disturbance to cover approximately 9.5 acres (see enclosed Google Earth image of site). This disturbance includes an open limestone pit that is approximately 4 feet deep at its southern edge, and approximately 12-15 feet deep at its northern edge. The pit daylights primarily to the west, with slope gradients of near vertical to 1.5H:1V. An approximate 1.5 acre area at the northwestern edge of the pit has been stripped of topsoil in preparation of mining. The salvaged topsoil from this area is bermed along its northern and western edges. Overburden and topsoil salvaged from the main pit area are stockpiled along the eastern and southern perimeters of the pit, above the pit walls. Several stockpiles of mined material are stored on the pit floor and at the southwestern edge of the pit near the access road. The operation appears to be following the approved mining and reclamation plans for the site.

Given the operator's commitment to limit pit disturbance to no more than 10 acres at any time, prior to disturbing more than 10 acres, the operator will need to either complete final reclamation of existing disturbance, or submit a Technical Revision to increase the maximum disturbance to more than 10 acres. Additionally, given the close proximity of current disturbance to the approved permit boundaries (especially the

northern and southwestern boundaries), the Division recommends the operation be very careful during mining and reclamation activities to not disturb land outside these boundaries.

It should be noted, the eastern portion of the pit (approximately 2 acres) was holding a few inches of water during the inspection. Mr. Owens informed the Division the ponded water was meteoric as the area had recently received three inches of rain in one evening. Mr. Owens indicated he had never observed this much water in the pit, as it typically infiltrates/evaporates fairly quickly after a storm event. After reviewing previous inspection reports for the site and the historical imagery of the site available in Google Earth, the Division could find no evidence the pit has previously held water as observed during the current inspection. The Division agrees with the operator that the water held in the pit is meteoric water and not groundwater. However, the operator should be advised, the Division of Water Resources (DWR) requires any stormwater runoff intercepted by an operation that is not diverted or captured in priority, to infiltrate into the ground or be released to the stream system (which may require a discharge permit from CDPHE WQCD) within 72 hours. Otherwise, the operator is required to make replacements with their Office for evaporation. Therefore, the Division recommends the operator continue to monitor site conditions and, if the pit continues to hold water past 72 hours, contact the DWR to determine how to gain compliance with their Office. The operator should also consider whether the mining and/or reclamation plans for the site need to be revised in any way to better control stormwater on site, such as installing structures/berms to divert stormwater around the pit and/or revising the reclamation grading plan for the site. Any such changes to the mining and/or reclamation plan could be proposed through the submittal of a Technical Revision to the permit (see enclosed form).

The Division currently holds a financial warranty for the site in the amount of \$24,700.00. This amount was calculated by the Division for the initial permit issuance in 2001/2002 to cover the proposed 10 acres of disturbance. After conducting this inspection, the Division re-evaluated the required financial warranty for completing reclamation at the site in accordance with the approved plan in the case where the Division must take over reclamation liability of the site (see enclosed bond estimate). The Division found the required financial warranty to be in the amount of \$65,554.00, which is \$40,854.00 more than the currently held financial warranty. Therefore, the Division is citing a problem in this report for failure to maintain the proper financial warranty amount to complete reclamation of the affected lands pursuant to C.R.S. 34-32.5-117(4)(b) and Rule 4.2.1(1). The Division will send the operator a notice of surety increase separately from this report on the corrective action date (in 30 days). The operator will have 60 days from the date of the surety increase notice to submit the additional required financial warranty. To reduce the required amount, the operator would need to complete reclamation on site and provide evidence to the Division this was done by the corrective action date. Such evidence should include photo documentation and a detailed description of the work that was completed.

This concludes the report.

Any questions or comments regarding this inspection report should be forwarded to Amy Eschberger at the Colorado Division of Reclamation, Mining and Safety, 1313 Sherman Street, Room 215, Denver, CO 80203, via telephone at 303-866-3567, ext. 8129, or via email at amy.eschberger@state.co.us.

PHOTOGRAPHS



Photo 1. View looking south, showing small overburden stockpile stored at southwestern corner of disturbed area.



Photo 2. View looking southeast across southern portion of pit. Note ponded water present on pit floor (in background).



Photo 3. View looking east across central portion of pit. Note ponded water present on pit floor (in background).



Photo 4. View looking west, showing mined material stockpiled at southwestern edge of pit area.



Photo 5. View looking west, showing mined material stockpiled at southwestern edge of pit area.



Photo 6. View looking southeast across pit. Note shallow ponded water present on pit floor.



Photo 7. View looking east across central portion of pit. Note shallow ponded water present on pit floor. Also note large topsoil stockpile stored above pit wall (in background).



Photo 8. View looking northeast across central portion of pit. Note shallow ponded water present on pit floor. Also note material stockpiled on pit floor (in background).



Photo 9. View looking south across western portion of pit which was dry during the inspection.



Photo 10. View looking northeast across northern portion of pit. Note ponded water present on pit floor (in background).



Photo 11. View looking west across area at northwestern edge of disturbance which was stripped in preparation for mining. Note topsoil berm stored at western edge of stripped area (in background).



Photo 12. View looking west, showing topsoil stockpile stored at northern edge of area stripped in preparation for mining.



Photo 13. View looking southwest across pit from top of northern pit wall. Note ponded water present on pit floor.



Photo 14. View looking south across pit from top of northern pit wall. Note ponded water present on pit floor. Also note material stockpiled on pit floor.



Photo 15. View looking southeast across pit from top of northern pit wall. Note ponded water present on pit floor. Also note pit wall approximately 12-15 feet in height with near vertical to 1.5H:1V slopes in this portion of the pit.



Photo 16. View looking north, showing large overburden stockpile stored at northeastern edge of pit, above the pit wall.



Photo 17. View looking northwest across pit from top of eastern pit wall. Note ponded water present on pit floor.



Photo 18. View looking southwest across pit from top of eastern pit wall. Note ponded water present on pit floor. Also note material stockpiled on pit floor.



Photo 19. View looking north across eastern pit wall. Note material stockpiled on pit floor. Also note large overburden stockpile at northeastern corner of pit (in background).



Photo 20. View looking west across pit from top of eastern pit wall. Note ponded water present on pit floor. Also note material stockpiled on pit floor.



Photo 21. View looking south, showing large topsoil stockpile stored at eastern edge of pit, above the pit wall.



Photo 22. View looking east across southern pit wall. Note pit wall approximately 4 feet in height with approximate 1H:1V slopes in this portion of the pit.



Photo 23. View looking west across southern pit wall. Note pit wall approximately 4 feet in height with approximate 1H:1V slopes in this portion of the pit. Also note material stockpiled at southwestern edge of pit.



Photo 24. View looking west across Fort Lyons Ditch located west of mine site, which is owned and maintained by the operator.

GENERAL INSPECTION TOPICS

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS----- <u>Y</u>	(FN) FINANCIAL WARRANTY----- PB	(RD) ROADS----- <u>Y</u>
(HB) HYDROLOGIC BALANCE----- <u>N</u>	(BG) BACKFILL & GRADING----- <u>Y</u>	(EX) EXPLOSIVES----- <u>NA</u>
(PW) PROCESSING WASTE/TAILING---- <u>N</u>	(SF) PROCESSING FACILITIES----- <u>N</u>	(TS) TOPSOIL----- <u>Y</u>
(MP) GENL MINE PLAN COMPLIANCE- <u>Y</u>	(FW) FISH & WILDLIFE----- <u>N</u>	(RV) REVEGETATION---- <u>Y</u>
(SM) SIGNS AND MARKERS----- <u>Y</u>	(SP) STORM WATER MGT PLAN---- <u>N</u>	(RS) RECL PLAN/COMP-- <u>Y</u>
(ES) OVERBURDEN/DEV. WASTE----- <u>Y</u>	(SC) EROSION/SEDIMENTATION--- <u>Y</u>	(ST) STIPULATIONS----- <u>N</u>
(AT) ACID OR TOXIC MATERIALS----- <u>NA</u>	(OD) OFF-SITE DAMAGE----- <u>N</u>	

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

Inspection Contact Address

Jerred Hoffman
The Fort Lyon Canal Company
750 Bent Ave.
Las Animas, CO 81054

Encl: Exhibit C – Mining Plan Map
Google Earth image of site
Technical Revision form
Division's Bond Estimate

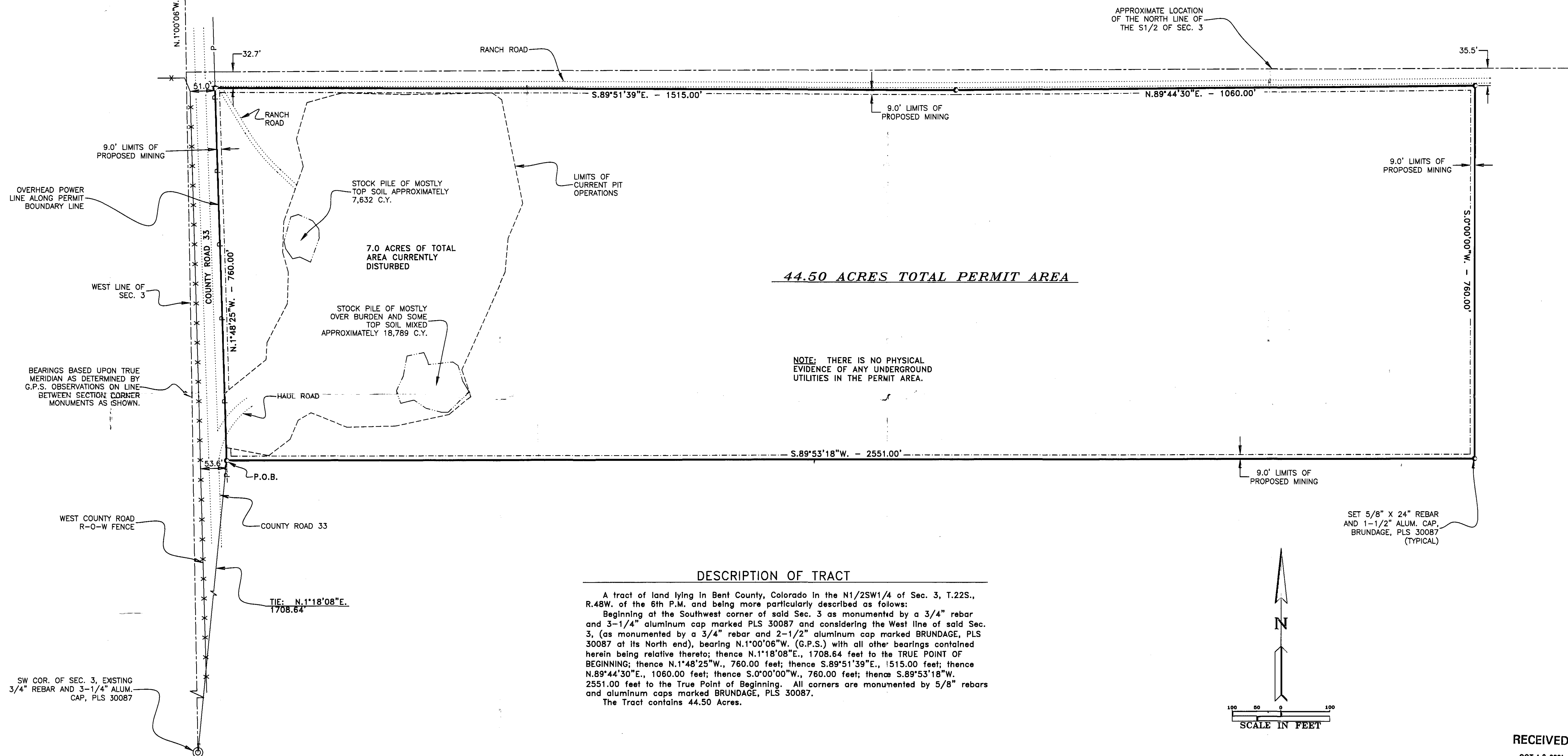
CC: Michael Cunningham, DRMS

SET 3/4" X 30" REBAR
AND 2-1/2" ALUM. CAP.
BRUNDAGE, PLS 30087

NW CORNER OF SEC. 3,
ACCEPTED EVIDENCE OF
ABANDONED COUNTY
ROADS EAST-WEST-SOUTH

PART OF THE N1/2SW1/4 OF
SEC. 3, T.22S., R.48W., 6th P.M.,
BENT COUNTY, COLORADO.

Permit Number 14-2001-097
Class: Report
Type: Map
Date: 10/18/2001
Application: Coal only ☐ Bond ☐ Enforcement ☐ Inspection ☐



DESCRIPTION OF TRACT

A tract of land lying in Bent County, Colorado in the N1/2SW1/4 of Sec. 3, T.22S., R.48W. of the 6th P.M. and being more particularly described as follows:
Beginning at the Southwest corner of said Sec. 3 as monumented by a 3/4" rebar and 3-1/4" aluminum cap marked PLS 30087 and considering the West line of said Sec. 3, (as monumented by a 3/4" rebar and 2-1/2" aluminum cap marked BRUNDAGE, PLS 30087 at its North end), bearing N.1°00'06"W. (G.P.S.) with all other bearings contained herein being relative thereto; thence N.1°18'08"E., 1708.64 feet to the TRUE POINT OF BEGINNING; thence N.1°48'25"W., 760.00 feet; thence S.89°51'39"E., 1515.00 feet; thence N.89°44'30"E., 1060.00 feet; thence S.0°00'00"W., 760.00 feet; thence S.89°53'18"W. 2551.00 feet to the True Point of Beginning. All corners are monumented by 5/8" rebars and aluminum caps marked BRUNDAGE, PLS 30087.
The Tract contains 44.50 Acres.

112 MINING PERMIT
LAND SURVEY PLAT

1"=100'

SURVEYOR'S STATEMENT

OCTOBER 12, 2001

I LANCE W. BRUNDAGE, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY STATE TO THE FORT LYON CANAL COMPANY ON THE BASIS OF MY KNOWLEDGE, INFORMATION AND BELIEF AND TO THE NORMAL STANDARDS OF CARE OF PROFESSIONAL LAND SURVEYORS PRACTICING IN COLORADO; THAT ON SEPTEMBER 26 AND OCTOBER 8, 2001, AS RESULT OF A SURVEY MADE ON THE GROUND AND MONUMENTED BY ME; THAT THIS LAND SURVEY PLAT WAS PREPARED BY ME AND REPRESENTS THE SURVEY MADE; THAT THE SURVEY WAS BASED UPON INFORMATION AND INSTRUCTIONS SUPPLIED BY CLIENT WITH CLIENT DESIRING NO FURTHER RESEARCH INTO EASEMENTS OR RIGHT-OF-WAYS BY THE UNDERSIGNED.

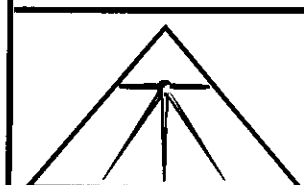
LANCE W. BRUNDAGE
REGISTERED PROFESSIONAL LAND SURVEYOR
COLORADO 30087

NOTICE:

THIS SURVEY MADE WITHOUT BENEFIT OF UPDATED ABSTRACT OR TITLE POLICY AND MAY BE SUBJECT TO OTHER EASEMENTS, CONDITIONS, RIGHTS, ETC. WHICH HAVE DEVELOPED SINCE THE DATE OF DATA REFERENCED IN THE SURVEYOR'S STATEMENT;

NOTICE:

ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.



BRUNDAGE LAND SURVEYING, Inc.

P.O. BOX 441 - SWINK, CO - 61077-0441
719-383-4MAP (4627)

DATE:

OCTOBER 12, 2001

DRAWING NO.

17001.DWG

PROJECT NO.

17001FLC

SHEET NO.

1 OF 1

112 MINING PERMIT
LAND SURVEY PLAT

PROJECT LOCATION:

PART OF THE N1/2SW1/4 OF SEC. 3, T.22S.,
R.48W., 6th P.M., BENT COUNTY, COLORADO

REVISED:

CLIENT:

FORT LYON CANAL COMPANY

LAS ANIMAS

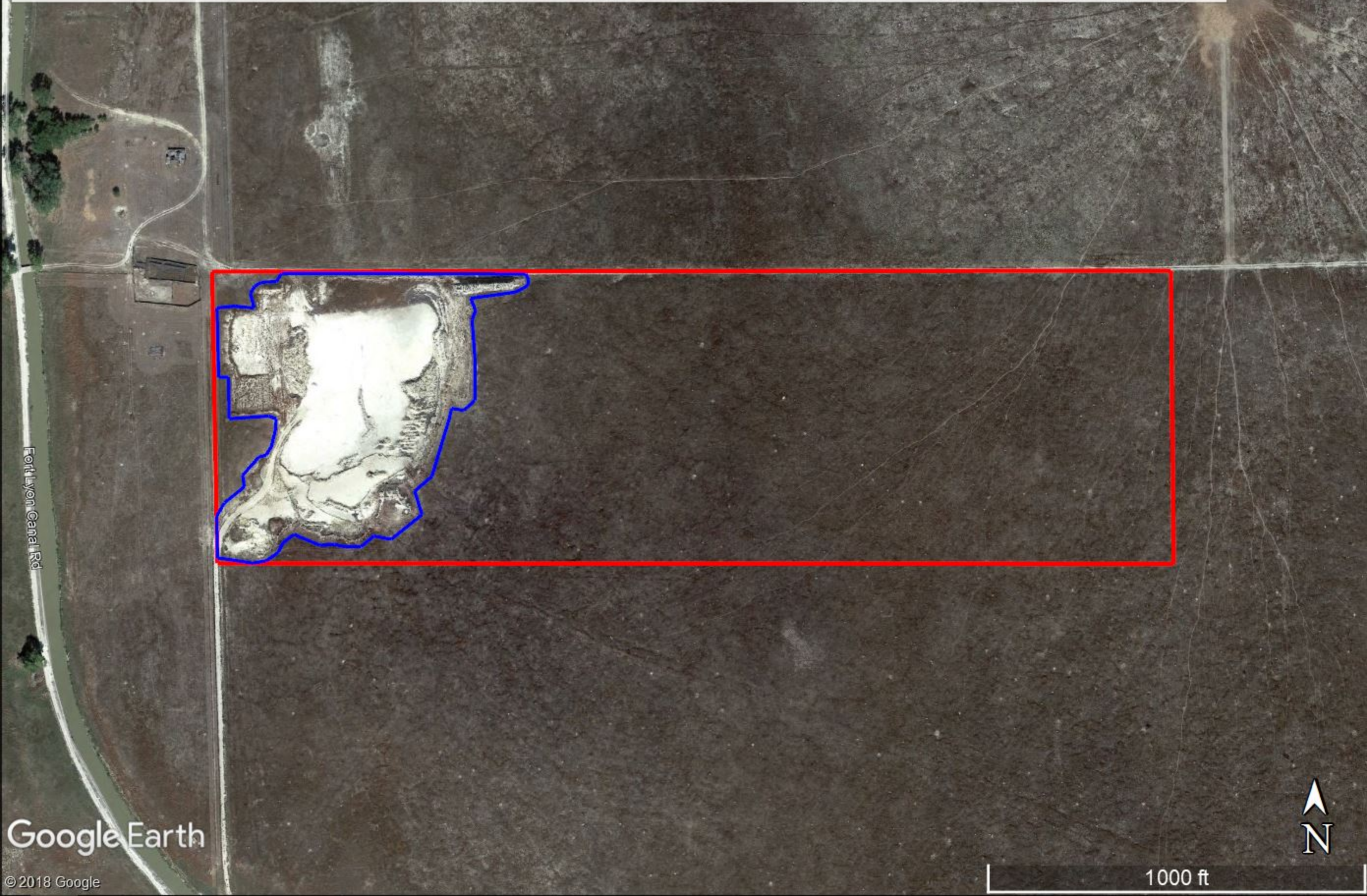
COLORADO

M-2001-097 / Fort Lyon - State Pit No. 1 / The Fort Lyon Canal Company (112c)

Red Outline = 44.5 acres = Approved Permit Area (location approximated based on permit maps)

Blue Outline = 9.5 acres = Disturbed Area (as of 9/11/2019 inspection)

(Image data from 10/11/2015)





COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY

1313 Sherman Street, Room 215, Denver, Colorado 80203 ph(303) 866-3567

REQUEST FOR TECHNICAL REVISION (TR) COVER SHEET

File No.: M- _____ Site Name: _____

County _____ TR# _____ (DRMS Use only)

Permittee: _____

Operator (If Other than Permittee): _____

Permittee Representative: _____

Please provide a brief description of the proposed revision: _____

As defined by the Minerals Rules, a Technical Revision (TR) is: “a change in the permit or application which does not have more than a minor effect upon the approved or proposed Reclamation or Environmental Protection Plan.” The Division is charged with determining if the revision as submitted meets this definition. If the Division determines that the proposed revision is beyond the scope of a TR, the Division may require the submittal of a permit amendment to make the required or desired changes to the permit.

The request for a TR is not considered “filed for review” until the appropriate fee is received by the Division (as listed below by permit type). Please submit the appropriate fee with your request to expedite the review process. After the TR is submitted with the appropriate fee, the Division will determine if it is approvable within 30 days. If the Division requires additional information to approve a TR, you will be notified of specific deficiencies that will need to be addressed. If at the end of the 30 day review period there are still outstanding deficiencies, the Division must deny the TR unless the permittee requests additional time, in writing, to provide the required information.

There is no pre-defined format for the submittal of a TR; however, it is up to the permittee to provide sufficient information to the Division to approve the TR request, including updated mining and reclamation plan maps that accurately depict the changes proposed in the requested TR.

Required Fees for Technical Revision by Permit Type - Please mark the correct fee and submit it with your request for a Technical Revision.

<u>Permit Type</u>	<u>Required TR Fee</u>	<u>Submitted</u> (mark only one)
110c, 111, 112 construction materials, and 112 quarries	\$216	☐
112 hard rock (not DMO)	\$175	☐
110d, 112d(1, 2 or 3)	\$1006	☐

COST SUMMARY WORK

Task description: Cost Summary

Site: Fort Lyon - State Pit No. 1

Permit Action: 9-11-2019 Inspection

Permit/Job#: M2001097

PROJECT IDENTIFICATION

Task #: 000

State: Colorado

Abbreviation: None

Date: 10/3/2019

County: Bent

Filename: M097-000

User: AME

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Grade highwall to 3H:1V	DOZER	2	2.62	\$1,192
002	Replace 1 foot of overburden on 10 acres	SCRAPER1	1	18.43	\$13,891
003	Replace 1 foot of topsoil on 10 acres	SCRAPER1	1	17.37	\$13,093
004	Revegetate 10 acres	REVEGE	1	10.00	\$13,699
005	Mobilization/Demobilization	MOBILIZE	1	7.20	\$11,377
<u>SUBTOTALS:</u>				55.62	\$53,252

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02

Total = \$1,076

Performance bond: 1.05

Total = \$559

Job superintendent: 32.00

Total = \$2,220

Profit: 10.00

Total = \$5,325

TOTAL O & P = \$9,181

CONTRACT AMOUNT (direct + O & P) = \$62,433

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): \$0

Total = \$0

Engineering work and/or contract/bid preparation: 0.00

Total = \$0

Reclamation management and/or administration: 5.00

\$3,122

CONTINGENCY: 0.00

Total = \$0

TOTAL INDIRECT COST = \$12,302

TOTAL BOND AMOUNT (direct + indirect) = \$65,554

BULLDOZER WORKTask description: **Grade highwall to 3H:1V**Site: **Fort Lyon - State Pit No. 1**Permit Action: **9-11-2019 Inspection**Permit/Job#: **M2001097****PROJECT IDENTIFICATION**Task #: **001**State: **Colorado**Abbreviation: **None**Date: **10/3/2019**County: **Bent**Filename: **M097-001**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:	\$41.24	NA

Total unit Cost/Hour: **\$227.36**Total Fleet Cost/Hour: **\$454.72****MATERIAL QUANTITIES**Initial Volume: **4,375**Swell factor: **1.330**Loose volume: **5,819 LCY**Source of estimated volume: **DRMS**

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: **Compacted fill or embankment 0.9**

Average push

gradient: **-5 %**Average site altitude: **3,950 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:	0.900	(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: 0.7926

Adjusted unit
production: 1,109.64 LCY/hr
Adjusted fleet
production: **2219.28** LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.205/LCY

Total job time: **2.62** Hours
Total job cost: **\$1,192**

SCRAPER TEAM WORKTask description: Replace 1 foot overburden on 10 acresSite: Fort Lyon - State Pit No. 1Permit Action: 9-11-2019 InspectionPermit/Job#: M2001097**PROJECT IDENTIFICATION**Task #: 002State: ColoradoAbbreviation: NoneDate: 10/3/2019County: BentFilename: M097-002User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 14M
-Water Truck:	Water Tanker, 2,500 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	NA	100	100
Ownership cost/hour:	\$125.39	NA	NA	NA	\$64.10	\$9.27
Operating cost/hour:	\$132.67	NA	NA	NA	\$56.17	\$17.75
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$30.86	NA	NA	NA	\$28.52	\$0.00
Unit Subtotals:	\$288.92	NA	NA	NA	\$148.79	\$27.01
Number of Units:	2	0	0	0	1	1
Group Subtotals:	Work:	\$577.84	Support:	\$0.00	Maint:	\$175.80

Total work team cost/hour: **\$753.64****MATERIAL QUANTITIES**Initial volume: 16,133

CCY

Swell factor: 1.250Loose volume: 20,166

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Scraper Bowl (volume) Basis:

Material weight: 2,650 lbs/LCY
 Material description: Decomposed rock - 25% Rock, 75% Earth
 Rated Payload: 81,600 pounds
 Payload Capacity: 30.79 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: 0.70 MinutesJob Condition Correction:

Site Altitude: 3950 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: Very hard, smooth, asphalt or concrete, no tire penetration 1.2Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	1.00	1.20	2.20	2806	0.72

Haul Time: 0.72 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-1.00	1.20	0.20	2937	0.42

Return Time: 0.42 minutesTotal Scraper team cycle time: 2.64 minutesAdjusted for job conditions: 547.05 LCY/HourSelected Number of Scrapers: 2 Scraper(s)Adjusted single scraper team (unit) hourly production: 1,094.09 LCY/HourAdjusted multiple scraper team (fleet) hourly production: 1,094.09 LCY/HourUnadjusted unit production/hour: 659.09 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s)Total job time: 18.43 HoursUnit cost: \$0.689 /LCYTotal job cost: \$13,891

SCRAPER TEAM WORKTask description: Replace 1 foot of topsoil on 10 acresSite: Fort Lyon - State Pit No. 1Permit Action: 9-11-2019 InspectionPermit/Job#: M2001097**PROJECT IDENTIFICATION**Task #: 003State: ColoradoAbbreviation: NoneDate: 10/3/2019County: BentFilename: M097-003User: AMEAgency or organization name: DRMS**HOURLY EQUIPMENT**COSTShift basis: 1 per day

Equipment Description	
-Scraper:	Cat 631G
-Dozer:	NA
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance -Motor Grader:	CAT 14M
-Water Truck:	Water Tanker, 2,500 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	NA	100	100
Ownership cost/hour:	\$125.39	NA	NA	NA	\$64.10	\$9.27
Operating cost/hour:	\$132.67	NA	NA	NA	\$56.17	\$17.75
%Utilization-ripper:	NA	NA	NA	NA	NA	NA
Ripper own. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Ripper op. cost/hour:	NA	NA	NA	NA	\$0.00	\$0.00
Operator cost/hour:	\$30.86	NA	NA	NA	\$28.52	\$0.00
Unit Subtotals:	\$288.92	NA	NA	NA	\$148.79	\$27.01
Number of Units:	2	0	0	0	1	1
Group Subtotals:	Work:	\$577.84	Support:	\$0.00	Maint:	\$175.80

Total work team cost/hour: **\$753.64****MATERIAL QUANTITIES**Initial volume: 16,133

CCY

Swell factor: 1.215Loose volume: **19,602**

LCY

Source of estimated volume: Division of Reclamation, Mining & SafetySource 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: 0.70 Minutes

Job Condition Correction:

Site Altitude: 3950 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	800.00	1.00	3.00	4.00	1667	0.59

Haul Time: 0.59 minutesReturn Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	800.00	-1.00	3.00	2.00	2914	0.47

Return Time: 0.47 minutes

Total Scraper team cycle time: 2.56 minutes
 Adjusted for job conditions: 564.14 LCY/Hour
 Selected Number of Scrapers: 2 Scraper(s)
 Adjusted single scraper team (unit) hourly production: 1,128.28 LCY/Hour
 Adjusted multiple scraper team (fleet) hourly production: 1,128.28 LCY/Hour

Unadjusted unit production/hour: 679.69 LCY/Hour

Optimal Number of Scrapers per push dozer: _____

JOB TIME AND COSTFleet size: 1 Team(s) Total job time: 17.37 HoursUnit cost: \$0.668 /LCY Total job cost: \$13,093

REVEGETATION WORKTask description: Revegetate 10 acresSite: Fort Lyon - State Pit No. 1Permit Action: 9-11-2019 InspectionPermit/Job#: M2001097**PROJECT IDENTIFICATION**Task #: 004
Date: 10/3/2019
User: AMEState: Colorado
County: BentAbbreviation: None
Filename: M097-004Agency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Ammonium nitrate, 33-0-0	121.00	pound	\$0.34	\$40.54
Triple superphosphate, 0-46-0	115.00	pound	\$0.43	\$48.88
			Total Fertilizer Materials Cost/Acre	\$89.41

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	\$36.15
Total Fertilizer Application Cost/Acre	\$36.15

TILLING

Description	Cost /Acre
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$101.93
Total Tilling Cost/Acre	\$101.93

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Lovington	0.90	14.69	\$14.38
Buffalograss - Native/Plains	0.60	0.58	\$7.24
Sand Dropseed	0.10	11.94	\$0.98
Sideoats Grama - El Reno	1.80	5.91	\$15.08
Western Wheatgrass - Barton	3.20	8.08	\$22.40
Totals Seed Mix	6.60	41.20	\$60.07

Application

--	--

Description	Cost /Acre
Drill Seeding (DRMS Survey Cost)	\$232.00
Total Seed Application Cost/Acre	\$232.00

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
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, hand, non-aquatic areas, ann. [DMG]	\$117.20
Total Mulch Application Cost/Acre	\$187.37

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:	10	Cost /Acre:	\$1,296.93
Estimated Failure Rate:	25%	Cost /Acre*:	\$292.07
*Selected Replanting Work Items:	SEEDING		
Initial Job Cost:	\$12,969.30		
Reseeding Job Cost:	\$730.18		
Total Job Cost:	\$13,699		
Job Hours:	10.00		

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization/Demobilization**Site: **Fort Lyon - State Pit No. 1**Permit Action: **9-11-2019 Inspection**Permit/Job#: **M2001097****PROJECT IDENTIFICATION**Task #: **005**State: **Colorado**Abbreviation: **None**Date: **10/3/2019**County: **Bent**Filename: **M097-005**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	47.71	\$103.86	\$123.81	2	\$455.34	\$247.62	\$500.00
Cat 631G	52.50	\$125.39	\$141.54	2	\$533.86	\$283.08	\$500.00
CAT 14M	23.57	\$64.10	\$67.39	1	\$131.49	\$67.39	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$18.15	\$67.39	1	\$85.54	\$67.39	\$250.00

Subtotals: **\$1,206.23** **\$665.48** **\$1,500.00****ROADABLE EQUIPMENT:**

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	\$27.02	1	\$27.02	\$27.02

Subtotals: **\$27.02** **\$27.02**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>LAMAR</u>	
Total one-way travel distance:	<u>15.00</u>	miles
Average Travel Speed:	<u>50.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	<u>\$11,360.41</u>
'* two round trips with haul rig:	
Total Roadable Mob/Demob Cost **	<u>\$16.21</u>
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>0.30</u>	<u>0.30</u>
Return Time (Hours):	<u>0.30</u>	<u>0.30</u>
Loading Time (Hours):	<u>1.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>1.50</u>	<u>NA</u>
Subtotals:	<u>3.60</u>	<u>0.60</u>

JOB TIME AND COST

Total job time:	<u>7.20</u>	Hours
-----------------	-------------	-------

Total job cost:	<u>\$11,377</u>
-----------------	-----------------