

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

# 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:	MINE/PROSPECTING ID#:	MINERAL:	COUNTY:
Miller Gravel Pit	M-1982-112	Sand and gravel	Elbert
INSPECTION TYPE:	INSPECTOR(S):	INSP. DATE:	INSP. TIME:
Monitoring	Amy Eschberger	February 18, 2016	12:00
OPERATOR:	<b>OPERATOR REPRESENTATIVE:</b>	TYPE OF OPERAT	FION:
Estate of Rick L Hunt	Mark Heifner, Don Opheim, Jake Mateer	112c - Construction	Regular Operation

<b>REASON FOR INSPECTION:</b>	BOND CALCULATION TYPE	: BOND AMOUNT:
Normal I&E Program	Complete Bond	\$44,146.00
DATE OF COMPLAINT:	POST INSP. CONTACTS:	JOINT INSP. AGENCY:
NA	None	None
WEATHER:	INSPECTOR'S SIGNATURE:	SIGNATURE DATE:
Clear	Jury Erchluger	February 1, 2017

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.

# **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 PB	(BG) BACKFILL & GRADING <u>Y</u>	(EX) EXPLOSIVES <u>NA</u>
(PW) PROCESSING WASTE/TAILING <u>Y</u>	(SF) PROCESSING FACILITIES Y	(TS) TOPSOIL <u>Y</u>
(MP) GENL MINE PLAN COMPLIANCE- <u>PB</u>	(FW) FISH & WILDLIFE <u>N</u>	(RV) REVEGETATION Y
(SM) SIGNS AND MARKERS Y	(SP) STORM WATER MGT PLAN <u>NA</u>	(CI) COMPLETE INSP Y
(ES) OVERBURDEN/DEV. WASTE <u>Y</u>	(SC) EROSION/SEDIMENTATION Y	(RS) RECL PLAN/COMP Y
(AT) ACID OR TOXIC MATERIALS <u>NA</u>	_	· · ·

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

## **INSPECTION TOPIC:** Hydrologic Balance

**PROBLEM:** The Division has no evidence that the operator has a valid well permit, substitute water supply plan, or approved water augmentation plan for the exposed groundwater at the site. This is a problem related to C.R.S. 34-32.5-116(4)(h) and Construction Materials Rule 3.1.6(1)(a) governing injury to existing water rights. **CORRECTIVE ACTIONS:** The operator shall demonstrate that the operation is in compliance with the Office of the State Engineer (SEO), show evidence that the operator is taking measures to bring the site into compliance with the SEO, or backfill the ponds to at least two feet above the groundwater surface by the corrective action date specified.

CORRECTIVE ACTION DUE DATE: 03/03/2017

## **INSPECTION TOPIC:** Gen. Compliance With Mine Plan

**PROBLEM:** The current mine plan needs to be updated and clarified pursuant to C.R.S. 34-32.5-112(1)(c)(VI). Specifically, the operator has disturbed more than the maximum allowed disturbed acreage of 30 acres. The operator must provide sufficient information to describe or identify how the operator intends to conduct the operation.

**CORRECTIVE ACTIONS:** The operator shall submit a Technical Revision, with the required \$216 revision fee, to update and clarify the current approved mine plan to reflect existing and proposed activities by the corrective action date. Specifically, the operator shall increase the maximum allowed disturbed acreage to at least the current amount of disturbed land, which the Division estimates to be 64.5 acres. **CORRECTIVE ACTION DUE DATE:** 03/03/2017

## **INSPECTION TOPIC:** Financial Warranty

**PROBLEM:** The 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).

**CORRECTIVE ACTIONS:** The operator shall submit adequate financial warranty, as determined by the Division. The Division will send a separate surety increase notice to the operator regarding the increase of the financial warranty. The operator will have 60 days from the date on the surety increase notice to post the additional financial warranty.

CORRECTIVE ACTION DUE DATE: 04/02/2017

# **OBSERVATIONS**

This was a normal monitoring inspection of the Miller Gravel Pit (Permit No. M-1982-112) conducted by Amy Eschberger of the Division of Reclamation, Mining and Safety (Division). The site is located approximately 13 miles north of Elizabeth, Colorado in Elbert County. The site can be accessed from the west via Hunt Circle, which intersects Co Rd 21 to the west. The site can also be accessed from the south via Hunt Circle, which intersects Co Rd 29 to the east. It should be noted the southern permit boundary is directly adjacent to a 110c permit held by the same operator, called Big R Pit, Permit No. M-1988-052. In scheduling the inspection, the Division learned the permittee, Rick L. Hunt, was deceased as of August 2015. Mr. Jake Mateer of Hunt Construction, and consultant Mr. Mark Heifner represented the permittee during the inspection. Also present for the inspection was Mr. Dan Opheim of Schmidt Construction Company, which operates the site.

This is a 112c operation permitted for 130.2 acres to mine sand and gravel (see enclosed Google Earth image showing permit area). The site is situated immediately east of Running Creek. The operation commenced in the northwestern portion of the permit area, and proceeded in a southward direction. The permit area was increased by 69.2 acres to the east with approval of Amendment No. 1 in 2007. The approved maximum allowed disturbed area at any time is 30 acres. The approved maximum mining depth is approximately 30 feet. A mobile material processing plant will operate on site. Salvaged topsoil will be stockpiled at the northern end of the site. The southwestern portion of the site will be used for storage of equipment and materials by Hunt Construction, owned by Rick L. Hunt. The main office for Hunt Construction is located just south of the permit area. The operation will eventually mine through the southern storage area, then will begin mining the amended area to the east. A small wash pond will exist at the northwestern edge of the permit area. The permittee will maintain a substitute water supply plan with the Division of Water Resources that covers evaporative losses for the wash pond.

The approved post-mining land use for the site is rangeland. The approved reclamation plan calls for grading all disturbed slopes to 3H:1V or flatter, replacing a minimum depth of 6 inches of topsoil on disturbed land, and revegetating the land with alfalfa. The final pit floor will slope gently toward the west as to create positive drainage toward Running Creek. No structures will require demolition for final reclamation. The private dirt road that crosses the permit area will be relocated during mining, and will remain after reclamation for use by the landowner. Any fences located within the permit area will be removed or relocated during mining and reclamation.

At the time of the inspection, it was sunny and cool with some snow remaining on the ground. A permit sign was posted at the southern entrance to the site off of Hunt Circle. Four-strand barbed wire fencing delineates the affected land boundary. The site was not active during the inspection. The Division observed the equipment and materials storage area at the southern end of the permit area. This area included several stockpiles of concrete rubble and rock, pipes, hoses, culverts, used tires, concrete blocks, metal beams, demolished fencing, wooden pallets, and miscellaneous scrap parts (**Photos 1-4**). The Division estimates the storage area to cover approximately 14 acres. Mr. Mateer indicated the handler of Rick L. Hunt's Estate has requested an inventory be completed of the equipment and materials stored on site, to determine what might be sold and what might need to be hauled off to a disposal facility. The Division requested a copy of the completed inventory. Although the approved mining plan allows for the storage area and its use by Hunt Construction, the approved reclamation plan does not indicate the area will continue to be used for this purpose after reclamation. Therefore, if the materials have not been removed by the next inspection, the Division will need to add costs for completing this task in the required financial warranty amount.

The primary working face in the pit is oriented northeast-southwest, with a northwesterly aspect. The main

highwall ranges from 20-30 feet in height, with slope gradients of near vertical to 1H:1V (**Photos 5-7**). The cut and fill method could be used to reclaim this highwall to the approved final configuration of 3H:1V. The easternmost section of the main highwall (approximately 450 feet in linear length) has already been graded to 3H:1V or flatter (**Photo 8**). Where the pit was expanded to the west, a shorter mined wall that is up to approximately 10 feet in height exists along the western edge of the permit area (**Photos 9 and 10**). The western mined wall has slope gradients of approximately 1H:1V. As this wall is adjacent to the western permit boundary, it will need to be backfilled for reclamation. It appears that adequate backfill material is available just east of this wall.

A stockpiling and processing area is located near the center of the disturbed area (**Photos 11 and 12**). Stockpiles of processed material were stored on both sides of the main access road which runs roughly eastwest in this portion of the permit area. Mobile screening equipment was present in the processing area. Salvaged topsoil was stored at the northern end of the permit area, north of the main haul road (**Photos 13 and 14**). The topsoil stockpiles appeared to be stable with vegetative cover. Three wash ponds are present on site, including one located at the northwestern edge of the site (approximately 0.3 acre in size; **Photo 15**), and two located just north of the main haul road (each approximately 0.14 acre in size). The wash ponds appear to be exposed groundwater. The Division estimates the combined surface area of the three ponds to be 0.58 acre. This appears to be consistent with TR-3, which limits total groundwater exposure to 1 acre. However, the Division could not find an up-to-date substitute water supply plan in the permit record that covers the amount of groundwater exposed on site. Therefore, this is cited as a problem in the report (see pages 1 and 2), and will require the operator to either demonstrate that the operation is in compliance with the Office of the State Engineer (SEO), show evidence that the operator is taking measures to bring the site into compliance with the SEO, or backfill the ponds to at least two feet above the groundwater surface by the corrective action date specified.

The Division estimates the operation has disturbed a total of 64.5 acres at the site, including the storage area, the pit area, the processing and stockpiling areas, the topsoil storage area, and the ponds (see enclosed Google Earth image showing permit area, disturbed area, and pond surface area). This amount of disturbance exceeds the approved maximum allowed disturbance at any time of 30 acres by 34.5 acres. <u>Therefore, this is cited as a problem in the report (see pages 1 and 2), and will require the operator to submit a Technical Revision to increase the maximum allowed disturbed area from 30 acres to a minimum of 64.5 acres. The Division recommends the operator overshoot the maximum allowed disturbance enough to cover any additional disturbance that may occur during mining or reclamation activities within the next year. For example, with a current disturbance of 64.5 acres, the operator might increase the maximum allowed disturbance to 65-70 acres.</u>

After conducting the inspection, the Division recalculated the required financial warranty for the site to account for 64.5 acres of disturbance. The bond estimate (see enclosed) includes costs for grading all highwalls to a final slope configuration of 3H:1V, ripping a total of 48.61 acres that were utilized for stockpiling, equipment storage, or haul roads (not including the main access road), replacing 6 inches of topsoil on a total of 64.5 acres, revegetating 64.5 acres with alfalfa, and mobilizing/demobilizing the equipment. The Division has calculated the required financial warranty for this site to be in the amount of \$146,646.00, which is \$102,500.00 more than the currently held bond of \$44,146.00. This is cited as a problem in the report (see pages 1 and 2), and will require the operator to submit the additional required financial warranty within 60 days of the signature date of this report.

During the inspection, the Division inquired about who is handling Rick L. Hunt's affairs since he passed away. Mr. Heifner and Mr. Mateer informed the Division that MidFirst Bank in Denver was handling Rick L. Hunt's Estate, which includes all of the affected land for this permit. After the inspection, the Division contacted Ms. Jennifer Sherman of MidFirst Bank and confirmed they were appointed as Personal Representative by the District Court of Elbert County to oversee the Estate of Rick L. Hunt. Ms. Sherman also informed the Division that Mr. Robert A. Lembke was appointed as Special Administrator in the Estate to operate the businesses of Rick L. Hunt, and would be the person to contact about any mining permits held in the name of the deceased. The Division met with Mr. Lembke and Mr. Heifner on April 1, 2016 to discuss the matter. During this meeting, potential paths forward were discussed including, transferring the permit to an authorized entity of the Estate, or transferring the permit to another entity such as Schmidt Construction Company which operates the pit. The Division recommended that the appropriate authority for the Estate of Rick L. Hunt submit documentation to the Division confirming that Rick L. Hunt is deceased, and proving that said entity is authorized to act on behalf of the Estate. Additionally, to keep the permit active, the authorized entity would need to continue filing the required annual reports, and maintain the financial warranty for the permit. The Division explained that failure to submit the required annual reports or maintain the required financial warranty may lead to revocation of the permit and forfeiture of the Estate decide what to do with the property, including the mine site.

It should be noted that on April 1, 2016, Mr. Lembke submitted the required Annual Report for this permit, and with it included documentation from the District Court of Elbert County which proves that Mr. Lembke is authorized to act as Special Administrator of Rick L. Hunt's businesses. Additionally, on August 18, 2016, Ms. Sherman with MidFirst Bank submitted documentation from the Elbert County District Court which proves that MidFirst Bank is authorized to act on behalf of the Estate of Rick L. Hunt. Also included was a certificate of authority which authorizes Ms. Sherman to act on behalf of MidFirst Bank, and a certificate of death for Rick L. Hunt.

As of the signature date of this report, the Division has not received a Succession of Operators application for this permit. However, given the documentation provided (described above), the Division recognizes the Estate of Rick L. Hunt as the permittee, and the authorization of Robert Lembke, Jennifer Sherman, and MidFirst Bank to act on behalf of the Estate. Therefore, all documents submitted to the Division for this permit, including corrective action requirements, must be received from one of the above authorized entities.

#### PERMIT #: M-1982-112 INSPECTOR'S INITIALS: AME INSPECTION DATE: February 18, 2016

## **PHOTOGRAPHS**



**Photo 1.** View of various equipment, materials, and scrap parts stored in southwestern portion of permit area. Note several material and rock stockpiles in background.



**Photo 2.** View of various equipment, materials, and scrap parts stored in southwestern portion of permit area.



**Photo 3.** View of various equipment, materials, and scrap parts stored in southwestern portion of permit area.



**Photo 4.** View of various equipment, materials, and scrap parts stored in southwestern portion of permit area.



**Photo 5.** View of portion of primary working face with height of approximately 25 feet and slope gradients of approximately 1H:1V.



**Photo 6.** View of portion of primary working face with height of approximately 25 feet and slope gradients of near vertical to 1H:1V.



**Photo 7.** View of primary working face (in background) with height of approximately 25-30 feet and slope gradients of near vertical to 1H:1V.



Photo 8. View of eastern portion of primary highwall that has been graded to 3H:1V or flatter.



**Photo 9.** View of mined wall along western edge of site with height of up to 10 feet and slope gradients near 1H:1V. Note fenceline behind wall delineating western permit boundary.



**Photo 10.** View of mined wall along western edge of site with height of up to 10 feet and slope gradients near 1H:1V. Note material available near wall that could be used for backfill.



**Photo 11.** View looking northwest across processing and stockpiling area located near center of disturbed area. Note main access road at right.



**Photo 12.** View looking southeast across processing and stockpiling area located near center of disturbed area. Note main access road at left.



**Photo 13.** View of topsoil stockpiles (in background) stored at northern end of permit area, north of access road.



**Photo 14.** View of topsoil stockpiles (in background) stored at northern end of permit area, north of access road. Note stockpiles appear stable with vegetative cover.



**Photo 15.** View of wash pond (0.3 acre in surface area) located at northwestern edge of permit area. Note top of pond was frozen at time of inspection.

## **Inspection Contact Address**

Jake Mateer 43160 CR 17-21 Elizabeth, CO 80107

Robert A. Lembke 8301 E. Prentice Ave. #100 Greenwood Village, CO 80111

- Enclosures: Google Earth image showing permit area Google Earth image showing permit area, disturbed area, and pond surface area Division's bond estimate
- EC: Jennifer Sherman, MidFirst Bank (jennifer.sherman@midfirst.com) Peter Hays, DRMS (peter.hays@state.co.us) Wally Erickson, DRMS (wally.erickson@state.co.us)

# M1982-112 / Miller Gravel Pit / Estate of Rick L. Hunt

N

1000 ft

Red Outline = 130.2 acres = Approved Permit Area (Image data from 6/14/2016)

M1982-112



© 2016 Google

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# M1982-112 / Miller Gravel Pit / Estate of Rick L. Hunt

Red Outline = 130.2 acres = Approved Permit Area Purple Outline = 64.5 acres = Disturbed Area Blue Outline = 0.58 acre = Pond Surface Area (Image data from 6/14/2016)



A N

1000 ft

# COST SUMMARY WORK

Т	ask descrip	otion:	Cost Summary				
Site:	Miller G	ravel Pit	Pe	rmit Action:	2/18/16 Inspection	Permit/Jo	b#: <u>M1982112</u>
<u>PI</u>	ROJECT	IDENTIFI	CATION				
	Task #:	000	State:	Colorado		Abbreviation:	None
	Date:	5/5/2016	County:	Elbert		Filename:	M112-000
	User:	AME					

TASK LIST (DIRECT COSTS)

	Form	Fleet	Task	<b>a</b>
*	Used	Size	Hours	Cost
Grade west highwall to 3H:1V	DOZER	2	3.80	\$1,608.00
Grade south highwalls to 3H:1V	DOZER	2	11.36	\$4,801.00
Rip stockpiling/processing area (North)	RIPPER	2	9.99	\$4,279.00
Rip stockpiling/processing area (Central)	RIPPER	2	12.51	\$5,361.00
Rip stockpiling and storage area (South)	RIPPER	2	12.90	\$5,527.00
Replace 6 in topsoil on 14 acres (North)	SCRAPER1	1	9.88	\$6,783.00
Replace 6 in topsoil on 50.5 acres (South)	SCRAPER1	1	42.15	\$28,940.00
Revegetate 14 ac to rangeland (North)	REVEGE	1	42.00	\$9,066.00
Revegetate 50.5 ac to rangeland (South)	REVEGE	1	152.00	\$32,704.00
Mobilization/Demobilization	MOBILIZE	1	8.90	\$13,967.00
	<u>SUBTC</u>	DTALS:	305.49	\$113,036
	Rip stockpiling/processing area (North)Rip stockpiling/processing area (Central)Rip stockpiling and storage area (South)Replace 6 in topsoil on 14 acres (North)Replace 6 in topsoil on 50.5 acres (South)Revegetate 14 ac to rangeland (North)Revegetate 50.5 ac to rangeland (South)	DescriptionUsedGrade west highwall to 3H:1VDOZERGrade south highwalls to 3H:1VDOZERRip stockpiling/processing area (North)RIPPERRip stockpiling/processing area (Central)RIPPERRip stockpiling and storage area (South)RIPPERReplace 6 in topsoil on 14 acres (North)SCRAPER1Revegetate 14 ac to rangeland (North)REVEGERevegetate 50.5 ac to rangeland (South)REVEGEMobilization/DemobilizationMOBILIZE	DescriptionUsedSizeGrade west highwall to 3H:1VDOZER2Grade south highwalls to 3H:1VDOZER2Rip stockpiling/processing area (North)RIPPER2Rip stockpiling/processing area (Central)RIPPER2Rip stockpiling and storage area (South)RIPPER2Replace 6 in topsoil on 14 acres (North)SCRAPER11Replace 6 in topsoil on 50.5 acres (South)SCRAPER11Revegetate 14 ac to rangeland (North)REVEGE1Revegetate 50.5 ac to rangeland (South)REVEGE1	DescriptionUsedSizeHoursGrade west highwall to 3H:1VDOZER23.80Grade south highwalls to 3H:1VDOZER211.36Rip stockpiling/processing area (North)RIPPER29.99Rip stockpiling/processing area (Central)RIPPER212.51Rip stockpiling and storage area (South)RIPPER212.90Replace 6 in topsoil on 14 acres (North)SCRAPER119.88Replace 6 in topsoil on 50.5 acres (South)SCRAPER1142.15Revegetate 14 ac to rangeland (North)REVEGE142.00Revegetate 50.5 ac to rangeland (South)REVEGE1152.00Mobilization/DemobilizationMOBILIZE8.90305.40

## **INDIRECT COSTS**

#### OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	\$2,283.33
Performance bond:	1.05	Total =	\$1,186.88
Job superintendent:	152.75	Total =	\$11,376.45
Profit:	10.00	Total =	\$11,303.60
		TOTAL O & P =	\$26,150.26
		CONTRACT AMOUNT (direct + O & P) = $($	\$139,186.26

## LEGAL - ENGINEERING - PROJECT MANAGEMENT:

TOTAL BO	ND AMOUNT (d	lirect + indirect) =	\$146,645.57
	TOTAL IN	NDIRECT COST =	\$33,609.57
CONTINGENCY:	0.00	Total =	\$0.00
Reclamation management and/or administration:	5.00	_	\$6,959.31
Engineering work and/or contract/bid preparation:	0.00	Total =	\$0.00
Financial warranty processing (legal/related costs):	500.00	Total =	500.00

# BULLDOZER WORK

Task description:	Grade	west high	wall to 3H:1	V		
Miller Gravel Pit		Perr	mit Action:	2/18/16 Inspection	Permit/Job#:	M1982112
PROJECT IDEN	<b>FIFICATION</b>	N				
Task #: 001		State:	Colorado		Abbreviation:	None
Date: $5/5/202$	16	County:	Elbert		Filename:	M112-001
User: AME		county.				
Agency or o	organization na	me: DR	RMS			
HOURLY EQUIE	<u>PMENT COS</u>	<u>T</u>				
Basic Machine:	Cat D8T - 8SU	J				
Horsepower:	310					
Blade Type:	Semi-Univers					
Attachment:	3-shank ripper	r				
Shift Basis:	1 per day					
Data Source:	(CRG)					
Cost Breakdown:						
				Utilization %		
Ownership Cost/Ho	our:		\$82.01	NA		
Operating Cost/Ho			\$79.23	100		
Ripper own. Cost/Ho			\$8.40	NA		
			\$2.81	50		
Ripper op. Cost/Ho			\$38.89	NA		
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Operator Cost/Ho Total unit Cost/Hour Total Fleet Cost/Hour MATERIAL QUA Initial Volume: Swell factor: Loose volume: Source of estimated s Source of estimated s HOURLY PRODI Average push distance Inadjusted hourly pr Materials consistence Average push gradier Average site altitudes	$\begin{array}{c} & & $211.34 \\ r: & $422.68 \\ \hline \\ \textbf{ANTITIES} \\ \hline \\ 3,704 \\ 1.250 \\ \hline \\ 4,630 \ LCY \\ \hline \\ \text{volume:} \\ \hline \\ \text{swell factor:} \\ \hline \\ \text{wolume:} \\ \hline \\ \text{swell factor:} \\ \hline \\ \hline \\ \textbf{UCTION} \\ \hline \\ \text{ce:} \\ \hline \\ \textbf{5} \\ \text{coduction:} \\ \hline \\ 1, \\ \text{volume:} \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \textbf{2}, \\ \hline \\ \textbf{1}, \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{5}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{5}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{5}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{5}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{5}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{1}, \\ \hline \\ \textbf{2}, \\ \hline \hline \hline \\ \textbf{2}, \\ \hline \hline \\ \textbf{2}, \\ \hline \hline \hline \\ \textbf{2}, \\ \hline \hline \hline \\ \textbf{2}, \\ \hline \hline \hline \hline \\ \textbf{2}, \\ \hline \hline \hline \ \textbf{2}, \\ \hline \hline \hline \hline \\ \textbf{2}, \\ \hline \hline \hline \ \textbf{2}, \\ \hline \hline \hline \hline \hline \hline \\ \textbf{2}, \\ \hline $	Cat Hand D feet 400.0 LC Compa et s/LCY	 	= 3,704 CY 		
Operator Cost/Ho Total unit Cost/Hour Total Fleet Cost/Hour MATERIAL QUA Initial Volume: Swell factor: Loose volume: Source of estimated s Gource of estimated s HOURLY PROD Average push distance Jnadjusted hourly pr Materials consistence Average push gradier Average site altitude Material weight: Weight description: ob Condition Correct	$\begin{array}{c} & & & \\ & & \\ r: & & \\ \hline & & \\ \hline & & \\ \hline \\ \hline$	Cat Hand D feet 400.0 LCY Comparent et s/LCY osed rock	 ' L x 10' H = book Y/hr cted fill or en  - 25% Rock,	= 3,704 CY  mbankment 0.9		
Operator Cost/Ho Total unit Cost/Hour Total Fleet Cost/Hour MATERIAL QUA Initial Volume: Swell factor: Loose volume: Source of estimated s Source of estimated s HOURLY PROD Average push distance Inadjusted hourly pr Materials consistence Average site altitude Material weight: Weight description: OD Condition Correct Operation	$\begin{array}{c} & & & \\ & & \\ r: & & \\ & & \\ \hline \hline & & \\ \hline \hline & & \\ \hline & & \\ \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline & & \\ \hline \hline \hline \\ \hline \hline \\ \hline \hline \\ \hline \hline \hline \\ \hline \hline \hline \\ \hline \hline \hline \hline \hline \\ \hline \hline$	Cat Hand D feet 400.0 LCY Compa et s/LCY osed rock 0.	 ' L x 10' H = book Y/hr cted fill or en  - 25% Rock, 750	= 3,704 CY 		
Operator Cost/Hor Total unit Cost/Hour Total Fleet Cost/Hour MATERIAL QUA Initial Volume: Swell factor: Loose volume: Source of estimated weight Average push distance Materials consistence Average push gradier Average site altituder Material weight: Weight description: <u>ob Condition Correct</u> Material con	\$211.34         r:       \$422.68         ANTITIES         3,704         1.250         4,630 LCY         volume:         swell factor:            best conduction:            y description:         nt:       5 %         :       6,100 fee            2,650 lb            Decomp         ction Factor         ator Skill:	Cat Hand Cat		= 3,704 CY 		
Operator Cost/Hor Total unit Cost/Hour Total Fleet Cost/Hour MATERIAL QUA Initial Volume: Swell factor: Loose volume: Source of estimated we Source of estimated we Source of estimated we Average push distance Materials consistence Average push gradien Average site altitude Material weight: Weight description: <u>ob Condition Correct</u> Opera Material con Dozing	: \$211.34 r: \$422.68 ANTITIES 3,704 1.250 4,630 LCY volume: well factor: UCTION ce: 50 roduction: y description: nt: 5 % : 6,100 fe  2,650 lb  Decomp ction Factor ator Skill:  g method:	Cat Hand Cat	  Y/hr cted fill or en  - 25% Rock, 750 900 100	= 3,704 CY = 3,704 CY = mbankment 0.9 , 75% Earth (AVG.) (CAT HB)) (50% SL)		
Operator Cost/Hor Total unit Cost/Hour Total Fleet Cost/Hour MATERIAL QUA Initial Volume: Swell factor: Loose volume: Source of estimated weight Average push distance Materials consistency Average push gradier Average site altitude Material weight: Weight description: Opera Material con Dozing	\$211.34         r:       \$422.68         ANTITIES         3,704         1.250         4,630 LCY         volume:         swell factor:            best conduction:            y description:         nt:       5 %         :       6,100 fee            2,650 lb            Decomp         ction Factor         ator Skill:	Cat Hand D feet 400.0 LC Comparent et s/LCY osed rock 0. 0. 1. 1.		= 3,704 CY 		

Task # 001

Spoil pile:	0.900	(SSD-FC)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)
Net correction:	0.4347	

Adjusted unit production:	608.58 LCY/hr
Adjusted fleet production:	<b>1217.16</b> LCY/hr

## JOB TIME AND COST

Fleet size:	2 Dozer(s)
Unit cost:	\$0.347/LCY

Total job time:	<b>3.80</b> Hours
Total job cost:	\$1,608

# BULLDOZER WORK

ROJECT IDENTIFICATION         Task #:       002       State:       County:       Elbert       Abbreviation:       None         Date: $55/2016$ County:       Elbert       Filename:       M112-002         Agency or organization name:       DRMS         OURLY EQUIPMENT COST         Basic Machine:       Cat D8T - 8SU         Horsepower:       310         Blade Type:       Semi-Universal         Attachment:       3-shank ripper         Shith Basi;       1per day         Data Source:       (CRG)         ost Breakdown:       Utilization %         Ownership Cost/Hour:       \$82.01       NA         Operating Cost/Hour:       \$82.01       NA         Ripper op. Cost/Hour:       \$25.81       50         Operator Cost/Hour:       \$211.34       otal Plet Cost/Hour:       \$22.68         Initial Volume:       16.554       Swell factor:       1250         Loose volume:       206.093 LCY       Our & \$11.907' L x 25' H = 16.554 CY (0H:1V to         M:I'V)       ource of estimated swell factor:       Cut & \$111.907' L x 25' H = 16.554 CY (0H:1V to         M:I'V)       Swell factor:       1.400.0 LCY/hr         haterials consiste	Task description:	Grade south high	walls to 3H	:1V		
Task #:       002       State:       Colorado       Abbreviation:       None         Date: $55/2016$ County:       Elbert       Filename:       M112-002         User:       AME	Miller Gravel Pit	Peri	mit Action:	2/18/16 Inspection	Permit/Job#:	M1982112
Task #:       002       State:       Colorado       Abbreviation:       None         Date: $55/2016$ County:       Elbert       Filename:       M112-002         User:       AME	PROJECT IDENTIFI	CATION				
Date: $55/2016$ County:       Elbert       Filename:       M112-002         Agency or organization name:       DRMS         OURLY EQUIPMENT COST         Basic Machine:       Cat DST - 8SU         Horsepower       310         Blade Type:       Semi-Universal         Attachment:       3-shank ripper         Data Source:       (CRG)         Ownership Cost/Hour:       S82.01         Operating Cost/Hour:       S12.01         Operating Cost/Hour:       S22.01         Operator Cost/Hour:       S22.01         Sasses       Sasses         Initial Volume:       16.554         Swell factor:       20.693 LCY         ource of estimated swell factor:       Cat Handbook         Intradjusted hourly production:       1.4000 LCY/hr         Iaterials consistency description:       Compacted fill or embankment 0.9         verage push distance:       -5 % <tr< td=""><td></td><td></td><td>Colorada</td><td></td><td>Abbroviation</td><td>None</td></tr<>			Colorada		Abbroviation	None
User: $\overline{\text{Agency or organization name:}}$ DRMS <b>IDENS IDENS IDENS</b>						
Agency or organization name:       DRMS         DRUCLY EQUIPMENT COST         Basic Machine:       Cat D8T - 8SU         Horsepowe:       310         Blade Type:       Semi-Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       CKG)         oct Breakdown:          Ownership Cost/Hour:       \$82.01         State Breakdown:          Ownership Cost/Hour:       \$82.01         NA       NA         Operating Cost/Hour:       \$82.01         Operator Cost/Hour:       \$22.15         Operator Cost/Hour:       \$38.89         NA       NA         operator Cost/Hour:       \$422.68         Initial Volume:       10.6554         Swell factor:       1250         Loose volume:       20.69         Doarsot Cost/Hour:       Sale 20         Ource of estimated swell factor:       Cat Handbook         CHUP VPODUCTOND       Hill 1907' L x 25' H = 16,554 CY (0H:1V to         Material consistency description:       Compacted fill or embankment 0.9         werage push distance:       50 feet         nadjusted hourly production:		County:	Elbert		Filename:	M112-002
Basic Machine:       Cat D8T - 8SU         Horsepower:       310         Blade Type:       Semi-Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         Ownership Cost/Hour:       \$82.01         NA       NA         Operating Cost/Hour:       \$82.01         NA       NA         Ripper op. Cost/Hour:       \$84.0         Operator Cost/Hour:       \$2.81         Operator Cost/Hour:       \$2.81         Operator Cost/Hour:       \$2.81         State Cost/Hour:       \$2.81         Swell Factor:       1.250         Loose volume:       20.693 LCY         ource of estimated volume:       Cut & fill 1.907' L x 25' H = 16,554 CY (0H:1V to 3H:1V)         ource of estimated swell factor:       Cat Handbook         ENCULY PRODUCTION       Material sonsistency description:         Verage push distance:       50 feet         nadjusted hourly production:       1.400.0 LCY/hr         faterials		zation name: DR	MS			
Basic Machine:       Cat D8T - 8SU         Horsepower:       310         Blade Type:       Semi-Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         Ownership Cost/Hour:       \$82.01         NA       NA         Operating Cost/Hour:       \$82.01         NA       NA         Ripper op. Cost/Hour:       \$84.0         Operator Cost/Hour:       \$2.81         Operator Cost/Hour:       \$2.81         Operator Cost/Hour:       \$2.81         State Cost/Hour:       \$2.81         Swell Factor:       1.250         Loose volume:       20.693 LCY         ource of estimated volume:       Cut & fill 1.907' L x 25' H = 16,554 CY (0H:1V to 3H:1V)         ource of estimated swell factor:       Cat Handbook         ENCULY PRODUCTION       Material sonsistency description:         Verage push distance:       50 feet         nadjusted hourly production:       1.400.0 LCY/hr         faterials		NT COST				
Horsepower:       310         Blade Type:       Semi-Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         Ownership Cost/Hour:       \$82.01         NA       NA         Operating Cost/Hour:       \$779.23         Image: State						
Blade Type:       Semi-Universal         Attachment:       3-shank ripper         Shirf Basis:       Der day         Data Source:       (CRG)         oxel Breakdown:       NA         Ownership Cost/Hour:       \$82.01         NA       NA         Operating Cost/Hour:       \$842.01         NA       NA         Operator Cost/Hour:       \$8.40         Na       \$2.81         Operator Cost/Hour:       \$2.81         Soutal unit Cost/Hour:       \$211.34         otal unit Cost/Hour:       \$21.34         soutal leter Cost/Hour:       \$21.56         Loose volume:       20.693 LCY         ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to         3H: 1V)       3H: 1V)         ource of estimated swell factor:       Cat Handbook         IOURLY PRODUCTION       Yerage push distance:         verage push distance:       50 feet         1.400.0 LCY/hr       1.400.0 LCY/hr         laterials consistency description:       Compacted fill or embankment 0.9         verage site altitude: $6.100$ feet         laterial weight:       2.650 lbs/LCY         /eight description:       Decomposed rock - 25% R		J81 - 8SU		_		
Attachment:       3-shank ripper         Iper day       1 per day         Data Source:       (CRG)         ood Breakdown:       NA         Ownership Cost/Hour:       \$82.01       NA         Operating Cost/Hour:       \$79.23       100         ipper own. Cost/Hour:       \$84.0       NA         Ripper op. Cost/Hour:       \$2.81       50         Operator Cost/Hour:       \$2.81       50         otal Init Cost/Hour:       \$211.34	· · · · · · · · · · · · · · · · · · ·	-Universal				
Shift Basis:       I per day         Out Source:       Utilization %         Ownership Cost/Hour:       S82.01       NA         Operating Cost/Hour:       S82.01       NA         Operating Cost/Hour:       S82.01       NA         Operator Cost/Hour:       \$\$211.34         otal mit Cost/Hour:       \$\$211.34         otal mit Cost/Hour:       \$\$2211.34         otal mit Cost/Hour:       \$\$\$2211.34         otal mit Cost/Hour:       \$	VI					
Data Source: $(CRG)$ ost Breakdown:       Utilization %         Ownership Cost/Hour:       \$82.01         NA       NA         Operating Cost/Hour:       \$79.23         ipper own. Cost/Hour:       \$23.80         Ripper op. Cost/Hour:       \$2.81         States over the experiment of the experiment						
od Breakdown:         Ownership Cost/Hour: $$82.01$ NA         Operating Cost/Hour: $$79.23$ 100         ipper own. Cost/Hour: $$8.40$ NA         Ripper op. Cost/Hour: $$2.81$ 50         Operator Cost/Hour: $$2.81$ 50         Operator Cost/Hour: $$$2.81$ 50         Operator Cost/Hour: $$$211.34$						
Ownership Cost/Hour: $$82.01$ NAOperating Cost/Hour: $$79.23$ 100ipper own. Cost/Hour: $$8.40$ NARipper op. Cost/Hour: $$2.81$ 50Operator Cost/Hour: $$2.81$ 50Operator Cost/Hour: $$211.34$ otal unit Cost/Hour: $$211.34$ statz.cosstatz.cosInitial Volume:16,554 $$$422.68$ Initial Volume:16,554 $$$2000 (CY)$ Loose volume: $$20,693 LCY$ ource of estimated volume:Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to $$3H:1V)$ ource of estimated swell factor:Cat HandbookIOURLY PRODUCTIONverage push distance: $$50 \text{ feet}$ $$1,400.0 LCY/hrlaterials consistency description:Compacted fill or embankment 0.9verage push gradient:-5\%$0.100 \text{ feet}laterial weight:2,650 \text{ lbs/LCY}//eight description:Decomposed rock - 25% Rock, 75% Earthob Condition Correction FactorSource$0.900Operator Skill:0.750$0.900Material consistency:0.900$0.000Dozing method:1.200(SUT)Source$		- /				
Ownership Cost/Hour:       \$82.01       NA         Operating Cost/Hour:       \$79.23       100         ipper own. Cost/Hour:       \$8.40       NA         Ripper op. Cost/Hour:       \$2.81       50         Operator Cost/Hour:       \$2.81       50         otal unit Cost/Hour:       \$211.34	Cost Breakdown:		1	<b>TT.111</b> .1		
Operating Cost/Hour:       \$79.23       100         ipper own. Cost/Hour:       \$8.40       NA         Ripper op. Cost/Hour:       \$2.81       50         Operator Cost/Hour:       \$211.34       50         otal unit Cost/Hour:       \$211.34       50         otal unit Cost/Hour:       \$422.68       NA         Initial Volume:         12.50       12.50         Loose volume:       20,693 LCY         ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to 3H:1V)         ource of estimated swell factor:       Cat Handbook         IOURLY PRODUCTION         Verage push distance:         indiguade hourly production:       1,400.0 LCY/hr         Interial consistency description:         Compacted fill or embankment 0.9       Verage push gradient:         verage push gradient:       -5 %         verage site altitude:       6,100 feet         Iaterial weight:       2,650 lbs/LCY         //eight description:       Decomposed rock - 25% Rock, 75% Earth         pb Condition Correction Factor       Source         Operator Skill:       0.750         Material consistency:       0.900         Dozing method:	Ormensh's Cost /II		¢00.01			
ipper own. Cost/Hour:       \$8.40       NA         Ripper op. Cost/Hour:       \$2.81       50         Operator Cost/Hour:       \$211.34       50         otal unit Cost/Hour:       \$221.34       50         statu unit Cost/Hour:       \$221.34       50         statu unit Cost/Hour:       \$422.68       NA         Initial Volume:         16.554       Swell factor:       16.554         Loose volume:       20,693 LCY       20,693 LCY         ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to 3H:1V)         ource of estimated swell factor:       Cat Handbook         IOURLY PRODUCTION         verage push distance:         50 feet       1,400.0 LCY/hr         faterials consistency description:       Compacted fill or embankment 0.9         verage push gradient: $-5\%$ verage site altitude: $-6,100$ feet         faterial weight:       2,650 lbs/LCY         /eight description:       Decomposed rock - 25% Rock, 75% Earth         bb Condition Correction Factor       Source         Operator Skill:       0.750       (AVG.)         Material consistency:       0.900       (CAT HB))         Dozin						
Ripper op. Cost/Hour:       \$2.81       50         Operator Cost/Hour:       \$38.89       NA         otal unit Cost/Hour:       \$211.34         stal Fleet Cost/Hour:       \$422.68         Initial Volume:         16.554         Swell factor:       1.250         Loose volume:       20,693 LCY         ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to         3H:1V)       ource of estimated swell factor:         Ource of estimated swell factor:       Cat Handbook         IOURLY PRODUCTION         verage push distance:       50 feet         1,400.0 LCY/hr						
Operator Cost/Hour:       \$33.89       NA         otal unit Cost/Hour:       \$211.34         otal Fleet Cost/Hour:       \$422.68 <b>IATERIAL QUANTITIES</b> Initial Volume:       16,554         Swell factor:       1.250         Loose volume: <b>20,693</b> LCY         ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to 3H:1V)         ource of estimated swell factor:       Cat Handbook <b>IOURLY PRODUCTION</b> verage push distance:       50 feet         inadjusted hourly production:       1,400.0 LCY/hr         Iaterials consistency description:       Compacted fill or embankment 0.9         verage push gradient:       -5 %         verage site altitude:       6,100 feet         Iaterial weight:       2,650 lbs/LCY         /eight description:       Decomposed rock - 25% Rock, 75% Earth         bb Condition Correction Factor       Source         Operator Skill:       0.750       (AVG.)         Material consistency:       0.900       (CAT HB))         Dozing method:       1.200       (SLOT)						
otal unit Cost/Hour:       \$211.34         otal Fleet Cost/Hour:       \$422.68         Initial Volume:       16,554         Swell factor:       1.250         Loose volume:       20,693 LCY         ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to $3H:1V$ ) $3H:1V$ ource of estimated swell factor:       Cat Handbook         IOURLY PRODUCTION       I.400.0 LCY/hr         Nerage push distance:       50 feet         inadjusted hourly production:       I.400.0 LCY/hr         faterials consistency description:       Compacted fill or embankment 0.9         verage push gradient:       -5 %         verage site altitude:       6,100 feet         faterial weight:       2,650 lbs/LCY         /eight description:       Decomposed rock - 25% Rock, 75% Earth         bb Condition Correction Factor       Operator Skill:         Operator Skill:       0.750       (AVG.)         Material consistency:       0.900       (CAT HB))         Dozing method:       1.200       (SLOT)						
<b>\$422.68 IATERIAL QUANTITIES</b> Initial Volume:       16,554         Swell factor:       1.250         Loose volume: <b>20,693</b> LCY         ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to $3H:1V$ )       Cat Handbook <b>Ource of estimated swell factor:</b> $0.0000$ Cat Handbook <b>OURLY PRODUCTION</b> verage push distance: $50$ feet $1.400.0$ LCY/hr       Interials consistency description:         Verage push gradient: $-5\%$ verage push gradient: $-5\%$ verage site altitude: $6,1000$ feet         Iaterial weight:       2,650 lbs/LCY         //eight description:       Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor       Source         Operator Skill:       0.750						
ource of estimated volume:       Cut & fill 1,907' L x 25' H = 16,554 CY (0H:1V to $3H:1V$ $3H:1V$ ource of estimated swell factor: $Cat Handbook$ IOURLY PRODUCTION       Cat Handbook         verage push distance: $50$ feet         nadjusted hourly production: $1,400.0$ LCY/hr         Iaterials consistency description:       Compacted fill or embankment 0.9         verage push gradient: $-5 %$ verage site altitude: $6,100$ feet         Iaterial weight: $2,650$ lbs/LCY         Veight description:       Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor       Source         Operator Skill: $0.750$ Operator Skill: $0.750$ Operator Skill: $0.750$ Dozing method: $1.200$	Swell factor: 1.250					
3H:1V) $Cat Handbook$ cource of estimated swell factor: $Cat Handbook$ <b>IOURLY PRODUCTION</b> $1,400.0 LCY/hr$ adaption of the system of the syste					4 7 7 .	
ource of estimated swell factor:       Cat Handbook         IOURLY PRODUCTION         verage push distance:       50 feet         'nadjusted hourly production:       1,400.0 LCY/hr         Iaterials consistency description:       Compacted fill or embankment 0.9         verage push gradient:       -5 %         verage site altitude:       6,100 feet         Iaterial weight:       2,650 lbs/LCY         //eight description:       Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor       Source         Operator Skill:       0.750         Material consistency:       0.900         Dozing method:       1.200	Source of estimated volum		1,907´L X 2	H = 16,554  CY (0H)	IV to	
NOURLY PRODUCTION         vverage push distance: 50 feet         inadjusted hourly production: 1,400.0 LCY/hr         Iaterials consistency description: Compacted fill or embankment 0.9         vverage push gradient: -5 %         vverage site altitude: 6,100 feet         Iaterial weight: 2,650 lbs/LCY         Veight description: Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor         Operator Skill:       0.750         Material consistency:       0.900         Material consistency:       0.900         Dozing method:       1.200	Source of estimated swall		book			
everage push distance: $50 \text{ feet}$ Inadjusted hourly production: $1,400.0 \text{ LCY/hr}$ Iaterials consistency description:       Compacted fill or embankment 0.9         everage push gradient: $-5 \%$ everage site altitude: $6,100 \text{ feet}$ Iaterial weight: $2,650 \text{ lbs/LCY}$ Veight description:       Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor       Source         Operator Skill: $0.750$ Material consistency: $0.900$ Ozing method: $1.200$	Source of estimated swell		UUUK			
everage push distance: $50 \text{ feet}$ Inadjusted hourly production: $1,400.0 \text{ LCY/hr}$ Iaterials consistency description:       Compacted fill or embankment 0.9         everage push gradient: $-5 \%$ everage site altitude: $6,100 \text{ feet}$ Iaterial weight: $2,650 \text{ lbs/LCY}$ Veight description:       Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor       Source         Operator Skill: $0.750$ Material consistency: $0.900$ Ozing method: $1.200$						
Inadjusted hourly production:       1,400.0 LCY/hr         Iaterials consistency description:       Compacted fill or embankment 0.9         verage push gradient:       -5 %         verage site altitude:       6,100 feet         Iaterial weight:       2,650 lbs/LCY         Veight description:       Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor       Source         Operator Skill:       0.750         Material consistency:       0.900         Dozing method:       1.200	HOUKLY PRODUCT	lon				
Inadjusted hourly production:       1,400.0 LCY/hr         Iaterials consistency description:       Compacted fill or embankment 0.9         verage push gradient:       -5 %         verage site altitude:       6,100 feet         Iaterial weight:       2,650 lbs/LCY         Veight description:       Decomposed rock - 25% Rock, 75% Earth         ob Condition Correction Factor       Source         Operator Skill:       0.750         Material consistency:       0.900         Dozing method:       1.200	Average push distance:	50 feet				
verage push gradient:     -5 %       verage site altitude:     6,100 feet       Iaterial weight:     2,650 lbs/LCY       /eight description:     Decomposed rock - 25% Rock, 75% Earth <u>ob Condition Correction Factor</u> Source       Operator Skill:     0.750       Material consistency:     0.900       Dozing method:     1.200		ion: 1,400.0 LC	Y/hr			
Average site altitude:       6,100 feet         Iaterial weight:       2,650 lbs/LCY         Veight description:       Decomposed rock - 25% Rock, 75% Earth         Ob Condition Correction Factor       Source         Operator Skill:       0.750         Material consistency:       0.900         Dozing method:       1.200	Materials consistency desc	ription: <u>Compa</u>	cted fill or e	mbankment 0.9		
Average site altitude:       6,100 feet         Iaterial weight:       2,650 lbs/LCY         Veight description:       Decomposed rock - 25% Rock, 75% Earth         Ob Condition Correction Factor       Source         Operator Skill:       0.750         Material consistency:       0.900         Dozing method:       1.200	Average push gradient:	-5 %				
Decomposed rock - 25% Rock, 75% Earth         Deb Condition Correction Factor       Source         Operator Skill:       0.750       (AVG.)         Material consistency:       0.900       (CAT HB))         Dozing method:       1.200       (SLOT)	Average site altitude:					
ob Condition Correction FactorSourceOperator Skill:0.750(AVG.)Material consistency:0.900(CAT HB))Dozing method:1.200(SLOT)	Material weight:	2,650 lbs/LCY				
Operator Skill:0.750(AVG.)Material consistency:0.900(CAT HB))Dozing method:1.200(SLOT)	Weight description:	Decomposed rock	- 25% Rock	, 75% Earth		
Operator Skill:0.750(AVG.)Material consistency:0.900(CAT HB))Dozing method:1.200(SLOT)	Job Condition Correction I	Factor		Source		
Material consistency:0.900(CAT HB))Dozing method:1.200(SLOT)			750			
Visibility: 1.000 (AVG.)			200	(SLOT)		
	Visibi	lity: 1.	000	(AVG.)		

Task # 002

Job efficiency	y: 0.830	(1 SHIFT/DAY)
Spoil pil	e: 1.000	(DOZ-OC)
Push gradien	nt: 1.115	(CAT HB)
Altitud	e: 1.000	(CAT HB)
Material Weigh	nt: 0.868	(CAT HB)
Blade typ	e: 1.000	(PAT)
Net correction	n: 0.6507	
Adjusted unit production:	910.98 LCY/hr	
Adjusted fleet production:	1821.96 LCY/hr	

# JOB TIME AND COST

Fleet size:	2 Dozer(s)
Unit cost:	\$0.232/LCY

Total job time:	11.36 Hours
Total job cost:	\$4,801

# BULLDOZER RIPPING WORK

	Task description:	Rip	stockpiling/processing a	rea (North)				
Site	: Miller Gravel	Pit	Permit Action:	2/18/16 Inspectio	on Permit/Job	#: <u>M1982112</u>		
	PROJECT ID	ENTIFICATI	ION					
	Task #: 003		State: Colorado		Abbreviation:			
	Date: 5/5 User: AN	5/2016 //E	County: Elbert		Filename:	M112-003		
		or organization	name: DRMS					
	HOURLY EQ	•						
			t D8T - 8SU		Horsepower:	310		
	Ripper Att		Shank Ripper		· · · · · · · · · · · · · · · · · · ·	per day		
			**		Data Source:	(CRG)		
	Cost Breakdown	<u>:</u>						
		O			Juilization %			
		Ownership C Operating C		\$82.01 \$79.23	<u>NA</u> 100			
	Ripp	er Ownership C		\$8.40	NA			
		per Operating C	ost/Hour:	\$5.62	100			
		Operator C		\$38.89	NA			
		Total Unit C	ost/Hour:	\$214.15				
		Total Fleet C	ost/Hour: \$428	3.30				
	MATERIAL (	DUANTITIES	Sele	cted estimating m	nethod: Area			
	Alternate Method				Alta			
		<u>us.</u>	~					
smic: Area:	NA 13.80		Bank Volume: Rip Depth (ft):	NA 1.50	BCY Volume: 33,396	NA BCY or		
Alta.	15.00	acres	· · · · <u>-</u>			BC1 01		
			mated quantity: Google	Earth Pro image	data from 6/14/16			
	HOURLY PR	<b>ODUCTION</b>						
	Seismic:							
			Seismic Velocity:	NA	feet/second			
	Area:							
			ge Ripping Depth:	2.56	mph			
			ge Ripping Width:	7.08	degrees			
		0	e Ripping Length: rage Dozer Speed:	700.00 88.00	feet feet			
			e Maneuver Time:	0.25	feet			
			ction per unit area:	0.832	acres/hour			
	Job Condition Correction Factors							
			y Unit Production:	0.832	Acres/hr			
			Site Altitude:	6,100	feet			
			Altitude Adj:	1.00	(CAT HB)			
			Job Efficiency:	0.83	(1 shift/day)			
			Net Correction:	0.83	multiplier			
		Adjusted	Hourly Unit Production:	0.69	Acres/hr			
			Hourly Fleet Production:	1.38	Acres/hr			
	JOB TIME AN	ND COST						
	Fleet size:	2	Grader(s)	Total job time:	9.99	Hours		
	Unit cost:	\$310.099	Per acre	Total job cost:	\$4,279			
		ψυ 10.077		1000 0030.	Ψ¬,=,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			

# BULLDOZER RIPPING WORK

Site:				rea (Central)			
	Miller Gravel	Pit Pe	ermit Action:	2/18/16 Inspec	etion Per	mit/Job#: <u>M1982</u>	112
	PROJECT ID	<b>ENTIFICATION</b>					
	Task #: 004		Colorado		Abbre	viation: None	
		/2016 County:	Elbert		Fil	ename: <u>M112-0</u>	04
	User: AN	<u>1E</u>					
	Agency	or organization name:	DRMS				
	HOURLY EQ	UIPMENT COST					
	Basic 1	Machine: Cat D8T - 8SU	J		Horsepower:	310	
	Ripper Att		er		Shift Basis:	1 per day	
					Data Source:	(CRG)	
	Cost Breakdown:						
					Utilization %		
		Ownership Cost/Hour:		\$82.01	NA		
	Pipp	Operating Cost/Hour: er Ownership Cost/Hour:		\$79.23 \$8.40	100 NA		
	11	ber Operating Cost/Hour:		\$5.62	<u> </u>		
		Operator Cost/Hour:		\$38.89	NA		
		Total Unit Cost/Hour:		\$214.15			
		Total Fleet Cost/Hour:	\$428	2 20			
		-	<b>Φ</b> 420				
	MATERIAL C	<u>DUANTITIES</u>	Sele	cted estimating	method: Area		
	Alternate Method	<u>ls:</u>					
mic:	NA	Ba	ank Volume:	NA	BCY	NA	
rea:	17.20	acres Rij	Depth (ft):	1.50		,624	BCY or
		Source of estimated quan	tity. Google	Earth Pro imag	ve data from 6/14/1	6	
				Bartin 110 mille	,	0	
	HOURLY PRO	<b>DDUCTION</b>					
	HOURLY PRO						
		DDUCTION Seismic Ve	locity:	NA	feet/secor	ıd	
			locity:	NA	feet/secor	ıd	
	<u>Seismic:</u>	Seismic Ve Average Ripping I	Depth:	2.56	mph	ıd	
	<u>Seismic:</u>	Seismic Ve Average Ripping I Average Ripping V	Depth: Width:	2.56 7.08	mph degrees	ıd	
	<u>Seismic:</u>	Seismic Ve Average Ripping I Average Ripping V Average Ripping L	Depth: Width: ength:	2.56 7.08 600.00	mph degrees feet	ıd	
	<u>Seismic:</u>	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S	Depth: Width: ength: Speed:	2.56 7.08 600.00 88.00	mph degrees feet feet	ıd	
	<u>Seismic:</u>	Seismic Ve Average Ripping I Average Ripping V Average Ripping L	Depth: Width: ength: Speed: Time:	2.56 7.08 600.00	mph degrees feet		
	<u>Seismic:</u> <u>Area:</u>	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni	Depth: Width: ength: Speed: Time:	2.56 7.08 600.00 88.00 0.25	mph degrees feet feet feet feet		
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni prrection Factors	Depth: Width: ength: Speed: Time: it area:	2.56 7.08 600.00 88.00 0.25 0.828	mph degrees feet feet feet feet acres/hou		
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni <u>prrection Factors</u> adjusted Hourly Unit Produ	Depth: Width: ength: Speed: Time: t area: uction:	2.56 7.08 600.00 88.00 0.25 0.828 0.828	mph degrees feet feet feet acres/hou Acres/hr		
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni <u>prrection Factors</u> adjusted Hourly Unit Produ	Depth: Width: ength: Speed: Time: it area: uction: titude:	2.56 7.08 600.00 88.00 0.25 0.828 0.828 6,100	mph degrees feet feet feet acres/hou Acres/hr feet	r	
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni prrection Factors adjusted Hourly Unit Produ Site Al Altitud	Depth: Width: ength: Speed: Time: it area: uction: titude: e Adj:	2.56 7.08 600.00 88.00 0.25 0.828 0.828 6,100 1.00	mph degrees feet feet feet acres/hou Acres/hr feet (CAT HB	r )	
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni <u>prrection Factors</u> adjusted Hourly Unit Produ Site Al Altitud Job Effic	Depth: Width: ength: Speed: Time: it area: it area: uction: titude: be Adj: piency:	2.56 7.08 600.00 88.00 0.25 0.828 0.828 6,100 1.00 0.83	mph degrees feet feet feet acres/hou Acres/hr feet (CAT HB (1 shift/da	r ) 1y)	
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni <u>prrection Factors</u> adjusted Hourly Unit Produ Site Al Altitud Job Effic Net Corre	Depth: Width: ength: Speed: Time: it area: uction: titude: titude: le Adj: eiency: ection:	$\begin{array}{r} 2.56 \\ \hline 7.08 \\ \hline 600.00 \\ \hline 88.00 \\ \hline 0.25 \\ \hline 0.828 \\ \hline 0.828 \\ \hline 6,100 \\ \hline 1.00 \\ \hline 0.83 \\ \hline 0.83 \\ \hline 0.83 \\ \hline \end{array}$	mph degrees feet feet feet acres/hou Acres/hr feet (CAT HB (1 shift/da multiplier	r ) 1y)	
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping L Average Dozer S Average Maneuver Production per uni prection Factors adjusted Hourly Unit Produ Site Al Altitud Job Effic Net Corre Adjusted Hourly Un	Depth: Width: ength: Speed: Time: tit area: it area: uction: titude: titude: e Adj: siency: ection: it Production:	$ \begin{array}{r} 2.56 \\ 7.08 \\ 600.00 \\ 88.00 \\ 0.25 \\ 0.828 \\ \hline 0.828 \\ 6,100 \\ 1.00 \\ 0.83 \\ 0.83 \\ \hline 0.69 \\ \end{array} $	mph degrees feet feet feet acres/hou Acres/hr feet (CAT HB (1 shift/da multiplier Acres/hr	r ) 1y)	
	<u>Seismic:</u> <u>Area:</u> <u>Job Condition Cc</u> Un	Seismic Ve Average Ripping I Average Ripping V Average Ripping V Average Dozer S Average Maneuver Production per uni <u>prrection Factors</u> adjusted Hourly Unit Produ Site Al Altitud Job Effic Net Corre Adjusted Hourly Un Adjusted Hourly Flee	Depth: Width: ength: Speed: Time: tit area: it area: uction: titude: titude: e Adj: siency: ection: it Production:	$\begin{array}{r} 2.56 \\ \hline 7.08 \\ \hline 600.00 \\ \hline 88.00 \\ \hline 0.25 \\ \hline 0.828 \\ \hline 0.828 \\ \hline 6,100 \\ \hline 1.00 \\ \hline 0.83 \\ \hline 0.83 \\ \hline 0.83 \\ \hline \end{array}$	mph degrees feet feet feet acres/hou Acres/hr feet (CAT HB (1 shift/da multiplier	r ) 1y)	
	Seismic: Area: Job Condition Co	Seismic Ve Average Ripping I Average Ripping V Average Ripping V Average Dozer S Average Maneuver Production per uni <u>prrection Factors</u> adjusted Hourly Unit Produ Site Al Altitud Job Effic Net Corre Adjusted Hourly Un Adjusted Hourly Flee	Depth: Width: ength: Speed: Time: tit area: it area: uction: titude: titude: e Adj: siency: ection: it Production:	$ \begin{array}{r} 2.56 \\ 7.08 \\ 600.00 \\ 88.00 \\ 0.25 \\ 0.828 \\ \hline 0.828 \\ 6,100 \\ 1.00 \\ 0.83 \\ 0.83 \\ \hline 0.69 \\ \end{array} $	mph degrees feet feet feet acres/hou Acres/hr feet (CAT HB (1 shift/da multiplier Acres/hr	r ) 1y)	
	<u>Seismic:</u> <u>Area:</u> <u>Job Condition Cc</u> Un	Seismic Ve Average Ripping I Average Ripping V Average Ripping V Average Dozer S Average Maneuver Production per uni <u>prrection Factors</u> adjusted Hourly Unit Produ Site Al Altitud Job Effic Net Corre Adjusted Hourly Un Adjusted Hourly Flee	Depth: Width: ength: Speed: Time: traction: titude: titude: et Adj: ection: it Production: et Production:	$ \begin{array}{r} 2.56 \\ 7.08 \\ 600.00 \\ 88.00 \\ 0.25 \\ 0.828 \\ \hline 0.828 \\ 6,100 \\ 1.00 \\ 0.83 \\ 0.83 \\ \hline 0.69 \\ \end{array} $	mph degrees feet feet feet acres/hou Acres/hr feet (CAT HB (1 shift/da multiplier Acres/hr Acres/hr	r ) iy)	ours

# BULLDOZER RIPPING WORK

	Task description:	Rip s	tockpiling and storage	area (South)						
Site	: Miller Gravel	Pit	Permit Action:	2/18/16 Inspectio	on Permit/Job	o#: <u>M1982112</u>				
	PROJECT ID	ENTIFICATIO	<u>DN</u>							
	Task #:005	5	State: Colorado		Abbreviation	: None				
		/2016	County: Elbert		Filename	: M112-005				
	User: AN									
	Agency	or organization 1	name: DRMS							
	HOURLY EQ	UIPMENT CO	<u>ST</u>							
	Basic 1	Machine: Cat	D8T - 8SU		Horsepower:	310				
	Ripper Att	achment: <u>3-Sh</u>	ank Ripper			1 per day				
	~ ~				Data Source:	(CRG)				
	Cost Breakdown:			I	Jtilization %					
		Ownership Co	st/Hour:	\$82.01	NA					
		Operating Co	st/Hour:	\$79.23	100					
		er Ownership Co per Operating Co		\$8.40 \$5.62	NA 100					
	Кірі	Operating Co Operator Co		\$38.89	 NA					
		Total Unit Co		\$214.15	<u> </u>					
		Total Fleet Co	st/Hour: \$47	8.30						
	MATERIAL C	<u>DUANTITIES</u>	Sel	ected estimating m	nethod: Area					
	Alternate Method	<u>ls:</u>								
smic:	NA		Bank Volume:	NA	BCY	NA				
Area:	17.61	acres	Rip Depth (ft):	1.50	Volume: <u>42,616</u>	BCY or				
		Source of estim	ated quantity: <u>Googl</u>	e Earth Pro image	data from 6/14/16					
	HOURLY PRO	<b>DDUCTION</b>								
	Seismic:									
	<u></u>	S	eismic Velocity:	NA	feet/second					
	Area:									
			Ripping Depth:	2.56	mph					
			Ripping Width:	7.08	degrees					
			Ripping Length: ge Dozer Speed:	500.00 88.00	feet feet					
			Maneuver Time:	0.25	feet					
		Producti	on per unit area:	0.822	acres/hour					
	Job Condition Correction Factors									
	Un	adjusted Hourly	Unit Production:	0.822	Acres/hr					
		5	Site Altitude:	6,100	feet					
			Altitude Adj:	1.00	(CAT HB)					
			Job Efficiency:	0.83	(1 shift/day)					
			Net Correction:	0.83	multiplier					
			Hourly Unit Production:		Acres/hr					
		Adjusted F		1.36	Acres/hr					
	JOB TIME AND COST									
	JOB TIME AN	·	Iourly Fleet Production:	1.30	_					
	JOB TIME AN	·	Iourly Fleet Production: Grader(s)	Total job time:	_	Hours				

Page 1 of 2

# SCRAPER TEAM WORK

Site: Miller Gravel Pit		Permit	Action:	2/18/16 Inspecti	on Perr	mit/Job#: <u>M1982</u>	2112
PROJECT IDEN	<b>TIFICATION</b>						
Task #: 006			Colorado		Abbrev		
Date: 5/5/201 User: AME	.6 Cour	nty: <u> </u>	Elbert		File	ename: M112-0	006
Agency or o	organization name:	DRM	S				
HOURLY EQUIP	MENT			COSTSI	nift basis: <u>1 per d</u>	ay	
	<u> </u>			ent Description			
		raper: Dozer:	Cat 631 NA	G			
Suppo	rt Equipment -Load		NA				
Road Ma	-Dump intenance –Motor G		NA CAT 14	łM			
	-Water 7	Fruck:	Water 7	Tanker, 2,500 Gal.			
Cost Breakdown:	Scraper Work	Team		Support Equip	oment	Maintenance	Equipment
<u>Cost Breakdown</u> .	Scraper	Doz	zer	Load Area	Dump Area	Motor Grader	Water Tru
%Utilization-machine:	100		NA	NA	NA	75	
Ownership cost/hour:	\$104.50		NA	NA	NA	\$53.53	\$7
Operating cost/hour:	\$129.95		NA	NA	NA	\$42.54	\$9
%Utilization-ripper:	NA		NA	NA	NA	NA	-
Ripper own. cost/hour:	NA		NA	NA	NA	\$0.00	\$0
Ripper op. cost/hour:	NA		NA	NA	NA	\$0.00	\$0
Operator cost/hour:	\$34.24		NA	NA	NA	\$35.83	\$0
Unit Subtotals:	\$268.69		NA	NA	NA	\$131.90	\$17
Number of Units:	2		0	0	0	1	
Group Subtotals:	Work:	\$537	7.38	Support:	\$0.00	Maint:	\$149.14
Total work team cost MATERIAL QUA Initial volume:			ССҮ	Swell fact	or: 1.215		
Loose volume:	13,721		LCY				
Sou	rce of estimated volu	ume:	14 ac x 6	5 in depth = 11,293	3 CY		
Source of	of estimated swell fa	ctor:	Cat Hand	lbook			
HOURLY PROD	UCTION						
				Scraper Bo	owl (volume) Basi	is:	
Material weight:	1,600 lbs/LCY				Volume: 24.00		CY
	T 0 1			77 17	1 24 00	т	201
Material description: Rated Payload:	Top Soil 81,600 pounds			Heaped Average			CY CY

<u>0.80</u> Minutes

<u>0.70</u> Minutes

#### Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

Job Condition Correction:

Site Altitude: 6100 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 3.0

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	1.00	3.00	4.00	1667	0.29

Haul Time: **0.29** minutes

#### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	-1.00	3.00	2.00	2914	0.29
				Return Time:	0.29	minutes
			Total Scrape	er team cycle time:	2.08	minutes
			Adjusted	for job conditions:	694.33	LCY/Hour
			Selected Nu	umber of Scrapers:	2	Scraper(s)
	Adjuste	d single scra	per team (unit)	hourly production:	1,388.65	LCY/Hour
	Adjusted n	nultiple scrap	per team (fleet)	hourly production:	1,388.65	LCY/Hour
Optima	Unadjusted unit pro al Number of Scrapers pe			_ LCY/Hour		
JOB T	IME AND COST					

Unit cost: \$0.494 /LCY

Total job cost: \_\_\_\_\_\_\$6,783\_\_\_\_\_

Page 1 of 2

# SCRAPER TEAM WORK

Site: Miller Gravel Pit		Permit	Action:	2/18/16 Inspecti	on Perr	nit/Job#: <u>M1982</u>	2112
PROJECT IDEN	<b><u><b>FIFICATION</b></u></b>						
Task #: 007	Sta	te: (	Colorado		Abbrev	viation: None	
Date: 5/5/201 User: AME	16 Coun	ity: I	Elbert		Fil	ename: M112-0	007
		עמס	C				
Agency of C	organization name: _	DRM	3				
HOURLY EQUIP	<u>'MENT</u>			COSTSh	nift basis: <u>1 per d</u>	ay	
				ent Description			
		aper: ozer:	Cat 631 NA	G			
Suppo	rt Equipment -Load	Area:	NA				
Dead Ma	-Dump / intenance –Motor Gr		NA CAT 14	INT			
Koau Ma	-Water T			Fanker, 2,500 Gal.			
Cost Breakdown:	Scraper Work			Support Equip		Maintenance	Equipment Water Tru
	Scraper	Doz		Load Area	Dump Area	Motor Grader	
%Utilization-machine:	100		NA	NA	NA	75	
Ownership cost/hour:	\$104.50	NA		NA	NA	\$53.53	\$1
Operating cost/hour:	\$129.95	NA		NA	NA	\$42.54	\$
%Utilization-ripper:	NA		NA	NA	NA	NA	¢.
Ripper own. cost/hour: Ripper op. cost/hour:	NA NA		NA NA	NA NA	NA NA	\$0.00 \$0.00	\$( \$(
Operator cost/hour:	\$34.24		NA	NA	NA	\$0.00	\$
Unit Subtotals:	\$268.69		NA	NA	NA	\$131.90	\$1
Number of Units:	200.09		0	0	0	¢131.90	ψI
Group Subtotals:	Work:	\$537	-	Support:	\$0.00	Maint:	\$149.14
Total work team cost	/hour: <b>\$686.52</b>			11			
MATERIAL QUA			~~~	~ ~ ~ ~			
Initial volume: Loose volume:	40,737 <b>49,495</b>		CCY LCY	Swell fact	or: <u>1.215</u>		
	rce of estimated volu of estimated swell fac		50.5 ac x Cat Hanc	6  in depth = 40,7 lbook	37 CY		
Source (							
Source of HOURLY PROD	UCTION						
	<u>UCTION</u>			Scraper Bo	owl (volume) Basi	<u>s:</u>	
	1,600 lbs/LCY			-	Volume: 24.00		CY
HOURLY PROD				-	Volume: 24.00 Volume: 34.00	L0	CY CY CY

0.80 Minutes

<u>0.70</u> Minutes

#### Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

Job Condition Correction:

Site Altitude: 6100 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 3.0

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	700.00	1.00	3.00	4.00	1667	0.53

Haul Time: **0.53** minutes

#### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res (%)	Velocity (fpm)	Travel Time (min)
	700.00	-1.00	3.00	2.00	2914	0.43
				Return Time:	0.43	minutes
			Total Scrape	er team cycle time:	2.46	minutes
			Adjusted	for job conditions:	587.07	LCY/Hour
			Selected Nu	umber of Scrapers:	2	Scraper(s)
	Adjuste	d single scra	per team (unit)	hourly production:	1,174.15	LCY/Hour
	Adjusted n	nultiple scrap	er team (fleet)	hourly production:	1,174.15	LCY/Hour
Optim	Unadjusted unit pro al Number of Scrapers pe			LCY/Hour		
	IME AND COST					
Flee	t size: 1	Team(s)	Г	'otal job time:	42.15	Hours

Fleet size:	1	Team(s)	Total job time:	42.15	Hours
Unit cost:	\$0.585	/LCY	Total job cost:	\$28,940	

# **REVEGETATION WORK**

Task des	cription:	Revegetate 14 ac to	rangelan	d (North)		
Site: Miller	Gravel Pit	Permi	t Action:	2/18/16 Inspection	Permit/Job	#: <u>M1982112</u>
<u>PROJEC</u>	CT IDENTIFIC	CATION				
Task #	#: 008	State: C	Colorado		Abbreviation:	None
Date	e: 5/5/2016	County: E	lbert		Filename:	M112-008
Use	r: AME					

# **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)	\$242.00
Total Tilling Cost/Acre	\$242.00

## **SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alfalfa - Common	15.00	72.31	\$38.40
Totals Seed Mix	15.00	72.31	\$38.40

# Application

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

## **Total Seed Application Cost/Acre**

## **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
					\$
	<b>40.00</b>				
Totals Nursery Stock Cost / Acre					\$0.00

#### JOB TIME AND COST

	No. of Acres:	14	Cost /Acre:	\$512.40
Estimate	ed Failure Rate:	50%	Cost /Acre*:	\$270.40
*Selected Replanti	ng Work Items:	SEEDING		
Initial Job Cost: Reseeding Job Cost: Total Job Cost: Job Hours:	\$1,892.80 \$9,066			

# **REVEGETATION WORK**

Task desc	ription:	Revegetate 50.5 ac to rangel	and (South)		
te: Miller Gravel Pit		Permit Action: 2/18/16 Inspection		Permit/Job#: M1982112	
<u>PROJEC'</u>	<u>r identific</u>	CATION			
Task #	009	State: Colorado		Abbreviation:	None
Date	5/5/2016	County: Elbert		Filename:	M112-009
User	AME				

# **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)	\$242.00
Total Tilling Cost/Acre	\$242.00

## **SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alfalfa - Common	15.00	72.31	\$38.40
Totals Seed Mix	15.00	72.31	\$38.40

# Application

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

## **Total Seed Application Cost/Acre**

## **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:	50.5	Cost /Acre:	\$512.40
Estimate	ed Failure Rate:	50%	Cost /Acre*:	\$270.40
*Selected Replanti	ng Work Items:	SEEDING		
Initial Job Cost: Reseeding Job Cost: Total Job Cost: Job Hours:	\$6,827.60 \$32,704			

# EQUIPMENT MOBILIZATION/DEMOBILIZATION

Miller Grave	l Pit	Permit	Action: 2/18/	16 Inspecti	on I	Permit/Job#: <u>N</u>	/1982112
ROJECT IDE	NTIFICATI	ON					
Task #: 01	0	State: Co	olorado		Abbre	viation: None	e
Date: 5/5	5/2016		bert		Fi	lename: M11	2-010
User: AN		•					
Agency	or organization	n name: DRMS					
QUIPMENT '	TRANSPOR	T RIG COST					
					Shift ba	sis: 1 per d	ay
				C	Cost Data Sour		
True	k Tractor Desc	rintion: GENE	RIC ON-HIGH	WAY TRU		OR, 6X4, DIESE	
The	K Hactor Dese				(2ND HALF,		ETOWERED,
						,	
True	ek Trailer Desc	rintion G	ENERIC FOI D	ING GOO	SENECK DR	OP DECK FOI	IIPMENT
Truc	ck Trailer Desc	eription: G	ENERIC FOLD				JIPMENT
Truc	ck Trailer Desc	ription: G			SENECK, DR (25T, 50T, AN		JIPMENT
Truc Cost Breakdown:	ek Trailer Desc	ription: G					JIPMENT
Cost Breakdown: Available Rig (	Capacities	0-25 Tons	26-50 Tons	<u>FRAILER (</u> 51+	25T, 50T, AN		JIPMENT
Cost Breakdown: Available Rig ( Ownershi	C <b>apacities</b> p Cost/Hour:	0-25 Tons \$16.63	<b>26-50 Tons</b> \$18.37	<u>FRAILER (</u> 51+ \$2	25T, 50T, AN Tons 2.33		JIPMENT
Cost Breakdown: Available Rig ( Ownershi Operatin	C <b>apacities</b> p Cost/Hour: g Cost/Hour:	0-25 Tons	26-50 Tons	<u>FRAILER (</u> 51+ \$2	25T, 50T, AN		JIPMENT
Cost Breakdown: Available Rig ( Ownershi Operatin	C <b>apacities</b> p Cost/Hour:	0-25 Tons \$16.63	<b>26-50 Tons</b> \$18.37	<b>TRAILER ( 51+</b> \$2 \$5	25T, 50T, AN Tons 2.33		JIPMENT
Cost Breakdown: Available Rig ( Ownershi Operatin Operato	C <b>apacities</b> p Cost/Hour: g Cost/Hour:	0-25 Tons \$16.63 \$44.38	<b>26-50 Tons</b> \$18.37 \$46.13	<b>FRAILER ( 51+</b> \$2 \$5 \$2 \$2	25T, 50T, AN Tons 2.33 0.07		JIPMENT
Cost Breakdown: Available Rig ( Ownershi Operatin Operato Helpe	C <b>apacities</b> p Cost/Hour: g Cost/Hour: r Cost/Hour:	0-25 Tons \$16.63 \$44.38 \$27.66	<b>26-50 Tons</b> \$18.37 \$46.13 \$27.66	<b>TRAILER ( 51+</b> \$2 \$5 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$ \$ \$ \$ \$ \$	Tons           2.33           0.07           7.66		JIPMENT
Cost Breakdown: Available Rig ( Ownershi Operatin Operato Helpe	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: r Cost/Hour:	0-25 Tons \$16.63 \$44.38 \$27.66 \$0.00	<b>26-50 Tons</b> \$18.37 \$46.13 \$27.66 \$25.39	<b>TRAILER ( 51+</b> \$2 \$5 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$ \$ \$ \$ \$ \$	<b>Tons</b> 2.33 0.07 7.66 5.39		JIPMENT
Cost Breakdown: Available Rig ( Ownershi Operatin Operato Helpe	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: r Cost/Hour: it Cost/Hour:	0-25 Tons           \$16.63           \$44.38           \$27.66           \$0.00           \$88.67	<b>26-50 Tons</b> \$18.37 \$46.13 \$27.66 \$25.39	<b>TRAILER ( 51+</b> \$2 \$5 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$ \$ \$ \$ \$ \$	<b>Tons</b> 2.33 0.07 7.66 5.39		JIPMENT
Cost Breakdown: Available Rig ( Ownershi Operatin Operato Helpe Total Uni	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: r Cost/Hour: it Cost/Hour:	0-25 Tons           \$16.63           \$44.38           \$27.66           \$0.00           \$88.67	<b>26-50 Tons</b> \$18.37 \$46.13 \$27.66 \$25.39	<b>TRAILER ( 51+</b> \$2 \$5 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$ \$ \$ \$ \$ \$	<b>Tons</b> 2.33 0.07 7.66 5.39	ND 100T) Return Trip	DOT Permit
Cost Breakdown: Available Rig O Ownershi Operatin Operato Helpe Total Uni	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: r Cost/Hour: it Cost/Hour: BLE EQUIPN	0-25 Tons \$16.63 \$44.38 \$27.66 \$0.00 \$88.67 MENT:	<b>26-50 Tons</b> \$18.37 \$46.13 \$27.66 \$25.39 \$117.55	STRAILER (           51+           \$2           \$5           \$2           \$2           \$2           \$2           \$2           \$2           \$2	<b>Tons</b> 2.33         0.07         7.66         5.39         25.45	ND 100T)	
Cost Breakdown: Available Rig ( Ownership Operation Operato Helpe Total Uni SON ROADAE Machine	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: it Cost/Hour: t Cost/Hour: BLE EQUIPN Weight/ Unit	0-25 Tons           \$16.63           \$44.38           \$27.66           \$0.00           \$88.67           MENT:           Owner ship	<b>26-50 Tons</b> \$18.37 \$46.13 \$27.66 \$25.39 \$117.55 Haul Rig	STRAILER (           51+           \$2           \$5           \$2           \$2           \$2           \$2           \$12           \$12           Fleet	225T, 50T, AN Tons 2.33 0.07 7.66 5.39 25.45 Haul Trip	ND 100T) Return Trip	DOT Permit
Cost Breakdown: Available Rig ( Ownership Operation Operato Helpe Total Uni SON ROADAE Machine	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: r Cost/Hour: it Cost/Hour: BLE EQUIPN Weight/	0-25 Tons           \$16.63           \$44.38           \$27.66           \$0.00           \$88.67           MENT:           Owner ship	<b>26-50 Tons</b> \$18.37 \$46.13 \$27.66 \$25.39 \$117.55 Haul Rig Cost/hr/uni	STRAILER (           51+           \$2           \$5           \$2           \$2           \$2           \$2           \$12           \$12           Fleet	225T, 50T, AN Tons 2.33 0.07 7.66 5.39 25.45 Haul Trip Cost/hr/	ND 100T) Return Trip	DOT Permit
Cost Breakdown: Available Rig C Ownership Operation Operato Helpe Total Uni NON ROADAE Machine Description	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: it Cost/Hour: BLE EQUIPM Weight/ Unit (TONS)	0-25 Tons           \$16.63           \$44.38           \$27.66           \$0.00           \$88.67           MENT:           Owner ship           Cost/hr/ unit	26-50 Tons \$18.37 \$46.13 \$27.66 \$25.39 \$117.55 Haul Rig Cost/hr/uni t	Size           Fleet           Size	225T, 50T, AN Tons 2.33 0.07 7.66 5.39 25.45 Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cost Breakdown: Available Rig C Ownership Operation Operato Helpe Total Uni NON ROADAE Machine Description Cat D8T - 8SU	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: it Cost/Hour: BLE EQUIPN Weight/ Unit (TONS) 53.08	0-25 Tons           \$16.63           \$44.38           \$27.66           \$0.00           \$88.67           MENT:           Owner ship           Cost/hr/ unit           \$73.32	26-50 Tons \$18.37 \$46.13 \$27.66 \$25.39 \$117.55 Haul Rig Cost/hr/uni t \$125.45	Signature           51+           \$2           \$5           \$2           \$12           Fleet           Size           4	225T, 50T, AN Tons 2.33 0.07 7.66 5.39 25.45 Haul Trip Cost/hr/ fleet \$795.06	Return Trip Cost/hr/ fleet \$501.80	DOT Permit Cost/ fleet \$500.00
Cost Breakdown: Available Rig C Ownershi Operatin Operato Helpe Total Uni NON ROADAE Machine Description Cat D8T - 8SU Cat 631G	Capacities p Cost/Hour: g Cost/Hour: r Cost/Hour: r Cost/Hour: t Cost/Hour: BLE EQUIPN Weight/ Unit (TONS) 53.08 52.50	0-25 Tons           \$16.63           \$44.38           \$27.66           \$0.00           \$88.67           MENT:           Owner ship           Cost/hr/ unit           \$73.32           \$91.86	26-50 Tons \$18.37 \$46.13 \$27.66 \$25.39 \$117.55 Haul Rig Cost/hr/uni t \$125.45 \$125.45 \$88.67	FRAILER (           51+           \$2           \$5           \$2           \$12           Fleet           Size           4           2	225T, 50T, AN Tons 2.33 0.07 7.66 5.39 25.45 Haul Trip Cost/hr/ fleet \$795.06 \$434.62	Return Trip Cost/hr/ fleet \$501.80 \$250.90	DOT Permit Cost/ fleet \$500.00 \$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.	\$27.11	1	\$27.11	\$27.11
		Subtotals:	\$27.11	\$27.11

# **EQUIPMENT HAUL DISTANCE and Time**

Nearest Major City or Town within project area region:	DENVER	
Total one-way travel distance:	40.00	miles
Average Travel Speed:	55.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	\$13,927.37	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	\$39.43	

Transportation Cycle Time:

	Non- Roadable	Roadable
Haul Time (Hours)	Equipment 0.73	Equipment 0.73
Haul Time (Hours):		
Return Time (Hours):	0.73	0.73
Loading Time (Hours):	1.50	NA
Unloading Time (Hours):	1.50	NA
Subtotals:	4.45	1.45

## JOB TIME AND COST

Total job time: **8.91** Hours

Total job cost: **\$13,967**