

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:
Upper Animas Sand and Gravel Pit	M-2005-065	Sand and gravel	San Juan
INSPECTION TYPE:	INSPECTOR(S):	INSP. DATE:	INSP. TIME:
Multi Person Inspection	Wallace Erickson, Lucas West	August 6, 2014	15:30
OPERATOR:	OPERATOR REPRESENTATIVE:	TYPE OF OPERATIO	DN:
Jack Clark, Jr.	Charles Ponchak	112c – In-stream, p	ond construction
REASON FOR INSPECTION:	BOND CALCULATION TYPE:	BOND AMOUNT:	
Surety Related	Complete Bond	\$32,500.00	
DATE OF COMPLAINT:	POST INSP. CONTACTS:	JOINT INSP. AGEN	CY:
NA	None	None	
WEATHER:	INSPECTOR'S SIGNATURE:	SIGNATURE DATE:	
Cloudy	Wellace H. El	October 16, 2014	

## **GENERAL INSPECTION TOPICS**

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

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

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

## **OBSERVATIONS**

This inspection occurred as part of the Division's monitoring program of permitted operations and to evaluate the current cost of reclamation in response to a surety reduction request (SR-01). The Upper Animas Sand and Gravel permit is approved for 16.3 acres affected lands, which includes the Pit 1, 2, 3 and 4 areas, for the extraction and processing of construction materials. Portions of the permit area are located within the active floodplain of the Animas River and/or the alluvial fan for Maggie Creek. Affected lands will be reclaimed to support rangeland post-mining land use, which will include the construction of four ponds. The Division holds \$32,500 financial warranty. This report is accompanied by one image from Google Earth, five photographs taken during the inspection, and a preliminary updated reclamation cost estimation totaling \$20,404.67.

<u>**Pit 1 Area:**</u> According to the reclamation plan, the excavation activity at Pit 1 will result in pit depth of 12 - 15 feet below native ground with pit slopes not steeper than 3H:1V. Pit depth will extend below the water table, exposing ground water in accordance with Division of Water Resources Permit No. 63417-F and Water Court Case No. 11CW69. DWR has indicated a new well permit for Pit 1 is required. Pit 1 is located within the active flood plain of the Animas River.

As shown on the Google Earth image and Photos 1 and 2, the operation has affected all of the Pit 1 area but the excavation has not yet extended to the full depth anticipated in the approved reclamation plan. Ground water was exposed at the far south end of Pit 1. Pit slopes were variable and ranged from not steeper than 3H:1V for approximately 700 linear feet along the northeast sides of the pit, to 1.5H:1V for the remaining 1,400 linear feet of pit perimeter. Vegetative cover was establishing for pit slopes at final grade. Topsoil stockpile was observed along the east side of Pit 1 area.

**Pit 2 Area:** According to the reclamation plan, the excavation activity at Pit 2 will result in pit depth of 35 – 40 feet below native ground with pit slopes not steeper than 3H:1V. Pit depth will not extend below the water table and the operation is not authorized to expose ground water at Pit 2. However, Pit 2 may be filled with water from Maggie Creek in accordance with Water Court Case No. 11CW69. Pit 2 is located within the alluvial fan of Maggie Creek.

As shown on the Google Earth image and Photos 3 and 4, the excavation activity appears complete for the western portions of Pit 2 and approximately 60% complete for the eastern portions of Pit 2. The pit perimeter may be extended along the southeast corner of Pit 2. All pit slopes, approximately 1,440 linear feet, were at final grade, not steeper than 3H:1V. Vegetative cover was establishing for all 3H:1V slopes. Topsoil stockpile was observed along the east side of Pit 2 area.

**Pit 3 Area:** The excavation at Pit 3 has not commenced. The lands have been affected only by material processing and stockpiling activities. A substantial stockpile of processed material was located at Pit 3. Topsoil was stockpiled along the east side of Pit 3 area. Comments from DWR indicate the Operator does not yet have a clear water right to fill a pond at Pit 3.

**Pit 4 Area:** The excavation at Pit 4 has not commenced. The lands appear to have been previously affected by material processing and stockpiling activities, but subsequently reclaimed. Vegetative cover was well established. Topsoil stockpile was observed along the east side of Pit 4 area. Comments from DWR indicate the Operator does not yet have a clear water right to fill a pond at Pit 4.

**Financial Warranty:** Pursuant to Rule 4.2.1(4), the Division has completed a preliminary estimation for the current cost of reclamation totaling \$20,404.67. Please find enclosed 19 pages of summary, work sheets and drawings utilized by the Division to estimate the current cost of reclamation. The estimation assumes continued mining to occur at Pit 2, thus the slope reduction task for Pit 2, task 002. Additional information and/or clarification from the Operator will cause the Division to re-evaluate its preliminary reclamation cost estimation.

<u>SR-01</u>: Based on observations made during the inspection and recorded in this report the Division recommends approval of the Operator's request for surety reduction (SR-01). The available information indicates the existing \$32,500 financial warranty may be reduced to \$20,405, representing a reduction of \$12,095. However, the financial warranty shall not be less than \$20,405 to ensure the successful completion of reclamation.

Response to this inspection report should be directed to Wally Erickson at the Division's office in Durango at 691 County Road 233, Suite A-2, Durango, Colorado 81301, phone (970) 247-5469, email <u>wally.erickson@state.co.us</u>.

### Inspection Contact Address

Jack Clark, Jr. P.O. Box 767 Silverton, CO 81433

Enclosure:	1)	One image from Google Earth;	
------------	----	------------------------------	--

- 2) Five photographs taken during the inspection; and
- 3) Reclamation cost estimation totaling \$20,404.67
- cc w/enclosure: Charles Ponchak Consulting Geologist 15292 6050 Road Montrose, CO 81403

ec w/enclosure: Russ Means, DRMS GJFO



with Water Court Case No. 11CW69. Pit slopes were variable and ranged from 3H:1V for east pit slopes to 63417-F. DWR has also indicated the Operator is required to apply for a new well permit in accordance 1 has exposed ground water (see Google Earth image). According to information received from Division of Water Resources (DWR), the Operator is authorized to expose ground water in accordance with Permit No. View southwest, showing southern portions of the Pit 1 area. Excavation activity at the far south end of Pit 1.5H:1V for west pit slopes. Several stockpiles of excavated materials were located on the pit floor.





Upper Animas Sand & Gravel M-2005-065 August 6, 2014 Photo 3

View northwest, showing western portions of the Pit 2 area. All slopes of the Pit 2 area had been graded to no steeper than 3H:1V. Vegetative cover was establishing for pit slopes.





## COST SUMMARY WORK

e: Upper A	nimas Sand and C	Gravel Pit	Permit Action:	-01 Permit/	Job#: <u>M200506</u>
PROJECT	<u>IDENTIFICA</u>	<u>FION</u>			
Task #:	000	State:	Colorado	Abbreviation:	None
Date:	10/15/2014	County:	San Juan	Filename:	M065-000
	WHE	-			

## TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Pit 1 Highwall Reduction	DOZER	1	2.74	\$591.00
002	Pit 2 Assumed Highwall Reduction	DOZER	1	8.70	\$1,904.00
003	Rough Grade and Rip Pit 3 Area	DOZER	1	2.63	\$587.00
004	Pit 1 Topsoil Replacement	SCRAPER1	1	3.80	\$1,001.00
005	Pit 2 Topsoil Replacement	SCRAPER1	<b>1</b>	2.86	\$752.00
006	Pit 3 Topsoil Replacement	DOZER	1	3.34	\$719.00
007	Revegetate 2.7 Acres Affected Land	REVEGE	1	0.00	\$3,239.00
008	Haul reclamation equipment to and from job site	MOBILIZE	1	6.80	\$7,729.00
		SUBTO	DTALS:	30.87	\$16,522

## **INDIRECT COSTS**

### OVERHEAD AND PROFIT:

Liability insurance:		Total =	\$333.74
Performance bond:	1.05%	Total =	\$173.48
Job superintendent:	10.00 hrs	Total =	\$751.60
Profit:	10.00%	Total =	\$1,652.20
		TOTAL O & $P =$	\$2,911.02
		CONTRACT AMOUNT (direct + O & P) = $($	\$19,433.02

#### LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): Engineering work and/or contract/bid preparation: Reclamation management and/or administration:	0.00 0.00% 5.00%	Total = Total =	0.00 \$0.00 \$971.65	·
CONTINGENCY:	0.00	Total =	\$0.00	
	TOTAL I	NDIRECT COST =	\$3,882.67	
TOTAL B	OND AMOUNT (d	irect + indirect) =	\$20,404.67	

## BULLDOZER WORK

Upper Animas Sand and Gravel Pit	Permit Action:	SR-01	Permit/Job#:	M2005065
PROJECT IDENTIFICATIO	<u>ON</u>			
Task #: 001	State: Colorado		Abbreviation:	None
Date: 10/15/2014	County: San Juan		Filename:	M065-001
User: <u>WHE</u>				
Agency or organization	name: DRMS			
HOURLY EQUIPMENT CO	<u>)ST</u>			
Basic Machine: Cat D8T - 8	U			
Horsepower: 310				
Blade Type: Universal	· · · · · · · · · · · · · · · · · · ·			
Attachment: 3-shank ripp	per			
Shift Basis: 1 per day				
Data Source: (CRG)				
Cost Breakdown:				
<u></u>		Utilization %		
Ownership Cost/Hour:	\$69.05	NA		
Operating Cost/Hour:	\$108.22	100		
Ripper op. Cost/Hour:	\$0.00	0		
Operator Cost/Hour:	\$38.01			
	920.01	NA		
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2	28	NA		
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165	28			
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212	28			
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165	28 28 	"Pit 1 Highwall Reducti	 on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY	28 28		on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:       Source of estimated swell factor:	28 28 		on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:	28 28 		on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION	28 28 See attached drawing, Cat Handbook		on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:	28 28 See attached drawing, Cat Handbook		on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:	28 28 See attached drawing, Cat Handbook		on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:	28 28 28 	"Pit 1 Highwall Reducti	on"	
Fotal unit Cost/Hour:       \$215.2         Total Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:	28 28 28 	"Pit 1 Highwall Reducti	on"	
Fotal unit Cost/Hour:       \$215.2         Total Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:         Average push gradient:      15 %	28 28 28 See attached drawing, Cat Handbook 50 feet 1,627.0 LCY/hr Partly consolidated	"Pit 1 Highwall Reducti	on"	
Fotal unit Cost/Hour:       \$215.2         Total Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:         Average push gradient:      15 %	28 28 28 See attached drawing, Cat Handbook 50 feet 1,627.0 LCY/hr Partly consolidated	"Pit 1 Highwall Reducti	on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:         Average push gradient:       -15 %         Average site altitude:       9,730 f	28 28 28 28 See attached drawing, Cat Handbook 50 feet 1,627.0 LCY/hr Partly consolidated feet	"Pit 1 Highwall Reducti	on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:         Average push gradient:       -15 %         Average site altitude:       9,730 f	28 28 28 See attached drawing, Cat Handbook 50 feet 1,627.0 LCY/hr Partly consolidated	"Pit 1 Highwall Reducti	on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:         Average site altitude:         9,730 f         Material weight:         2,900 l	28 28 28 28 See attached drawing, Cat Handbook 50 feet 1,627.0 LCY/hr Partly consolidated feet	"Pit 1 Highwall Reducti	on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:         Average site altitude:       9,730 f         Material weight:       2,900 f         Weight description:       Decom	28 28 28 28 28 28 28 28 28 28	"Pit 1 Highwall Reducti ""Pit 1 Highwall Reducti stockpile 1.1	on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:         Jnadjusted hourly production:         Materials consistency description:         Average site altitude:       9,730 f         Material weight:       2,900 f	28 28 28 28 28 28 28 28 28 28	"Pit 1 Highwall Reducti stockpile 1.1 50% Earth	on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:       Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:	28 28 28 28 28 28 28 28 28 28	"Pit 1 Highwall Reducti ""Pit 1 Highwall Reducti stockpile 1.1	on"	
Fotal unit Cost/Hour:       \$215.2         Fotal Fleet Cost/Hour:       \$215.2         MATERIAL QUANTITIES         Initial Volume:       2,212         Swell factor:       1.165         Loose volume:       2,577 LCY         Source of estimated volume:       Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:	28 28 28 28 28 28 28 28 28 28	"Pit 1 Highwall Reducti ""Pit 1 Highwall Reducti """ stockpile 1.1 50% Earth <u>Source</u> (AVG.)	on"	

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.329	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5773

Adjusted unit production:	939.27 LCY/hr
Adjusted fleet production:	939.27 LCY/hr

Fleet size:	1 Dozer(s)
Unit cost:	\$0.229/LCY

Total job time:	2.74 Hours
Total job cost:	\$591

Water Elevation Native Ground Anticipated Pand fill to 4 of crest resulting in 12 of pit slope reducing top soil replacement & revegetation Material Quantity = 1,400 L × 42.66 S. ft. Area A Topseil [eplace ment above water elevation = 2100 x 12 = 25,200 sy. ft. Total perimeter Pit 1 = 700'+ 1400' = 2100' Topsoil guantity at 6° replacement depth = 11 12 12 12 11 Highwall L N W N łł 23.7 × 3.6 = 42.66 Se. St. 2,212 cv. y d 59,724 cu. ft Balanced Cut A FIL Reduction from 1.5H:IV Highwall @ Water Elevation 25,200 38.Ft. × 0.50 = 12,600 es. ft. = 466.67 cu. yd. NSH: IV 4  $(\mathcal{N})$ т < 466.67 cu. yd. 21: HE @ 24:11 PIT Floor Upper Animas Sand A Scale 1"= 5" 10/15/14 WHE W-2005-065 0 for Pit 1 slopes only N 5 Grave

## BULLDOZER WORK

Upper Animas Sand and Gravel Pit	Permit Action:	SR-01	Permit/Job#:	MONSOCO
		58-01	remm/300#:	1/12/03/03
PROJECT IDENTIFICATIO	N			
Task #: 002	State: Colorado		Abbassisticas	NTama
Date: $10/15/2014$	County: San Juan		Abbreviation:	None MOG5 002
User: WHE	County. <u>San Juan</u>	·	Filename:	M065-002
Agency or organization n	ame: DRMS			
HOURLY EQUIPMENT CO	<u>ST</u>			
Basic Machine: Cat D8T - 8U	J			
Horsepower: 310		<u> </u>		
Blade Type: Universal				
Attachment: 3-shank rippe	er.			
Shift Basis: 1 per day				
Data Source: (CRG)		·····		
Cost Breakdown:				
		Utilization %		
Ownership Cost/Hour:	\$69.05	NA		
Operating Cost/Hour:	\$108.22	100		
Ripper op. Cost/Hour:	\$3.73	50		
Operator Cost/Hour:	\$38.01	NA		
*		1 4 14 3		
Fotal unit Cost/Hour: \$219.00	)			
Potol Floot Cont/Hours 6110.00	۱ ۱			
Fotal Fleet Cost/Hour: \$219.00	)			
	)			
Total Fleet Cost/Hour:       \$219.00         MATERIAL QUANTITIES	)			
MATERIAL QUANTITIES Initial Volume:	)			
MATERIAL QUANTITIES	)			
MATERIAL QUANTITIES Initial Volume:	)			
MATERIAL QUANTITIES Initial Volume: 7,152 Swell factor: 1.250		"Pit 2 Assumed Highwa	11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:	See attached drawing, Reduction"	"Pit 2 Assumed Highwa	11	
MATERIAL QUANTITIESInitial Volume:7,152Swell factor:1.250Loose volume:8,940 LCY	See attached drawing,	"Pit 2 Assumed Highwa	11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:       Source of estimated swell factor:	See attached drawing, Reduction"	, "Pit 2 Assumed Highwa	11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:	See attached drawing, Reduction"	, "Pit 2 Assumed Highwa	11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5	See attached drawing, Reduction" Cat Handbook	, "Pit 2 Assumed Highwa	11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5	See attached drawing, Reduction" Cat Handbook	, "Pit 2 Assumed Highwa	11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr		11	
MATERIAL QUANTITIES         Initial Volume:         Swell factor:         1.250         Loose volume:         8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:	See attached drawing, Reduction" Cat Handbook		11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:         Average push gradient:       -15 %	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated		11	
MATERIAL QUANTITIES         Initial Volume:         Swell factor:         1.250         Loose volume:         8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated		11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:         Average site altitude:       9,730 fe	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated set		11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:         Average push gradient:       -15 %	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated set		11	
MATERIAL QUANTITIES         Initial Volume:         Swell factor:         1.250         Loose volume:         8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:         Average site altitude:       9,730 fe         Material weight:       2,650 lb	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated set	stockpile 1.1	11	
MATERIAL QUANTITIES         Initial Volume:       7,152         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:         Average site altitude:       9,730 fe         Material weight:       2,650 lb         Weight description:       Decomp         ob Condition Correction Factor       0	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated set os/LCY posed rock - 25% Rock	stockpile 1.1	11	
MATERIAL QUANTITIES         Initial Volume:         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:         Average site altitude:       9,730 fe         Material weight:       2,650 lb         Weight description:       Decomp         Operator Skill:	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated eet os/LCY bosed rock - 25% Rock 0.750	stockpile 1.1 , 75% Earth <u>Source</u> (AVG.)	11	
MATERIAL QUANTITIES         Initial Volume:         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Unadjusted hourly production:       1         Materials consistency description:         Average site altitude:       9,730 fe         Material weight:       2,650 lb         Weight description:       Decomp         Operator Skill:	See attached drawing, Reduction" Cat Handbook 0 feet .627.0 LCY/hr Partly consolidated eet os/LCY posed rock - 25% Rock 0.750 1.100	stockpile 1.1 , 75% Earth (AVG.) (CAT HB)	11	
MATERIAL QUANTITIES         Initial Volume:         Swell factor:       1.250         Loose volume:       8,940 LCY         Source of estimated volume:         Source of estimated swell factor:         HOURLY PRODUCTION         Average push distance:       5         Jnadjusted hourly production:       1         Materials consistency description:         Average site altitude:       9,730 fe         Material weight:       2,650 lb         Weight description:       Decomp         Operator Skill:	See attached drawing, Reduction" Cat Handbook 0 feet ,627.0 LCY/hr Partly consolidated eet os/LCY bosed rock - 25% Rock 0.750	stockpile 1.1 , 75% Earth <u>Source</u> (AVG.)		

ty:1.000	(AVG.)
cy: 0.830	(1 SHIFT/DAY)
ile: 0.800	(FND-RF)
nt: 1.329	(CAT HB)
de: 1.000	(CAT HB)
ht: 0.868	(CAT HB)
pe: 1.000	(PAT)
on: 0.6319	
1,028.10 LCY/hr	
1029 1 I CV/hr	
	cy:       0.830         le:       0.800         nt:       1.329         de:       1.000         ht:       0.868         pe:       1.000         on:       0.6319

Fleet size:	1 Dozer(s)
Unit cost:	\$0.213/LCY

Total job time:	8.70 Hours
Total job cost:	\$1,904

6 Water Elevation ative Snound N Total perimeter of completed Pitz = 1,800' Topsail replacement above water elevation = (1805 × 125 = 21,600 sg. ft. Anticipated Pond fill to 4 of crest resulting in 12 of pit slope reputing topsoil replacement & vergetation Material Quantity =  $630^{\circ}L \times 306.5 \times 56$  ft. Topsoil quartity at 6" replacement depth = Assume 630 of new highwall ereated to camplete Area  $\Delta = \frac{b \times h}{2}$ Assumed Highwall Reduction Balanced Cut & Fill 63.2 × 9.7 41 11 7, 151,7 193,095 cu, y d. Qu. ft. @ Ilany felt 306.5 sg. ft. 21,600 58, A. from 1.5H: 1V to 3H: 1V I SHIV р + 1 ۲, S '0 × = 10, 200 cu, ft. 400 cr, Yd 10/15/14 WHE S90-5002-W Upper Animas Sanch & Grave ( 2010 0-Final Slope @ 3H: IV セナ Floor

## BULLDOZER WORK

Gravel Pit       SR-01       Permit/Job#:       M200         ROJECT IDENTIFICATION       Task #:       003       State:       Colorado       Abbreviation:       None         Date:       10/15/2014       County:       San Juan       Filename:       M065-         User:       WHE
Task #:       003       State:       Colorado       Abbreviation:       None         Date: $10/15/2014$ County:       San Juan       Filename:       M065-         User:       WHE       M065-       M065-       M065-         OURLY EQUIPMENT COST       Basic Machine:       Cat D8T - 8U       M065-         Basic Machine:       Cat D8T - 8U       M065-         Blade Type:       Universal       M065-         Shift Basis:       1per day       M065-         Data Source:       (CRG)       MA         Operating Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Ripper op.       Cost/Hour:       \$222.73         tal unit Cost/Hour:       \$222.73       Machine:         ATERIAL QUANTITIES       Nital Volume:       1.333         Swell factor:       1.250       Lose volume:       Cat Handbook         OURLY PRODUCTION       S0 feet       M066-       M00         Pure of estimated swell factor:       Cat Handbook       Machine:       Machine:         Ouse volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy       Machine:       Machine:         Uree of estimated swell factor:       Cat H
Date:       10/15/2014       County:       San Juan       Filename:       M065-         User:       WHE       Image: San Juan       Filename:       M065-         Agency or organization name:       DRMS         OURLY EQUIPMENT COST         Basic Machine:       Cat D8T - 8U         Horsepower:       310         Blade Type:       Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         st Breakdown:       Wheter String Cost/Hour:         Stoperating Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Singer op. Cost/Hour:       \$108.22       100         Operator Cost/Hour:       \$222.73       100         Lat unit Cost/Hour:       \$222.73       100         AttaRIAL OUANTITIES       1.250       1.250         Loose volume:       1.4567 LCY       1.250         Loose volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy       1.250         Loose volume:       1.667 LCY       1.250         Loose volume:       1.627.0 LCY/hr       1.627.0 LCY/hr         urce of estimated swell factor:       50 fe
Date:       10/15/2014       County:       San Juan       Filename:       M065-         User:       WHE       Image: San Juan       Filename:       M065-         Agency or organization name:       DRMS         OURLY EQUIPMENT COST         Basic Machine:       Cat D8T - 8U         Horsepower:       310         Blade Type:       Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         st Breakdown:       NA         Operating Cost/Hour:       \$69.05       NA         Operator Cost/Hour:       \$108.22       100         Stipper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$222.73       100         tal unit Cost/Hour:       \$222.73       100         ATERIAL OUANTITIES       1.250       1.250         nitial Volume:       1.333       Swell factor:       Cat Handbook         OURLV PRODUCTION       50 feet       1.627.0 LCY/hr       1.627.0 LCY/hr         uterials consistency description:       Compacted fill or embankment 0.9       1.946
Agency or organization name:       DRMS         OURLY EQUIPMENT COST         Basic Machine:       Cat D8T - 8U         Horsepower:       310         Blade Type:       Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         workership Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Kipper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$222.73       100         tal unit Cost/Hour:       \$222.73       100         tal unit Cost/Hour:       \$222.73       100         Swell factor:       1.250       Lose volume:       1.667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy       100         urce of estimated swell factor:       Cat Handbook       100         OURLY PRODUCTION       To feet       1.627.0 LCY/hr         traigusted hourly production:       1.627.0 LCY/hr       1.02.0         uterials consistency description:       Compacted fill or embankment 0.9       1.02.0         erage push gradient:       0 %       1.02.0       1.02.0
OURLY EQUIPMENT COST         Basic Machine:       Cat D8T - 8U         Horsepower:       310         Blade Type:       Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         stift Basis:       1 per day         Data Source:       (CRG)         stift Basis:       1 per day         Data Source:       (CRG)         stift Breakdown:       \$69.05         Wornership Cost/Hour:       \$69.05         NA       Operating Cost/Hour:         \$108.22       100         Napper op. Cost/Hour:       \$108.22         System Cost/Hour:       \$222.73         tal unit Cost/Hour:       \$222.73         Stall Pieet Cost/Hour:       \$222.73         ATERIAL QUANTITIES       stal I nite Volume:         nitial Volume:       1,333         Swell factor:       1250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         DURLY PRODUCTION       ************************************
Basic Machine:       Cat D&T - &U         Horsepower:       310         Blade Type:       Universal         Attachment:       3-shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         wet Breakdown:       Utilization %         Ownership Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Sipper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$222.73
Horsepower: $310$ Blade Type:       Universal         Attachment: $3$ -shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         Staft Breakdown:       Utilization %         Ownership Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Sipper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$222.73       100         tal unit Cost/Hour:       \$222.73       100         AttERIAL QUANTITIES       1.250       NA         Initial Volume:       1,333
Horsepower: $310$ Blade Type:       Universal         Attachment: $3$ -shank ripper         Shift Basis:       1 per day         Data Source:       (CRG)         Staft Breakdown:       Utilization %         Ownership Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Sipper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$222.73       100         tal unit Cost/Hour:       \$222.73       100         AttERIAL QUANTITIES       1.250       NA         Initial Volume:       1,333
Blade Type:       Universal         3-shark ripper       1 per day         Data Source:       1 per day         Data Source:       (CRG)         set Breakdown:       Utilization %         Dwnership Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Ripper op. Cost/Hour:       \$108.22       100         Operator Cost/Hour:       \$222.73         tal unit Cost/Hour:       \$222.73         tal unit Cost/Hour:       \$222.73         ATERIAL QUANTITIES         Initial Volume:       1,333         Swell factor:       1.250         Loose volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         OURLY PRODUCTION         rerage push distance:       50 feet         adjusted hourly production:       1,627.0 LCY/hr         uterials consistency description:       Compacted fill or embankment 0.9         erage push gradient:       0 %
Attachment: $3$ -shank ripper         I per day       I per day         Data Source:       (CRG)         set Breakdown:       NA         Ownership Cost/Hour:       \$69.05         NA       NA         Operating Cost/Hour:       \$108.22         Ripper op. Cost/Hour:       \$7.46         Operator Cost/Hour:       \$222.73         tal unit Cost/Hour:       \$222.73         tal locot/Hour:       \$222.73         tal Fleet Cost/Hour:       \$222.73         mital Volume:       1,333         Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION       1,627.0 LCY/hr         tetrials consistency description:       Compacted fill or embankment 0.9         erage push gradient:       0 %
Shift Basis:       I per day         Data Source:       (CRG)         set Breakdown:       Utilization %         Ownership Cost/Hour:       \$69.05       NA         Operating Cost/Hour:       \$108.22       100         Sipper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$38.01       NA         Operator Cost/Hour:       \$222.73         tal unit Cost/Hour:       \$222.73         ATERIAL QUANTITIES         nitial Volume:       1,333         Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         DURLY PRODUCTION       50 feet         rerage push distance:       50 feet         adjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9         erage push gradient:       0 %
Data Source: $(CRG)$ sst Breakdown:          Dwnership Cost/Hour:       \$69.05         NA          Operating Cost/Hour:       \$108.22         Stipper op. Cost/Hour:       \$7.46         Operator Cost/Hour:       \$38.01         NA          Operator Cost/Hour:       \$222.73         tal unit Cost/Hour:       \$222.73         ATERIAL OUANTITIES         nitial Volume:       1.250         Loose volume:       1.667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION       50 feet         rerage push distance:       50 feet         adjusted hourly production:       1,627.0 LCY/hr         atterials consistency description:       Compacted fill or embankment 0.9         erage push gradient:       0 %
Utilization % NAOwnership Cost/Hour:\$69.05NAOperating Cost/Hour:\$108.22100Ripper op. Cost/Hour:\$7.46100Operator Cost/Hour:\$38.01NAtal unit Cost/Hour:\$222.73tal Fleet Cost/Hour:\$222.73ATERIAL QUANTITIESnitial Volume:1,333Swell factor:1.250Loose volume:1,667 LCYurce of estimated volume:(360' x 200' x 0.5'D) / 27 = 1333.33 cyCat HandbookOURLY PRODUCTIONrerage push distance:50 feet1,627.0 LCY/hradjusted hourly production:1,627.0 LCY/hratterials consistency description:Compacted fill or embankment 0.9
Downership Cost/Hour:\$69.05NAOperating Cost/Hour:\$108.22100Ripper op. Cost/Hour:\$7.46100Operator Cost/Hour:\$38.01NAAtal unit Cost/Hour:\$222.73tal Fleet Cost/Hour:\$222.73ATERIAL QUANTITIESnitial Volume: $1,333$ Swell factor: $1.250$ Loose volume: $1,667$ LCYurce of estimated volume: $(360' \times 200' \times 0.5'D) / 27 = 1333.33$ cyCat HandbookOURLY PRODUCTIONrerage push distance: $50$ feet $50$ feetLadjusted hourly production: $1,627.0$ LCY/hrAtterials consistency description:Compacted fill or embankment 0.9
Operating Cost/Hour:       \$108.22       100         Ripper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$38.01       NA         tal unit Cost/Hour:       \$222.73         stal Fleet Cost/Hour:       \$222.73         ATERIAL QUANTITIES         nitial Volume: $1,333$ Swell factor: $1.250$ Loose volume: $1,667$ LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION       Terage push distance:         rerage push distance: $50$ feet         adjusted hourly production: $1,627.0$ LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9         erage push gradient:       0 %
Ripper op. Cost/Hour:       \$7.46       100         Operator Cost/Hour:       \$38.01       NA         tal unit Cost/Hour:       \$222.73         ATERIAL QUANTITIES         nitial Volume:       1,333         Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION       ************************************
Operator Cost/Hour:       \$38.01       NA         tal unit Cost/Hour:       \$222.73         tal Fleet Cost/Hour:       \$222.73         ATERIAL QUANTITIES       ************************************
tal unit Cost/Hour: $$222.73$ tal Fleet Cost/Hour: $$222.73$ ATERIAL QUANTITIES         nitial Volume: $1,333$ Swell factor: $1.250$ Loose volume: $1,667$ LCY         urce of estimated volume: $(360' \times 200' \times 0.5'D) / 27 = 1333.33 \text{ cy}$ urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance: $50$ feet         adjusted hourly production: $1,627.0$ LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9         erage push gradient: $0 \%$
ATERIAL OUANTITIES         initial Volume:       1,333         Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance:       50 feet         adjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9
ATERIAL OUANTITIES         initial Volume:       1,333         Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance:       50 feet         adjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9
ATERIAL QUANTITIES         initial Volume:       1,333         Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance:       50 feet         adjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9
nitial Volume: $1,333$ Swell factor: $1.250$ Loose volume: $1,667 \text{ LCY}$ urce of estimated volume: $(360' \times 200' \times 0.5'\text{D}) / 27 = 1333.33 \text{ cy}$ urce of estimated swell factor: $Cat \text{ Handbook}$ OURLY PRODUCTION         rerage push distance: $50 \text{ feet}$ iadjusted hourly production: $1,627.0 \text{ LCY/hr}$ aterials consistency description:       Compacted fill or embankment 0.9
Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance:       50 feet         iadjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9
Swell factor:       1.250         Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance:       50 feet         iadjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9
Loose volume:       1,667 LCY         urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance:       50 feet         uadjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9
urce of estimated volume:       (360' x 200' x 0.5'D) / 27 = 1333.33 cy         urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION       Cat Handbook         verage push distance:       50 feet         adjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9         verage push gradient:       0 %
urce of estimated swell factor:       Cat Handbook         OURLY PRODUCTION         rerage push distance:       50 feet         nadjusted hourly production:       1,627.0 LCY/hr         aterials consistency description:       Compacted fill or embankment 0.9         rerage push gradient:       0 %
OURLY PRODUCTION         verage push distance:       50 feet         hadjusted hourly production:       1,627.0 LCY/hr         interials consistency description:       Compacted fill or embankment 0.9         verage push gradient:       0 %
yerage push distance:       50 feet         hadjusted hourly production:       1,627.0 LCY/hr         interials consistency description:       Compacted fill or embankment 0.9         rerage push gradient:       0 %
yerage push distance:       50 feet         hadjusted hourly production:       1,627.0 LCY/hr         interials consistency description:       Compacted fill or embankment 0.9         rerage push gradient:       0 %
adjusted hourly production: <u>1,627.0 LCY/hr</u> aterials consistency description: <u>Compacted fill or embankment 0.9</u> erage push gradient: <u>0 %</u>
adjusted hourly production: <u>1,627.0 LCY/hr</u> aterials consistency description: <u>Compacted fill or embankment 0.9</u> erage push gradient: <u>0 %</u>
erage push gradient: 0 %
erage push gradient: 0 %
arage gite altitude: 0.720 feat
erage site attitude: 9,750 feet
aterial weight: 2,650 lbs/LCY
eight description: Decomposed rock - 25% Rock, 75% Earth
Material consistency: 0.000 (CAT HD))
Material consistency:0.900(CAT HB))Dozing method:1.000(GEN.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.868	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3890

Adjusted unit production:	632.90 LCY/hr	
Adjusted fleet production:	632.9 LCY/hr	

Fleet size:	1 Dozer(s)
Unit cost:	\$0.352/LCY

Total job time:	2.63 Hours
Total job cost:	\$587

# SCRAPER TEAM WORK

Upper Animas San Site: Gravel Pit		I CHILL	t Action:	SR-01	Per	mit/Job#: <u>M200</u> :	5065
PROJECT IDENT	<b>TFICATION</b>						
Task #: 004			Colorado			viation: <u>None</u>	
Date: 10/15/20 User: WHE	<u>014</u> Co	unty:	San Juan		Fi	lename: M065-0	004
***********	rganization name	א מרו	(C				
HOURLY EQUIP	-			COSTS	hift basis: <u>1 per c</u>	lay	
				ent Description			
		Scraper: -Dozer:	Cat 613 Cat D8	C Series 2			
Suppor	t Equipment -Loa		NA	1-30			
	-Dum ntenance –Motor	p Area:	NA				
Koad Man		Grader: Truck:	NA NA				
Cost Breakdown:	Scraper Wo Scraper	rk Team Do	7er	Support Equip Load Area	oment Dump Area	Maintenance Motor Grader	Equipm Wate
					-		
%Utilization-machine:	100	2:	···	NA	NA	NA	]
Ownership cost/hour:	\$25.15	\$69		NA	NA	NA	]
Operating cost/hour:	\$70.41	\$27		NA	NA	NA	]
Ripper op. cost/hour:	NA f22.5(	<u>\$0.</u>		NA	NA	NA	]
Operator cost/hour: Unit Subtotals:	\$33.56	\$38		NA	NA	NA	1
Number of Units:	\$129.12	\$134	+.11	NA	NA	NA	]
Group Subtotals:	1 Work:	1 \$263	23	0 Support:	0	0 Maint:	\$
Total work team cost/l	hour: <u>\$263.23</u>	φωυ.	,	Support,	φν.υυ		2
Initial volume:	467		CCY	Swell fact	or: 1.250		
Loose volume:	583		LCY				
~	e of estimated vo	T	<b>G</b>		1 Highwall Redu		

#### HOURLY PRODUCTION

		Scraper Bowl (volume) Basis:		
Material weight:	2,550 lbs/LCY	Struck Volume:	8.90	LCY
Material description:	Earth - Dry packed	Heaped Volume:	11.00	LCY
Rated Payload:	26,400 pounds	Average Volume:	9.95	LCY
Payload Capacity:	10.35 LCY	Adjusted Capacity:	9.95	LCY

0.90 Minutes

0.70 Minutes

Site Altitude: 9730 feet

#### Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

### Job Condition Correction:

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

#### Travel Time:

Road Condition: <u>Rutted dirt, little maintenance, no water, 2" tire penetration 5.0</u>

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade	Roll. Res	Total Res	Velocity (fpm)	Travel Time
1	1085.00	0.00	<u>(%)</u> 5.00	<b>(%)</b> 5.00	1228	(min) 0.96

Haul Time: 0.96 minutes

#### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1085.00	0.00	5.00	5.00	1915	0.67
				Return Time:	0.67	minutes
				er team cycle time: for job conditions:	<u>3.23</u> 153.41	minutes LCY/Hour
	Adjuste	d single scra	Selected Nu	umber of Scrapers: hourly production:	1	Scraper(s) LCY/Hour

Unadjusted unit production/hour: <u>184.83</u> LCY/Hour Optimal Number of Scrapers per push dozer: \_\_\_\_\_

#### JOB TIME AND COST

Fleet size: <u>1</u> Team(s)

Unit cost:	\$1.716	/LCY

Total job time:	3.80	Hours
Total job cost:	\$1,001	

Page 1 of 2

# SCRAPER TEAM WORK

Site: <u>(</u>	OURLY EQUIP	TIFICATION 2014 Co organization name: 2014	unty: S	Colorado San Juan IS		Abbre	mit/Job#: M200 viation: None lename: M065-	
	Task #: 005 Date: 10/15/2 User: WHE Agency or c	2014 Co organization name: PMENT	unty: S	San Juan				005
	Date: 10/15/2 User: WHE Agency or c	2014 Co	unty: S	San Juan				005
<u>H(</u>	User: WHE Agency or c OURLY EQUIP	organization name:	·			Fi	lename: <u>M065-</u>	005
<u>H(</u>	OURLY EQUIP	<u>MENT</u>	DRM	<u>(S</u>				
HC							······	
	Suppor	-2			COSTS	hift basis: <u>1 per c</u>	lay	
	Suppor	-5		Equipme	ent Description			
	Suppor		Scraper:	Cat 613	C Series 2			
	ouppo.	rt Equipment -Loa	-Dozer:	Cat D8 NA	<u>F - 8U</u>		······	
		- Dum	p Area:	NA				<u></u>
	Road Mai	intenance – Motor		NA				
		-Water	Truck:	NA				
Co	st Breakdown:	Scraper Wo	rk Team		Support Equip	oment	Maintenance	Equipm
		Scraper	Doz	zer	Load Area	Dump Area	Motor Grader	Wate
%Utili	ization-machine:	100	2:	5	NA	NA	NA	1
Owne	ership cost/hour:	\$25.15	\$69	.05	NA	NA	NA	1
<b>^</b>	rating cost/hour:	\$70.41	\$27	.06	NA	NA	NA	1
	er op. cost/hour:	NA	\$0.0	00	NA	NA	NA	] ]
Ope	erator cost/hour:	\$33.56	\$38.		NA	NA	NA	] ]
	Unit Subtotals:	\$129.12	\$134	4.11	NA	NA	NA	1
	Sumber of Units:	1	1		0	0	0	L
	Group Subtotals:	Work:	\$263	3.23	Support:	\$0.00	Maint:	\$
Tot	tal work team cost/ ATERIAL QUA Initial volume: Loose volume:	/hour: <u>\$263.23</u>		CCY LCY	Swell fact		j <u>ıvanı.</u>	<u> </u> '
		*****						
		ree of estimated vo f estimated swell f		See attac Cat Hand	100-00 T	2 Assumed High	wall Reduction"	•
HC	OURLY PRODU	JCTION						
					Scraper Bo	owl (volume) Bas	<u>is:</u>	
	Material weight:	2,550 lbs/LCY			Struck '	Volume: 8.90	L	CY
Mate	erial description:	Earth - Dry packe	ed		Heaped			CY
ъ.	Rated Payload: ayload Capacity:	26,400 pounds 10.35 LCY			Average Adjusted C			CY CY

0.90 Minutes

0.70 Minutes

#### Cycle Time:

Scraper Loading Time: Maneuver and Spread Time:

### Job Condition Correction:

	Scraper	Push Dozer	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	0.830	0.830	

#### Travel Time:

Road Condition: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0

#### Haul Route:

Seg #	Haul Distance (Ft)	Grade	Roll. Res	Total Res	Velocity (fpm)	Travel Time
		(%)	(%)	(%)		(min)
1	865.00	0.00	4.00	4.00	1528	0.69

Haul Time: 0.69 minutes

#### Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	865.00	0.00	4.00	4.00	2002	0.54
				Return Time:	0.54	minutes
				er team cycle time:	2.83	minutes
			•	for job conditions:	175.09	LCY/Hour
				umber of Scrapers:	1	Scraper(s)
	Adjuste	d single scrap	per team (unit)	hourly production:	175.09	LCY/Hour
	Adjusted n	nultiple scrap	er team (fleet)	hourly production:	175.09	LCY/Hour
	Unadjusted unit pro	duction/hour	:210.95	LCY/Hour		

Optimal Number of Scrapers per push dozer:

### JOB TIME AND COST

 Fleet size:
 1
 Team(s)
 Total job time:
 2.86
 Hours

Unit cost: \$1.503 /LCY

Total job cost: \_\_\_\_\_\_\$752

Site Altitude: 9730 feet

## BULLDOZER WORK

Upper Animas Sand and Gravel Pit	Permit Action:	SR-01	Permit/Job#:	M2005065
PROJECT IDENTIFICATIO	N			
Task #: 006	State: Colorado		Abbreviation:	None
Date: 10/15/2014	County: San Juan		Filename:	M065-006
User: WHE				
Agency or organization n	ame: DRMS		44-004-04-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	
HOURLY EQUIPMENT CO	<u>ST</u>			
Basic Machine: Cat D8T - 8U	J			
Horsepower: 310	·			
Blade Type: Universal	······································	*******		
Attachment: 3-shank rippe	er			
Shift Basis: 1 per day				
Data Source: (CRG)				
Cost Breakdown:				
en e		Utilization %		
Ownership Cost/Hour:	\$69.05	NA		
Operating Cost/Hour:	\$108.22	100		
Ripper op. Cost/Hour:	\$0.00	0		
Operator Cost/Hour:	\$38.01	NA		
-		<u> </u>		
Fotal unit Cost/Hour: \$215.28	3			
Fotal Fleet Cost/Hour: \$215.28	5			
MATERIAL QUANTITIES				
Initial Volume: 1,333				
Swell factor: 1.250				
Loose volume: 1,667 LCY				
Source of estimated volume:	(360' x 200' x 0.5'D)	/ 27 = 1333.33 cy		
Source of estimated swell factor:	Cat Handbook			
HOURLY PRODUCTION				
Average push distance: 8	0 feet			
	,110.8 LCY/hr			
	9×20.0 DO1/10			
Materials consistency description:	Consolidated stock	oile 1.0		
Verage push gradient: 0 %				
Average site altitude: 9,730 fe				
$\frac{9,750}{10}$				
Material weight:2,550 1k	os/LCY		_	
	os/LCY			
Veight description: Earth -		Source		
Veight description: Earth -	Dry packed	Source (AVG.)		
Veight description: <u>Earth -</u> ob Condition Correction Factor Operator Skill:	Dry packed 0.750	(AVG.)		
Veight description: Earth - <u>ob Condition Correction Factor</u> Operator Skill: Material consistency:	Dry packed 0.750 1.000	(AVG.) (CAT HB)		
Veight description: <u>Earth -</u> ob Condition Correction Factor Operator Skill:	Dry packed 0.750	(AVG.)		

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4492

Adjusted unit production:	498.97 LCY/hr
Adjusted fleet production:	498.97 LCY/hr

Fleet size:	1 Dozer(s)
Unit cost:	\$0.431/LCY

Total job time:	3.34 Hours
Total job cost:	\$719

# **REVEGETATION WORK**

	e: Gravel Pit		SR-01	Permit/Job#:	M2005065
Date: 10/15/2014 County: San Juan Filename: M065-0	PROJECT IDENTIF	<b>ICATION</b>			
				Abbreviation:	None
		County:	San Juan	Filename:	M065-007
User: <u>WHE</u> Agency or organization name: DRMS					

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
0-20-20, 4-8-12, 10-10-10	40.00	pound	\$0.21	\$8.44
			Total Fertilizer Materials Cost/Acre	\$8.44

## Application

Description		Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)		\$52.71
	Total Fertilizer Application Cost/Acre	<b>\$52.7</b> 1

# **TILLING**

Description Chiral planning (DMC)	Cost /Acre
Chisel plowing {DMG}	\$88.58
Total Tilling Cost/Acre	\$88.58

# **SEEDING**

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Orchardgrass - Paiute	0.80	9.92	\$1.73
Mountain Brome - Bromar	3.80	6.11	\$12.92
Red Clover - Medium	0.40	2.48	\$0.74
Western Wheatgrass - Native	3.20	8.08	\$9.73
Timothy, Alpine - Native	0.40	11.94	\$10.83
Penstemon, Rocky Mountain	0.10	1.57	\$3.37
Totals Seed Mix	8.70	40.09	\$39.32

## Application

\_\_\_\_\_\_<u>}\_\_\_\_</u>\_\_\_\_

Description		Cost /Acre
Drill seeding (DRMS Cost Data)		\$88.20
	Total Seed Application Cost/Acre	\$88.20

## **MULCHING and MISCELLANEOUS**

#### Materials

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

## Application

Description		Cost /Acre
Crimping, with tractor {DMG survey data}		\$65.89
Power mulcher (MEANS 32 91 13.16 0250)		\$86.68
	Total Mulch Application Cost/Acre	\$152.57

## **NURSERY STOCK PLANTING**

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
		4-1			\$
		Tot	als Nursery Stoc	<u>k Cost / Acre</u>	\$0.00

No. of Acres:	2.7	Cost /Acre:	\$959.82
Estimated Failure Rate:	25%	Cost /Acre*:	\$959.82
*Selected Replanting Work Items:	FERTILIZING,TIL LCHING	LING,SEEDING,MU	
Initial Job Cost: \$2,591.51			

initial Job Cost:	32,391.31
Reseeding Job Cost:	\$647.88
Total Job Cost:	\$3,239
Job Hours:	0.00

#### Page 1 of 2

# EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task descripti	on: <u>Ha</u>	ul reclamation e	quipment to and	from job :	site		
Upper Anin Gravel Pit	mas Sand and	Permit	Action: SR-01		Ре	rmit/Job#:	M2005065
PROJECT I	DENTIFICAT	ION					
Task #:	008	State: C	Colorado		Abbr	eviation:	None
	10/15/2014 WHE	County: S	San Juan		F	ilename:	M065-008
Ager	icy or organizatio	n name: <u>DRM</u>	S				
EQUIPMEN	T TRANSPOJ	<u>RT RIG COST</u>					
					Shift ba Cost Data Sou		per day RG Data
T	ruck Tractor Dese	cription: GEN	VERIC ON-HIGH				IESEL POWEREI
		<b></b>			(2ND HALF,		
Т	ruck Trailer Deso	cription: GEN	ERIC FOLDING				JIPMENT TRAILI
				(251,	, 50T, AND 10	01)	
Cost Breakdow	vn:						
Available Rig	Canacities	0-25 Tons	26-50 Tons	514	+ Tons		
	ship Cost/Hour:	\$16.63	\$18.37		22.33		
Operating Cost/Hour:		\$44.38	\$46.13		50.07		
Operator Cost/Hour:		\$27.66	\$27.66		27.66		
Helper Cost/Hour:		\$0.00	\$25.39	·····	25.39		
	Jnit Cost/Hour:	\$88.67	\$117.55		25.45		
NON ROAD	ABLE EQUIP	MENT:					
Machine	Weight/	Owner ship	Haul Rig	Fleet	Haul Trip	Return T	rip DOT Per
Description	Unit	Cost/hr/ unit	Cost/hr/unit	Size	Cost/hr/	Cost/hr/	
a.	(TONS)				fleet		
	1 (1010)						
Cat D8T - 8U	53.70	\$69.05	\$125.45	1	\$194.50	\$125.45	\$250.00
Cat D8T - 8U Cat 613C Series Drill/Broadcast	53.70	\$69.05 \$25.15	\$125.45 \$88.67	1 1		\$125.45 \$88.67	\$250.00 \$250.00

Subtotals: \$756.23 \$568.80 \$1,500.00

\$177.34

\$500.00

## **ROADABLE EQUIPMENT:**

6.00

\$7.03

Seeder with Tractor Power Mulcher

(Reinco M90)

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Light Duty Pickup, 4x4, 3/4 T.	\$15.30	1	\$15.30	\$15.30
		Subtotals:	\$15.30	\$15.30

\$88.67

2

\$191.40

## **EQUIPMENT HAUL DISTANCE and Time**

DURANGO	
60.00	miles
50.00	mph
\$7,692.53	
\$36.72	
	60.00 50.00 \$7,692.53

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	1.20	1.20
Return Time (Hours):	1.20	1.20
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	3.40	2.40

#### JOB TIME AND COST

Total job time: 6.80 Hours

Total job cost: \_\_\_\_\_\$7,729