COST SUMMARY WORK

Task description:

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 7/11/2019 County: Larimer Filename: M059-000
User: JLE

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Backfill southern portion of BNER	TRUCK1	1	40.40	$37,126
002	Install clay liner, BNER	TRUCK1	1	44.47	$52,333
002a	Dewater BNER	PUMPING	1	999.19	$58,283
003	Replace Topsoil	DOZER	1	51.52	$14,595
004	Revegetate Disturbed Areas	REVEGE	1	8.21	$6,565
005	Install clay liner, Pfeiff Pond	TRUCK1	1	16.46	$19,374
005a	Dewater Dewater Pfeiff Pond	PUMPING	1	343.71	$25,968
006	Equipment Mob/Demob	MOBILIZE	1	7.46	$15,966
			SUBTOTALS:	**1511.42**	**$230,210**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02	Total =	$4,650
Performance bond:	1.05	Total =	$2,417
Job superintendent:	168.52	Total =	$11,694
Profit:	10.00	Total =	$23,021
		TOTAL O & P =	$41,782
		CONTRACT AMOUNT (direct + O & P) =	$271,992

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	$500	Total =	$500
Engineering work and/or contract/bid preparation:	4.25	Total =	$11,560
Reclamation management and/or administration:	5.00		$13,600
CONTINGENCY:	3.00	Total =	$6,906
		TOTAL INDIRECT COST =	$74,348
		TOTAL BOND AMOUNT (direct + indirect) =	**$304,558**

TRUCK/LOADER TEAM WORK

Task description: **Backfill southern portion of BNER**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 7/11/2019 County: Larimer Filename: NA
User: JLE

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 15-18 cy, 6x4
-Loader:	CAT 988H
Support Equipment -Load Area:	NA
-Dump Area:	Cat D9T - 9SU
Road Maintenance –Motor Grader:	CAT 12M
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	25	25
Ownership cost/hour:	$28.38	$91.83	NA	$121.49	$33.62	$9.27
Operating cost/hour:	$55.36	$95.52	NA	$105.84	$8.55	$4.44
%Utilization-riper:	NA	0	NA	15	NA	NA
Ripper own. cost/hour:	NA	$0.00	NA	$15.98	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	NA	$1.45	$0.00	$0.00
Operator cost/hour:	$24.79	$35.93	NA	$39.98	$45.39	$0.00
Unit Subtotals:	$108.53	$223.27	NA	$268.75	$87.56	$13.70
Number of Units:	3	1	0	1	1	1
Group Subtotals:	Work:	$548.86	Support:	$268.75	Maint:	$101.26

Total work team cost/hour: **$918.87**

MATERIAL QUANTITIES

Initial volume: 30,000 CCY Swell factor: 1.060
Loose volume: **31,800** LCY

Source of estimated volume: AM03, Table E-1, Exhibit E
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: Sand - Damp
Rated Payload: 63,980 Pounds

Payload Capacity: 22.45 LCY

Truck Bed (volume) Basis:

Struck Volume:	15.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	16.50	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **10.12** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	9.200	LCY (heaped)
Bucket Fill Factor:	1.100	Other - rock/dirt mixtures (100-120%) 1.100
Adjusted Capacity:	**10.120**	LCY

Job Condition Corrections:

Site Altitude (ft.): 4890 feet

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

Loading Tool Cycle Time:

Number of Loading Tool Passes Required to Fill Truck: 1 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.575 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Independently owned trucks 0.04	0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment:	0.010	minutes
Adjusted Loader Cycle Time:	**0.585**	minutes
Net Load Time per Truck:	**0.100**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.100	Minutes	Adjusted for site altitude:	0.100	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) 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	0.00	3.00	3.00	2800	0.284

Haul Time: **0.284** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	3.00	3.00	2949	0.137

Return Time: **0.137** minutes
Total Truck Cycle Time: **1.921** minutes

Loading Tool unit Production 1,012.00 LCY/Hour Adjusted for job efficiency: 839.96 LCY/Hour
Truck Unit Production 316.09 LCY/Hour Adjusted for job efficiency: 262.35 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 787.05 LCY/Hour
Adjusted single truck/loader team production: 787.05 LCY/Hour
Adjusted multiple truck/loader team production: **787.05** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **40.40** Hours

Unit cost: $1.167 /LCY Total job cost: **$37,126**

TRUCK/LOADER TEAM WORK

Task description: **Install clay liner, BNER**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #:	002	State:	Colorado	Abbreviation:	None
Date:	7/11/2019	County:	Larimer	Filename:	M059-002
User:	JLE				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 15-18 cy, 6x4
-Loader:	CAT 988H
Support Equipment -Load Area:	Cat D9T - 9SU
-Dump Area:	CAT 836H
Road Maintenance –Motor Grader:	CAT 12M
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	50	50	50	50
Ownership cost/hour:	$28.38	$91.83	$121.49	$185.53	$33.62	$9.27
Operating cost/hour:	$55.36	$95.52	$52.92	$72.79	$17.11	$8.87
%Utilization-riper:	NA	0	100	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$15.98	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	$9.64	$0.00	$0.00	$0.00
Operator cost/hour:	$24.79	$35.93	$39.98	$31.46	$45.39	$0.00
Unit Subtotals:	$108.53	$223.27	$224.02	$289.77	$96.11	$18.14
Number of Units:	3	1	1	1	1	1
Group Subtotals:	Work:	$548.86	Support:	$513.79	Maint:	$114.25

Total work team cost/hour: **$1,176.90**

MATERIAL QUANTITIES

Initial volume: 25,000 CCY Swell factor: 1.220

Loose volume: **30,500** LCY

Source of estimated volume: AM03, Table E-1, Exhibit E

Source of estimated swell factor: Cat Handbook

Material Purchase Cost: $0.00

Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,800 Pounds/LCY

Description: Clay - Natural bed

Rated Payload:	63,980	Pounds
Payload Capacity:	22.85	LCY

Truck Bed (volume) Basis:

Struck Volume:	15.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	16.50	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **9.43** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	9.200	LCY (heaped)
Bucket Fill Factor:	1.025	Bank Clay; Earth (100%-105%) 1.025
Adjusted Capacity:	**9.430**	LCY

Job Condition Corrections: Site Altitude (ft.): 4890 feet

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

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 1 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.575 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Bank or broken material 0.04	0.040	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders - 0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Small target 0.04	0.040	(Cat HB)
	Net Cycle Time Adjustment:	0.000	minutes
	Adjusted Loader Cycle Time:	**0.575**	minutes
	Net Load Time per Truck:	**0.100**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.100	Minutes	Adjusted for site altitude:	0.100	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) 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	500.00	0.00	4.00	4.00	2394	0.347

Haul Time: **0.347** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	4.00	4.00	2910	0.207

Return Time: **0.207** minutes
Total Truck Cycle Time: **2.054** minutes

Loading Tool unit Production 943.00 LCY/Hour Adjusted for job efficiency: 782.69 LCY/Hour
Truck Unit Production 275.46 LCY/Hour Adjusted for job efficiency: 228.63 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 685.90 LCY/Hour
Adjusted single truck/loader team production: 685.90 LCY/Hour
Adjusted multiple truck/loader team production: **685.90** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **44.47** Hours

Unit cost: $1.716 /LCY Total job cost: **$52,333**

PUMPING WORK

Task description: **Dewater BNER**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #:	002A	State:	Colorado	Abbreviation:	None
Date:	7/11/2019	County:	Larimer	Filename:	M059-002a
User:	JLE				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Centrifugal pump - 125M, 8 in.	1
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	2
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	3
Labor Unit 1:	Pump operator	1

Horsepower: 70
Shift Basis: 1 per day
Weight: 1.50 (US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$12.14	NA
Operating Cost/Hour:	$17.99	100
Operator Cost/Hour:	$28.20	NA
Total Unit Cost/Hour:	$58.33	

Total Fleet Cost/Hour: $58.33

PUMPING QUANTITIES

Initial Pond Volume:	250.00		Conversion factor:	325850.5800
Final Pond Volume:	**81,462,645.00**	gallons		
Total Pond Inflow Surface Area:	77,500	Sq. ft.	Unit inflow rate in gph/sq. ft.:	0.3516
Total Pond Inflow Volume per Hour:	27,249.00	gallons		

Source of estimated volume: 10 Acre BNER, Approx 25’ deep

PUMPING TIME

Maximum Pump Capacity:	125,000	gph/pump
Estimated Suction Head:	20	feet
Estimated Discharge Head:	10	feet
Total Head:	30	feet
CPB Pump Capacity:	93,600	gph/pump
Site Altitude:	4,890	feet

Adjusted Pumping Capacity:	93,600	gph
Initial Unadjusted Pumping Time:	870.33	hours
Inflow during Initial Pumping:	23,715,551	gallons
Net Unadjusted Pumping Time:	1,123.70	Hours
Altitude Adjustment Factor:	0.9700	(3% rule)
Pump Efficiency Factor:	0.9167	(55 min./hr.)
Total Adjusted Pumping Time:	999.19	hours

JOB TIME AND COST

Total job time: **999.19** Hours

Unit cost: $0.000554 /Gallon

Total job cost: **$58,283**

BULLDOZER WORK

Task description: **Replace Topsoil**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #:	003	State:	Colorado	Abbreviation:	None
Date:	7/11/2019	County:	Larimer	Filename:	M059-003
User:	JLE				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D9T - 9SU
Horsepower:	405
Blade Type:	Semi-Universal
Attachment:	1-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$121.49	NA
Operating Cost/Hour:	$105.84	100
Ripper own. Cost/Hour:	$15.98	NA
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$39.98	NA

Total unit Cost/Hour:	$283.28
Total Fleet Cost/Hour:	**$283.28**

MATERIAL QUANTITIES

Initial Volume:	12,250
Swell factor:	1.215
Loose volume:	**14,884** LCY

Source of estimated volume: AM03, Table E-1, Exhibit E

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 400 feet

Unadjusted hourly production: 305.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %

Average site altitude: 4,890 feet

Material weight: 1,600 lbs/LCY

Weight description: Top Soil

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.100	(50% SL)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	1.438	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.9453

Adjusted unit production: 288.88 LCY/hr

Adjusted fleet production: **288.88** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.981/LCY

Total job time: **51.52** Hours

Total job cost: **$14,595**

REVEGETATION WORK

Task description: **Revegetate Disturbed Areas**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None
Date: 7/11/2019 County: Larimer Filename: NA
User: JLE

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	250.00	pound	$0.34	$85.00
			Total Fertilizer Materials Cost/Acre	**$85.00**

Application

Description	Cost /Acre
Truck whirlwind spreader (MEANS 32 01 90.13 0140)	$14.81
Total Fertilizer Application Cost/Acre	**$14.81**

TILLING

Description	Cost /Acre
Weed control spraying (MEANS 31 31 16.13 3100)	$193.60
Total Tilling Cost/Acre	**$193.60**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alfalfa - Common	4.00	19.28	$10.20
Switchgrass - Nebraska 28	5.00	44.65	$67.50
Sideoats Grama - Vaughn	6.00	19.70	$50.25
Thickspike Wheatgrass - Critana	9.00	31.82	$61.88
Totals Seed Mix	24.00	115.45	**$189.83**

Application

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

Total Seed Application Cost/Acre	**$232.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
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:	8.21	Cost /Acre:	$715.24
Estimated Failure Rate:	20%	Cost /Acre*:	$421.83
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$5,872.12**
Reseeding Job Cost:	**$692.64**
Total Job Cost:	**$6,565**
Job Hours:	**8.21**

TRUCK/LOADER TEAM WORK

Task description: **Install clay liner, Pfeiff Pond**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #:	005	State:	Colorado	Abbreviation:	None
Date:	7/11/2019	County:	Larimer	Filename:	M059-005
User:	JLE				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 15-18 cy, 6x4
-Loader:	CAT 988H
Support Equipment -Load Area:	Cat D9T - 9SU
-Dump Area:	CAT 836H
Road Maintenance –Motor Grader:	CAT 12M
-Water Truck:	Water Tanker, 2,500 Gal.

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	50	50	50	50
Ownership cost/hour:	$28.38	$91.83	$121.49	$185.53	$33.62	$9.27
Operating cost/hour:	$55.36	$95.52	$52.92	$72.79	$17.11	$8.87
%Utilization-riper:	NA	0	100	NA	NA	NA
Ripper own. cost/hour:	NA	$0.00	$15.98	$0.00	$0.00	$0.00
Ripper op. cost/hour:	NA	$0.00	$9.64	$0.00	$0.00	$0.00
Operator cost/hour:	$24.79	$35.93	$39.98	$31.46	$45.39	$0.00
Unit Subtotals:	$108.53	$223.27	$224.02	$289.77	$96.11	$18.14
Number of Units:	3	1	1	1	1	1
Group Subtotals:	Work:	$548.86	Support:	$513.79	Maint:	$114.25

Total work team cost/hour: **$1,176.90**

MATERIAL QUANTITIES

Initial volume: 10,000 CCY Swell factor: 1.220

Loose volume: **12,200** LCY

Source of estimated volume: AM03, Table E-1, Exhibit E

Source of estimated swell factor: Cat Handbook

Material Purchase Cost: $0.00

Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,800 Pounds/LCY

Description: Clay - Natural bed

Rated Payload:	63,980	Pounds
Payload Capacity:	22.85	LCY

Truck Bed (volume) Basis:

Struck Volume:	15.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	16.50	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **9.43** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	9.200	LCY (heaped)
Bucket Fill Factor:	1.025	Bank Clay; Earth (100%-105%) 1.025
Adjusted Capacity:	**9.430**	LCY

Job Condition Corrections: Site Altitude (ft.): 4890 feet

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

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 1 passes

Excavators and Front Shovels:

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

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.575 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Bank or broken material 0.04	0.040	(Cat HB)
Stockpile:	No adjustment - factor not applicable 0.00	0.000	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Small target 0.04	0.040	(Cat HB)
	Net Cycle Time Adjustment:	0.000	minutes
	Adjusted Loader Cycle Time:	**0.575**	minutes
	Net Load Time per Truck:	**0.100**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minutes
Truck Load Time:	0.100	Minutes	Adjusted for site altitude:	0.100	Minutes
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minutes

Truck Travel (Haul & Return) 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	300.00	0.00	4.00	4.00	2394	0.263

Haul Time: **0.263** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	300.00	0.00	4.00	4.00	2910	0.138

Return Time: **0.138** minutes
Total Truck Cycle Time: **1.901** minutes

Loading Tool unit Production 943.00 LCY/Hour   Adjusted for job efficiency: 782.69 LCY/Hour

Truck Unit Production 297.63 LCY/Hour   Adjusted for job efficiency: 247.04 LCY/Hour

Optimal No. of Trucks: 3 Truck(s)   Selected Number of Trucks: 3 Truck(s)

Adjusted hourly truck team production: 741.11 LCY/Hour
Adjusted single truck/loader team production: 741.11 LCY/Hour
Adjusted multiple truck/loader team production: **741.11** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s)   Total job time: **16.46** Hours

Unit cost: $1.588 /LCY   Total job cost: **$19,374**

PUMPING WORK

Task description: **Dewater Dewater Pfeiff Pond**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #:	005A	State:	Colorado	Abbreviation:	None
Date:	7/11/2019	County:	Larimer	Filename:	M059-005a
User:	JLE				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

	Description	Quantity
Make and Model:	Centrifugal pump - 125M, 8 in.	1
Attachment 1:	Suction hose - 6 in. diam., 25 ft.	2
Attachment 2:	Discharge hose - 6 in. D., 25 ft.	45
Labor Unit 1:	Pump operator	1

Horsepower: 70
Shift Basis: 1 per day
Weight: 1.50 (US Tons)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$27.68	NA
Operating Cost/Hour:	$19.67	100
Operator Cost/Hour:	$28.20	NA
Total Unit Cost/Hour:	$75.55	

Total Fleet Cost/Hour: $75.55

PUMPING QUANTITIES

Initial Pond Volume:	100.00		Conversion factor:	325850.5800
Final Pond Volume:	**32,585,058.00**	gallons		
Total Pond Inflow Surface Area:	29,375	Sq. ft.	Unit inflow rate in gph/sq. ft.:	0.3516
Total Pond Inflow Volume per Hour:	10,328.25	gallons		

Source of estimated volume: 4 Acre Pfeiff Pond, Approx. 25’ deep

PUMPING TIME

Maximum Pump Capacity:	125,000	gph/pump
Estimated Suction Head:	20	feet
Estimated Discharge Head:	10	feet
Total Head:	30	feet
CPB Pump Capacity:	93,600	gph/pump
Site Altitude:	4,890	feet

Adjusted Pumping Capacity:	93,600	gph
Initial Unadjusted Pumping Time:	348.13	hours
Inflow during Initial Pumping:	3,595,584	gallons
Net Unadjusted Pumping Time:	386.55	Hours
Altitude Adjustment Factor:	0.9700	(3% rule)
Pump Efficiency Factor:	0.9167	(55 min./hr.)
Total Adjusted Pumping Time:	343.72	hours

JOB TIME AND COST

Total job time: **343.72** Hours

Unit cost: $0.000718 /Gallon

Total job cost: **$25,968**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **Equipment Mob/Demob**

Site: **Brownwood Pit** Permit Action: SI01 Permit/Job#: M1979059

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 7/11/2019 County: Larimer Filename: M059-006
User: JLE

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	**0-25 Tons**	**26-50 Tons**	**51+ Tons**
Ownership Cost/Hour:	$17.20	$29.63	$38.69
Operating Cost/Hour:	$26.56	$47.02	$55.69
Operator Cost/Hour:	$23.63	$23.63	$23.63
Helper Cost/Hour:	$0.00	$23.53	$23.53
Total Unit Cost/Hour:	$67.39	$123.81	$141.54

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D9T - 9SU	65.36	$137.47	$141.54	1	$279.01	$141.54	$250.00
Generic 15-18 cy, 6x4	10.51	$28.38	$67.39	3	$287.31	$202.17	$750.00
CAT 988H	54.46	$91.83	$141.54	1	$233.37	$141.54	$250.00
CAT 836H	54.88	$185.53	$141.54	1	$327.07	$141.54	$250.00
CAT 12M	16.01	$33.62	$67.39	1	$101.01	$67.39	$250.00
Drill/Broadcast Seeder with Tractor	25.00	$18.15	$67.39	2	$171.08	$134.78	$500.00
Centrifugal pump - 125M, 8 in.	1.50	$10.72	$67.39	1	$78.11	$67.39	$250.00
				Subtotals:	**$1,476.96**	**$896.35**	**$2,500.00**

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.	$65.88	1	$65.88	$65.88
Fuel Tanker, 6x4, 210 HP	$81.32	2	$162.64	$162.64
Light Duty Pickup, 4x4, 3/4 T.	$167.39	1	$167.39	$167.39

Subtotals:	**$395.91**	**$395.91**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	LOVELAND	
Total one-way travel distance:	5.00	miles
Average Travel Speed:	30.00	mph
Total Non-Roadable Mob/Demob Cost * '* two round trips with haul rig:	$15,834.43	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$131.97	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.17	0.17
Return Time (Hours):	0.17	0.17
Loading Time (Hours):	1.70	NA
Unloading Time (Hours):	1.70	NA
Subtotals:	3.73	0.33

JOB TIME AND COST

Total job time:	**7.47**	Hours
Total job cost:	**$15,966**	