



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

August 27, 2014

Mr. Bob Warneke
Natural Soda, Inc.
3200 Rio Blanco CR 31
Rifle, CO 81650

Re: Nahcolite Project, Permit No. M-1999-051, Surety Increase, Revision No. SI-2

Dear Mr. Warneke

On August 27, 2014 the Division of Reclamation, Mining and Safety increased the current Financial Warranty for this permit to \$140,863.92, in accordance with Rule 4.2.1 of the Rules and Regulations. This is an increase of 21,514.78 over the currently held \$119,349.14 financial warranty. The reason for the surety increase is to cover reclamation costs for an additional monitoring well (MU-2) that was not included in the previous reclamation cost estimate.

The Division ordered amendment of the current Financial Warranty or submittal of a new Financial Warranty reflecting the increase is due within 60 days from the date of this letter. If you wish to submit a different type of Financial Warranty or have questions regarding modification of the existing financial warranty please contact Barbara Coria at (303) 866-3567 extension 8148.

If you have any other questions regarding this permit activity please contact me at 970.241.2042.

Sincerely,

Travis Marshall
Environmental Protection Specialist

Enclosure - Reclamation Cost Estimate

cc: Russ Means, DRMS
Barbara Coria, DRMS

Paul Daggett
BLM - WRFO
220 East Market Street
Meeker, CO 81641

Gerald Daub
Daub & Associates, Inc
1985 1/2 South Broadway
Grand Junction, CO 81507



COST SUMMARY WORK

Task description: _____

Rock School Lease Experimental Nahcolite Permit Action: _____
Site: Mine SI-2 Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 8/27/2014 County: Rio Blanco Filename: _____
User: THM

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Plug and Abandon Water Monitoring wells	BOREHOLE	1	40.00	\$92,483.74
02a	Backfill monitoring well pads and well pad access roads	EXCAVATE	1	18.33	\$2,834.00
03a	Re-grade monitoring well pads and well pad access road	DOZER	1	19.15	\$3,285.00
04a	Spread topsoil over re-graded well pads and well pad access	DOZER	1	6.49	\$1,113.00
05a	Revegetate 3.1 acres disturbance	REVEGE	1	8.00	\$4,520.00
06a	Mobilization	MOBILIZE	1	11.24	\$7,732.00
<u>SUBTOTALS:</u>				103.21	\$111,968

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02%	Total =	\$2,261.75
Performance bond:	1.05%	Total =	\$1,175.66
Job superintendent:	51.61 hrs	Total =	\$3,878.63
Profit:	10.00%	Total =	\$11,196.80
		TOTAL O & P =	\$18,512.84
		CONTRACT AMOUNT (direct + O & P) =	\$130,480.84

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	500.00	Total =	500.00
Engineering work and/or contract/bid preparation:	0.00%	Total =	\$0.00
Reclamation management and/or administration:	5.00%		\$6,524.04

CONTINGENCY: 3.00 Total = \$3,359.04

TOTAL INDIRECT COST = \$28,895.92

TOTAL BOND AMOUNT (direct + indirect) = \$140,863.92

BOREHOLE SEALING WORK

Task description: Plug and Abandon Water Monitoring wells

Rock School Lease
Site: Experimental Nahcolite Mine

Permit Action:
SI-2

Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 01A
Date: 8/27/2014
User: THM

State: Colorado
County: Rio Blanco

Abbreviation: None
Filename: SI-2

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
MWD-1	Portland cement grout - 6 in. (labor, equip, materials)	6"	1731	1,731.00	LF	\$11.24	\$19,451.94
MWU-2	Portland cement grout - 6 in. (labor, equip, materials)	6"	687	687.00	LF	\$11.24	\$7,720.09
MWD-2	Portland cement grout - 6 in. (labor, equip, materials)	6"	1703	1,703.00	LF	\$11.24	\$19,137.29
MWA-2	Portland cement grout - 8 in. (labor, equip, materials)	8"	1200	1,200.00	LF	\$12.22	\$14,665.92
MWB-2	Portland cement grout - 6 in. (labor, equip, materials)	6"	1398	1,398.00	LF	\$11.24	\$15,709.89
AM-2	Portland cement grout - 4 in. (labor, equip, materials)	4"	88	88.00	LF	\$8.04	\$707.88
MU-2	Portland cement grout - 4 in. (labor, equip, materials)	4"	1876	1,876.00	LF	\$8.04	\$15,090.73

Job Hours: 40.00

Total Cost: \$92,484.00

HYDRAULIC EXCAVATOR WORK

Task description: Backfill monitoring well pads and well pad access roads

Rock School Lease Permit Action:
Site: Experimental Nahcolite Mine SI-2 Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 02A State: Colorado Abbreviation: None
Date: 8/27/2014 County: Rio Blanco Filename: SI-2
User: THM

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat 336D L 10'-6" Stick Horsepower: 268
Attachment 1: ROPS Cab Weight (MT): 29.30
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	\$38.17	NA
Operating Cost/Hour:	\$88.21	100
Operator Cost/Hour:	\$28.17	NA
Total Unit Cost/Hour:	\$154.55	
Total Fleet Cost/Hour:	\$154.55	

MATERIAL QUANTITIES

Initial volume: 5,000 CCY Swell factor: 1.125
Loose volume: 5,625 LCY
Source of estimated volume: Division of Reclamation, Mining & Safety
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE
Secondary Job Condition within Basic Description: AVERAGE
Cycle Time Value: 0.321 minutes

Load Bucket Capacity

Rated Capacity: 2.26 LCY (heaped) Bucket Size Class: Medium
Bucket Fill Factor: 0.875 Loose material - 1/2" to 3/4" (85 - 90%) 0.875
Adjusted Capacity: 1.98 LCY

Job Condition Correction Factors

Site Altitude: 6600 feet

Altitude Adj: 1.00 Source
Job Efficiency: 0.83 (CAT HB)
Net Correction: 0.83 (1 shift/day)
multiplier

Unadjusted Hourly Unit Production: 369.63 LCY/Hour
Adjusted Hourly Unit Production: 306.79 LCY/Hour
Adjusted Hourly Fleet Production: 306.79 LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: 18.34 Hours
Unit cost: \$0.504 /LCY Total job cost: \$2,834

BULLDOZER WORKTask description: Re-grade monitoring well pads and well pad access roadRock School Lease
Site: Experimental Nahcolite MinePermit Action:
SI-2Permit/Job#: M1999051**PROJECT IDENTIFICATION**Task #: 03A
Date: 8/27/2014
User: THMState: Colorado
County: Rio BlancoAbbreviation: None
Filename: SI-2Agency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D7R DS Series II LGP
Horsepower: 238
Blade Type: Straight
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$49.84</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$83.73</u>	<u>100</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>100</u>
Operator Cost/Hour:	<u>\$38.01</u>	<u>NA</u>

Total unit Cost/Hour: 0
Total Fleet Cost/Hour: \$171.57**MATERIAL QUANTITIES**Initial Volume: 5,000
Swell factor: 1.125
Loose volume: 5,625 LCYSource of estimated volume: Division of Reclamation, Mining & Safety
Source of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 75 feet
Unadjusted hourly production: 594.6 LCY/hrMaterials consistency description: Partly consolidated stockpile 1.1Average push gradient: 0 %
Average site altitude: 6,600 feetMaterial weight: 2,550 lbs/LCYWeight description: Earth - Dry packed

<u>Job Condition</u>	<u>Correction Factor</u>	<u>Source</u>
Operator Skill:	<u>0.750</u>	<u>(AVG.)</u>
Material consistency:	<u>1.100</u>	<u>(CAT HB)</u>

Dozing method:	1.000	(GEN.)
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:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4941

Adjusted unit production: 293.79 LCY/hr

Adjusted fleet production: 293.79 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.584/LCY

Total job time: 19.15 Hours

Total job cost: \$3,285

BULLDOZER WORKTask description: Spread topsoil over re-graded well pads and well pad access

Rock School Lease Permit Action:
 Site: Experimental Nahcolite Mine SI-2 Permit/Job#: M1999051

PROJECT IDENTIFICATION

Task #: 04A State: Colorado Abbreviation: None
 Date: 8/27/2014 County: Rio Blanco Filename: SI-2
 User: THM

Agency or organization name: DRMS**HOURLY EQUIPMENT COST**

Basic Machine: Cat D7R DS Series II LGP
 Horsepower: 238
 Blade Type: Straight
 Attachment: 3-shank ripper
 Shift Basis: 1 per day
 Data Source: (CRG)

Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	<u>\$49.84</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$83.73</u>	<u>100</u>
Ripper op. Cost/Hour:	<u>\$0.00</u>	<u>100</u>
Operator Cost/Hour:	<u>\$38.01</u>	<u>NA</u>

Total unit Cost/Hour: 0
 Total Fleet Cost/Hour: \$171.57

MATERIAL QUANTITIES

Initial Volume: 2,500
 Swell factor: 1.215
 Loose volume: 3,038 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety
 Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 75 feet
 Unadjusted hourly production: 594.6 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
 Average site altitude: 6,600 feet

Material weight: 1,600 lbs/LCYWeight description: Top Soil

<u>Job Condition Correction Factor</u>	<u>Source</u>
Operator Skill: <u>0.750</u>	<u>(AVG.)</u>
Material consistency: <u>1.100</u>	<u>(CAT HB)</u>

Dozing method:	1.000	(GEN.)
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: 0.7877

Adjusted unit production: 468.37 LCY/hr

Adjusted fleet production: 468.37 LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: \$0.366/LCY

Total job time: 6.49 Hours

Total job cost: \$1,113

REVEGETATION WORKTask description: Revegetate 3.1 acres disturbanceSite: Rock School Lease
Experimental Nahcolite MinePermit Action: SI-2Permit/Job#: M1999051**PROJECT IDENTIFICATION**Task #: 05A
Date: 8/27/2014
User: THMState: Colorado
County: Rio BlancoAbbreviation: None
Filename: SI-2Agency or organization name: DRMS**FERTILIZING****Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			\$	\$
			Total Fertilizer Materials Cost/Acre	\$0.00

Application

Description	Cost /Acre
	\$
Total Fertilizer Application Cost/Acre	\$0.00

TILLING

Description	Cost /Acre
Chisel plowing {DMG}	\$88.58
Total Tilling Cost/Acre	\$88.58

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bitterbrush, Antelope	1.00	0.31	\$20.26
Great Basin Wildrye - Magnar	0.50	2.03	\$3.75
Alfalfa - Ladak (inoculated)	1.50	7.23	\$4.68
Russian Wildrye - Vinal	0.50	2.01	\$1.86
Pubescent Wheatgrass - Luna	0.50	1.03	\$1.12
Milk Vetch, Cicer - Monarch	0.50	1.66	\$2.56
Streambank Wheatgrass - Sodar	0.50	1.63	\$2.11
Thickspike Wheatgrass - Critana	0.50	1.77	\$2.59
Western Wheatgrass - Arriba	1.00	2.53	\$3.68
Flax, Lewis Blue	0.20	1.33	\$3.30

Saltbush, Four Wing	1.50	2.07	\$16.10
Globemallow, Scarlet (or copper)	0.20	2.26	\$28.09
Winter Fat	0.50	1.27	\$16.35
Penstemon, Palmer	0.20	4.42	\$6.20
Totals Seed Mix	9.10	31.55	\$112.62

Application

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
Straw, 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
					\$
Totals Nursery Stock Cost / Acre					\$0.00

JOB TIME AND COST

No. of Acres: 3.1 Cost /Acre: \$971.97
 Estimated Failure Rate: 50% Cost /Acre*: \$971.97
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING
 Initial Job Cost: \$3,013.11
 Reseeding Job Cost: \$1,506.55
 Total Job Cost: \$4,520
 Job Hours: 8.00

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization**Site: **Rock School Lease
Experimental Nahcolite Mine**Permit Action: **SI-2**Permit/Job#: **M1999051****PROJECT IDENTIFICATION**Task #: **06A**
Date: **8/27/2014**
User: **THM**State: **Colorado**
County: **Rio Blanco**Abbreviation: **None**
Filename: **SI-2**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:	\$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
Total Unit Cost/Hour:	\$88.67	\$117.55	\$125.45

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 336D L 10'-6" Stick	32.23	\$42.57	\$117.55	1	\$160.12	\$117.55	\$250.00
Cat D7R DS Series II LGP	34.57	\$44.66	\$117.55	1	\$162.21	\$117.55	\$250.00
Drill/Broadcast Seeder with Tractor	25.00	\$39.59	\$88.67	1	\$128.26	\$88.67	\$250.00
Power Mulcher (Reinco M90)	6.00	\$7.03	\$88.67	1	\$95.70	\$88.67	\$250.00

Subtotals: **\$546.29** **\$412.44** **\$1,000.00****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.	\$29.58	1	\$29.58	\$29.58
Light Duty Pickup, 4x4, 3/4 T.	\$15.34	1	\$15.34	\$15.34

Subtotals: **\$44.92** **\$44.92**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	<u>GRAND JUNCTION</u>	
Total one-way travel distance:	<u>104.00</u>	miles
Average Travel Speed:	<u>45.00</u>	mph

Total Non-Roadable Mob/Demob Cost *	
'* two round trips with haul rig:	<u>\$7,524.04</u>

Total Roadable Mob/Demob Cost **	
'** one round trip, no haul rig:	<u>\$207.63</u>

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	<u>2.31</u>	<u>2.31</u>
Return Time (Hours):	<u>2.31</u>	<u>2.31</u>
Loading Time (Hours):	<u>0.50</u>	<u>NA</u>
Unloading Time (Hours):	<u>0.50</u>	<u>NA</u>
Subtotals:	<u>5.62</u>	<u>4.62</u>

JOB TIME AND COST

Total job time:	<u>11.24</u>	Hours
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Total job cost:	<u>\$7,732</u>
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