



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

April 24, 2014

Mr. Kirk Daehling
Natural Soda, Inc.
3200 RBC Road 31
Rifle, CO 81650

Re: Natural Soda, Inc., Nahcolite Project, Permit No.M-1983-194, Second Adequacy Review of Technical Revision No. 35 application, TR-35.

Dear Mr. Daehling,

The Division of Reclamation, Mining and Safety (DRMS) has conducted further review of the application for a technical revision to the above referenced 112d(3) permit. The purpose of the technical revision is for the planned construction of three production well pairs, two water supply wells and 23 core/monitoring wells along with new drill pads and associated access roads. A review of the application has revealed a few more clarifications required to process the technical revision:

- 1) What measures will be implemented to measure the potential subsidence above the proposed cavities?
- 2) Due to the proposed production well pairs being located within close proximity to previously mined zones will the potential for subsidence be magnified?
- 3) Please review the enclosed reclamation cost estimate which accounts for the existing reclamation liability along with the proposed reclamation liability associated with Technical Revision 35.


The technical revision cannot be approved until the issues are adequately addressed. Please submit a response to the issues as soon as possible but no later than May 2, 2014, so the decision date of May 9, 2014 can be met. If your response, or a written request for an extension of the decision date, is not received by May 2, 2014 the request for the revision may be denied.

If you need additional information, please contact me at the Division of Reclamation, Mining and Safety, Grand Junction Field Office, 101 S. 3rd St., Suite 301, Grand Junction, Colorado 81501, telephone no. 970.241.2042.



Mr. Daehling
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Sincerely,

A handwritten signature in black ink, appearing to read 'Travis Marshall', with a stylized, flowing script.

Travis Marshall
Environmental Protection Specialist

Enclosure(s): Reclamation Cost Estimate

cc: Paul Daggett
BLM - White River Field Office
220 East Market Street
Meeker, CO 81641

Gerald Daub
Daub & Associates, Inc.
1985 ½ South Broadway
Grand Junction, CO 81507

COST SUMMARY WORK

Task description: TR-35 Final Reclamation Cost Estimate

Site: Nahcolite Project

Permit Action: TR-35

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 001

State: Colorado

Abbreviation: None

Date: 4/23/2014

County: Rio Blanco

Filename: M194-001

User: THM

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
01a	Demo. of NSI Plant, Pipelines and Powerlines	DEMOLISH	1	80.00	\$530,207.68
02a	Borehole P&A	BOREHOLE	1	460.00	\$1,417,767.89
03a	Re-grade Process Ponds	DOZER	2	141.43	\$56,045.00
04a	Re-grade Plant Area	DOZER	2	41.97	\$16,632.39
05a	Re-grade Well Pads	DOZER	2	100.17	\$39,693.04
06a	Distribute 6" of topsoil over 8 acre process pond area	DOZER	2	5.92	\$2,345.73
07a	Distribute 6" topsoil over 6.2 acre process area	DOZER	2	4.59	\$1,817.55
08a	Replace topsoil over re-graded well pads and access roads	DOZER	2	25.45	\$10,083.06
09a	Rip compacted areas	RIPPER	2	14.08	\$5,945.00
10a	Distribute 6" topsoil de-compacted area	DOZER	2	10.27	\$4,070.86
11a	Revegetate 73.76 acres	REVEGE	1	73.76	\$136,105.34
12a	Mobilization	MOBILIZE	1	8.00	\$6,399.36
<u>SUBTOTALS:</u>				965.64	\$2,227,112.90

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance: 2.02%

Total = \$44,987.68

Performance bond: 1.05%

Total = \$23,384.69

Job superintendent: 482.82 hrs

Total = \$31,581.26

Profit: 10.00%

Total = \$222,711.29

TOTAL O & P = \$322,664.92

CONTRACT AMOUNT (direct + O & P) = \$2,549,777.82

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs): 500.00

Total = 500.00

Engineering work and/or contract/bid preparation: 4.25%

Total = \$108,365.56

Reclamation management and/or administration: 5.00%

\$127,488.89

CONTINGENCY: 3.00

Total = \$66,813.39

TOTAL INDIRECT COST = \$625,832.76

TOTAL BOND AMOUNT (direct + indirect) = \$2,852,945.66

DEMOLITION WORK

Task description: Demo. of NSI Plant, Pipelines and Powerlines

Site: Nahcolite Project

Permit Action: TR-35

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 01A

State: Colorado

Abbreviation: None

Date: 4/15/2014

County: Rio Blanco

Filename: TR-35

User: THM

Agency or organization name: DRMS

UNIT COSTS

Location adjustment: 91.30 %

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
NSI Plant	200'L x 175'W x 50'H	Plant (3S) demo./on-site disposal in excavated pit - Max. 200 ft. push	1,750,000.00	CF	\$0.19	\$330,750.00
Product Storage Dome	100'L x 100'W x 50'H	Plant (3S) demo./on-site disposal in excavated pit - Max. 200 ft. push	500,000.00	CF	\$0.19	\$94,500.00
Removal of NSI Plant Slab	200'L x 175'W	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	35,000.00	SF	\$2.26	\$79,240.00
Removal of Storage Dome slab	100'L x 100'W	Demo. and on-site disposal in existing pit, 8 in. thick - Max. 200 ft. push	10,000.00	SF	\$2.22	\$22,200.00
Scale Building	20'W x 100'L x 15'H	Plant (1S) demo./on-site disposal in excavated pit - Max. 200 ft. push	30,000.00	CF	\$0.16	\$4,680.00
Removal of Scale Building Slab	20'W x 100'L	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	2,000.00	SF	\$1.70	\$3,396.00
Removal of Conveyor System	200'L	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	200.00	LF	\$43.17	\$8,634.00
Removal of Overhead Powerline	2100'L	Powerline or utility line, overhead, wood - Double or "H" pole	2,100.00	LF	\$5.23	\$10,978.80
Tank Farm	30'W x 50'H	Tank Removal and disposal in pit	5.00	Tank	\$2,000.00	\$10,000.00
Removal of Pipeline	3600	Pipe, steel, welded connections - 10 in. diameter pipe	3,600.00	LF	\$1.85	\$6,660.00
Removal of Flagpoles/Monument	70 sq feet	USER PROVIDED ITEM	70.00	FT^2	\$5.00	\$350.00
Removal of 12" barren liquor pipeline	5050 LF	Pipe, steel, welded connections - 10 in. diameter pipe	5,050.00	LF	\$1.85	\$9,342.50

Job Hours: 80.00

Subtotal
(unadjusted): \$580,731.30

Total Cost
(adjusted for location): \$530,207.68

BOREHOLE SEALING WORK

Task description: Borehole P&A

Site: Nahcolite Project

Permit Action: TR-35

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 02A
Date: 4/16/2014
User: THM

State: Colorado
County: Rio Blanco

Abbreviation: None
Filename: TR-35

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
3M-TDR	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
89-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
89-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$7.82	\$11,077.26
89-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$7.82	\$2,712.64
90-1	Portland cement grout - 10 in. (labor, equip, materials)	9.625"	1417	1,417.00	LF	\$17.84	\$25,284.95
90-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
90-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$7.82	\$11,077.26
94-1M	Portland cement grout - 6 in. (labor, equip, materials)	5"	2200	2,200.00	LF	\$10.92	\$24,025.54
BG-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
BG-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5	1627	1,627.00	LF	\$7.82	\$12,718.91
DS-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
DS-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
EX-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
IRI-1	Portland cement grout - 4 in. (labor, equip, materials)	4"	347	347.00	LF	\$7.82	\$2,712.64

IRI-4	Portland cement grout - 4 in. (labor, equip, materials)	4"	1417	1,417.00	LF	\$7.82	\$11,077.26
IRI-5	Portland cement grout - 4 in. (labor, equip, materials)	4.625"	347	347.00	LF	\$7.82	\$2,712.64
IRI-6	Portland cement grout - 4 in. (labor, equip, materials)	4"	1627	1,627.00	LF	\$7.82	\$12,718.91
IRI-7	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
IRI-8	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$7.82	\$2,712.64
MU-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
MWA-2	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	347	347.00	LF	\$11.88	\$4,121.39
MWB-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1627	1,627.00	LF	\$10.92	\$17,767.98
MWD-1	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
MWD-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
7H-1R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
7H-1V	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
7H-2I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
12H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
12H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
10H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
11H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
10H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
11H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
DS-4	Portland cement grout - 4	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44

BOREHOLE SEALING WORK

Task description: Borehole P&A

Site: Nahcolite Project

Permit Action: TR-35

Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 02A
Date: 4/16/2014
User: THM

State: Colorado
County: Rio Blanco

Abbreviation: None
Filename: TR-35

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
3M-TDR	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
89-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
89-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$7.82	\$11,077.26
89-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$7.82	\$2,712.64
90-1	Portland cement grout - 10 in. (labor, equip, materials)	9.625"	1417	1,417.00	LF	\$17.84	\$25,284.95
90-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
90-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1417	1,417.00	LF	\$7.82	\$11,077.26
94-1M	Portland cement grout - 6 in. (labor, equip, materials)	5"	2200	2,200.00	LF	\$10.92	\$24,025.54
BG-1	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
BG-4	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1627	1,627.00	LF	\$7.82	\$12,718.91
DS-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
DS-3	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
EX-2	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
IRI-1	Portland cement grout - 4 in. (labor, equip, materials)	4"	347	347.00	LF	\$7.82	\$2,712.64

IRI-4	Portland cement grout - 4 in. (labor, equip, materials)	4"	1417	1,417.00	LF	\$7.82	\$11,077.26
IRI-5	Portland cement grout - 4 in. (labor, equip, materials)	4.625"	347	347.00	LF	\$7.82	\$2,712.64
IRI-6	Portland cement grout - 4 in. (labor, equip, materials)	4"	1627	1,627.00	LF	\$7.82	\$12,718.91
IRI-7	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44
IRI-8	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	347	347.00	LF	\$7.82	\$2,712.64
MU-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
MWA-2	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	347	347.00	LF	\$11.88	\$4,121.39
MWB-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1627	1,627.00	LF	\$10.92	\$17,767.98
MWD-1	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
MWD-2	Portland cement grout - 6 in. (labor, equip, materials)	5"	1876	1,876.00	LF	\$10.92	\$20,487.23
7H-1 R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
7H-1 V	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
7H-2 I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1876	1,876.00	LF	\$11.88	\$22,281.63
12H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
12H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
10H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
11H-I	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
10H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
11H-R	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1935	1,935.00	LF	\$11.88	\$22,982.38
DS-4	Portland cement grout - 4	4.5"	1876	1,876.00	LF	\$7.82	\$14,665.44

	in. (labor, equip, materials)						
BG-5	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1645	1,645.00	LF	\$7.82	\$12,859.62
DS-5	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1902	1,902.00	LF	\$7.82	\$14,868.69
BG-6	Portland cement grout - 4 in. (labor, equip, materials)	4.5"	1639	1,639.00	LF	\$7.82	\$12,812.72
WSW-2	Portland cement grout - 8 in. (labor, equip, materials)	7.625"	1460	1,460.00	LF	\$11.88	\$17,340.71
DVPW-1(A)	Portland cement grout - 8 in. (labor, equip, materials)	7"	2350	2,350.00	LF	\$11.88	\$27,911.42
DVPW-(B)	Portland cement grout - 8 in. (labor, equip, materials)	7"	2350	2,350.00	LF	\$11.88	\$27,911.42
10H-1V	Portland cement grout - 8 in. (labor, equip, materials)	7"	2010	2,010.00	LF	\$11.88	\$23,873.17
13H-I	Portland cement grout - 8 in. (labor, equip, materials)	8"	2335	2,335.00	LF	\$11.88	\$27,733.26
13H-R	Portland cement grout - 8 in. (labor, equip, materials)	8"	2310	2,310.00	LF	\$11.88	\$27,436.33
8H-I	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$11.88	\$25,060.89
8H-R	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$11.88	\$25,060.89
14H-I	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$11.88	\$25,060.89
14H-R	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$11.88	\$25,060.89
WSW-3	Portland cement grout - 8 in. (labor, equip, materials)	7"	1420	1,431.00	LF	\$11.88	\$16,996.27
WSW-4	Portland cement grout - 8 in. (labor, equip, materials)	7"	1431	1,431.00	LF	\$11.88	\$16,996.27
A (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1844	1,844.00	LF	\$11.88	\$21,901.56
B (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1879	1,879.00	LF	\$11.88	\$22,317.26
C (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1898	1,898.00	LF	\$11.88	\$22,542.93
D (Phase 1)	Portland cement grout - 8 in. (labor, equip,	6.5"	1949	1,949.00	LF	\$11.88	\$23,148.66

	materials)						
E (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1967	1,967.00	LF	\$11.88	\$23,362.45
F (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1933	1,933.00	LF	\$11.88	\$22,958.63
G (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	2012	2,012.00	LF	\$11.88	\$23,896.93
H (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1983	1,983.00	LF	\$11.88	\$23,552.49
I (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1986	1,986.00	LF	\$11.88	\$23,588.12
J (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	2038	2,038.00	LF	\$11.88	\$24,205.73
K (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1963	1,963.00	LF	\$11.88	\$23,314.94
L (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1901	1,901.00	LF	\$11.88	\$22,578.56
M (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1917	1,917.00	LF	\$11.88	\$22,768.59
DS-7 (Phase 1)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1897	1,897.00	LF	\$11.88	\$22,531.05
N (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5	1859	1,859.00	LF	\$11.88	\$22,079.71
O (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5	1807	1,807.00	LF	\$11.88	\$21,462.10
P (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1817	1,817.00	LF	\$11.88	\$21,580.87
Q (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1836	1,836.00	LF	\$11.88	\$21,806.54
R (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1835	1,835.00	LF	\$11.88	\$21,794.66
S (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1744	1,744.00	LF	\$11.88	\$20,713.84
T (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1739	1,739.00	LF	\$11.88	\$20,654.45
U (Phase 2)	Portland cement grout - 8 in. (labor, equip, materials)	6.5"	1694	1,694.00	LF	\$11.88	\$20,119.98
DS-6 (Phase 3)	Portland cement grout - 4 in. (labor, equip, materials)	4"	1882	1,882.00	LF	\$7.82	\$14,712.35

9H-I	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$11.88	\$25,060.89
9H-R	Portland cement grout - 8 in. (labor, equip, materials)	7"	2110	2,110.00	LF	\$11.88	\$25,060.89

Job Hours: 460.00Total Cost: \$1,417,767.87

BULLDOZER WORKTask description: Re-grade Process PondsSite: Nahcolite ProjectPermit Action: TR-35Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 03AState: ColoradoAbbreviation: NoneDate: 4/16/2014County: Rio BlancoFilename: TR-35User: THMAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**MATERIAL QUANTITIES**Initial Volume: 52,723Swell factor: 1.110Loose volume: 58,523 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 175 feetUnadjusted hourly production: 562.2 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 2,800 lbs/LCYWeight description: Clay - Natural bed**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
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:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3680

Adjusted unit production: 206.89 LCY/hr

Adjusted fleet production: 413.78 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.958/LCY

Total job time: 141.43 Hours

Total job cost: \$56,045.00

BULLDOZER WORKTask description: Re-grade Plant AreaSite: Nahcolite ProjectPermit Action: TR-35Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 04AState: ColoradoAbbreviation: NoneDate: 4/16/2014County: Rio BlancoFilename: TR-35User: THMAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		Utilization %
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**MATERIAL QUANTITIES**Initial Volume: 19,682Swell factor: 1.110Loose volume: 21,847 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly production: 634.3 LCY/hrMaterials consistency description: Compacted fill or embankment 0.9Average push gradient: -5 %Average site altitude: 6,600 feetMaterial weight: 2,800 lbs/LCYWeight description: Clay - Natural bed**Job Condition Correction Factor**

		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)

Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4103

Adjusted unit production: 260.25 LCY/hr
Adjusted fleet production: 520.5 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.761/LCY

Total job time: 41.97 Hours
Total job cost: \$16,632.39

BULLDOZER WORKTask description: Re-grade Well PadsSite: Nahcolite ProjectPermit Action: TR-35Permit/Job#: M1983194PROJECT IDENTIFICATIONTask #: 05AState: ColoradoAbbreviation: NoneDate: 4/23/2014County: Rio BlancoFilename: TR-35User: THMAgency or organization name: DRMSHOURLY EQUIPMENT COSTBasic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26MATERIAL QUANTITIESInitial Volume: 74,547Swell factor: 1.110Loose volume: 82,747 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat HandbookHOURLY PRODUCTIONAverage push distance: 75 feetUnadjusted hourly production: 1,017.1 LCY/hrMaterials consistency description: Partly consolidated stockpile 1.1Average push gradient: 5 %Average site altitude: 6,600 feetMaterial weight: 2,800 lbs/LCYWeight description: Clay - Natural bedJob Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)

Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.821	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4061

Adjusted unit production: 413.04 LCY/hr
 Adjusted fleet production: **826.08 LCY/hr**

JOB TIME AND COST

Fleet size: 2 Dozer(s)
 Unit cost: \$0.480/LCY

Total job time: **100.17 Hours**
 Total job cost: **\$39,693.04**

BULLDOZER WORKTask description: Distribute 6" of topsoil over 8 acre process pond areaSite: Nahcolite ProjectPermit Action: TR-35Permit/Job#: M1983194PROJECT IDENTIFICATIONTask #: 06AState: ColoradoAbbreviation: NoneDate: 4/23/2014County: Rio BlancoFilename: TR-35User: THMAgency or organization name: DRMSHOURLY EQUIPMENT COSTBasic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)Cost Breakdown:

		<u>Utilization %</u>
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26MATERIAL QUANTITIESInitial Volume: 6,453Swell factor: 1.000Loose volume: 6,453 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat HandbookHOURLY PRODUCTIONAverage push distance: 150 feetUnadjusted hourly production: 634.3 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 1,600 lbs/LCYWeight description: Top SoilJob Condition Correction Factor

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
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: 0.8593

Adjusted unit production: 545.05 LCY/hr

Adjusted fleet production: 1090.1 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.364/LCY

Total job time: 5.92 Hours

Total job cost: \$2,345.73

BULLDOZER WORKTask description: Distribute 6" topsoil over 6.2 acre process areaSite: Nahcolite ProjectPermit Action: TR-35Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 07AState: ColoradoAbbreviation: NoneDate: 4/23/2014County: Rio BlancoFilename: TR-35User: THMAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**MATERIAL QUANTITIES**Initial Volume: 5,000Swell factor: 1.000Loose volume: 5,000 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 150 feetUnadjusted hourly production: 634.3 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
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: 0.8593

Adjusted unit production: 545.05 LCY/hr

Adjusted fleet production: 1090.1 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.364/LCY

Total job time: 4.59 Hours

Total job cost: \$1,817.55

BULLDOZER WORK

Task description: Replace topsoil over re-graded well pads and access roads

Site: Nahcolite Project

Permit Action: TR-35

Permit/Job#: M1983194

Task #: 08A

Date: 4/23/2014

User: THM

State: Colorado

County: Rio Blanco

Abbreviation: None

Filename: TR-35

Agency or organization name: DRMS

PROJECT IDENTIFICATION

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU

Horsepower: 310

Blade Type: Semi-Universal

Attachment: NA

Shift Basis: 1 per day

Data Source: (CRG)

Cost Breakdown:

Ownership Cost/Hour:	\$56.69	Utilization %	NA
Operating Cost/Hour:	\$104.03		100
Ripper op. Cost/Hour:	\$0.00		0
Operator Cost/Hour:	\$37.41		NA
Total unit Cost/Hour:	\$198.13		
Total Fleet Cost/Hour:	\$396.26		

MATERIAL QUANTITIES

Initial Volume: 28,394

Swell factor: 1.000

Loose volume: 28,394 LCY

Source of estimated volume: Division of Reclamation, Mining & Safety

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet

Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %

Average site altitude: 6,600 feet

Material weight: 2,100 lbs/LCY

Weight description: Earth - Loam

Job Condition Correction Factor

Operator Skill: 0.750

Material consistency: 1.200

Dozing method: 1.000

Source (AVG.) (CAT HB) (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:	1.095	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.6544

Adjusted unit production: 557.94 LCY/hr

Adjusted fleet production: 1115.88 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)

Unit cost: \$0.355/LCY

Total job time: 25.45 Hours

Total job cost: \$10,083.06

BULLDOZER RIPPING WORK

Task description: Rip compacted areas

Site: Nahcolite Project Permit Action: TR-35 Permit/Job#: M1983194

PROJECT IDENTIFICATION

Task #: 09A State: Colorado Abbreviation: None
Date: 4/23/2014 County: Rio Blanco Filename: TR-35
User: THM

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	<u>\$63.00</u>	<u>NA</u>
Operating Cost/Hour:	<u>\$104.03</u>	<u>100</u>
Ripper Operating Cost/Hour:	<u>\$6.53</u>	<u>100</u>
Operator Cost/Hour:	<u>\$37.41</u>	<u>NA</u>
Total Unit Cost/Hour:	<u>\$210.98</u>	
Total Fleet Cost/Hour:	<u>\$421.97</u>	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 18.70 acres Rip Depth (ft): 2.00 Volume: 60,339 BCY or CCY

Source of estimated quantity: Staff Estimate

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	<u>2.56</u>	<u>mph</u>
Average Ripping Width:	<u>7.08</u>	<u>degrees</u>
Average Ripping Length:	<u>300.00</u>	<u>feet</u>
Average Dozer Speed:	<u>88.00</u>	<u>feet</u>
Average Maneuver Time:	<u>0.25</u>	<u>feet</u>
Production per unit area:	<u>0.800</u>	<u>acres/hour</u>

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	<u>0.800</u>	<u>Acres/hr</u>
Site Altitude:	<u>6,600</u>	<u>feet</u>
Altitude Adj:	<u>1.00</u>	<u>(CAT HB)</u>
Job Efficiency:	<u>0.83</u>	<u>(1 shift/day)</u>
Net Correction:	<u>0.83</u>	<u>multiplier</u>

Adjusted Hourly Unit Production:	<u>0.66</u>	<u>Acres/hr</u>
Adjusted Hourly Fleet Production:	<u>1.33</u>	<u>Acres/hr</u>

JOB TIME AND COST

Fleet size: <u>2</u>	Grader(s)	Total job time: <u>14.09</u>	Hours
Unit cost: <u>\$317.920</u>	Per acre	Total job cost: <u>\$5,945.00</u>	

REVEGETATION WORKTask description: Revegetate 44.9 acresSite: Nahcolite ProjectPermit Action: TR-35Permit/Job#: M1983194PROJECT IDENTIFICATIONTask #: 11AState: ColoradoAbbreviation: NoneDate: 4/23/2014County: Rio BlancoFilename: TR-35User: THMAgency or organization name: DRMSFERTILIZINGMaterials

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
Disc harrowing, 6" deep (MEANS 32 91 13.23 6100)	\$98.01
Weed control spraying (MEANS 31 31 16.13 3100)	\$145.20
Total Tilling Cost/Acre	\$243.21

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Alkali Sacaton	0.10	3.90	\$2.28
Crested Wheatgrass - Ephraim	4.00	18.37	\$8.92
Blue Wildrye - Arlington or Elkton	1.50	5.17	\$17.88
Russian Wildrye - Bozoiisky	1.50	6.03	\$9.36
Hard Fescue - Discovery	1.00	12.97	\$2.09
Pubescent Wheatgrass - Luna	1.50	3.10	\$3.36
Yellow Sweet Clover - Madrid	0.50	2.98	\$1.28
Tall Wheatgrass - Jose	1.80	3.26	\$4.05
Thickspike Wheatgrass - Critana	4.30	15.20	\$22.23
Sweetvetch, Utah or Northern	0.10	0.05	\$4.09

BULLDOZER WORKTask description: Distribute 6" topsoil over 18.7 acres of decompacted areaSite: Nahcolite ProjectPermit Action: TR-35Permit/Job#: M1983194**PROJECT IDENTIFICATION**Task #: 10AState: ColoradoAbbreviation: NoneDate: 4/23/2014County: Rio BlancoFilename: TR-35User: THMAgency or organization name: DRMS**HOURLY EQUIPMENT COST**Basic Machine: Cat D8T - 8SUHorsepower: 310Blade Type: Semi-UniversalAttachment: NAShift Basis: 1 per dayData Source: (CRG)**Cost Breakdown:**

		<u>Utilization %</u>
Ownership Cost/Hour:	\$56.69	NA
Operating Cost/Hour:	\$104.03	100
Ripper op. Cost/Hour:	\$0.00	0
Operator Cost/Hour:	\$37.41	NA

Total unit Cost/Hour: \$198.13Total Fleet Cost/Hour: \$396.26**MATERIAL QUANTITIES**Initial Volume: 15,053Swell factor: 1.000Loose volume: 15,053 LCYSource of estimated volume: Division of Reclamation, Mining & SafetySource of estimated swell factor: Cat Handbook**HOURLY PRODUCTION**Average push distance: 100 feetUnadjusted hourly production: 852.6 LCY/hrMaterials consistency description: Loose stockpile 1.2Average push gradient: 0 %Average site altitude: 6,600 feetMaterial weight: 1,600 lbs/LCYWeight description: Top Soil**Job Condition Correction Factor**

		<u>Source</u>
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
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: 0.8593

Adjusted unit production: 732.64 LCY/hr
Adjusted fleet production: 1465.28 LCY/hr

JOB TIME AND COST

Fleet size: 2 Dozer(s)
Unit cost: \$0.270/LCY

Total job time: 10.27 Hours
Total job cost: \$4,070.86

Western Wheatgrass - Barton	1.50	3.79	\$5.52
Yarrow, Western	0.20	12.16	\$6.13
Totals Seed Mix	18.00	86.97	\$87.18

Application

Description	Cost /Acre
Drill seeding (MEANS 32 92 19.13 0020)	\$404.00
Total Seed Application Cost/Acre	\$404.00

MULCHING and MISCELLANEOUS**Materials**

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Herbicide - 2,4D @ 1.0 pt/ac	2.00	ACRE	\$1.23	\$2.46
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	\$265.00	\$530.00
Total Mulch Materials Cost/Acre				\$532.46

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: 73.76 Cost /Acre: \$1,419.42
 Estimated Failure Rate: 30% Cost /Acre*: \$1,419.42
 *Selected Replanting Work Items: TILLING,SEEDING,MULCHING

Initial Job Cost: \$104,696.42
 Reseeding Job Cost: \$31,408.93
 Total Job Cost: \$136,105.34
 Job Hours: 73.76

EQUIPMENT MOBILIZATION/DEMOBILIZATIONTask description: **Mobilization**Site: **Nahcolite Project**Permit Action: **TR-35**Permit/Job#: **M1983194****PROJECT IDENTIFICATION**Task #: **12A**State: **Colorado**Abbreviation: **None**Date: **4/23/2014**County: **Rio Blanco**Filename: **TR-35**User: **THM**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 D8T - 8SU	53.08	\$65.28	\$125.45	2	\$381.46	\$250.90	\$500.00
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: **\$605.42** **\$428.24** **\$1,000.00****ROADABLE EQUIPMENT:**

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.	\$14.59	2	\$29.18	\$29.18

Subtotals: **\$29.18** **\$29.18**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region:	RIFLE	
Total one-way travel distance:	60.00	miles
Average Travel Speed:	40.00	mph

Total Non-Roadable Mob/Demob Cost *	\$6,311.82
** two round trips with haul rig:	

Total Roadable Mob/Demob Cost **	\$87.54
** one round trip, no haul rig:	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	1.50	1.50
Return Time (Hours):	1.50	1.50
Loading Time (Hours):	0.50	NA
Unloading Time (Hours):	0.50	NA
Subtotals:	4.00	3.00

JOB TIME AND COST

Total job time:	8.00	Hours
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Total job cost:	\$6,399.36
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