Inspection Report For Well: UT20736 - 04355

U.S. Environmental Protection Agency
Underground Injection Control Program, 8ENF-T
999 18th Street, Suite 300, Denver, CO 80202-2466

This form was printed on 9/24/2013

INSPECTOR(S): Lead: Roberts, Sarah — Date: ~~10~~ 12/11/2013

Others: Ajayi, Christopher — Time: 10:25 (am) / pm

OPERATOR (only if different): _____

REPRESENTATIVE(S): Chad Steinson

PRE-INSPECTION REVIEW

Petroglyph Operating Company, Inc

Well Name:	Ute Tribal 18-08
Well Type:	Enhanced Recovery (2R)
Operating Status:	AC (ACTIVE) as of 12/31/2002
Oil Field:	Antelope Creek (Duchesne)
Location:	SENE S18 T5S R3W
Indian Country:	X, Uintah and Ouray

Last Inspection:	8/29/2012	***Allowable Inj Pressure:***	2030 /
Last MIT:	Pass 1/16/2013	***Annulus Pressure From Last MIT:***	1085

BLACK = POSSIBLE VIOLATION GREY = DATA MISSING

INSPECTION TYPE: (Select One)

- [ ] Construction / Workover
- [ ] Plugging
- [ ] Post-Closure
- [ ] Response to Complaint
- [x] Routine
- [ ] Witness MIT
- [ ] Other

ICIS Entered
Date 1/2/14
Initials DB

OBSERVED VALUES:

Tubing Gauge:	[x] Yes / [ ] No	Pressure: U: 1983 / L: ____ psig Gauge Range: Scada psig	Gauge Owner:	[ ] EPA / [x] Operator
Annulus Gauge:	[x] Yes / [ ] No	Pressure: 0 psig Gauge Range: opened psig	Gauge Owner:	[x] EPA / [ ] Operator
Bradenhead Gauge:	[ ] Yes / [ ] No	Pressure: ____ psig Gauge Range: ____ psig	Gauge Owner:	[ ] EPA / [ ] Operator
Pump Gauge:	[ ] Yes / [ ] No	Pressure: ____ psig Gauge Range: ____ psig	Gauge Owner:	[ ] EPA / [ ] Operator

Operating Status: (Select One)
- [x] Active
- [ ] Being Reworked
- [ ] Not Injecting
- [ ] Production
- [ ] Plugged and Abandoned
- [ ] Under Construction

U2 Entered
Date 12/17/13
Initial

See page 2 for photos, comments, and site conditions.

GREEN	BLUE	CBI
	1	

Inspection Report For Well: UT20736 - 04355 (PAGE 2)

PHOTOGRAPHS: ☐ Yes ☒ No List of photos taken: _____

Comments and site conditions observed during inspection: _____

GPS: GPS File ID: _____

Signature of EPA Inspector(s): _____ _____ _____

☐ Data Entry ☐ Compliance Staff ☐ Hard Copy Filing

NOTICE OF INSPECTION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, 999 18TH STREET - SUITE 500
DENVER, COLORADO 80202-2405

Date: 12/16/13
Hour: 8:00a

Notice of inspection is hereby given according to Section 1445(b) of the Safe Drinking Water Act (42 U.S.C. §300f et seq.).

Firm Name: Petrochych Operating, Inc.

Firm Address: Roosevelt, UT, Antelope Creek Oil Field

REASON FOR INSPECTION:

For the purpose of inspecting records, files, papers, processes, controls and facilities, and obtaining samples to determine whether the person subject to an applicable underground injection control program has acted or is acting in compliance with the Safe Drinking Water Act and any applicable condition of permit or rule authorization.

SECTION 1445(b) of the SAFE DRINKING WATER ACT is quoted below:

Section 1445(b)(1): Except as provided in Paragraph (2), the Administrator, or representatives of the Administrator duly designated by him, upon presenting appropriate credentials, and a written notice to any supplier of water or other person subject to (a), or person subject (A) a national primary drinking water regulation prescribed under Section 1412(B) an applicable Underground Injection Control Program, or (C) any requirement to monitor an unregulated contaminant pursuant to subsection (a), or person in charge of any of the property of such supplier or other person referred to in clause (A), (B), or (C), is authorized to enter any establishment, ... facility, or other property of such supplier or other person in order to determine whether such supplier or other person has acted or is acting in compliance with this title, including for this purpose, inspection, at reasonable times, of records, files, papers, processes, controls, and facilities, or in order to test any feature of a public water system, including its raw water source. The Administrator or the Comptroller General (or any representative designated by either) shall have access for the purpose of audit and examination to any records, reports, or information of a grantee which are required to be maintained under subsection (a) or which are pertinent to any financial assistance under this title.

Sarah Roberts
Inspector's Name & Title (Print)

Inspector's Signature

EPA R8 3560-1 (8-89)

Original - Regional Office Copy
Yellow Copy - Operator Copy

OMB No. 2040-0042 Approval Expires 11/30/2014

EPA

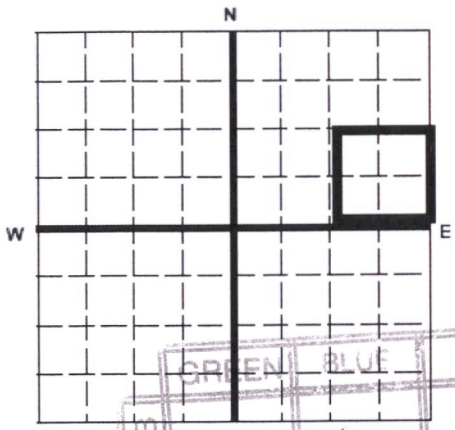
United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah, 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-04355

Surface Location Description
___ 1/4 of ___ 1/4 of SE 1/4 of NE 1/4 of Section 18 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1929 ft. frm (N/S) N Line of quarter section
and 612 ft. from (E/W) E Line of quarter section.

WELL ACTIVITY
- [ ] Brine Disposal
- [X] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [X] Area

Number of Wells 111

U2 Entered
Date 4/4/17
Initial DB

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 18-08

GREEN BLUE CBI TAB 2

MONTH	YEAR	INJECTION PRESSURE AVERAGE PSIG	INJECTION PRESSURE MAXIMUM PSIG	TOTAL VOLUME INJECTED BBL	TOTAL VOLUME INJECTED MCF	TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MINIMUM PSIG	TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MAXIMUM PSIG
January	16	1854	1941	6		0	0
February	16	1956	1970	407		0	0
March	16	1885	1976	239		0	0
April	16	1987	1995	388		0	0
May	16	1955	1981	240		0	0
June	16	1969	1985	270		0	0
July	16	1954	1955	182		0	0
August	16	1955	1966	212		0	0
September	16	1958	1969	277		0	0
October	16	1980	1987	346		0	0
November	16	1975	1993	243		0	0
December	16	1980	1988	346		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		03/21/2017

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

multi-chem
A HALLIBURTON SERVICE

Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 18-08 INJ, DUCHESNE**	Lab Tech:	**Kaitlyn Natelli**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2017**		
Sample ID:	**WA-345373**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	1/23/2017
System Temperature 1 (°F):	300
System Pressure 1 (psig):	2000
System Temperature 2 (°F):	130
System Pressure 2 (psig):	50
Calculated Density (g/ml):	1.0022
pH:	8.40
Calculated TDS (mg/L):	6947.25
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	168.00
H_2S in Gas (%):	
H2S in Water (mg/L):	10.00
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	0.00
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	2095.88	Chloride (Cl):	2500.00
Potassium (K):	18.93	Sulfate (SO_4):	50.00
Magnesium (Mg):	18.46	Bicarbonate (HCO_3):	1952.00
Calcium (Ca):	42.23	Carbonate (CO_3):	
Strontium (Sr):	3.43	Hydroxide(HO):	
Barium (Ba):	4.87	Acetic Acid (CH_3COO)	
Iron (Fe):	137.82	Propionic Acid (C_2H_5COO)	
Zinc (Zn):	103.83	Butanoic Acid (C_3H_7COO)	
Lead (Pb):	0.05	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Ammonia NH_3:		Fluoride (F):	
Manganese (Mn):	0.28	Bromine (Br):	
Aluminum (Al):	0.60	Silica (SiO_2):	19.47
Lithium (Li):	2.71	Calcium Carbonate ($CaCO_3$):	
Boron (B):	3.83	Phosphates (PO_4):	16.40
Silicon (Si):	9.10	Oxygen (O_2):	

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
130.00	50.00	1.63	34.96	0.80	2.41	5.16	9.06	4.26	100.17	0.00	0.00	0.00	0.00	0.00	0.00	12.58	10.04
149.00	267.00	1.69	35.23	0.71	2.30	5.11	9.06	4.35	100.18	0.00	0.00	0.00	0.00	0.00	0.00	12.32	10.04
168.00	483.00	1.76	35.55	0.63	2.19	5.08	9.06	4.45	100.19	0.00	0.00	0.00	0.00	0.00	0.00	12.10	10.04
187.00	700.00	1.85	35.85	0.58	2.09	5.09	9.06	4.55	100.20	0.00	0.00	0.00	0.00	0.00	0.00	11.91	10.04
206.00	917.00	1.95	36.10	0.54	2.02	5.11	9.06	4.64	100.20	0.00	0.00	0.00	0.00	0.00	0.00	11.75	10.04
224.00	1133.00	2.05	36.31	0.51	1.97	5.15	9.06	4.73	100.21	0.00	0.00	0.00	0.00	0.00	0.00	11.61	10.04
243.00	1350.00	2.16	36.48	0.50	1.94	5.21	9.06	4.81	100.21	0.00	0.00	0.00	0.00	0.00	0.00	11.49	10.04
262.00	1567.00	2.28	36.60	0.50	1.93	5.28	9.06	4.89	100.21	0.00	0.00	0.00	0.00	0.00	0.00	11.38	10.04
281.00	1783.00	2.40	36.70	0.51	1.95	5.36	9.06	4.96	100.21	0.00	0.00	0.00	0.00	0.00	0.00	11.29	10.04
300.00	2000.00	2.52	36.77	0.52	1.98	5.45	9.06	5.03	100.21	0.00	0.00	0.00	0.00	0.00	0.00	11.22	10.04

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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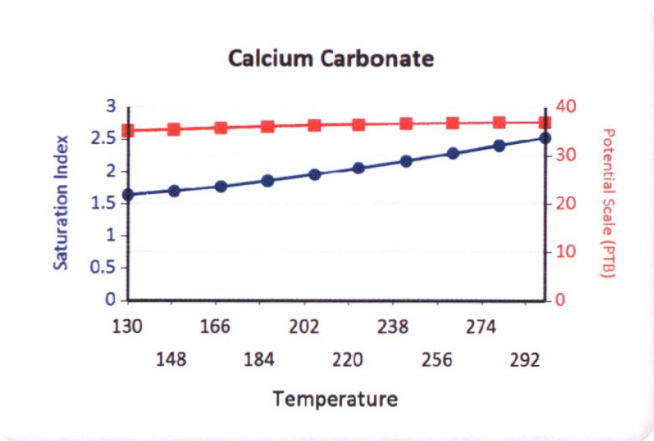
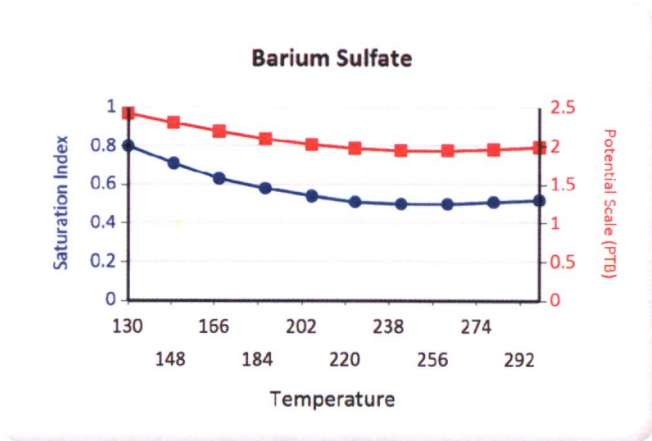
Water Analysis Report

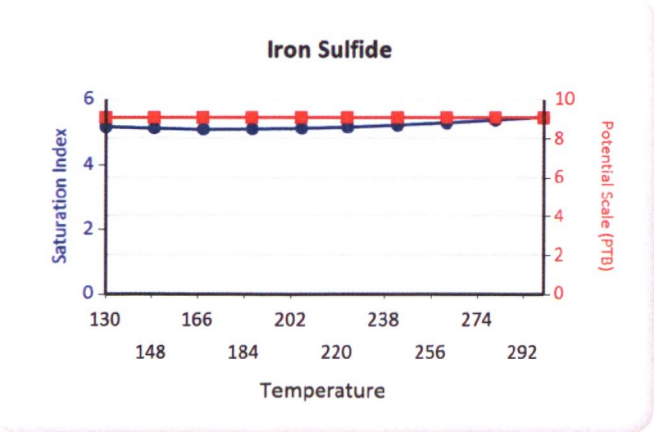
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
130.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	3.78	69.76	10.98	0.02	3.82	23.83	2.01	15.52	14.44	45.17
149.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	3.98	69.78	10.54	0.02	4.56	27.16	2.41	17.89	14.91	45.17
168.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	4.18	69.80	10.16	0.02	5.34	30.43	2.85	20.37	15.43	45.17
187.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	4.36	69.80	9.82	0.02	6.12	32.94	3.29	22.42	15.97	45.17
206.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	4.52	69.81	9.53	0.02	6.89	34.66	3.73	23.94	16.52	45.17
224.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	4.67	69.81	9.26	0.02	7.65	35.70	4.17	24.95	17.07	45.17
243.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	4.80	69.81	9.03	0.02	8.39	36.28	4.60	25.56	17.62	45.17
262.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	4.91	69.81	8.82	0.02	9.10	36.58	5.02	25.90	18.16	45.17
281.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	5.01	69.81	8.64	0.02	9.79	36.73	5.43	26.09	18.69	45.17
300.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	5.10	69.81	8.47	0.02	10.44	36.80	5.82	26.19	19.20	45.17

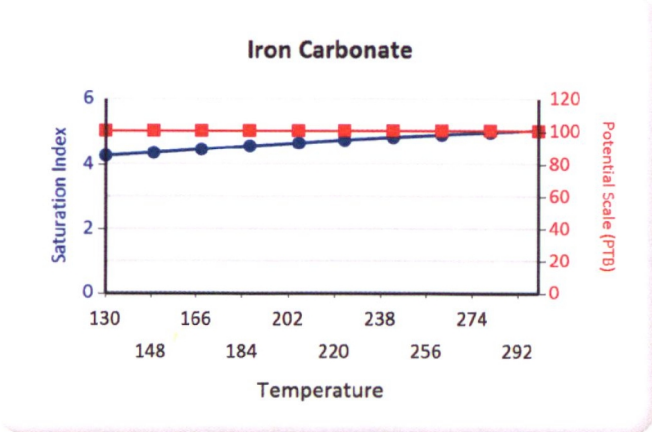
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate









Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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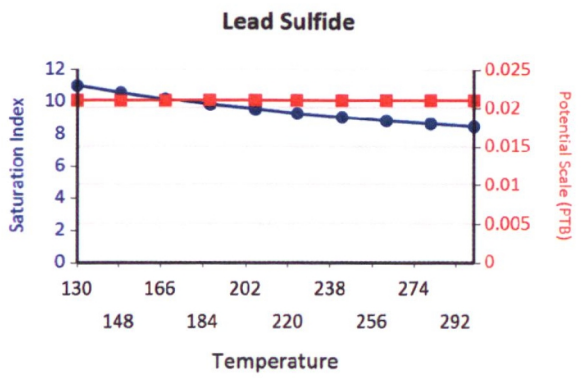
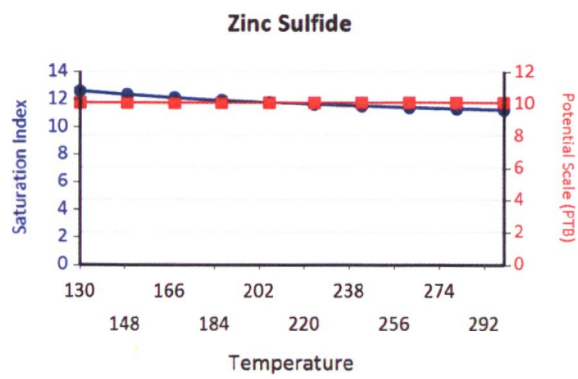
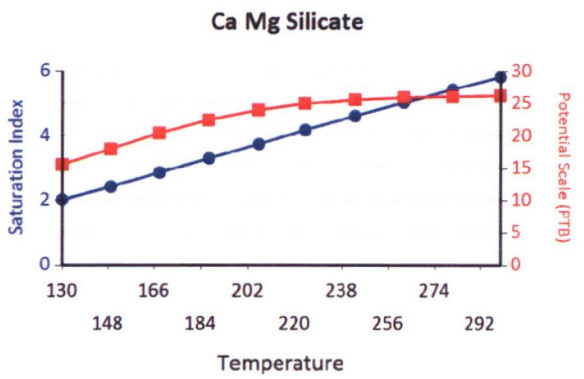
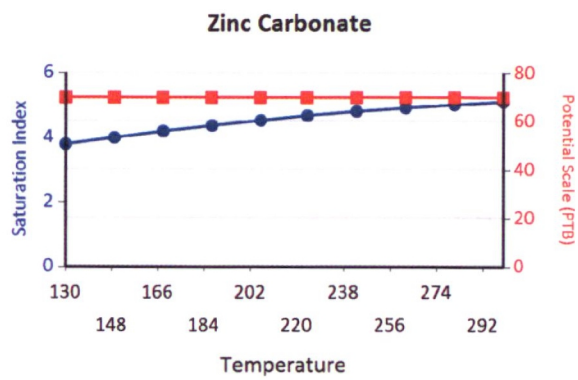
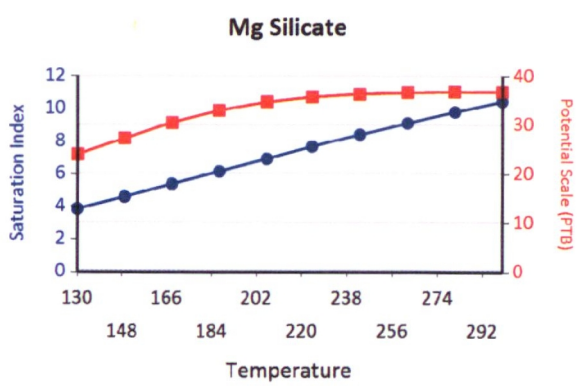
Water Analysis Report

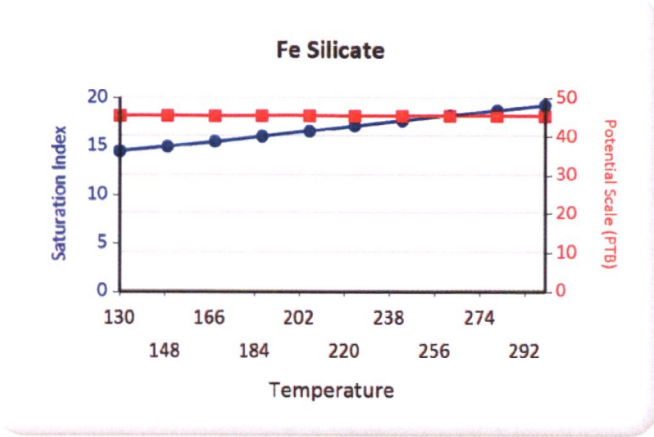











Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
20
15
10
5
0
50
40
30
20
10
0
130
148
166
184
202
220
238
256
274
292

OMB No. 2040-0042 Approval Expires 11/30/2014

EPA

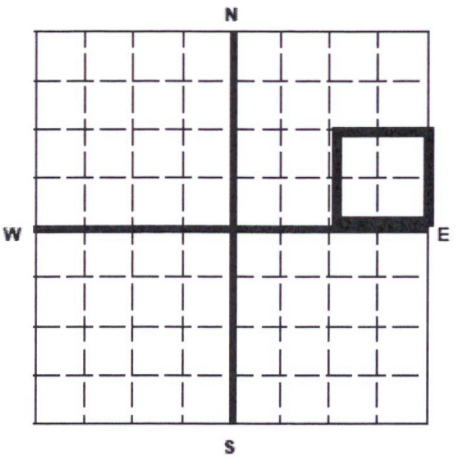
United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah, 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-~~04434~~ 04355

Surface Location Description
___ 1/4 of ___ 1/4 of SE 1/4 of NE 1/4 of Section 18 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1929 ft. frm (N/S) N Line of quarter section
and 612 ft. from (E/W) E Line of quarter section.

U2 Entered
Date 3/1/16
Initial 83

WELL ACTIVITY
- [ ] Brine Disposal
- [X] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [X] Area

Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 18-08

MONTH	YEAR	INJECTION PRESSURE AVERAGE PSIG	INJECTION PRESSURE MAXIMUM PSIG	TOTAL VOLUME INJECTED BBL	TOTAL VOLUME INJECTED MCF	TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MINIMUM PSIG	TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING) MAXIMUM PSIG
January	15	1966	1979	244		0	0
February	15	1972	1984	184		0	0
March	15	1983	1999	311		0	0
April	15	1979	1983	259		0	0
May	15	1975	1981	246		0	0
June	15	1971	1972	196		0	0
July	15	1964	1969	339		0	0
August	15	1983	1991	349		0	0
September	15	1961	1981	265		0	0
October	15	1974	1994	288		0	0
November	15	1965	1992	125		0	0
December	15	1977	1997	219		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		02/08/2016

GREEN BLUE CBI
TAB 2

EPA Form 7520-11 (Rev. 12-11)

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

multi-chem
A HALLIBURTON SERVICE

Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 18-08 INJ, DUCHESNE**	Lab Tech:	**Michele Pike**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2016**		
Sample ID:	**WA-327553**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics

Test Date:	1/14/2016
System Temperature 1 (°F):	60
System Pressure 1 (psig):	2000
System Temperature 2 (°F):	180
System Pressure 2 (psig):	50
Calculated Density (g/ml):	1.0014
pH:	7.40
Calculated TDS (mg/L):	5890.47
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	24.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	0.00
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	1774.96	Chloride (Cl):	2500.00
Potassium (K):	5.03	Sulfate (SO_4):	510.00
Magnesium (Mg):	81.73	Bicarbonate (HCO_3):	781.00
Calcium (Ca):	183.68	Carbonate (CO_3):	
Strontium (Sr):	5.61	Acetic Acid (CH_3COO)	
Barium (Ba):	1.58	Propionic Acid (C_2H_5COO)	
Iron (Fe):	13.67	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	2.02	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.29	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.05	Silica (SiO_2):	30.85
Aluminum (Al):	0.14	Calcium Carbonate ($CaCO_3$):	
Lithium (Li):	1.21	Phosphates (PO_4):	4.08
Boron (B):	0.01	Oxygen (O_2):	
Silicon (Si):	14.42		

Notes:

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180.00	50.00	1.29	87.06	1.08	0.86	0.00	0.00	2.28	9.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
167.00	267.00	1.13	75.74	1.10	0.87	0.00	0.00	2.10	9.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	483.00	1.02	68.37	1.13	0.87	0.00	0.00	1.97	9.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	700.00	0.92	61.21	1.17	0.88	0.00	0.00	1.84	9.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
127.00	917.00	0.83	54.37	1.22	0.88	0.00	0.00	1.71	9.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113.00	1133.00	0.74	47.92	1.28	0.89	0.00	0.00	1.58	9.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	1350.00	0.66	41.94	1.36	0.90	0.00	0.00	1.45	9.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87.00	1567.00	0.58	36.49	1.45	0.91	0.00	0.00	1.33	9.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.00	1783.00	0.51	31.61	1.55	0.91	0.00	0.00	1.21	9.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.00	2000.00	0.45	27.32	1.68	0.92	0.00	0.00	1.09	8.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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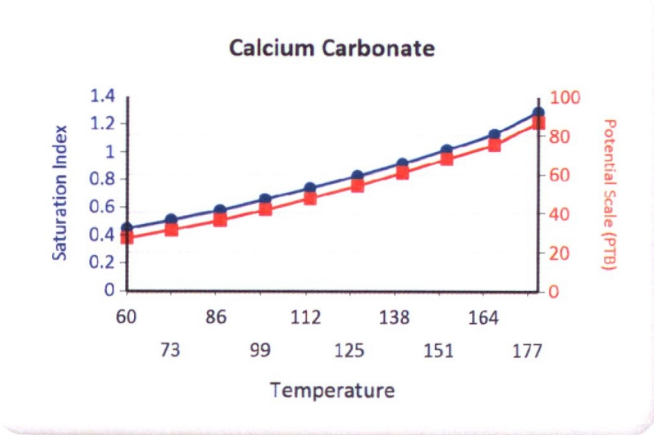
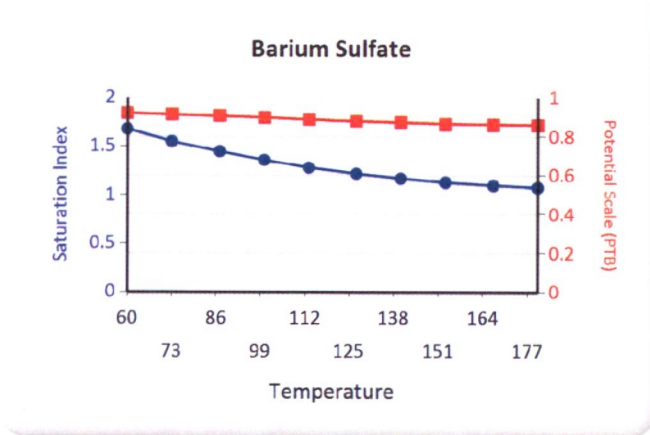
Water Analysis Report

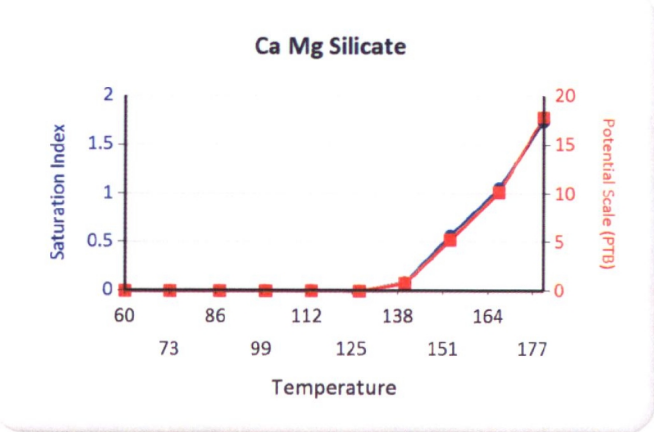
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	1.46	1.31	0.00	0.00	3.50	36.96	1.74	17.83	8.30	10.59
167.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	1.22	1.28	0.00	0.00	2.38	23.12	1.05	10.14	7.34	10.54
153.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	1.23	0.00	0.00	1.58	14.28	0.56	5.19	6.70	10.47
140.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	1.15	0.00	0.00	0.77	6.48	0.08	0.75	6.07	10.37
127.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	1.03	0.00	0.00	0.00	0.00	0.00	0.00	5.45	10.21
113.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.83	0.00	0.00	0.00	0.00	0.00	0.00	4.84	9.98
100.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.47	0.00	0.00	0.00	0.00	0.00	0.00	4.24	9.62
87.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.66	9.11
73.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10	8.42
60.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56	7.51

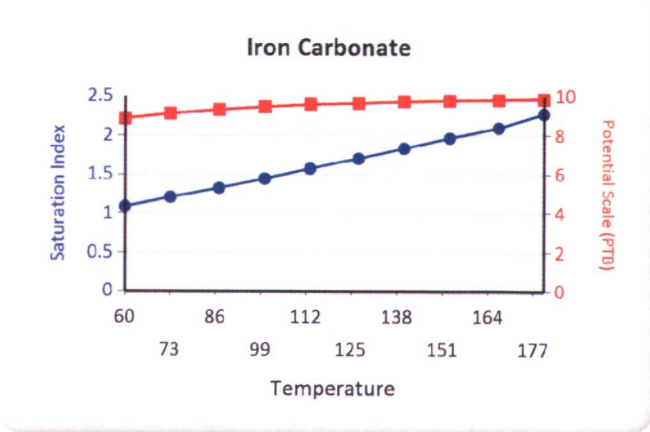
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

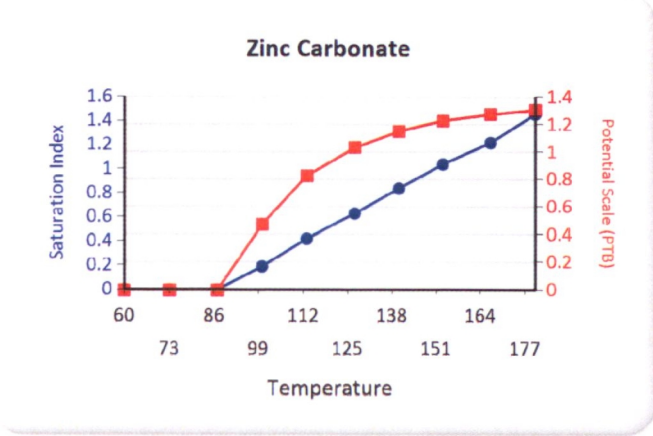
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Fe Silicate

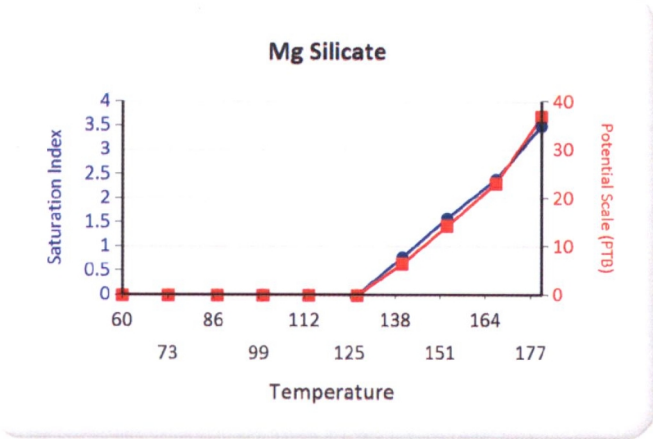


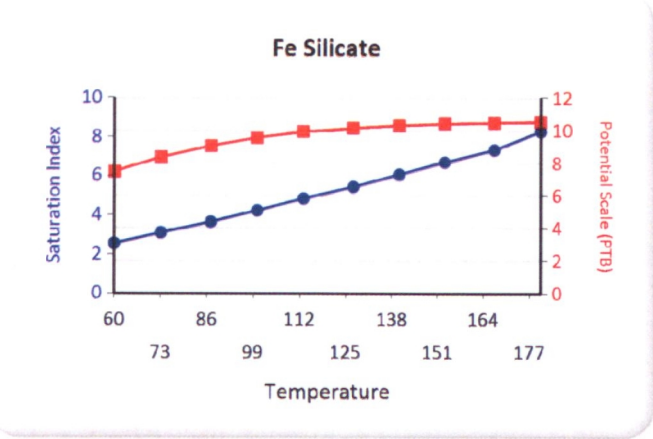







Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
60
86
112
138
164
73
99
125
151
177


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
4
3.5
3
2.5
2
1.5
1
0.5
0
40
30
20
10
0
60
86
112
138
164
73
99
125
151
177


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
10
8
6
4
2
0
12
10
8
6
4
2
0
60
86
112
138
164
73
99
125
151
177

OMB No. 2040-0042 Approval Expires 12/31/2011

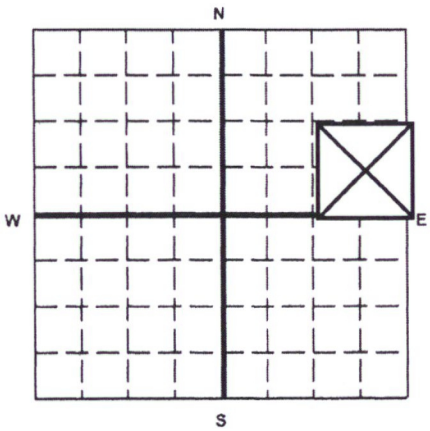
EPA

United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee	Name and Address of Surface Owner
Petroglyph Operating Company, Inc. 2258 P.O. Box 7608 Boise, Idaho 83709	Ute Indian Tribe P.O. Box 70 Ft. Duchesne, Utah 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-04355

Surface Location Description

___ 1/4 of ___ 1/4 of SE 1/4 of NE 1/4 of Section 18 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1929 ft. frm (N/S) N Line of quarter section and 612 ft. from (E/W) E Line of quarter section.

WELL ACTIVITY
- [ ] Brine Disposal
- [X] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [X] Area

Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 18-08

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING -- CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	14	1979	1991	251		0	0
February	14	1989	1995	229		0	0
March	14	1983	1996	202		0	0
April	14	1770	1999	279		0	0
May	14	1991	1998	381		0	0
June	14	1967	1987	210		0	0
July	14	1966	1979	233		0	0
August	14	1977	1986	330		0	0
September	14	1971	1993	262		0	0
October	14	1988	1994	373		0	0
November	14	1987	1996	255		0	0
December	14	1991	2003	260		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		2/10/2015

EPA Form 7520-11 (Rev. 12-08)

U2 Entered
Date 3/23/15
Initial GW

TAB	GREEN	BLUE	CBI
		2	

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

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Units of Measurement: **Standard**

Water Analysis Report

Production Company:	**PETROGLYPH OPERATING CO INC - EBUS**	Sales Rep:	**James Patry**
Well Name:	**UTE TRIBAL 18-08 INJ, DUCHESNE**	Lab Tech:	**Gary Winegar**
Sample Point:	**WELLHEAD**		
Sample Date:	**1/7/2015**		
Sample ID:	**WA-297443**		

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	1/14/2015
System Temperature 1 (°F):	160
System Pressure 1 (psig):	1300
System Temperature 2 (°F):	80
System Pressure 2 (psig):	15
Calculated Density (g/ml):	1.0029
pH:	8.10
Calculated TDS (mg/L):	8438.24
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	5.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	2439.75	Chloride (Cl):	4000.00
Potassium (K):	60.07	Sulfate (SO_4):	146.00
Magnesium (Mg):	46.83	Bicarbonate (HCO_3):	1586.00
Calcium (Ca):	102.36	Carbonate (CO_3):	
Strontium (Sr):	6.39	Acetic Acid (CH_3COO)	
Barium (Ba):	5.11	Propionic Acid (C_2H_5COO)	
Iron (Fe):	2.02	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.22	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.12	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.13	Silica (SiO_2):	43.24

Notes:
B=5.37 Al=.07 Li=1.84

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	1.54	71.00	1.60	2.97	2.95	1.11	1.71	1.44	0.00	0.00	0.00	0.00	0.00	0.00	10.11	0.12
88.00	157.00	1.52	69.04	1.51	2.95	2.85	1.11	1.72	1.44	0.00	0.00	0.00	0.00	0.00	0.00	9.90	0.12
97.00	300.00	1.54	70.11	1.44	2.93	2.79	1.11	1.77	1.44	0.00	0.00	0.00	0.00	0.00	0.00	9.74	0.12
106.00	443.00	1.56	71.23	1.37	2.91	2.75	1.11	1.82	1.44	0.00	0.00	0.00	0.00	0.00	0.00	9.59	0.12
115.00	585.00	1.58	72.37	1.30	2.89	2.71	1.11	1.87	1.45	0.00	0.00	0.00	0.00	0.00	0.00	9.46	0.12
124.00	728.00	1.61	73.53	1.24	2.87	2.68	1.11	1.92	1.45	0.00	0.00	0.00	0.00	0.00	0.00	9.33	0.12
133.00	871.00	1.64	74.71	1.19	2.84	2.66	1.11	1.97	1.45	0.00	0.00	0.00	0.00	0.00	0.00	9.21	0.12
142.00	1014.00	1.67	75.86	1.14	2.82	2.64	1.11	2.01	1.45	0.00	0.00	0.00	0.00	0.00	0.00	9.09	0.12
151.00	1157.00	1.70	77.00	1.10	2.80	2.63	1.11	2.06	1.45	0.00	0.00	0.00	0.00	0.00	0.00	8.99	0.12
160.00	1300.00	1.73	78.11	1.06	2.78	2.63	1.11	2.11	1.46	0.00	0.00	0.00	0.00	0.00	0.00	8.89	0.12

		Hemihydrate CaSO4·0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	12.12	0.05	1.22	7.83	0.59	4.19	5.86	1.55
88.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.03	11.80	0.05	1.38	8.33	0.65	4.31	5.86	1.55
97.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.06	11.53	0.05	1.78	10.98	0.86	5.78	6.10	1.55
106.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.08	11.28	0.05	2.19	13.84	1.08	7.35	6.35	1.56
115.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.10	11.05	0.05	2.60	16.92	1.31	9.01	6.61	1.56
124.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.11	10.83	0.05	3.02	20.20	1.55	10.74	6.89	1.56
133.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.12	10.62	0.05	3.44	23.68	1.78	12.52	7.17	1.56
142.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.12	10.43	0.05	3.87	27.30	2.02	14.34	7.45	1.57
151.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.13	10.24	0.05	4.29	31.00	2.26	16.14	7.75	1.57
160.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.13	10.07	0.05	4.72	34.69	2.51	17.89	8.04	1.57

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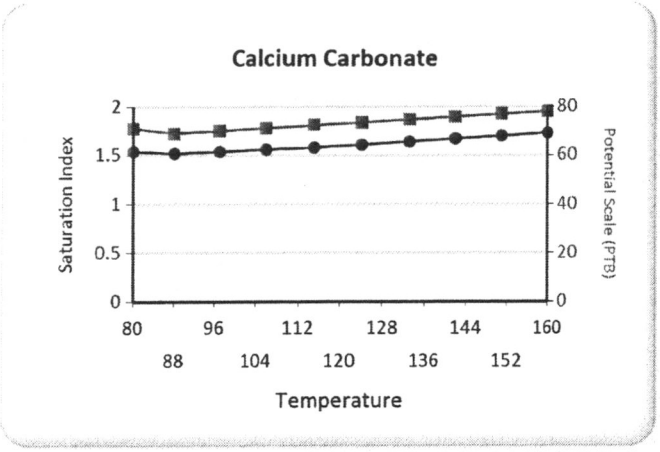
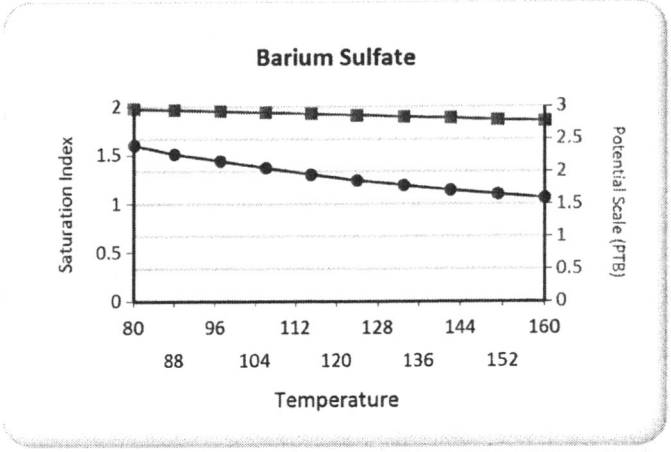
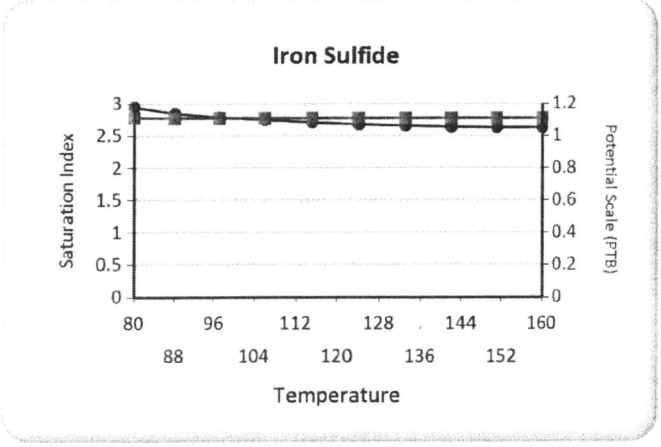
Water Analysis Report

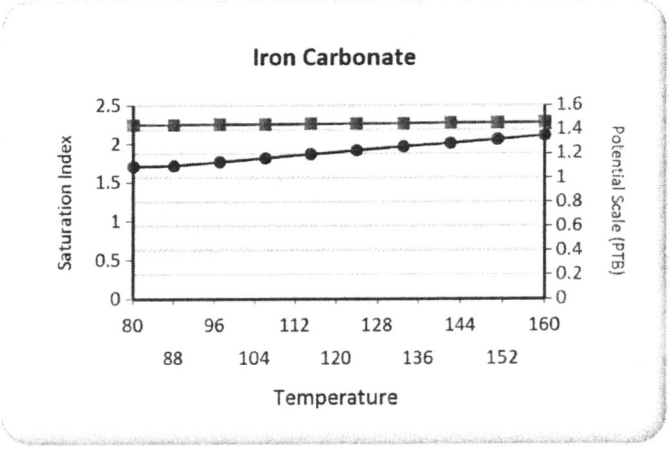
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

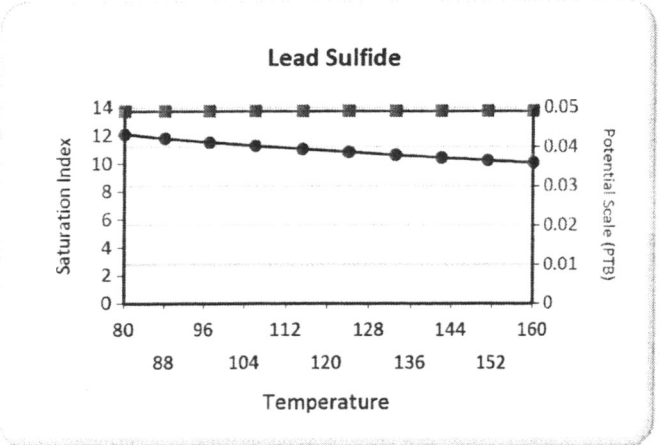
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

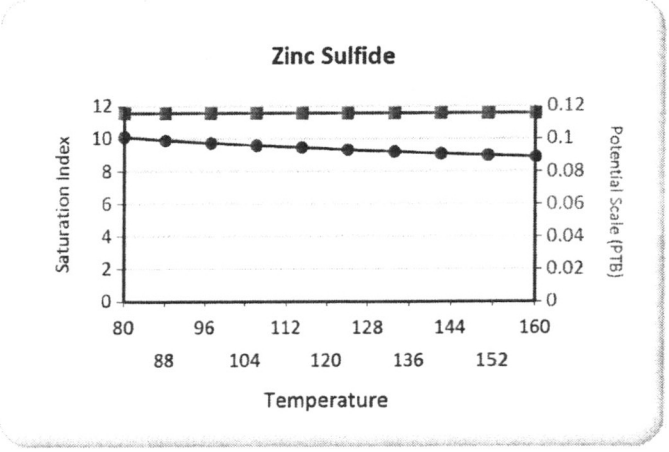


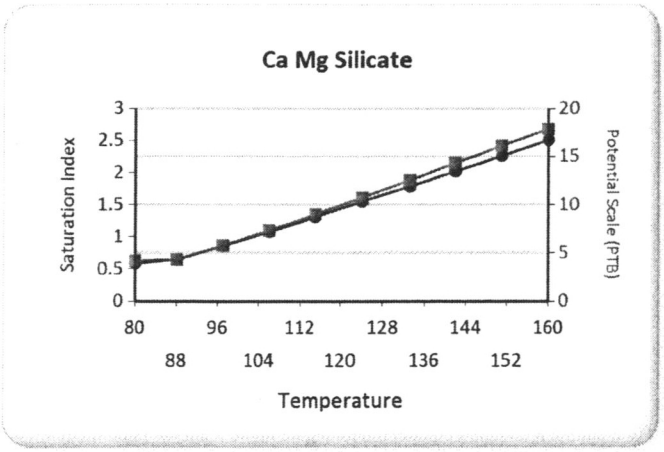


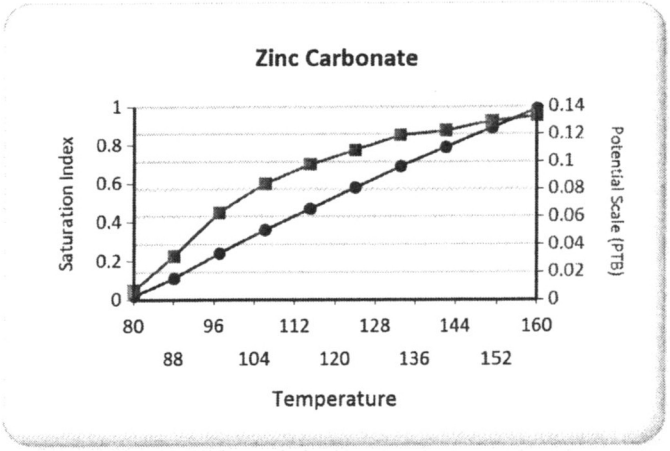


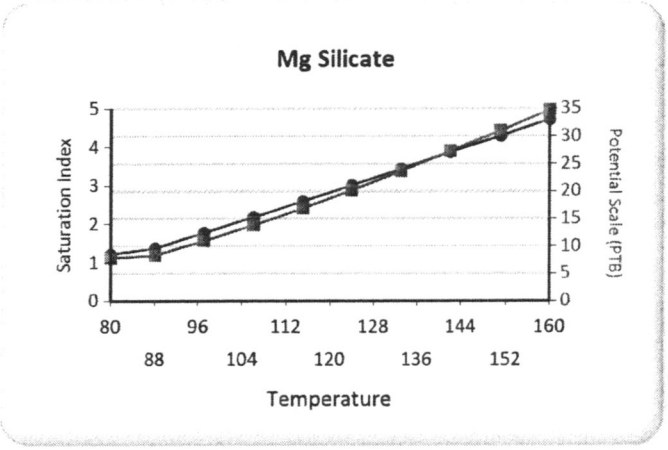


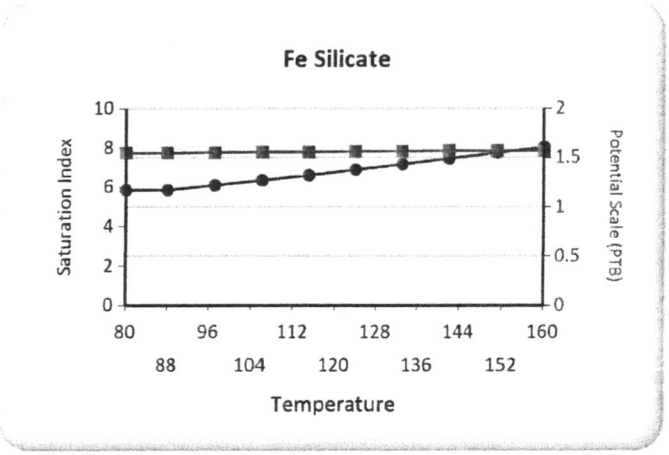





Ca Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
3
2.5
2
1.5
1
0.5
0
20
15
10
5
0
80
96
112
128
144
160
88
104
120
136
152


Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
1
0.8
0.6
0.4
0.2
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
80
96
112
128
144
160
88
104
120
136
152


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
5
4
3
2
1
0
35
30
25
20
15
10
5
0
80
96
112
128
144
160
88
104
120
136
152


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
10
8
6
4
2
0
2
1.5
1
0.5
0
80
96
112
128
144
160
88
104
120
136
152

OMB No. 2040-0042 Approval Expires 12/31/2011

EPA

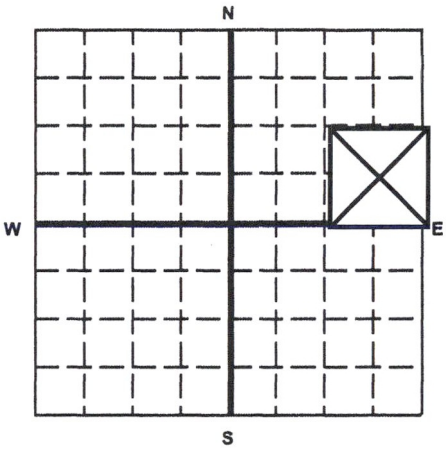
United States Environmental Protection Agency
Washington, DC 20460

ANNUAL DISPOSAL/INJECTION WELL MONITORING REPORT

Name and Address of Existing Permittee
Petroglyph Operating Company, Inc. 2258
P.O. Box 7608
Boise, Idaho 83709

Name and Address of Surface Owner
Ute Indian Tribe
P.O. Box 70
Ft. Duchesne, Utah 84026

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Utah	Duchesne	UT2736-04355

Surface Location Description
___ 1/4 of ___ 1/4 of SE 1/4 of NE 1/4 of Section 18 Township 5S Range 3W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1929 ft. frm (N/S) N Line of quarter section
and 612 ft. from (E/W) E Line of quarter section.

WELL ACTIVITY
- [ ] Brine Disposal
- [x] Enhanced Recovery
- [ ] Hydrocarbon Storage

TYPE OF PERMIT
- [ ] Individual
- [x] Area

Number of Wells 111

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 18-08

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING -- CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	13	1951	1987	139		0	0
February	13	1962	1995	279		0	0
March	13	1979	2003	285		0	0
April	13	1986	1999	296		0	0
May	13	1967	1982	266		0	0
June	13	1968	1986	261		0	0
July	13	1961	1976	219		0	0
August	13	1978	1991	359		0	0
September	13	1982	1996	267		0	0
October	13	1977	2001	260		0	0
November	13	1983	1998	218		0	0
December	13	1974	1990	219		0	0

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Chad Stevenson, Water Facilities Supervisor		2/11/2014

U2 Entered
Date 2/20/14
Initial DB

EPA Form 7520-11 (Rev. 12-08)

BLUE	CBI
✓	

Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

multi-chem®
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Units of Measurement: **Standard**

Water Analysis Report

Production Company: **PETROGLYPH ENERGY INC**
Well Name: **UTE TRIBAL 18-08 INJ**
Sample Point: **Wellhead**
Sample Date: **1/8/2014**
Sample ID: **WA-262974**

Sales Rep: **James Patry**
Lab Tech: **Gary Winegar**

Scaling potential predicted using ScaleSoftPitzer from Brine Chemistry Consortium (Rice University)

Sample Specifics	
Test Date:	1/15/2014
System Temperature 1 (°F):	180
System Pressure 1 (psig):	1300
System Temperature 2 (°F):	60
System Pressure 2 (psig):	15
Calculated Density (g/ml):	1.002
pH:	7.90
Calculated TDS (mg/L):	7126.81
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	0.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	2347.53	Chloride (Cl):	3000.00
Potassium (K):	42.00	Sulfate (SO_4):	347.00
Magnesium (Mg):	46.00	Bicarbonate (HCO_3):	1220.00
Calcium (Ca):	92.00	Carbonate (CO_3):	
Strontium (Sr):	4.10	Acetic Acid (CH_3COO)	
Barium (Ba):	2.70	Propionic Acid (C_2H_5COO)	
Iron (Fe):	3.50	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.30	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.07	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.21	Silica (SiO_2):	21.40

Notes:
B=2.4 Al=.03 Li=.53

(PTB = Pounds per Thousand Barrels)

		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum $CaSO_4 \cdot 2H_2O$		Celestite $SrSO_4$		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	14.00	1.09	48.09	1.94	1.59	0.00	0.00	1.44	2.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.00	157.00	1.08	47.10	1.79	1.58	0.00	0.00	1.49	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86.00	300.00	1.12	49.19	1.66	1.57	0.00	0.00	1.58	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	443.00	1.17	51.48	1.55	1.56	0.00	0.00	1.67	2.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113.00	585.00	1.22	53.91	1.45	1.55	0.00	0.00	1.76	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126.00	728.00	1.27	56.43	1.37	1.54	0.00	0.00	1.85	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	871.00	1.33	58.98	1.30	1.53	0.00	0.00	1.94	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	1014.00	1.39	61.51	1.24	1.51	0.00	0.00	2.02	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166.00	1157.00	1.46	63.96	1.19	1.50	0.00	0.00	2.11	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.00	1300.00	1.53	66.29	1.15	1.49	0.00	0.00	2.19	2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Vernal, UT 84078

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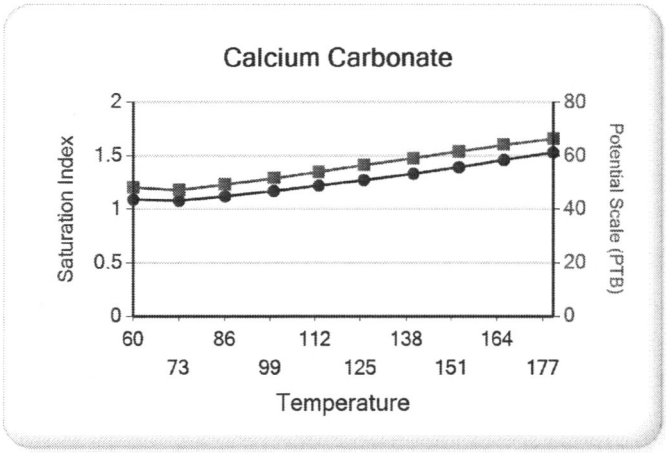
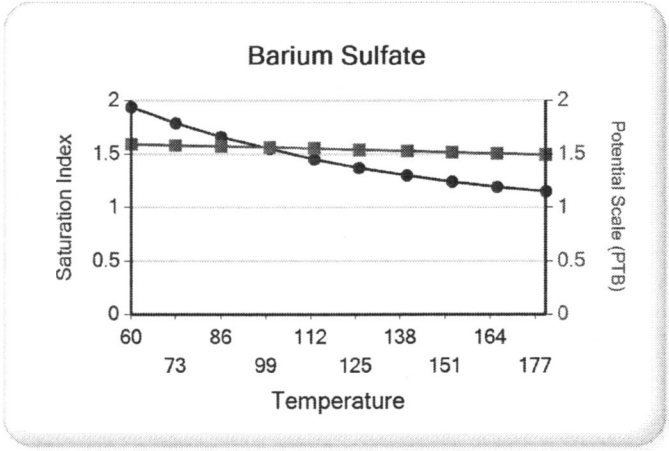
Water Analysis Report

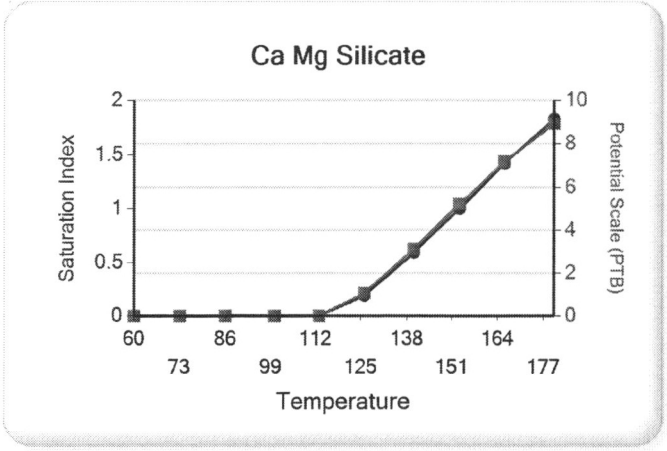
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.97	2.52
73.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	2.53
86.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.46	2.58
100.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.04	0.00	0.00	0.00	0.00	0.00	0.00	4.90	2.63
113.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.10	0.00	0.00	0.68	3.43	0.00	0.00	5.36	2.65
126.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.13	0.00	0.00	1.38	7.17	0.19	1.06	5.84	2.67
140.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.15	0.00	0.00	2.09	11.15	0.59	3.13	6.34	2.69
153.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.17	0.00	0.00	2.80	15.17	1.00	5.20	6.85	2.70
166.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.18	0.00	0.00	3.50	18.87	1.42	7.18	7.37	2.71
180.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	1.10	0.19	0.00	0.00	4.21	21.85	1.83	8.93	7.89	2.71

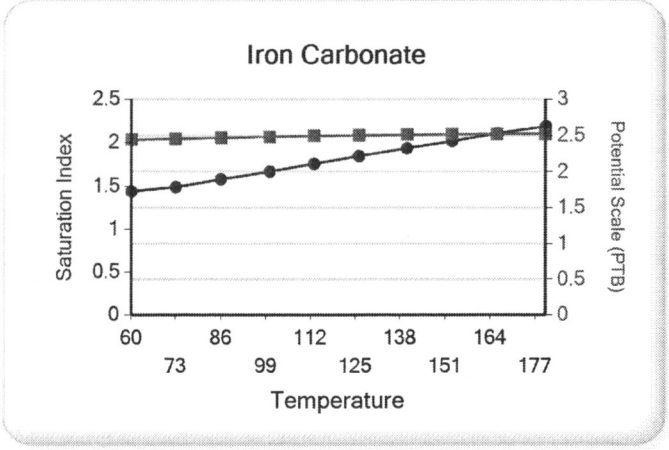
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Fe Silicate

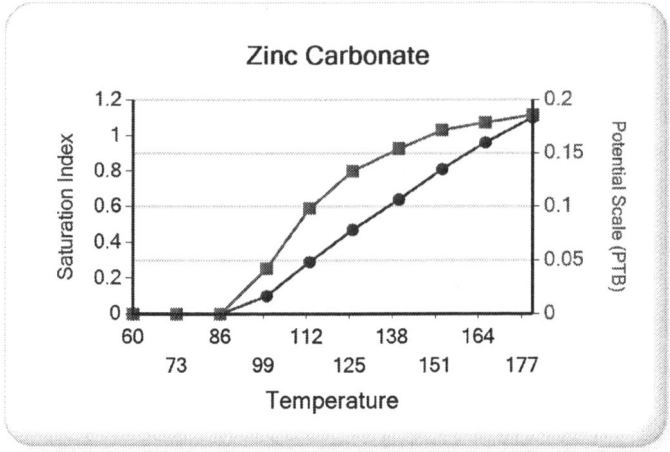
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

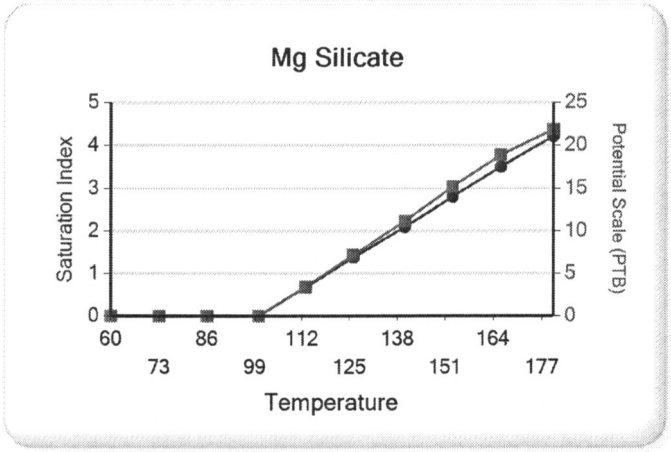


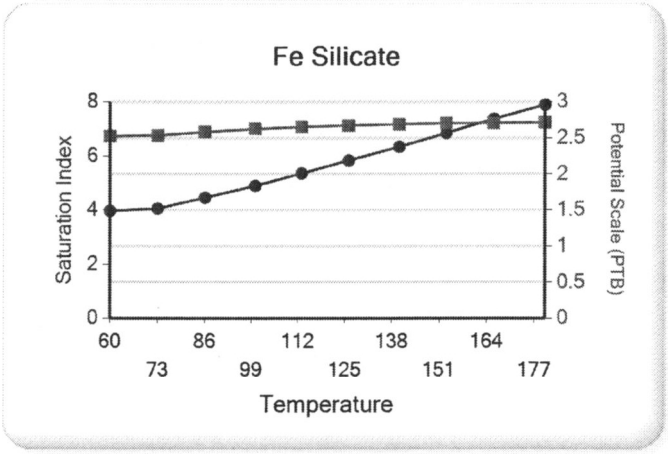







Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
1.2
1
0.8
0.6
0.4
0.2
0
0.2
0.15
0.1
0.05
0
60
86
112
138
164
73
99
125
151
177


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
5
4
3
2
1
0
25
20
15
10
5
0
60
86
112
138
164
73
99
125
151
177


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
8
6
4
2
0
3
2.5
2
1.5
1
0.5
0
60
86
112
138
164
73
99
125
151
177

January 28, 2013

RECEIVED
JAN 31 2013
Office of Legal Enforcement Program
Region 8 EPA

Don Breffle
Mail Code: 8ENF-UFO
US EPA Region 8
1595 Wyncoop Street
Denver, CO 80202-1129

RE: EPA AREA PERMIT NO. UT2736-04355
Mechanical Integrity Test
Standard Five year retesting for Ute Tribal 18-08

Mr. Breffle:
The enclose Mechanical Integrity Test was performed on the above referenced well on January 16, 2013. This MIT was performed because the well was due for the regular five year Mechanical Integrity Test.

If you need any more information please call at (435) 722-5302.

Sincerely,
Petroglyph Operating Co., Inc.

Rodrigo Jurado
Regulatory Compliance Specialist

Encl: MIT for the Ute Tribal 18-08

U2 Entered
Date 1/31/13
Initial DB

	GREEN	BLUE	CBI
TAB		2	

Mechanical Integrity Test
Casing or Annulus Pressure Mechanical Integrity Test

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Direct Implementation Program 8P-W-GW
999 18th Street, Suite 500 Denver, CO 80202-2466

EPA Witness: _____

Test conducted by: CHAD STEVENSON Date: 1.16.2013

Others present: _____

Well Name: 18-08

Field: ANTELOPE CREEK Type: ER SWD Status: AC TA UC

Location: 18-08 Sec: ___ T ___ N/S R ___ E/W County: DUCHESNE State: UT

Operator: PETROGLYPH ENERGY

Last MIT: / / Maximum Allowable Pressure: _____ PSIG

Is this a regularly scheduled test? [X] Yes [ ] No

Initial test for permit? [ ] Yes [ ] No

Test after well rework? [ ] Yes [ ] No

Well injecting during test? [ ] Yes [X] No If Yes, rate: 0 bpd

Pre-test casing/tubing annulus pressure: _____ psig

MIT DATA TABLE	Test #1	Test #2	Test #3
TUBING PRESSURE			
Initial Pressure	1935 psig	psig	psig
End of test pressure	1935 psig	psig	psig
CASING / TUBING ANNULUS PRESSURE			
0 minutes	1085 psig	psig	psig
5 minutes	1085 psig	psig	psig
10 minutes	1085 psig	psig	psig
15 minutes	1085 psig	psig	psig
20 minutes	1085 psig	psig	psig
25 minutes	1085 psig	psig	psig
30 minutes	1085 psig	psig	psig
4 1/2 hours ~~minutes~~	1085 psig	psig	psig
minutes	psig	psig	psig
RESULT	[ ] P	psig	psig

CALIBRATED CHARTS
BATAVIA N.Y.
METER NUMBER
18-08
TIME PUT ON
9:30 AM
DATE PUT ON
1-16-13
TUBE & ORIF. SIZE
TIME TAKEN OFF
2:15 PM
DATE TAKEN OFF
1-16-13
MW-MP 2000
PRINTED IN U.S.A.
12 NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.
12 MIDNIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10
9:30 AM
PST 1935
2:15 PM
PST 1935

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

Ref: 8P2-W-GW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

MAY 12 1997

Ms. April Menzies
Geology/Petroleum Engineering Technician
Petroglyph Operating Company, Inc.
P. O. Box 1839
Hutchinson, KS 67504-1839

RE: UNDERGROUND INJECTION CONTROL (UIC)
Authorization to Inject
Ute Tribal #18-08 (UT04355)
Antelope Creek Waterflood
EPA Area Permit No. UT2736-00000
Duchesne County, Utah

Dear Ms. Menzies:

Thank you for the recently submitted information pertaining to the above-referenced area permit and well. The Well Rework Record, injection zone fluid pore pressure survey, and the successfully run mechanical integrity test on the Ute Tribal #18-08 (UT2736-04355) have been reviewed and approved. Petroglyph has complied with all of the pertinent permit conditions (Part II, Section C. 2.) for the Antelope Creek Waterflood area permit.

Pleased be advised that administrative approval has been granted for injection of Class II fluids into the above referenced well for enhanced recovery of oil and gas. Please also be aware of the monitoring, recordkeeping and reporting requirements described in Part II, Section D of the permit and that the current **maximum surface injection pressure (Pmax) is limited to 1960 psig**, as modified by UIC Permit Minor Modification dated January 30, 1997.

Upon receipt of this letter, the Compliance Officer, Mr. John Carson will then take over routine matters involving well operations, future correspondence, forms, and reports. Please direct all correspondence to the attention of Mr. Carson at the above letterhead **(MAIL CODE ENF-T)** or contact Mr. Carson at (303) 312-6203. Thank you for your continued cooperation.

Sincerely,

D. Edwin Hogle
Director, Groundwater Program
Office of Pollution Prevention
State and Tribal Assistance

Printed on Recycled Paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466

JUL 23 2001

Ref: 8P-W-GW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Micheal Safford
Operations Coordinator
Petroglyph Operating Company, Inc.
P.O. Box 607
Roosevelt, UT 84066

RE: **UNDERGROUND INJECTION CONTROL (UIC)**
APPROVAL TO INCREASE MAXIMUM
SURFACE INJECTION PRESSURE
EPA Area Permit No. UT2736-00000
Ute Tribal No. 18-08
EPA Well Authority No. UT2736-04355
Antelope Creek Waterflood
Duchesne County, Utah

Dear Mr. Safford:

The Environmental Protection Agency (EPA) Antelope Creek Final Area Permit UT2736-00000 (Effective July 12, 1994) Part II, Section C. 5. (b), permits the "Director" to authorize, by letter, an increase in the maximum surface injection pressure (MIP) for the Ute Tribal No. 18-08, following receipt and approval of a valid step-rate test (SRT).

On June 14, 2001, Petroglyph Energy, Inc. (Petroglyph) submitted an SRT to the EPA, dated June 11, 2001. The SRT was received by the EPA on June 18, 2001. The SRT was reviewed and approved by the EPA on June 20, 2001. The SRT shows the fracture gradient (FG) for the Green River Formation injection interval between the approximate depths of 4384' and 5454' to be 0.900 psi/ft.

As of the date of this letter, the EPA authorizes an increase in the maximum surface injection pressure (MIP) from 1960 psig to 2030 psig. The following modified injection pressure will provide for higher injectivity capacity which will improve the waterflood efficiency without endangering any underground sources of drinking water (USDWs).

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FG	=	0.900 psi/ft
D	=	4384 feet: Top perforation
SG	=	Specific gravity of injectate: 1.01
0.433	=	Density of injectate fluid

MIP = [(0.900) - (.433)(1.01)] 4384

MIP = 2030 psig

Please send all compliance correspondence relative to this well to the **ATTENTION: Nathan Wiser, at the letterhead address, citing Mail Code: 8ENF-T very prominently.** You may call Mr. Wiser at 303.312.6211.

All other provisions and conditions of the Permit remain as originally issued July 12, 1994 and Revised April 30, 1998.

Sincerely,

for Kerrigan G. Clough
Assistant Regional Administrator
Office of Partnerships and
Regulatory Assistance

cc: Mr. D. Floyd Wopsock, Chairman
Uintah & Ouray Business Committee
Ute Indian Tribe

Ms. Elaine Willie, Environmental Coordinator
Ute Indian Tribe

Norman Cambridge
BIA - Uintah & Ouray Agency

Mr. Jerry Kenczka
BLM - Vernal District Office

Mr. Gilbert Hunt
State of Utah Natural Resources
Division of Oil, Gas & Mining

Mr. Nathan Wiser
8ENF-T

Step Rate Test (SRT) Analysis

Date: 07/16/01

Operator: Petroglyph Energy, Inc.
Well: Ute Tribal 18-08
Permit #: UT2736-04355

Enter the following data :

Specific Gravity (SG) of injectate	1.01	g/cc
Depth to top perforation(D)	4384	feet
Depth to Top of permitted injection zone	4384	feet
Estimated Formation Parting Pressure (Pfp) from SRT chart	2045	psi
Instantaneous Shut In Pressure (ISIP) from SRT	2130	psi
Bottom Hole Parting Pressure (from downhole pressure recorder)		psi

2045

Part One - Calculation of Fracture Gradient (F G)

Calculated Fracture Gradient = **0.900** psi/ft.

FG = Pbhp / Depth (D) of top perforation
(Uses downhole recorded bottom hole parting pressure when available)

0.904

Calculated Bottom Hole Parting Pressure = 3962 psi

*Calculated Pbhp = Formation Fracture Pressure + (0.433 * SG * D)*
(Use lesser of ISIP or Pfp) *value used=* *2045*

3962

Part Two - Calculation of Maximum Surface Injection Pressure (M S I P)

Maximum Surface Injection Pressure = **2030** psig

(rounded down to nearest 5 psig)

*MSIP = [FG - (0.433 * SG)] * Depth to top of permitted injection zone (or top perforation)*

4384

2028

CONCURRENCE COPY

JAN 30 1997

Ref: 8P2-W-GW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Angela R. Ely
Administrative Operations Manager
Petroglyph Operating Company, Inc.
6209 North Highway 61
Hutchinson, Kansas 67502

RE: **UIC Minor Permit Modification**
Conversion of Additional Well to
Antelope Creek Waterflood
EPA Area Permit UT2736-00000
Duchesne County, Utah

Dear Ms. Ely:

Your letter of January 13, 1997, requesting that the following production well be converted to Class II enhanced oil recovery well and added to the Antelope Creek Waterflood, as authorized under EPA Area Permit UT2736-00000, is hereby granted.

NAME	LOCATION	EPA WELL PERMIT NO.
Ute Tribal 18-08	SE NE Section 18 T 5 S - R 3 W	UT2736-04355

This additional well is within the boundary of the existing area permit for the Antelope Creek Waterflood (UT2736-00000), and this addition is made by minor permit modification according to the terms and conditions of that permit. Unless specifically mentioned in this Minor Permit Modification, all terms and conditions of the original permit will apply to the construction, operation, monitoring, and plugging and abandonment of this additional injection well. The proposed well location, well schematic, conversion procedures, and revised plugging and abandonment plan and schematic, submitted by your office, have been reviewed and approved as follows:

(1) The **conversion** of this production well has been reviewed and found satisfactory as submitted, therefore, no corrective action is required.

(2) **Maximum injection pressure (Pmax)** for this well is as follows:

$$Pmax = [Fg - 0.433\ (Sg)]\ d$$

CEW 8P2-W-GW 1/28/97 DBA 1/29/97 Tuher 1-29-97

Where: Pmax = Maximum surface injection pressure at wellhead
d = 4384' shallowest perforations

Sg = Specific gravity of injected water

Pmax = [0.88 - .433 (1.00)] 4384

Pmax = 1960 psig

Until such time as the permittee demonstrates that a fracture gradient other than .88 psi/ft applies to the disposal zones of this newly converted well, the maximum allowable wellhead injection pressure **(Pmax) for this well will be 1960 psig.**

(3) The **plugging and abandonment plan and schematic**, submitted by your office, has been reviewed, revised and approved.

Prior to commencing injection into this well, permittee must fulfill permit condition Part II, C. 2. and have received **written authorization** to inject **by the Environmental Protection Agency.** In summary, these requirements for your newly permitted injection well are:

(1) All conversion is complete and the permittee has submitted a completed **Well Rework Record (EPA Form 7520-12)**.

(2) The **pore pressure has been determined.**

(3) The well has successfully completed and passed an **mechanical integrity test (MIT)**, guidance enclosed.

All other provisions and conditions of the permit remain as originally issued.

If you have any questions, please contact Mr. Chuck Williams at (303) 312-6625. Also, please direct the above requirements to Mr. Williams at the above letterhead address, citing **MAIL CODE 8P2-W-GW.** Thank you for your continued cooperation.

Sincerely,

Original signed
Kerrigan G. Clough
Assistant Regional Administrator
Office of Pollution Prevention,
State & Tribal Assistance

Kerrigan G. Clough
Assistant Regional Administrator
Office of Pollution Prevention,
State and Tribal Assistance

Enclosure: MIT Guidance and EPA Form

cc: Mr. Ferron Secakuku
Energy & Mineral Resource Dep't.
Ute Indian Tribe

Ms. Ruby Atwine, Chairperson
Uintah & Ouray Business Committee
Northern Ute Tribe

Mr. Norman Cambridge
BIA - Uintah & Ouray Agency

Mr. Gil Hunt
State of Utah Natural Resources
Division of Oil, Gas, and Mining

Mr. Jerry Kenczka
BLM - Vernal District Office

FCD: January 28, 1997, Chuck W. F:\DATA\WP\PETROGLF\MNRMD-18.08