Inspection Report For Well: UT20736 - 06678

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: 10:15 am / pm

OPERATOR (only if different): _____

REPRESENTATIVE(S): Chad Stevinson

PRE-INSPECTION REVIEW

Petroglyph Operating Company, Inc

Well Name:	Ute Tribal 18-06		
Well Type:	Enhanced Recovery (2R)		
Operating Status:	AC (ACTIVE) as of 3/10/2006		
Oil Field:	Antelope Creek (Duchesne)		
Location:	SENW S18 T5S R3W		
Indian Country:	X, Uintah and Ouray		
Last Inspection:	8/29/2012	***Allowable Inj Pressure:***	1575 /
Last MIT:	Pass 2/5/2011	***Annulus Pressure From Last MIT:***	1075

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 12/31/13
Initials DB

OBSERVED VALUES:

Tubing Gauge:	[x] Yes [ ] No	Pressure: U: 1515 L: ____ psig Gauge Range: Scale ____ 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

GREEN	BLUE	CBI
	1	

UIC Entered
12/17/13
AR

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

Inspection Report For Well: UT20736 - 06678 (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: Petroglyph 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

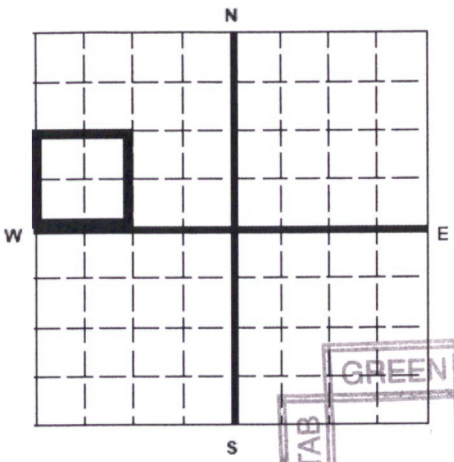
United States Environmental Protection Agency
Washington, DC 20460

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	UT2736-06678

Surface Location Description
___ 1/4 of ___ 1/4 of SW 1/4 of NW 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 2176 ft. frm (N/S) N Line of quarter section
and 1568 ft. from (E/W) W Line of quarter section.

U2 Entered
Date 4/4/17
Initial DB

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 18-06

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	1432	1437	0		0	0
February	16	1429	1433	0		0	0
March	16	1426	1431	0		0	0
April	16	1432	1438	0		0	0
May	16	1427	1442	0		0	0
June	16	1428	1432	0		0	0
July	16	1419	1422	0		0	0
August	16	1423	1426	0		0	0
September	16	1414	1416	0		0	0
October	16	1406	1417	0		0	0
November	16	1408	1415	0		0	0
December	16	1401	1406	0		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

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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 18-06 INJ, DUCHESNE**	Lab Tech:	**Kaitlyn Natelli**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2017**		
Sample ID:	**WA-345375**		

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):	0.9990
pH:	8.40
Calculated TDS (mg/L):	2533.54
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
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):	605.67	Chloride (Cl):	483.00
Potassium (K):	11.38	Sulfate (SO_4):	2.00
Magnesium (Mg):	63.83	Bicarbonate (HCO_3):	1281.00
Calcium (Ca):	51.44	Carbonate (CO_3):	
Strontium (Sr):	3.35	Hydroxide(HO):	
Barium (Ba):	2.68	Acetic Acid (CH_3COO)	
Iron (Fe):	2.10	Propionic Acid (C_2H_5COO)	
Zinc (Zn):	0.10	Butanoic Acid (C_3H_7COO)	
Lead (Pb):	0.01	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Ammonia NH_3:		Fluoride (F):	
Manganese (Mn):	0.28	Bromine (Br):	
Aluminum (Al):	0.06	Silica (SiO_2):	26.70
Lithium (Li):	2.68	Calcium Carbonate ($CaCO_3$):	
Boron (B):	1.08	Phosphates (PO_4):	7.57
Silicon (Si):	12.48	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	1.71	40.44	0.00	0.00	3.49	1.16	2.41	1.52	0.00	0.00	0.00	0.00	0.00	0.00	9.78	0.05
149.00	267.00	1.78	41.10	0.00	0.00	3.44	1.16	2.51	1.52	0.00	0.00	0.00	0.00	0.00	0.00	9.52	0.05
168.00	483.00	1.86	41.98	0.00	0.00	3.42	1.16	2.61	1.52	0.00	0.00	0.00	0.00	0.00	0.00	9.31	0.05
187.00	700.00	1.95	42.72	0.00	0.00	3.43	1.16	2.72	1.52	0.00	0.00	0.00	0.00	0.00	0.00	9.13	0.05
206.00	917.00	2.06	43.33	0.00	0.00	3.46	1.16	2.82	1.52	0.00	0.00	0.00	0.00	0.00	0.00	8.97	0.05
224.00	1133.00	2.16	43.80	0.00	0.00	3.51	1.16	2.92	1.52	0.00	0.00	0.00	0.00	0.00	0.00	8.84	0.05
243.00	1350.00	2.28	44.16	0.00	0.00	3.57	1.16	3.00	1.52	0.00	0.00	0.00	0.00	0.00	0.00	8.72	0.05
262.00	1567.00	2.40	44.42	0.00	0.00	3.64	1.16	3.09	1.52	0.00	0.00	0.00	0.00	0.00	0.00	8.62	0.05
281.00	1783.00	2.52	44.61	0.00	0.00	3.73	1.16	3.16	1.52	0.00	0.00	0.00	0.00	0.00	0.00	8.54	0.05
300.00	2000.00	2.64	44.74	0.00	0.00	3.82	1.16	3.23	1.52	0.00	0.00	0.00	0.00	0.00	0.00	8.46	0.05

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Vernal, UT 84078

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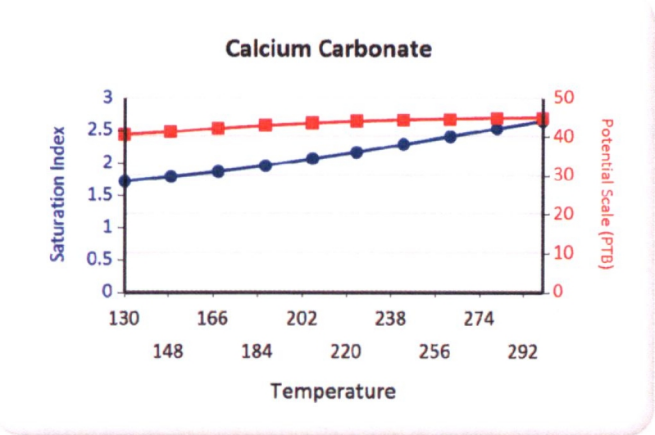
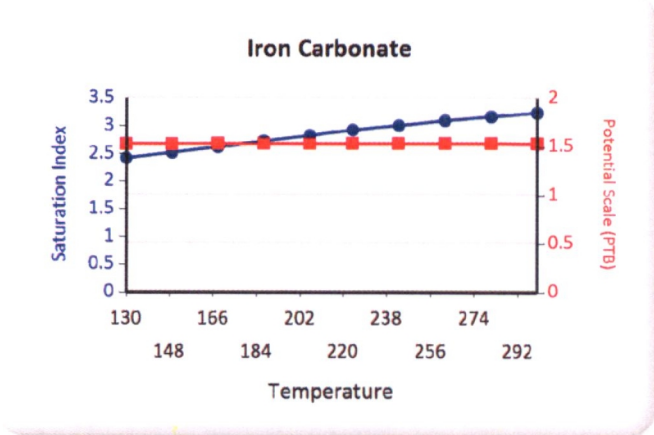
Water Analysis Report

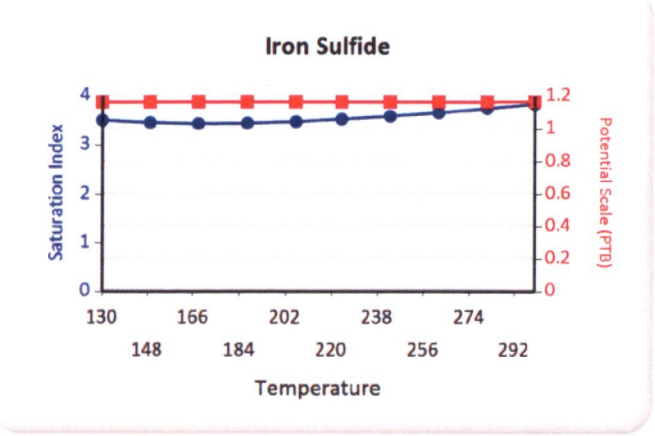
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
130.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.06	10.49	0.00	6.07	38.81	3.16	19.47	9.55	1.63
149.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	0.06	10.06	0.00	6.82	45.78	3.57	22.46	10.02	1.63
168.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	1.21	0.06	9.69	0.00	7.63	54.32	4.02	26.25	10.58	1.63
187.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	0.06	9.36	0.00	8.43	61.42	4.48	29.63	11.14	1.63
206.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	0.07	9.07	0.00	9.21	66.00	4.93	32.25	11.71	1.63
224.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.07	8.81	0.00	9.98	68.14	5.37	34.00	12.28	1.63
243.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86	0.07	8.58	0.00	10.71	68.91	5.81	35.02	12.84	1.63
262.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.07	8.38	0.00	11.42	69.15	6.22	35.55	13.38	1.63
281.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	2.08	0.07	8.20	0.00	12.09	69.22	6.62	35.82	13.90	1.63
300.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	2.17	0.07	8.03	0.00	12.74	69.24	7.01	35.95	14.41	1.63

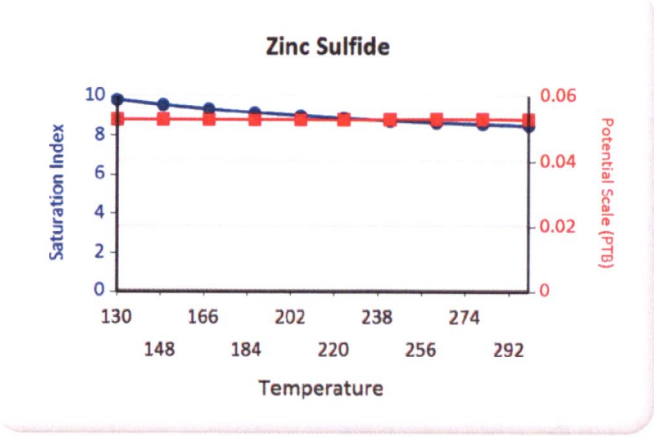
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

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









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1553 East Highway 40
Vernal, UT 84078

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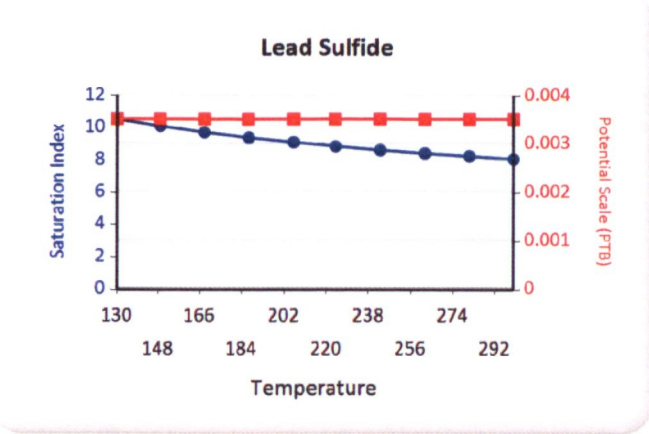
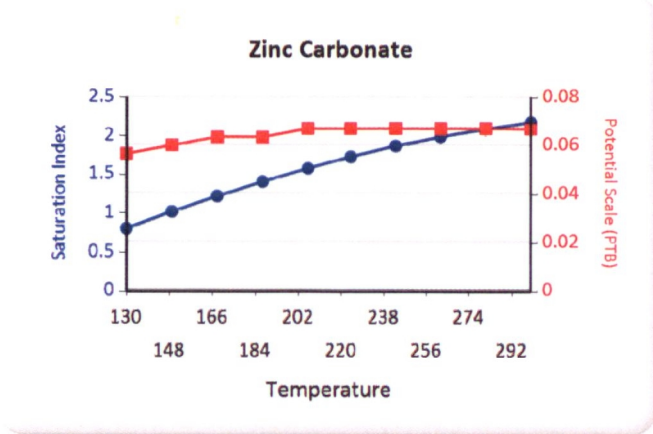
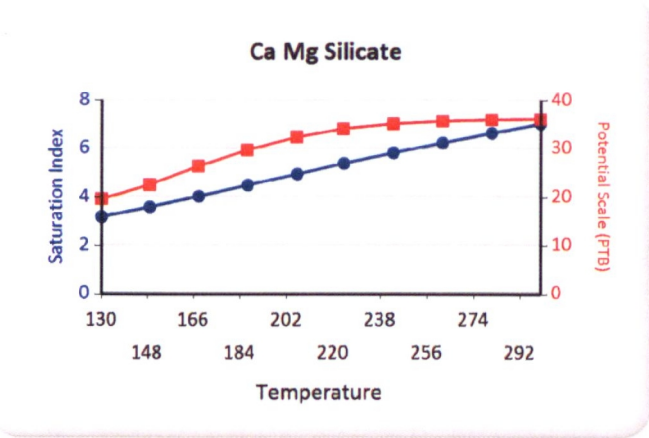
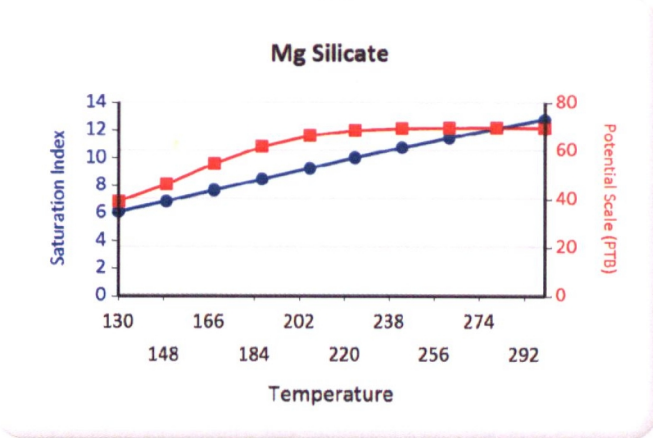
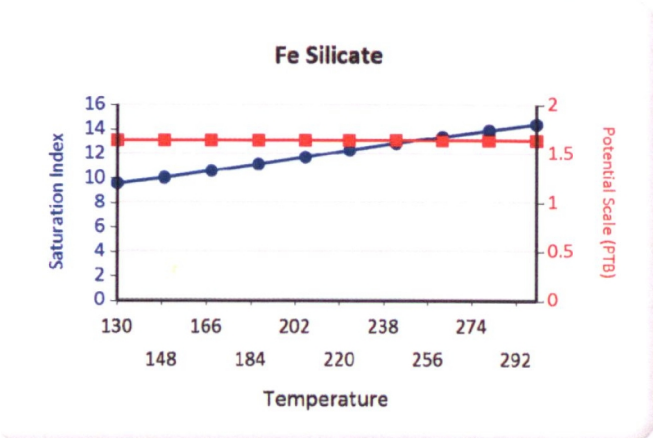
Water Analysis Report











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

EPA

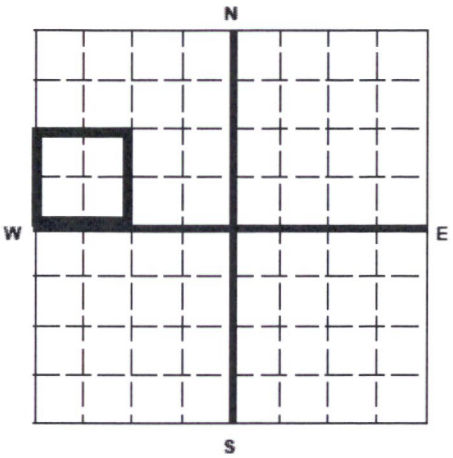
United States Environmental Protection Agency
Washington, DC 20460

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~~ 06678

Surface Location Description
___ 1/4 of ___ 1/4 of SW 1/4 of NW 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 2176 ft. frm (N/S) N Line of quarter section
and 1568 ft. from (E/W) W Line of quarter section.

U2 Entered
Date 3/1/16
Initial DB

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 18-06

		INJECTION PRESSURE		TOTAL VOLUME INJECTED		TUBING – CASING ANNULUS PRESSURE (OPTIONAL MONITORING)	
MONTH	YEAR	AVERAGE PSIG	MAXIMUM PSIG	BBL	MCF	MINIMUM PSIG	MAXIMUM PSIG
January	15	1500	1501	9		0	0
February	15	1508	1513	0		0	0
March	15	1501	1507	0		0	0
April	15	1491	1501	0		0	0
May	15	1488	1490	0		0	0
June	15	1494	1494	0		0	0
July	15	1487	1497	0		0	0
August	15	1479	1479	0		0	0
September	15	1466	1469	0		0	0
October	15	1445	1452	0		0	0
November	15	1449	1455	0		0	0
December	15	1436	1442	0		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

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

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 18-06 INJ, DUCHESNE**	Lab Tech:	**Michele Pike**
Sample Point:	**Well Head**		
Sample Date:	**1/6/2016**		
Sample ID:	**WA-327558**		

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):	1.0016
pH:	8.30
Calculated TDS (mg/L):	6247.42
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	0.00
H_2S in Gas (%):	
H2S in Water (mg/L):	15.00
Tot. SuspendedSolids(mg/L):	
Corrosivity(LanglierSat.Indx)	0.00
Alkalinity:	

Analysis @ Properties in Sample Specifics

Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	2083.29	Chloride (Cl):	3000.00
Potassium (K):	8.66	Sulfate (SO_4):	1.00
Magnesium (Mg):	76.01	Bicarbonate (HCO_3):	976.00
Calcium (Ca):	67.99	Carbonate (CO_3):	
Strontium (Sr):	3.40	Acetic Acid (CH_3COO)	
Barium (Ba):	1.71	Propionic Acid (C_2H_5COO)	
Iron (Fe):	0.64	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.18	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.57	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.33	Silica (SiO_2):	27.64
Aluminum (Al):	0.01	Calcium Carbonate ($CaCO_3$):	
Lithium (Li):	0.75	Phosphates (PO_4):	7.71
Boron (B):	0.27	Oxygen (O_2):	
Silicon (Si):	12.92		

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	1.69	50.76	0.00	0.00	2.79	0.35	1.74	0.46	0.00	0.00	0.00	0.00	0.00	0.00	9.34	0.09
167.00	267.00	1.59	47.80	0.00	0.00	2.75	0.35	1.63	0.46	0.00	0.00	0.00	0.00	0.00	0.00	9.45	0.09
153.00	483.00	1.51	45.54	0.00	0.00	2.75	0.35	1.53	0.45	0.00	0.00	0.00	0.00	0.00	0.00	9.58	0.09
140.00	700.00	1.44	43.18	0.00	0.00	2.76	0.35	1.43	0.45	0.00	0.00	0.00	0.00	0.00	0.00	9.74	0.09
127.00	917.00	1.37	40.78	0.00	0.00	2.78	0.35	1.33	0.44	0.00	0.00	0.00	0.00	0.00	0.00	9.90	0.09
113.00	1133.00	1.31	38.42	0.00	0.00	2.82	0.35	1.23	0.44	0.00	0.00	0.00	0.00	0.00	0.00	10.09	0.09
100.00	1350.00	1.25	36.16	0.00	0.00	2.88	0.35	1.13	0.43	0.00	0.00	0.00	0.00	0.00	0.00	10.29	0.09
87.00	1567.00	1.20	34.07	0.00	0.00	2.95	0.35	1.04	0.42	0.00	0.00	0.00	0.00	0.00	0.00	10.52	0.09
73.00	1783.00	1.15	32.19	0.00	0.00	3.03	0.35	0.94	0.41	0.00	0.00	0.00	0.00	0.00	0.00	10.77	0.09
60.00	2000.00	1.11	30.56	0.00	0.00	3.14	0.35	0.85	0.40	0.00	0.00	0.00	0.00	0.00	0.00	11.04	0.09

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

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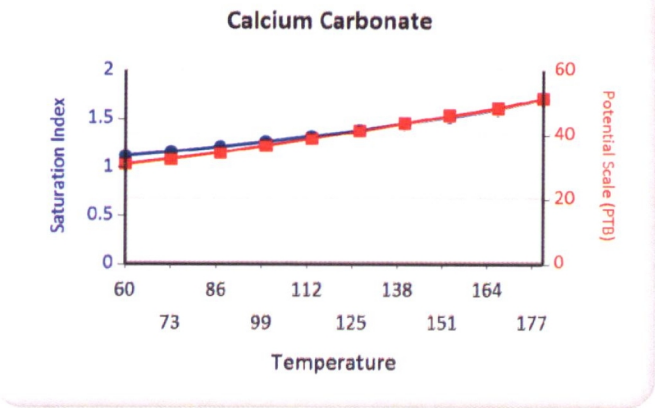
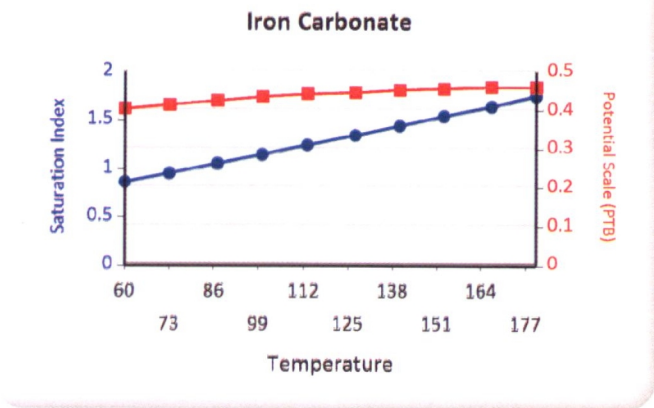
Water Analysis Report

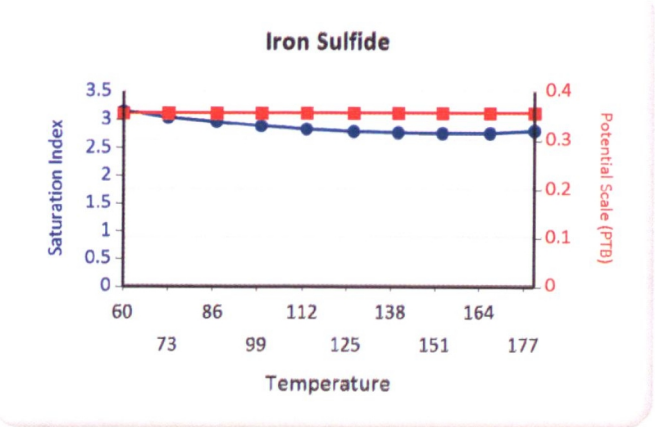
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180.00	50.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.11	11.12	0.23	7.58	55.05	4.02	26.53	8.40	0.50
167.00	267.00	0.00	0.00	0.00	0.00	0.00	0.00	1.01	0.11	11.33	0.23	6.86	45.11	3.59	21.96	7.84	0.50
153.00	483.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.11	11.58	0.23	6.23	38.09	3.22	18.79	7.40	0.50
140.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.09	11.85	0.23	5.61	31.58	2.86	15.83	6.95	0.49
127.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.08	12.15	0.23	4.98	25.80	2.50	13.15	6.52	0.49
113.00	1133.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.06	12.47	0.23	4.36	20.83	2.15	10.77	6.10	0.49
100.00	1350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.03	12.82	0.23	3.73	16.63	1.79	8.67	5.68	0.49
87.00	1567.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.21	0.23	3.10	13.08	1.45	6.81	5.28	0.49
73.00	1783.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.63	0.23	2.47	10.05	1.10	5.12	4.89	0.48
60.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.08	0.23	1.84	7.36	0.76	3.55	4.51	0.48

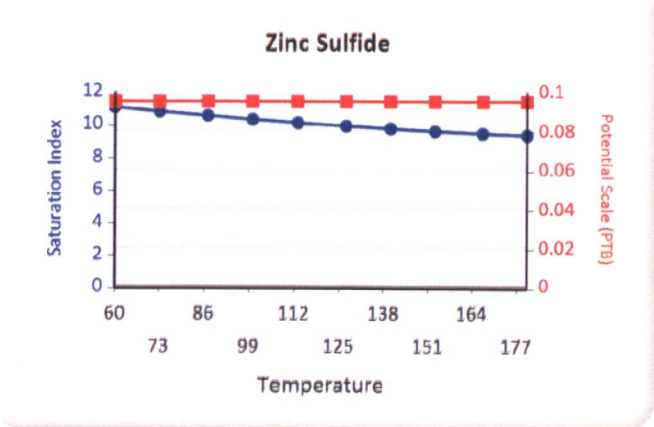
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Iron Sulfide Iron Carbonate Zinc Sulfide Zinc Carbonate Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

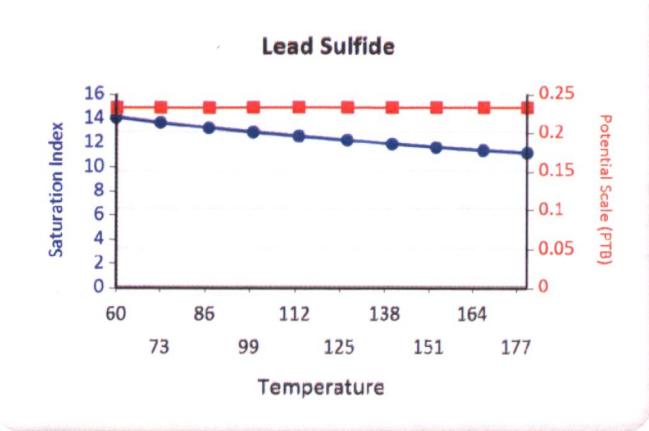
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Iron Sulfide Iron Carbonate Zinc Sulfide Lead Sulfide Mg Silicate Ca Mg Silicate Fe Silicate

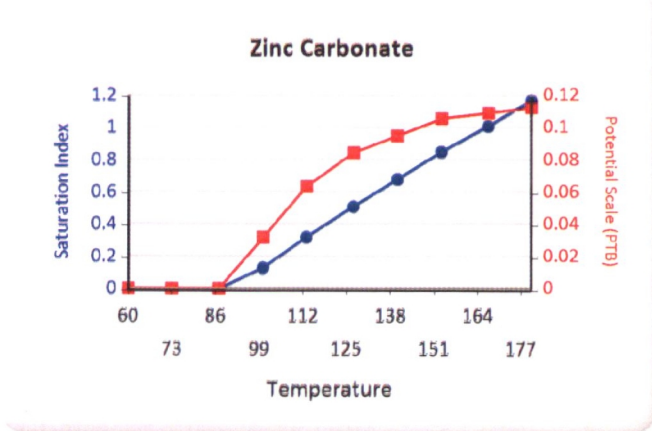









Lead Sulfide
Saturation Index
Potential Scale (PTB)
Temperature
60 86 112 138 164
73 99 125 151 177


Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
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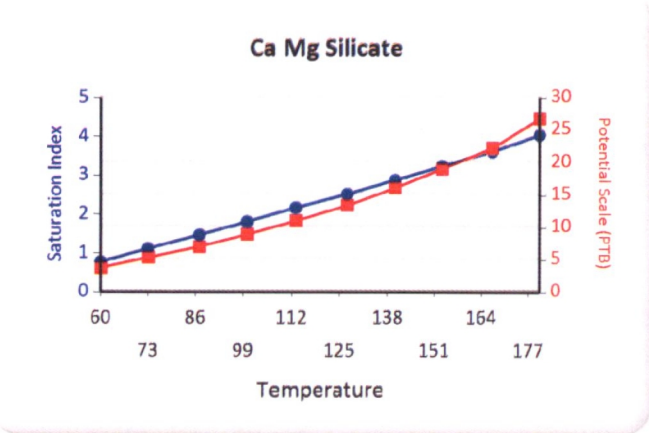
73 99 125 151 177


Ca Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
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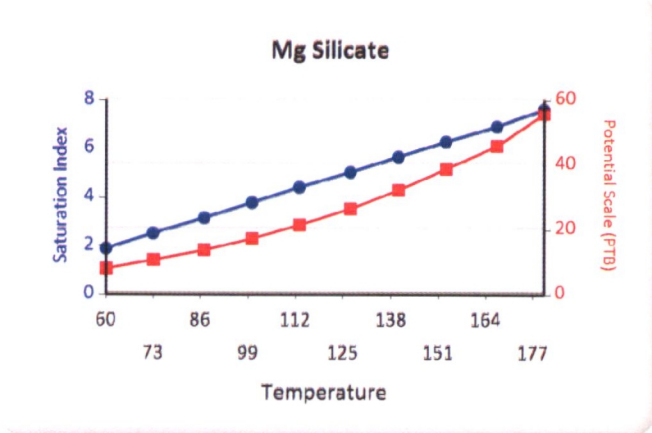
73 99 125 151 177


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
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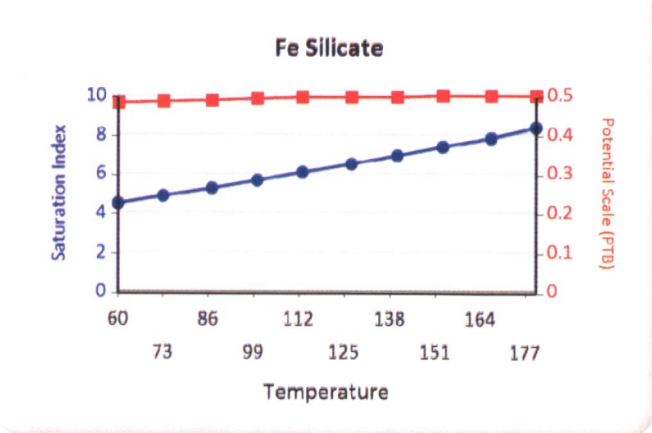
73 99 125 151 177


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
60 86 112 138 164
73 99 125 151 177

Mechanical Integrity Test
Tubing/Casing Annulus Pressure Test

U.S. Environmental Protection Agency
Underground Injection Control Program
1595 Wynkoop Street, Denver, CO 80202

EPA Witness: _____ Date: 2/4/16
Test conducted by: C. HARSTEVENSON
Others present: _____

Well Name: 18-06 UT20736-06678 Type: ER SWD **Status:** AC TA UC
Field: ANTELOPE CREEK
Location: 18-06 Sec: ____ T ____ N/S R ____ E/W County: DUCHESNE State: UT
Operator: PETROGLYPH ENERGY
Last MIT: ____/____/____ **Maximum Allowable Pressure:** _____ **PSIG**

Regularly scheduled test? [X] Yes [ ] No
Initial test for permit? [ ] Yes [ ] No
Test after well rework? [ ] Yes [ ] No

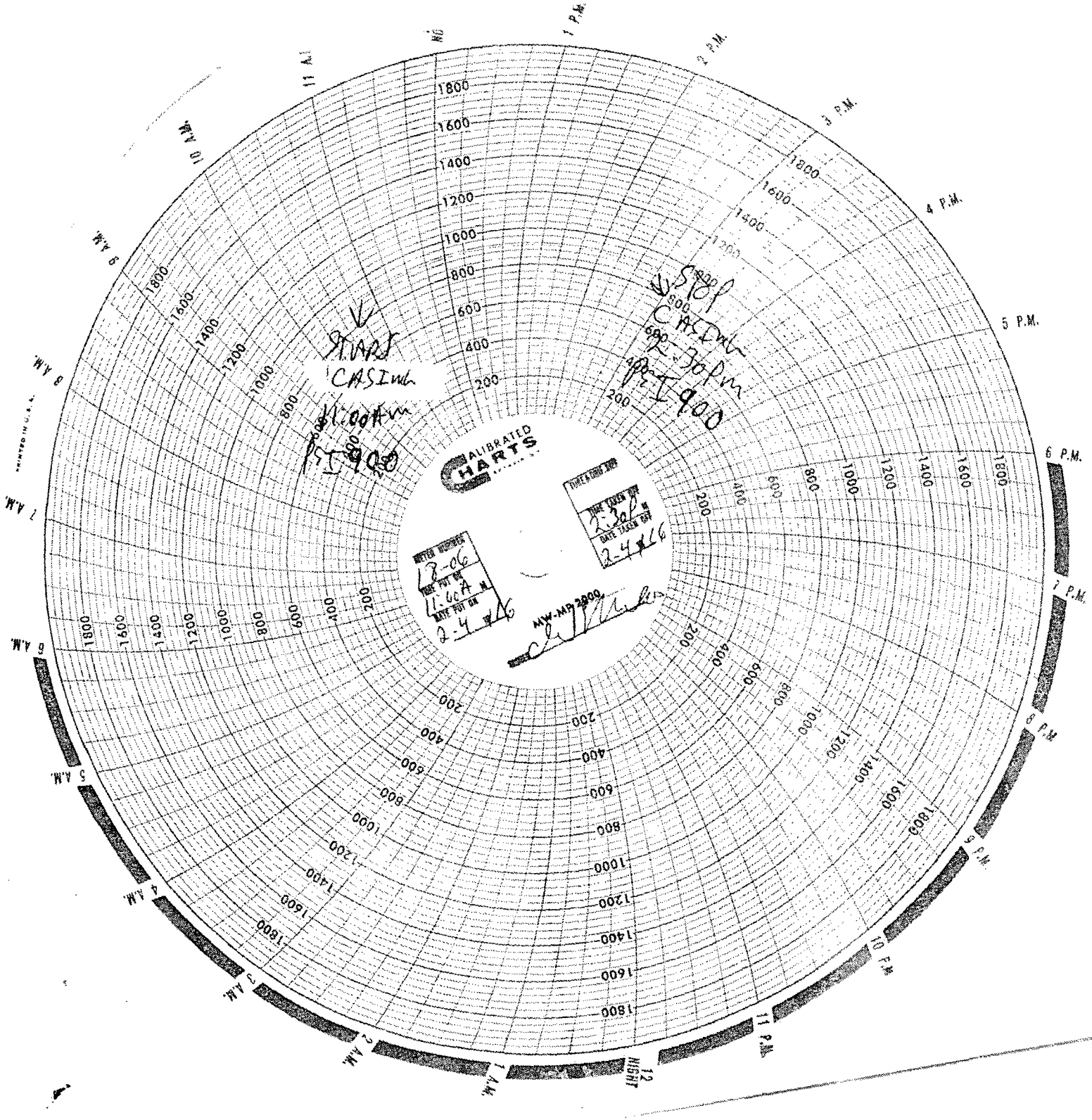
Well injecting during test? If Yes, rate: _____ **bpd**
Pre-test annulus pressure: _____ **psig**

MIT DATA TABLE	Test #1	Test #2	Test #3
TUBING		**PRESSURE RECORD**	
Initial Pressure	1429 psig	psig	psig
End of test pressure	1429 psig	psig	psig
CASING / TUBING ANNULUS		**PRESSURE RECORD**	
0 minutes	900 psig	psig	psig
5 minutes	900 psig	psig	psig
10 minutes	900 psig	psig	psig
15 minutes	900 psig	psig	psig
20 minutes	900 psig	psig	psig
25 minutes	900 psig	psig	psig
30 minutes	900 psig	psig	psig
3½ HOURS ~~minutes~~	900 psig	psig	psig
_____ minutes	psig	psig	psig
RESULT	[ ] Pass [ ] Fail	[ ] Pass [ ] Fail	[ ] Pass [ ] Fail

Does the annulus pressure build back up after the test ? **If Yes,** _____ **psig.**

TAB	GREEN	BLUE	CBI
		2	

U2 Entered
Date 4/25/16
Initial DB



START CASING
11:00AM
PSI 900
STOP CASING
2:30PM
PSI 900
CALIBRATED CHARTS
METER NUMBER
18-06
TIME PUT ON
11:00A M
DATE PUT ON
2-4 #16
TIME TAKEN OFF
2:30P M
DATE TAKEN OFF
2-4 #16
MW-MP 2000

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

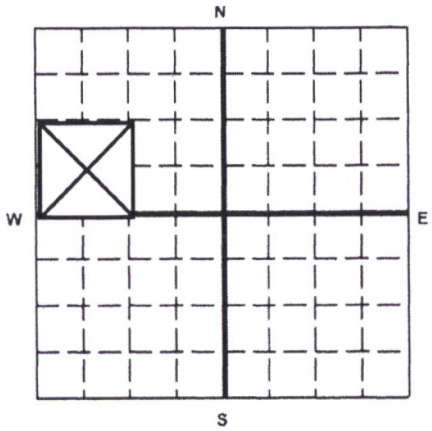
EPA

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	UT2736-06678

Surface Location Description

____ 1/4 of ____ 1/4 of SW 1/4 of NW 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 2176 ft. frm (N/S) N Line of quarter section and 1568 ft. from (E/W) W 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 18-06

		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	1529	1537	192		0	0
February	14	1526	1536	108		0	0
March	14	1527	1536	94		0	0
April	14	1513	1544	51		0	0
May	14	1536	1540	73		0	0
June	14	1502	1521	50		0	0
July	14	1535	1531	85		0	0
August	14	1524	1536	~~107~~	93 inj monthly	0	0
September	14	1497	1500	49		0	0
October	14	1500	1523	86		0	0
November	14	1537	1539	152		0	0
December	14	1533	1543	79		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

	GREEN	BLUE	CBI
TAB		?	

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 18-06 INJ, DUCHESNE**	Lab Tech:	**Gary Winegar**
Sample Point:	**WELLHEAD**		
Sample Date:	**1/7/2015**		
Sample ID:	**WA-297449**		

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):	0.9991
pH:	6.80
Calculated TDS (mg/L):	2703.65
CO2 in Gas (%):	
Dissolved CO_2 (mg/L)):	40.00
H_2S in Gas (%):	
H2S in Water (mg/L):	10.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	440.28	Chloride (Cl):	1000.00
Potassium (K):	10.53	Sulfate (SO_4):	246.00
Magnesium (Mg):	74.72	Bicarbonate (HCO_3):	732.00
Calcium (Ca):	164.56	Carbonate (CO_3):	
Strontium (Sr):	4.53	Acetic Acid (CH_3COO)	
Barium (Ba):	1.72	Propionic Acid (C_2H_5COO)	
Iron (Fe):	0.54	Butanoic Acid (C_3H_7COO)	
Zinc (Zn):	0.06	Isobutyric Acid ($(CH_3)_2CHCOO$)	
Lead (Pb):	0.00	Fluoride (F):	
Ammonia NH_3:		Bromine (Br):	
Manganese (Mn):	0.11	Silica (SiO_2):	28.60

Notes:
B=1.11 Al=.04 Li=.38

(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	0.26	25.26	1.67	1.00	1.15	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.43	0.03
88.00	157.00	0.21	19.89	1.59	1.00	1.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.18	0.03
97.00	300.00	0.24	23.05	1.51	0.99	0.98	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.05	0.03
106.00	443.00	0.28	26.43	1.44	0.99	0.97	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.94	0.03
115.00	585.00	0.32	30.00	1.38	0.98	0.97	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.84	0.03
124.00	728.00	0.36	33.75	1.33	0.97	0.98	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.75	0.03
133.00	871.00	0.40	37.65	1.28	0.97	0.99	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.66	0.03
142.00	1014.00	0.45	41.68	1.23	0.96	1.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.58	0.03
151.00	1157.00	0.50	45.81	1.19	0.96	1.03	0.27	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	7.51	0.03
160.00	1300.00	0.55	50.03	1.16	0.95	1.06	0.27	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	7.45	0.03

		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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88.00	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	0.00	0.00
97.00	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	0.00	0.00
106.00	443.00	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	0.00	0.00
115.00	585.00	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	0.00	0.00
124.00	728.00	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	0.00	0.00
133.00	871.00	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	0.00	0.00
142.00	1014.00	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	0.00	0.00
151.00	1157.00	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	0.00	0.00
160.00	1300.00	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	0.00	0.00

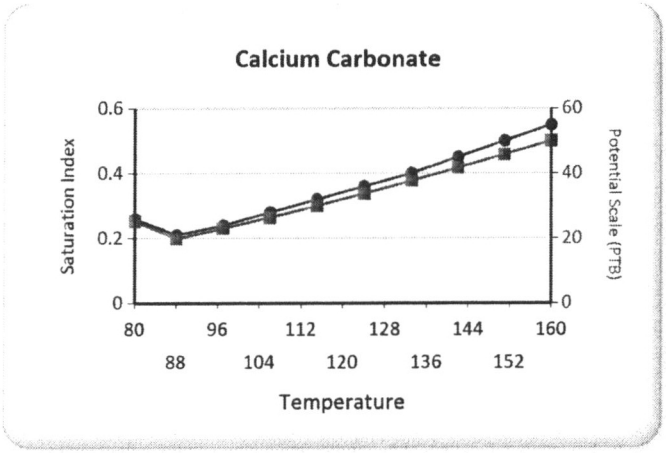
Multi-Chem Analytical Laboratory
1553 East Highway 40
Vernal, UT 84078

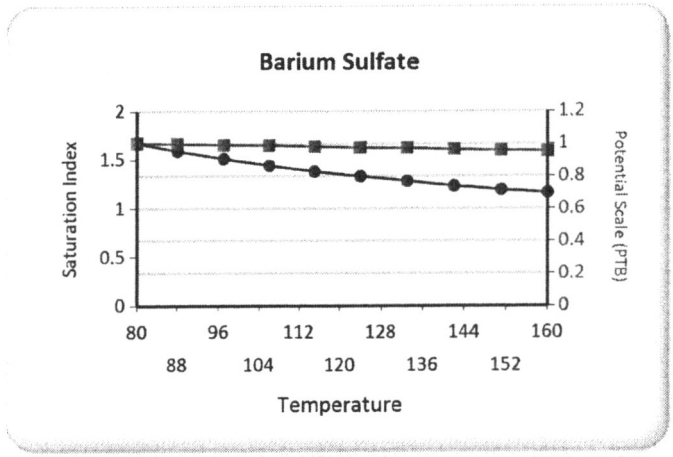
multi-chem®
A HALLIBURTON SERVICE

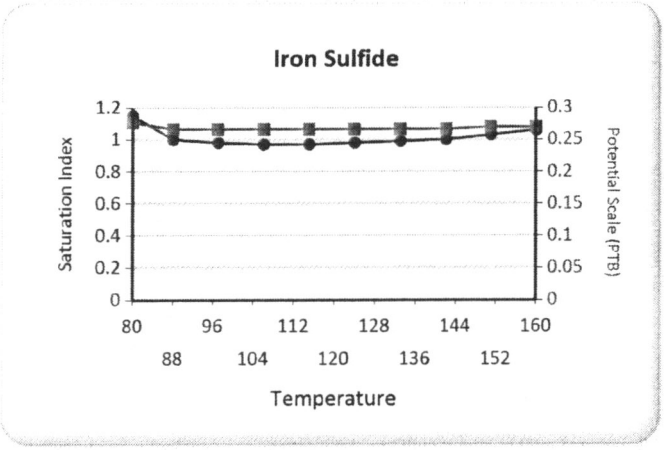
Water Analysis Report

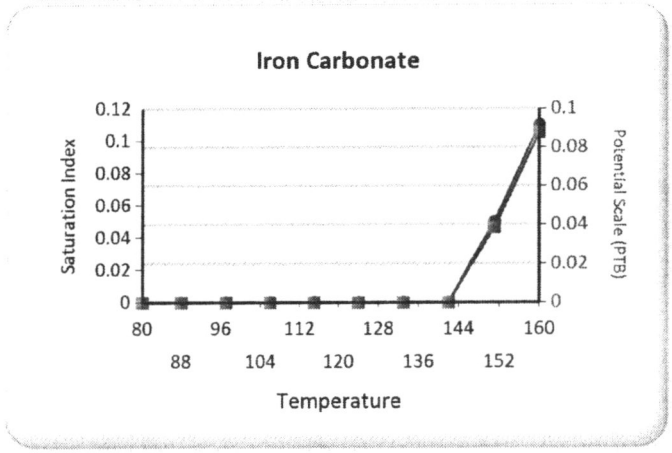
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Zinc Sulfide

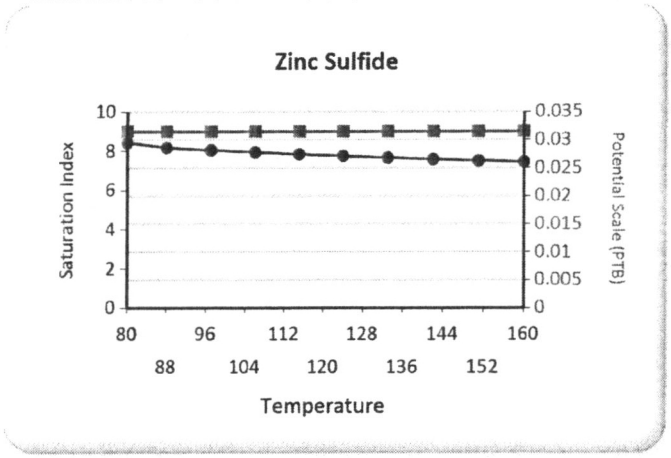
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide











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

EPA

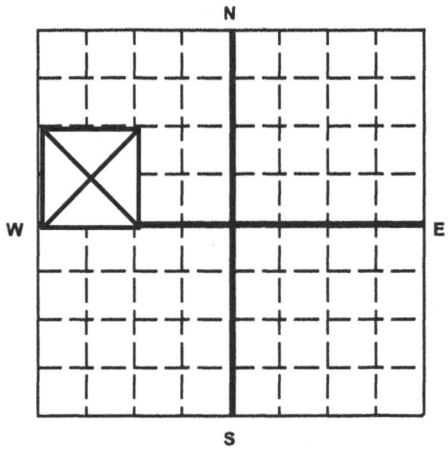
United States Environmental Protection Agency
Washington, DC 20460

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	UT2736-06678

Surface Location Description
___ 1/4 of ___ 1/4 of SW 1/4 of NW 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 2176 ft. frm (N/S) N Line of quarter section
and 1568 ft. from (E/W) W 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 18-06

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	13	0	-2	0		0	0
February	13	1448	-3	0		0	0
March	13	798	-3	0		0	0
April	13	686	-3	0		0	0
May	13	1501	1505	0		0	0
June	13	1339	1504	0		0	0
July	13	610	1036	0		0	0
August	13	1068	1087	0		0	0
September	13	1388	1545	943		0	0
October	13	1516	1542	464		0	0
November	13	1531	1544	340		0	0
December	13	1527	1538	214		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	C Stevenson	2/11/2014

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

GREEN	BLUE	CBI
	2	

U2 Entered
Date 3/20/14
Initial DB

Multi-Chem Analytical Laboratory
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Vernal, UT 84078

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Units of Measurement: **Standard**

Water Analysis Report

Production Company: **PETROGLYPH ENERGY INC**
Well Name: **UTE TRIBAL 18-06 INJ**
Sample Point: **Wellhead**
Sample Date: **1/8/2014**
Sample ID: **WA-262972**

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):	1.006
pH:	8.30
Calculated TDS (mg/L):	13200.87
CO2 in Gas (%):	
Dissolved CO2 (mg/L)):	0.00
H2S in Gas (%):	
H2S in Water (mg/L):	0.00

Analysis @ Properties in Sample Specifics			
Cations	*mg/L*	*Anions*	*mg/L*
Sodium (Na):	4626.64	Chloride (Cl):	6000.00
Potassium (K):	107.00	Sulfate (SO4):	64.00
Magnesium (Mg):	18.00	Bicarbonate (HCO3):	2293.60
Calcium (Ca):	46.00	Carbonate (CO3):	
Strontium (Sr):	5.30	Acetic Acid (CH3COO)	
Barium (Ba):	15.00	Propionic Acid (C2H5COO)	
Iron (Fe):	1.10	Butanoic Acid (C3H7COO)	
Zinc (Zn):	0.35	Isobutyric Acid ((CH3)2CHCOO)	
Lead (Pb):	0.09	Fluoride (F):	
Ammonia NH3:		Bromine (Br):	
Manganese (Mn):	0.25	Silica (SiO2):	23.54

Notes:
B=6 Al=0 Li=1.5

(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
60.00	14.00	1.41	36.22	1.73	8.74	0.00	0.00	1.61	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.00	157.00	1.41	36.14	1.59	8.66	0.00	0.00	1.67	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86.00	300.00	1.44	36.43	1.46	8.57	0.00	0.00	1.74	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	443.00	1.46	36.74	1.35	8.46	0.00	0.00	1.81	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113.00	585.00	1.49	37.06	1.25	8.34	0.00	0.00	1.88	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126.00	728.00	1.53	37.38	1.16	8.21	0.00	0.00	1.95	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.00	871.00	1.57	37.70	1.09	8.08	0.00	0.00	2.01	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	1014.00	1.61	38.01	1.03	7.95	0.00	0.00	2.08	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166.00	1157.00	1.66	38.30	0.97	7.82	0.00	0.00	2.14	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.00	1300.00	1.71	38.57	0.93	7.71	0.00	0.00	2.20	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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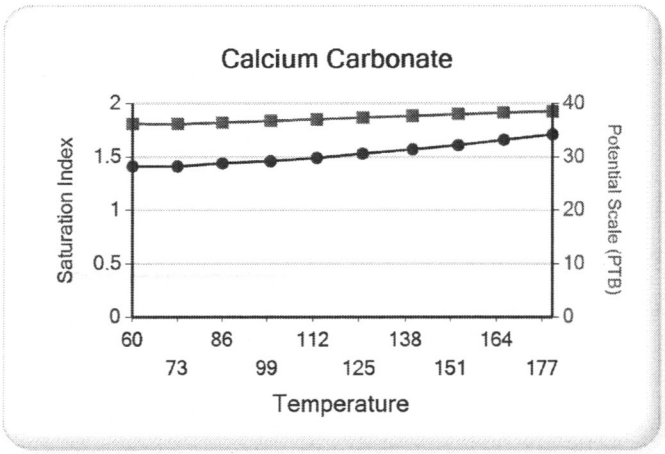
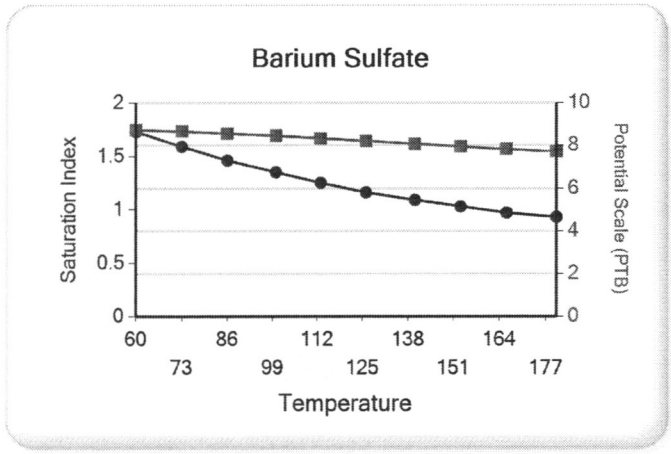
Water Analysis Report

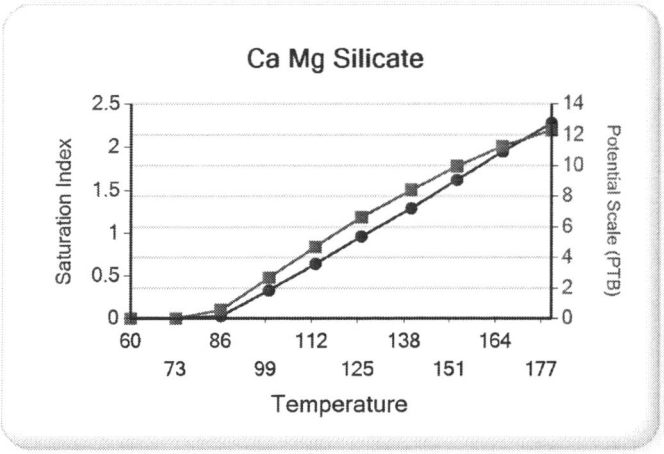
		Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
60.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.06	0.00	0.00	0.00	0.00	0.00	0.00	5.19	0.84
73.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.12	0.00	0.00	0.04	0.55	0.00	0.00	5.37	0.84
86.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.16	0.00	0.00	0.59	4.19	0.03	0.56	5.67	0.84
100.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.19	0.00	0.00	1.15	7.70	0.33	2.67	5.99	0.85
113.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.20	0.00	0.00	1.73	11.08	0.64	4.71	6.33	0.85
126.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.21	0.00	0.00	2.31	14.28	0.96	6.64	6.70	0.85
140.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.22	0.00	0.00	2.90	17.27	1.29	8.41	7.07	0.85
153.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.22	0.00	0.00	3.49	19.98	1.62	9.96	7.46	0.85
166.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.23	0.00	0.00	4.07	22.34	1.95	11.27	7.86	0.86
180.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	0.23	0.00	0.00	4.66	24.30	2.28	12.32	8.27	0.86

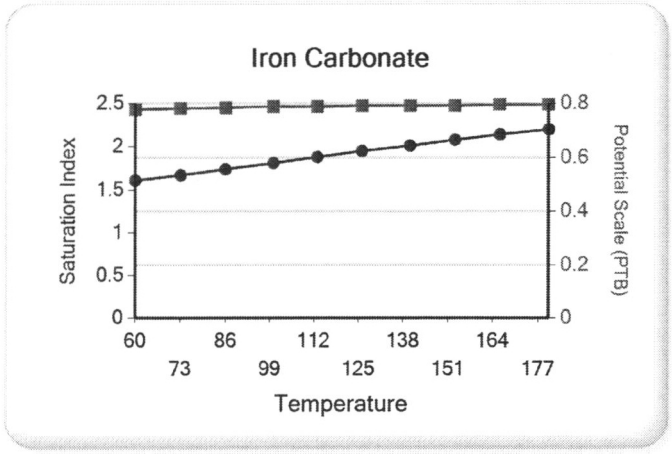
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Fe Silicate

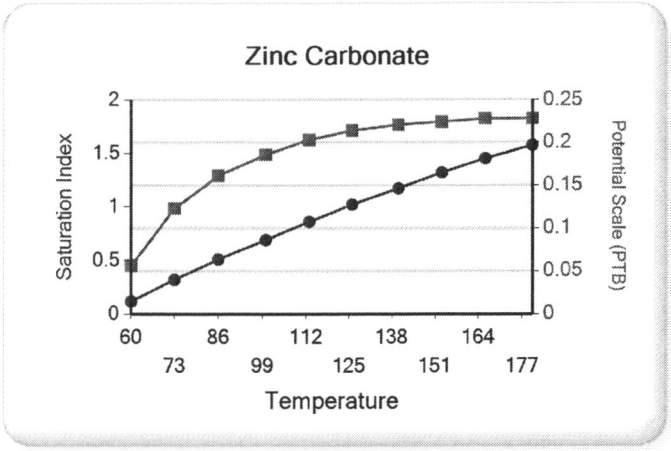
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

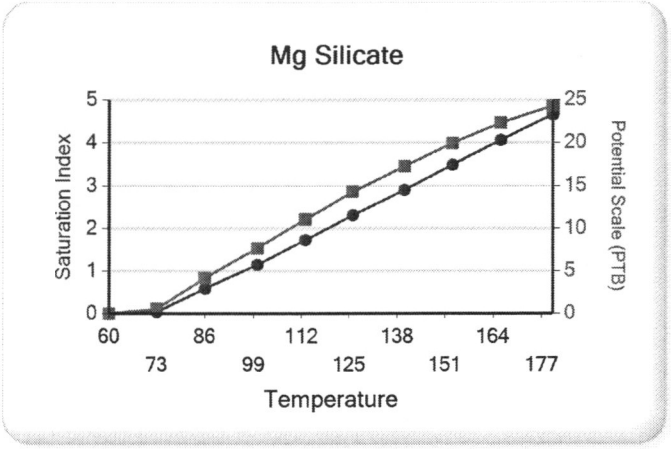









Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
60
73
86
99
112
125
138
151
164
177


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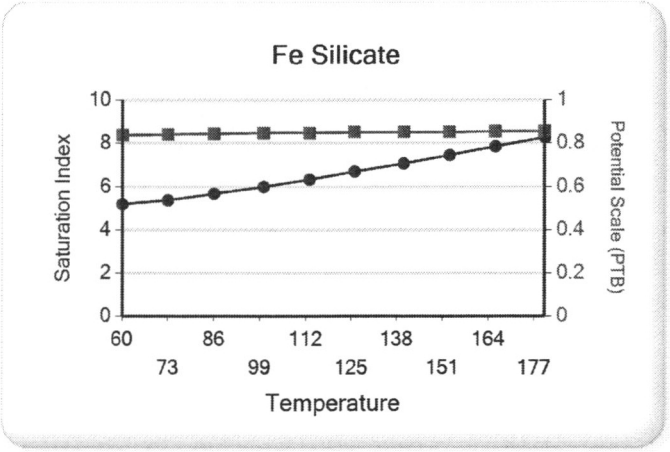
73
86
99
112
125
138
151
164
177


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
0
2
4
6
8
10
0.2
0.4
0.6
0.8
1
60
73
86
99
112
125
138
151
164
177

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

AUTHORIZATION FOR ADDITIONAL WELL

UIC Area Permit No: UT20736-00000

The Antelope Creek Waterflood Final UIC Area Permit No. UT20736-00000, effective July 12, 1994, authorizes injection for the purpose of enhanced oil recovery into multiple lenticular sand units which are distributed throughout the lower portion of the Green River Formation. On January 19, 2005, the permittee provided notice to the Director concerning the following additional enhanced recovery injection well:

Well Name:	**Ute Tribal 18-06**
EPA Well ID Number:	**UT20736-06678**
Location:	2176 ft FNL & 1568 ft FWL SW NW Sec. 18 - T5S - R3W Duchesne County, Utah.

Pursuant to 40 CFR §144.33, Area UIC Permit No. UT20736-00000 authorizes the permittee to construct and operate, convert, or plug and abandon additional enhanced recovery injection wells within the area permit. This well was determined to satisfy additional well criteria required by the permit.

This well is subject to all provisions of UIC Area Permit No. UT20736-00000, as modified and as specified in the Well Specific Requirements detailed below. This Authorization shall expire one year after the Effective Date unless the permittee has converted the well to injection or submits a written request to extend this Authorization prior to the expiration date.

This Authorization is effective upon signature.

Date: JAN 13 2006

for **Stephen S. Tuber**
*Assistant Regional Administrator
Office of Partnerships and Regulatory Assistance

** The person holding this title is referred to as the Director throughout the Permit and Authorization*

WELL-SPECIFIC REQUIREMENTS

Well Name: **Ute Tribal 18-06**
EPA Well ID Number: **UT20736-06678**

Prior to commencing injection operations, the permittee shall submit the following information and receive written Authority to Inject from the Director:

1. a successful Part I (Internal) Mechanical Integrity test (MIT);
2. pore pressure calculation of the proposed injection zone; and
3. completed Well Rework Record EPA Form No. 7520-12 and schematic diagram.

Approved Injection Zone: Injection is approved between the base of the Green River A Lime Marker, at approximately 3884 ft, to the top of the Basal Carbonate, at approximately 5901 ft.

Maximum Allowable Injection Pressure (MAIP): The initial MAIP is **1575 psig,** based on the following calculation:

MAIP = [FG - (0.433)(SG)] * D, where
FG = 0.80 psi/ft SG = 1.002 D = **4312 ft** (top perforation depth KB)
MAIP = 1575 psi

UIC Area Permit No. UT20736-00000 also provides the opportunity for the permittee to request a change of the MAIP based upon results of a step rate test that demonstrates the formation breakdown pressure will not be exceeded.

Well Construction and Corrective Action: ***No Corrective Action is required*** Based on review of well construction and cementing records, including CBL, well construction is considered adequate to prevent fluid movement out of the injection zone and into USDWs.

Tubing and Packer: 2-3/8" or similar size injection tubing is approved; the packer shall be set at a depth no more than 100 ft above the top perforation.

Corrective Action for Wells in Area of Review: ***No Corrective Action is required.*** The following wells that penetrate the confining zone are within or proximate to a 1/4 mile radius around the Ute Tribal No. 18-03 were evaluated to determine if any corrective action is necessary to prevent fluid movement into USDWs:

Well:	Ute Tribal No. 18-05	Location:	Sec. 18 - T5S - R3W
Well:	Ute Tribal No. 18-04E	Location:	Sec. 18 - T5S - R3W
Well:	Ute Tribal No. 18-11	Location:	Sec. 18 - T5S - R3W

Demonstration of Mechanical Integrity: A successful demonstration of Part I (Internal) Mechanical Integrity using a standard Casing-Tubing pressure test is required prior to injection and at least once every five years thereafter. EPA reviewed the cement bond log and determined the cement will provide an effective barrier to significant upward movement of fluids through vertical channels adjacent to the well bore pursuant to 40 CFR 146.8 (a)(2). Therefore, further demonstration of Part II (External) Mechanical Integrity is not required at this time.

Demonstration of Financial Responsibility: The applicant has demonstrated financial responsibility in the amount of $15,000 via a Surety Bond that has been reviewed and approved by the EPA.

Plugging and Abandonment: The well shall be plugged in a manner that isolates the injection zone and prevents movement of fluids into or between USDWs. Tubing, packers, and any downhole apparatus shall be removed. Class A, C, G, and H cements, with additives such as accelerators and retarders that control or enhance cement properties, may be used for plugs; however, volume extending additives and gel cements are not approved for plug use. Plug placement shall be verified by tagging. Plugging gel of at least 9.2 lb/gal shall be placed between all plugs. A minimum 50 ft surface plug shall be set inside and outside of the surface casing to seal pathways for fluid migration into the subsurface. Within sixty (60) days after plugging the owner or operator shall submit Plugging Record (EPA Form 7520-13) to the Director. The Plugging Record must be certified as accurate and complete by the person responsible for the plugging operation. At a minimum, the following plugs are required:

PLUG NO. 1: Set a cast iron bridge plug (CIBP) no more than 50 ft above the top perforation at 4312 ft with a minimum 20 ft cement plug on top of the CIBP.

PLUG NO. 2: Set a minimum 200 ft cement plug inside of the 5-1/2" casing across the Trona Zone and the Mahogany Shale, between approximately 2668 ft to 2868 ft.

PLUG NO. 3: Set a minimum 200 ft cement plug inside of the 5-1/2" casing and on the backside of the 5-1/2" casing across the base of the USDW, between approximately 1038 ft to 1238 ft. This plug fulfills the Utah BLM P&A requirement.

PLUG NO. 4: Set a minimum 50 ft cement plug on the backside of the 5-1/2" casing, across the surface casing shoe at 414 ft (unless pre-existing backside cement precludes cement-squeezing this interval.)

PLUG NO. 5: Set a cement plug inside of the 5-1/2" casing, from at least 406 ft to 456 ft.

PLUG NO. 6: Set a cement plug on the backside of the 5-1/2" casing, from surface to a depth of at least 50 ft.

PLUG NO. 7: Set a cement plug inside of the 5-1/2" casing from surface to a depth of at least 50 ft.

Cut off surface and 5-1/2" casing at least 4 ft below ground level and set P&A marker; submit Sundry Notices and all necessary data as required by the EPA and other regulatory agencies.

Reporting of Noncompliance:

(a) Anticipated Noncompliance. The operator shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(b) Compliance Schedules. Reports of compliance or noncompliance with, or any progress on, interim and final requirements contained in any compliance schedule of this Permit shall be submitted no later than thirty (30) days following each schedule date.

(c) Written Notice of any noncompliance which may endanger health or the environment shall be reported to the Director within five (5) days of the time the operator becomes aware of the noncompliance. The written notice shall contain a description of the noncompliance and its cause; the period of noncompliance including dates and times; if the noncompliance has not been corrected the anticipated time it is expected to continue; and steps taken or planned to prevent or reduce recurrence of the noncompliance.

Twenty-Four Hour Noncompliance Reporting:

The operator shall report to the Director any noncompliance which may endanger health or environment. Information shall be provided, either orally or by leaving a message, within twenty-four (24) hours from the time the operator becomes aware of the circumstances by telephoning 1.800.227-8917 and asking for the EPA Region 8 UIC Program Compliance and Enforcement Director, or by contacting the Region 8 Emergency Operations Center at 303.293.1788 if calling from outside EPA Region 8. The following information shall be included in the verbal report:

(a) Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW.

(b) Any noncompliance with a Permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

Oil Spill and Chemical Release Reporting:

The operator shall comply with all other reporting requirements related to oil spills and chemical releases or other potential impacts to human health or the environment by contacting the **National Response Center (NRC) 1.800.424.8802 or 202.267.2675,** or through the **NRC website at http://www.nrc.uscg.mil/index.htm.**

Other Noncompliance:

The operator shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted.

Other Information:

Where the operator becomes aware that he failed to submit any relevant facts in the Permit application, or submitted incorrect information in a Permit application, or in any report to the Director, the operator shall submit such correct facts or information within two (2) weeks of the time such information became known to him.

WELL-SPECIFIC CONSIDERATIONS

Well Name: **Ute Tribal 18-06**
EPA Well ID Number: **UT20736-00000**

Underground Sources of Drinking Water (USDWs): USDWs in the Antelope Creek Waterflood area generally may occur within the Uinta Formation, which extends from the surface to the top of the Green River Formation at approximately 1482 ft. According to *"Base of Moderately Saline Ground Water in the Uinta Basin, Utah, State of Utah Technical Publication No. 92,"* the base of moderately saline ground water may be found at approximately 52 ft below ground surface at this well location. Based on information reported by Petroglyph, the bas of a USDW was found at 1138 ft KB in the Ute Tribal 18-06. Based on analysis of the submitted cement bond log (CBL) the top of casing cement in this well is at approximately 2462 ft (KB).

Confining Zone: The Confining Zone at this location is approximately 208 ft of interbedded limestone and shale between the depths of 3676 ft to 3884 ft (KB) which directly overlies the Injection Zone, based on correlation to the Antelope Creek Ute Tribal 04-03 well Type Log. Additional impermeable lacustrine shale beds above the Confining Zone provide for further protection for any overlying USDW.

Injection Zone: The Injection Zone at this well location is an approximately 2017 ft section of multiple lenticular sand units interbedded with shale, marlstone and limestone from the base of the Confining Zone at 3884 ft (KB) to the top of the Basal Carbonate Formation at 5901 ft (KB), based on correlation to the Antelope Creek Ute Tribal 04-03 well Type Log.

Well Construction: The CBL shows more than 34 ft of 80% or greater bond across the confining zone, approximately 3850 ft to 3884 ft.

Surface casing:	8-5/8" casing is set at 414 ft (KB) in a 12-1/4" hole, using 225 sacks cement circulated to the surface.
Longstring casing:	5-1/2" casing is set at 6012 ft (KB) in a 7-7/8" 6012 ft Total Depth hole with a plugged back total depth (PBTD) of 5965 ft, cemented with 405 sacks cement. Top of Cement (TOC): 2462 ft (KB) CBL.
Perforations:	top perforation: **4312 ft** Bottom perforation: **5644 ft**

Wells in Area of Review (AOR): Construction and cementing records, including cement bond logs (CBL) as available, for two wells in the 1/4 mile AOR that penetrated the confining zone were reviewed and found adequate to prevent fluid movement out of the injection zone and into USDWs.

Well: Ute Tribal No. 18-05 ●	Casing Cement top: 2006 ft (provided)
Well: Ute Tribal No. 18-04E ●	Casing Cement top: 1537 ft (CBL)
Well: Ute Tribal No. 18-11 ●	Casing Cement top: 2414 ft (CBL)