# Inspection Report For Well: UT20736 - 04635

**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: 12/10/2013

Others: Ajayi, Christopher — Time: 9:45 am / pm

OPERATOR (only if different): _____

REPRESENTATIVE(S): Chad Stevenson

## PRE-INSPECTION REVIEW

**Petroglyph Operating Company, Inc**

| | | | |
|---|---|---|---|
| ***Well Name:*** | Ute Tribal 04-11 | | |
| ***Well Type:*** | Enhanced Recovery (2R) | | |
| ***Operating Status:*** | AC (ACTIVE) as of 12/31/2002 | | |
| ***Oil Field:*** | Antelope Creek (Duchesne) | | |
| ***Location:*** | NESW S4 T5S R3W | | |
| ***Indian Country:*** | X, Uintah and Ouray | | |
| ***Last Inspection:*** | 8/28/2012 | ***Allowable Inj Pressure:*** | 1900 / |
| ***Last MIT:*** | Pass 8/8/2006 | ***Annulus Pressure From Last MIT:*** | 1070 |

← check this

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 12/30/13
Initials DB

**OBSERVED VALUES:**

| | | | | |
|---|---|---|---|---|
| Tubing Gauge: | [x] Yes / [ ] No | Pressure: U: 1868 / L: ____ psig<br>Gauge Range: Santa ____ psig | Gauge Owner: | [ ] EPA / [x] Operator |
| Annulus Gauge: | [x] Yes / [ ] No | Pressure: 0 psig<br>Gauge Range: pencil gauge psig | Gauge Owner: | [ ] EPA / [ ] Operator |
| Bradenhead Gauge: | [ ] Yes / [ ] No | Pressure: ____ psig<br>Gauge Range: ____ psig | Gauge Owner: | [ ] EPA / [ ] Operator |
| Pump Gauge: | [ ] Yes / [ ] No | Pressure: ____ psig<br>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 DB

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

| TAB | GREEN | BLUE | CBI |
|---|---|---|---|
| | | ✓ | |

# Inspection Report For Well: UT20736 - 04635 (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<br>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

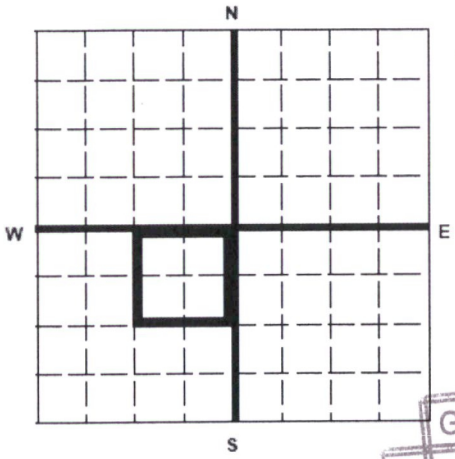
United States Environmental Protection Agency
Washington, DC 20460

# 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 | UT2736-04635 |

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

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

Surface Location 1999 ft. frm (N/S) S Line of quarter section
and 1739 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

U2 Entered
Date 3/29/17
Initial DB

Lease Name Ute Indian Tribe Well Number UTE TRIBAL 04-11

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 | 1806 | 1868 | 964 | | 0 | 0 |
| February | 16 | 1805 | 1834 | 983 | | 0 | 0 |
| March | 16 | 1840 | 1863 | 1129 | | 0 | 0 |
| April | 16 | 1819 | 1849 | 1176 | | 0 | 0 |
| May | 16 | 1837 | 1859 | 1320 | | 0 | 0 |
| June | 16 | 1831 | 1856 | 1219 | | 0 | 0 |
| July | 16 | 1820 | 1849 | 1247 | | 0 | 0 |
| August | 16 | 1842 | 1853 | 1336 | | 0 | 0 |
| September | 16 | 1811 | 1848 | 1281 | | 0 | 0 |
| October | 16 | 1846 | 1863 | 1617 | | 0 | 0 |
| November | 16 | 1821 | 1866 | 999 | | 0 | 0 |
| December | 16 | 1826 | 1834 | 853 | | 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 | Ch Stevenson | 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 04-11,DUCHESNE** | Lab Tech: | **Kaitlyn Natelli** |
| Sample Point: | **Well Head** | | |
| Sample Date: | **1/6/2017** | | |
| Sample ID: | **WA-345339** | | |

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

### Sample Specifics

| | |
|---|---|
| Test Date: | 1/25/2017 |
| System Temperature 1 (°F): | 300 |
| System Pressure 1 (psig): | 2000 |
| System Temperature 2 (°F): | 130 |
| System Pressure 2 (psig): | 50 |
| Calculated Density (g/ml): | 1.0009 |
| pH: | 8.00 |
| Calculated TDS (mg/L): | 5316.93 |
| CO2 in Gas (%): | |
| Dissolved $CO_2$ (mg/L)): | 20.00 |
| $H_2S$ 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): | 1772.21 | Chloride (Cl): | 2000.00 |
| Potassium (K): | 13.47 | Sulfate ($SO_4$): | 90.00 |
| Magnesium (Mg): | 16.47 | Bicarbonate ($HCO_3$): | 1366.00 |
| Calcium (Ca): | 30.94 | Carbonate ($CO_3$): | |
| Strontium (Sr): | 2.18 | Hydroxide(HO): | |
| Barium (Ba): | 2.33 | Acetic Acid ($CH_3COO$) | |
| Iron (Fe): | 4.82 | Propionic Acid ($C_2H_5COO$) | |
| Zinc (Zn): | 2.63 | Butanoic Acid ($C_3H_7COO$) | |
| Lead (Pb): | 0.00 | Isobutyric Acid ($(CH_3)_2CHCOO$) | |
| Ammonia $NH_3$: | | Fluoride (F): | |
| Manganese (Mn): | 0.18 | Bromine (Br): | |
| Aluminum (Al): | 0.17 | Silica ($SiO_2$): | 15.70 |
| Lithium (Li): | 2.64 | Calcium Carbonate ($CaCO_3$): | |
| Boron (B): | 2.64 | Phosphates ($PO_4$): | 4.72 |
| Silicon (Si): | 7.34 | 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 | 1.04 | 21.70 | 0.85 | 1.19 | 0.00 | 0.00 | 2.32 | 3.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 149.00 | 267.00 | 1.11 | 22.43 | 0.76 | 1.14 | 0.00 | 0.00 | 2.43 | 3.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 168.00 | 483.00 | 1.21 | 23.41 | 0.68 | 1.10 | 0.00 | 0.00 | 2.55 | 3.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 187.00 | 700.00 | 1.32 | 24.27 | 0.63 | 1.06 | 0.00 | 0.00 | 2.67 | 3.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 206.00 | 917.00 | 1.44 | 24.98 | 0.59 | 1.03 | 0.00 | 0.00 | 2.79 | 3.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 224.00 | 1133.00 | 1.56 | 25.54 | 0.57 | 1.01 | 0.00 | 0.00 | 2.89 | 3.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 243.00 | 1350.00 | 1.69 | 25.98 | 0.56 | 1.01 | 0.00 | 0.00 | 3.00 | 3.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 262.00 | 1567.00 | 1.82 | 26.30 | 0.57 | 1.01 | 0.00 | 0.00 | 3.09 | 3.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 281.00 | 1783.00 | 1.96 | 26.53 | 0.58 | 1.02 | 0.00 | 0.00 | 3.18 | 3.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 2000.00 | 2.09 | 26.70 | 0.60 | 1.03 | 0.00 | 0.00 | 3.26 | 3.50 | 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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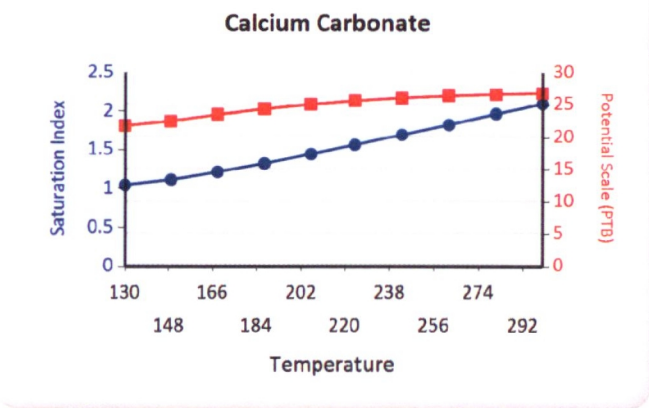
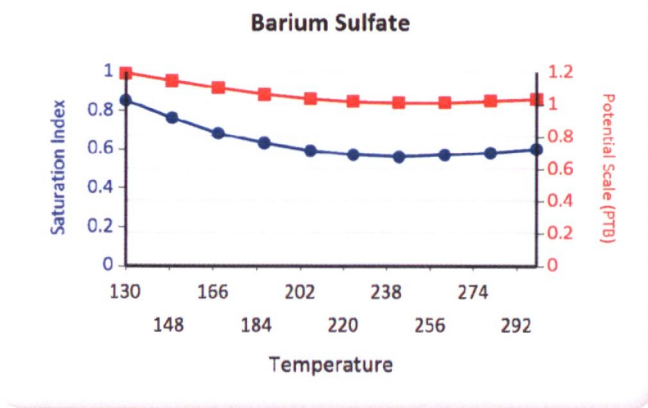
## Water Analysis Report

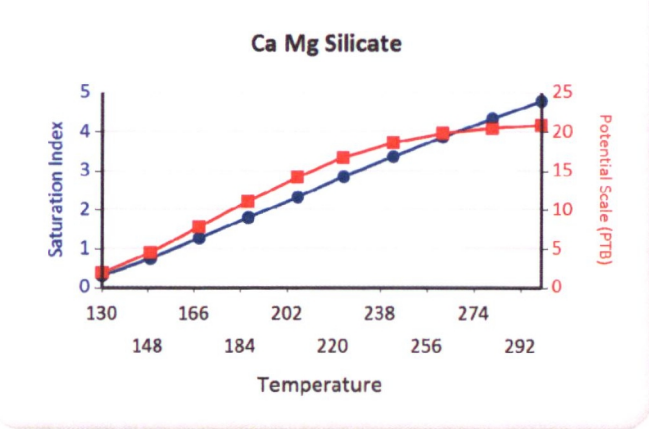
| | | Hemihydrate CaSO4~0.5H2O | | Anhydrate CaSO4 | | Calcium Fluoride | | Zinc Carbonate | | Lead Sulfide | | Mg Silicate | | Ca Mg Silicate | | Fe Silicate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp (°F) | PSI | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB |
| 130.00 | 50.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.74 | 1.74 | 0.00 | 0.00 | 1.45 | 7.35 | 0.30 | 1.88 | 7.80 | 3.73 |
| 149.00 | 267.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.95 | 1.75 | 0.00 | 0.00 | 2.24 | 11.46 | 0.74 | 4.45 | 8.31 | 3.74 |
| 168.00 | 483.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.17 | 1.76 | 0.00 | 0.00 | 3.16 | 16.48 | 1.27 | 7.76 | 8.98 | 3.74 |
| 187.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.38 | 1.76 | 0.00 | 0.00 | 4.08 | 21.15 | 1.80 | 11.09 | 9.66 | 3.75 |
| 206.00 | 917.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.56 | 1.76 | 0.00 | 0.00 | 4.97 | 25.10 | 2.33 | 14.15 | 10.34 | 3.75 |
| 224.00 | 1133.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.73 | 1.77 | 0.00 | 0.00 | 5.85 | 28.12 | 2.85 | 16.69 | 11.01 | 3.75 |
| 243.00 | 1350.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.88 | 1.77 | 0.00 | 0.00 | 6.70 | 30.19 | 3.36 | 18.55 | 11.68 | 3.75 |
| 262.00 | 1567.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.01 | 1.77 | 0.00 | 0.00 | 7.52 | 31.46 | 3.86 | 19.74 | 12.33 | 3.75 |
| 281.00 | 1783.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.13 | 1.77 | 0.00 | 0.00 | 8.31 | 32.17 | 4.33 | 20.43 | 12.96 | 3.75 |
| 300.00 | 2000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.23 | 1.77 | 0.00 | 0.00 | 9.06 | 32.54 | 4.78 | 20.81 | 13.56 | 3.75 |

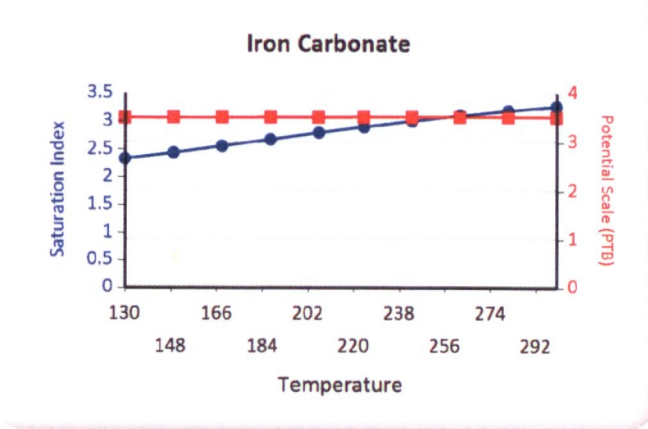
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

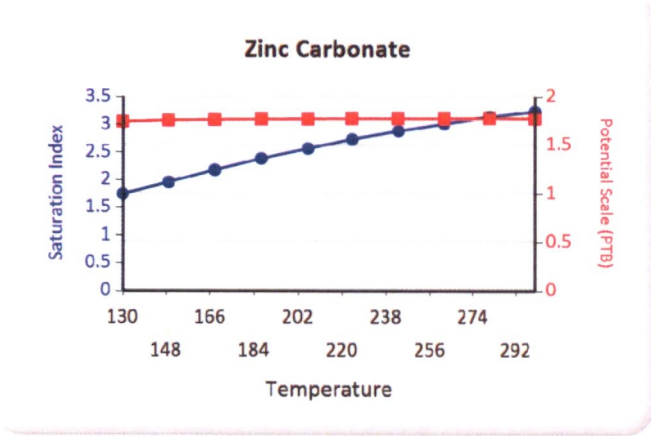
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

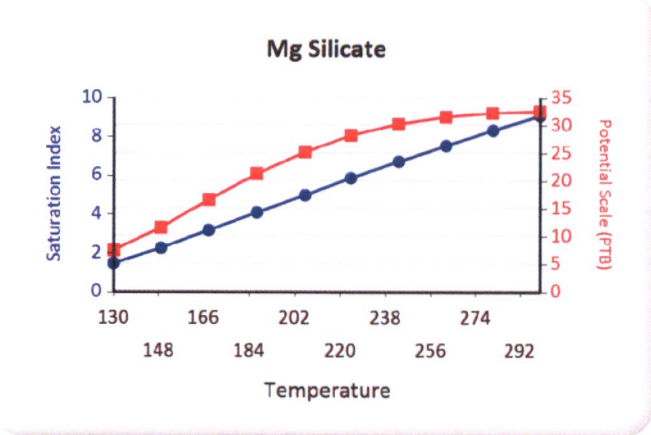


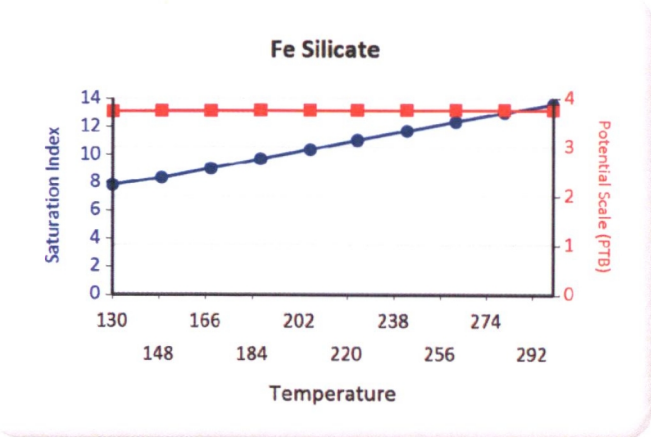




Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
3.5
3
2.5
2
1.5
1
0.5
0
2
1.5
1
0.5
0
130
148
166
184
202
220
238
256
274
292


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
10
8
6
4
2
0
35
30
25
20
15
10
5
0
130
148
166
184
202
220
238
256
274
292


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
14
12
10
8
6
4
2
0
4
3
2
1
0
130
148
166
184
202
220
238
256
274
292

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

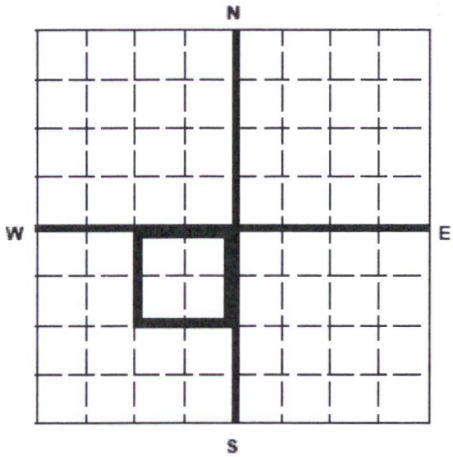
United States Environmental Protection Agency
Washington, DC 20460

# 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~~ 04635 |

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

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

Surface Location 1999 ft. frm (N/S) S Line of quarter section
and 1739 ft. from (E/W) W Line of quarter section

U2 Entered
Date 2/29/16
Initial DJ

**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 04-11

| 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 | 1692 | 1771 | 822 | | 0 | 0 |
| February | 15 | 1834 | 1859 | 1490 | | 0 | 0 |
| March | 15 | 1826 | 1855 | 1548 | | 0 | 0 |
| April | 15 | 1809 | 1832 | 1400 | | 0 | 0 |
| May | 15 | 1846 | 1855 | 1444 | | 0 | 0 |
| June | 15 | 1831 | 1861 | 1369 | | 0 | 0 |
| July | 15 | 1836 | 1857 | 1534 | | 0 | 0 |
| August | 15 | 1773 | 1862 | 1509 | | 0 | 0 |
| September | 15 | 1826 | 1844 | 1592 | | 0 | 0 |
| October | 15 | 1833 | 1833 | 1626 | | 0 | 0 |
| November | 15 | 1855 | 1868 | 1481 | | 0 | 0 |
| December | 15 | 1838 | 1862 | 1335 | | 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)

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 04-11,DUCHESNE** | Lab Tech: | **Michele Pike** |
| Sample Point: | **Well Head** | | |
| Sample Date: | **1/6/2016** | | |
| Sample ID: | **WA-327679** | | |

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

### Sample Specifics

| | |
|---|---|
| Test Date: | 1/13/2016 |
| System Temperature 1 (°F): | 60 |
| System Pressure 1 (psig): | 2000 |
| System Temperature 2 (°F): | 180 |
| System Pressure 2 (psig): | 50 |
| Calculated Density (g/ml): | 1.0110 |
| pH: | 8.50 |
| Calculated TDS (mg/L): | 19901.67 |
| CO2 in Gas (%): | |
| Dissolved $CO_2$ (mg/L)): | 0.00 |
| $H_2S$ 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): | 7310.95 | Chloride (Cl): | 10000.00 |
| Potassium (K): | 38.30 | Sulfate ($SO_4$): | 4.00 |
| Magnesium (Mg): | 10.00 | Bicarbonate ($HCO_3$): | 2440.00 |
| Calcium (Ca): | 31.28 | Carbonate ($CO_3$): | |
| Strontium (Sr): | 5.27 | Acetic Acid ($CH_3COO$) | |
| Barium (Ba): | 29.85 | Propionic Acid ($C_2H_5COO$) | |
| Iron (Fe): | 4.87 | Butanoic Acid ($C_3H_7COO$) | |
| Zinc (Zn): | 1.05 | Isobutyric Acid ($(CH_3)_2CHCOO$) | |
| Lead (Pb): | 0.24 | Fluoride (F): | |
| Ammonia $NH_3$: | | Bromine (Br): | |
| Manganese (Mn): | 0.00 | Silica ($SiO_2$): | 25.86 |
| Aluminum (Al): | 0.05 | Calcium Carbonate ($CaCO_3$): | |
| Lithium (Li): | 1.96 | Phosphates ($PO_4$): | 6.27 |
| Boron (B): | 5.13 | Oxygen ($O_2$): | |
| Silicon (Si): | 12.09 | | |

**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 | 1.66 | 26.54 | 0.00 | 0.00 | 0.00 | 0.00 | 2.98 | 3.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 167.00 | 267.00 | 1.59 | 26.36 | 0.00 | 0.00 | 0.00 | 0.00 | 2.89 | 3.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 153.00 | 483.00 | 1.52 | 26.20 | 0.00 | 0.00 | 0.00 | 0.00 | 2.81 | 3.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 140.00 | 700.00 | 1.47 | 26.02 | 0.02 | 0.14 | 0.00 | 0.00 | 2.73 | 3.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 127.00 | 917.00 | 1.41 | 25.84 | 0.08 | 0.49 | 0.00 | 0.00 | 2.65 | 3.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 113.00 | 1133.00 | 1.36 | 25.65 | 0.15 | 0.86 | 0.00 | 0.00 | 2.56 | 3.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 1350.00 | 1.32 | 25.45 | 0.23 | 1.25 | 0.00 | 0.00 | 2.48 | 3.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 87.00 | 1567.00 | 1.27 | 25.25 | 0.33 | 1.63 | 0.00 | 0.00 | 2.39 | 3.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 73.00 | 1783.00 | 1.24 | 25.05 | 0.44 | 2.00 | 0.00 | 0.00 | 2.30 | 3.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 2000.00 | 1.20 | 24.86 | 0.57 | 2.34 | 0.00 | 0.00 | 2.22 | 3.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

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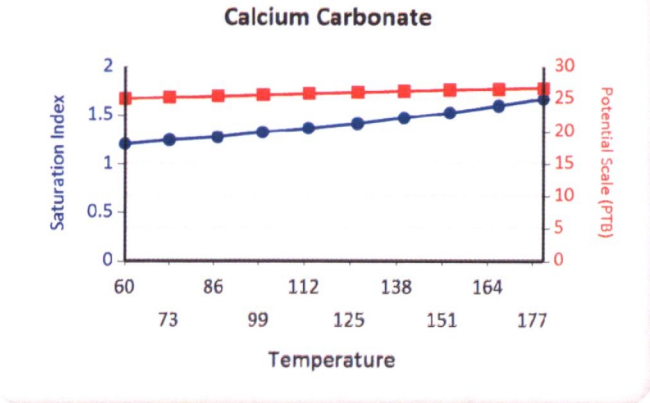
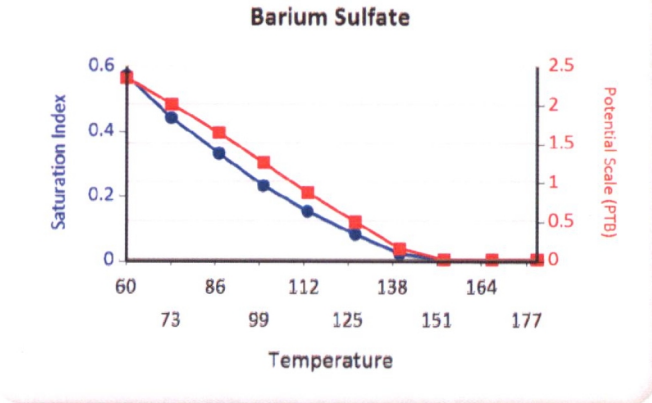
## Water Analysis Report

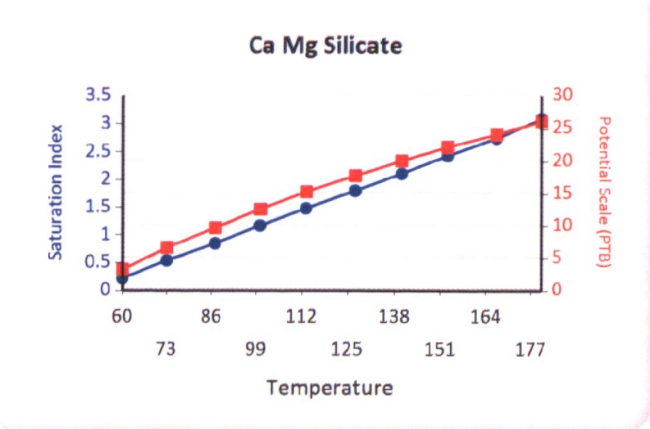
| | | Hemihydrate CaSO4~0.5H2O | | Anhydrate CaSO4 | | Calcium Fluoride | | Zinc Carbonate | | Lead Sulfide | | Mg Silicate | | Ca Mg Silicate | | Fe Silicate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp (°F) | PSI | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB | SI | PTB |
| 180.00 | 50.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.13 | 0.70 | 0.00 | 0.00 | 5.43 | 19.34 | 3.07 | 25.95 | 11.61 | 3.79 |
| 167.00 | 267.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.70 | 0.00 | 0.00 | 4.84 | 18.93 | 2.73 | 23.91 | 11.19 | 3.79 |
| 153.00 | 483.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.86 | 0.70 | 0.00 | 0.00 | 4.28 | 18.37 | 2.42 | 22.00 | 10.82 | 3.79 |
| 140.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.71 | 0.69 | 0.00 | 0.00 | 3.72 | 17.54 | 2.10 | 19.89 | 10.46 | 3.79 |
| 127.00 | 917.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.55 | 0.69 | 0.00 | 0.00 | 3.16 | 16.37 | 1.79 | 17.60 | 10.10 | 3.79 |
| 113.00 | 1133.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.38 | 0.68 | 0.00 | 0.00 | 2.59 | 14.75 | 1.47 | 15.12 | 9.74 | 3.79 |
| 100.00 | 1350.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.19 | 0.66 | 0.00 | 0.00 | 2.01 | 12.60 | 1.16 | 12.46 | 9.39 | 3.79 |
| 87.00 | 1567.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.63 | 0.00 | 0.00 | 1.43 | 9.86 | 0.84 | 9.58 | 9.04 | 3.78 |
| 73.00 | 1783.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.79 | 0.59 | 0.00 | 0.00 | 0.84 | 6.45 | 0.53 | 6.47 | 8.69 | 3.78 |
| 60.00 | 2000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.57 | 0.52 | 0.00 | 0.00 | 0.23 | 2.31 | 0.21 | 3.08 | 8.35 | 3.78 |

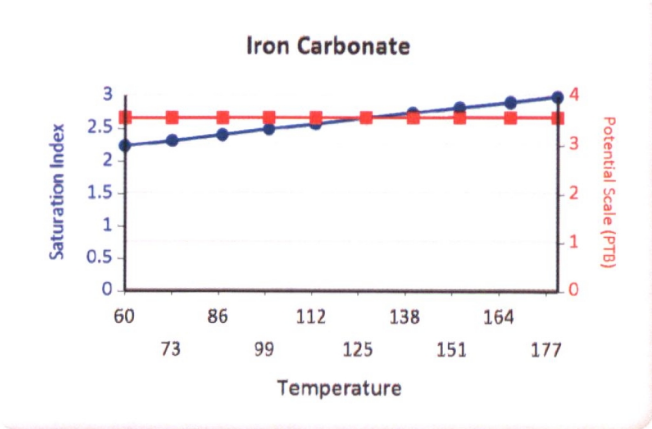
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

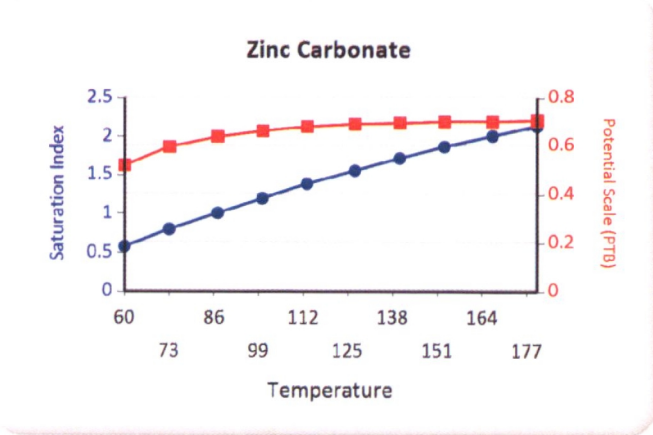
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

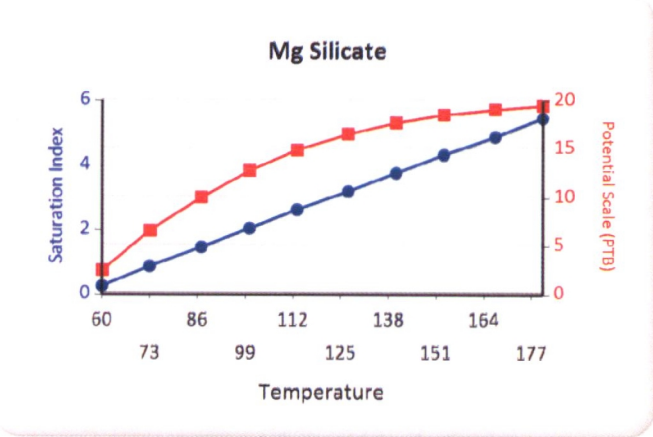


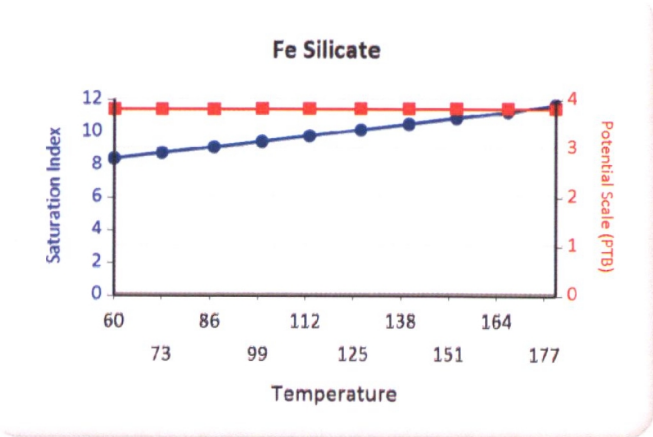




Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
2.5
2
1.5
1
0.5
0
0.8
0.6
0.4
0.2
0
60
86
112
138
164
73
99
125
151
177


Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
6
4
2
0
20
15
10
5
0
60
86
112
138
164
73
99
125
151
177


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
12
10
8
6
4
2
0
4
3
2
1
0
60
86
112
138
164
73
99
125
151
177

PETROGLYPH EXECUTIVE OFFICES

ST-20736-04635
RECEIVED
AUG 29 2016
ECEJ

BLUE / #2

August 8, 2016

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

RE: 5-Year Mechanical Integrity Test
Ute Tribal 04-11

Mr. Wang:

Please find enclosed the 5-year Mechanical Integrity Test for the Ute Tribal 04-11.

If any questions, please reach me at (208) 685-9711.

Best Regards,

Nicole Colby
Manager, Land & Regulatory Compliance

PETROGLYPH OPERATING COMPANY, INC.
960 Broadway Avenue, Suite 500 ▪ P.O. Box 70019 ▪ Boise, Idaho 83707 ▪ (208) 685-7600 ▪ Fax: (208) 685-7605 ▪ www.petroglyphenergy.com

# 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: 9/9/16
Test conducted by: CHAD STEVENSON
Others present: _____

**Well Name:** 04-11 Type: ER SWD **Status: AC TA UC**
Field: ANTELOPE CREEK
Location: 04-11 Sec: ____ T ____ N / S R ____ E / W County: DUCHESNE State: UT
Operator: PETROGLYPH ENERG
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:** 42 **bpd**
**Pre-test annulus pressure:** **psig**

| *MIT DATA TABLE* | *Test #1* | *Test #2* | *Test #3* |
|---|---|---|---|
| ***TUBING*** | | ***PRESSURE RECORD*** | |
| *Initial Pressure* | 1847 psig | psig | psig |
| *End of test pressure* | 1847 psig | psig | psig |
| ***CASING / TUBING ANNULUS*** | | ***PRESSURE RECORD*** | |
| *0 minutes* | 1020 psig | psig | psig |
| *5 minutes* | 1020 psig | psig | psig |
| *10 minutes* | 1020 psig | psig | psig |
| *15 minutes* | 1020 psig | psig | psig |
| *20 minutes* | 1020 psig | psig | psig |
| *25 minutes* | 1020 psig | psig | psig |
| *30 minutes* | 1020 psig | psig | psig |
| 4 HOURS ~~minutes~~ | 1020 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.**

CALIBRATED CHARTS
MW-MP 2000
METER NUMBER
04-11
TIME PUT ON
10:00 AM
DATE PUT ON
8-8-46
TIME TAKEN OFF
2:00 PM
DATE TAKEN OFF
8-8-46
START
Chart
10:00 AM
PST 10-20
STOP
Chart
2:00 PM
PST 10-20
NIGHT
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.
NIGHT
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 A.M.
11 A.M.

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

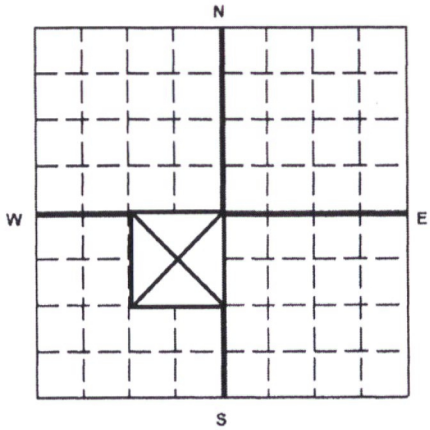
EPA

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<br>P.O. Box 7608<br>Boise, Idaho 83709 | Ute Indian Tribe<br>P.O. Box 70<br>Ft. Duchesne, Utah 84026 |

Locate Well and Outline Unit on Section Plat - 640 Acres




| State | County | Permit Number |
|---|---|---|
| Utah | Duchesne | UT2736-04635 |

Surface Location Description

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

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

Surface Location 1999 ft. frm (N/S) S Line of quarter section and 1739 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 04-11

| | | 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 | 1839 | 1862 | 857 | | 0 | 0 |
| February | 14 | 1863 | 1866 | 797 | | 0 | 0 |
| March | 14 | 1848 | 1853 | 906 | | 0 | 0 |
| April | 14 | 1860 | 1865 | 938 | | 0 | 0 |
| May | 14 | 1856 | 1859 | 940 | | 0 | 0 |
| June | 14 | 1830 | 1865 | 805 | | 0 | 0 |
| July | 14 | 1834 | 1864 | 813 | | 0 | 0 |
| August | 14 | 1848 | 1856 | 972 | | 0 | 0 |
| September | 14 | 1811 | 1852 | 785 | | 0 | 0 |
| October | 14 | 1835 | 1860 | 874 | | 0 | 0 |
| November | 14 | 1830 | 1850 | 1169 | | 0 | 0 |
| December | 14 | 1740 | 1841 | 1029 | | 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 3/20/15
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: | **PETROGLYPH TRIBAL 04-11, DUCHESNE** | Lab Tech: | **Gary Winegar** |
| Sample Point: | **WELLHEAD** | | |
| Sample Date: | **1/7/2015** | | |
| Sample ID: | **WA-298188** | | |

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

| Sample Specifics | |
|---|---|
| Test Date: | 1/21/2015 |
| System Temperature 1 (°F): | 160 |
| System Pressure 1 (psig): | 1300 |
| System Temperature 2 (°F): | 80 |
| System Pressure 2 (psig): | 15 |
| Calculated Density (g/ml): | 0.9994 |
| pH: | 7.40 |
| Calculated TDS (mg/L): | 3150.55 |
| CO2 in Gas (%): | |
| Dissolved $CO_2$ (mg/L)): | 24.00 |
| $H_2S$ in Gas (%): | |
| H2S in Water (mg/L): | |

| Analysis @ Properties in Sample Specifics | | | |
|---|---|---|---|
| *Cations* | *mg/L* | *Anions* | *mg/L* |
| Sodium (Na): | 776.87 | Chloride (Cl): | 1000.00 |
| Potassium (K): | 13.96 | Sulfate ($SO_4$): | 386.00 |
| Magnesium (Mg): | 69.91 | Bicarbonate ($HCO_3$): | 732.00 |
| Calcium (Ca): | 136.28 | Carbonate ($CO_3$): | 0.00 |
| Strontium (Sr): | 4.49 | Acetic Acid ($CH_3COO$) | |
| Barium (Ba): | 0.42 | Propionic Acid ($C_2H_5COO$) | |
| Iron (Fe): | 1.76 | Butanoic Acid ($C_3H_7COO$) | |
| Zinc (Zn): | 0.88 | Isobutyric Acid ($(CH_3)_2CHCOO$) | |
| Lead (Pb): | 0.09 | Fluoride (F): | |
| Ammonia $NH_3$: | | Bromine (Br): | |
| Manganese (Mn): | 0.07 | Silica ($SiO_2$): | 27.82 |

**Notes:**
**B=1.88 Al=0 Li=.62**

(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 | 0.74 | 43.28 | 1.20 | 0.23 | 0.00 | 0.00 | 0.68 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 88.00 | 157.00 | 0.69 | 39.68 | 1.12 | 0.23 | 0.00 | 0.00 | 0.66 | 0.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 97.00 | 300.00 | 0.72 | 41.80 | 1.04 | 0.23 | 0.00 | 0.00 | 0.72 | 1.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 106.00 | 443.00 | 0.76 | 44.07 | 0.97 | 0.22 | 0.00 | 0.00 | 0.79 | 1.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 115.00 | 585.00 | 0.80 | 46.48 | 0.91 | 0.22 | 0.00 | 0.00 | 0.85 | 1.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 124.00 | 728.00 | 0.84 | 49.02 | 0.85 | 0.21 | 0.00 | 0.00 | 0.92 | 1.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 133.00 | 871.00 | 0.88 | 51.68 | 0.80 | 0.21 | 0.00 | 0.00 | 0.98 | 1.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 142.00 | 1014.00 | 0.93 | 54.44 | 0.75 | 0.21 | 0.00 | 0.00 | 1.05 | 1.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 151.00 | 1157.00 | 0.97 | 57.28 | 0.71 | 0.20 | 0.00 | 0.00 | 1.11 | 1.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 160.00 | 1300.00 | 1.02 | 60.19 | 0.68 | 0.20 | 0.00 | 0.00 | 1.18 | 1.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | 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 | 1.10 | 0.73 |
| 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 | 0.90 | 0.63 |
| 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 | 1.22 | 0.78 |
| 106.00 | 443.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.56 | 0.91 |
| 115.00 | 585.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.24 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.92 | 1.02 |
| 124.00 | 728.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.37 | 0.34 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.28 | 1.10 |
| 133.00 | 871.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.49 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.66 | 1.17 |
| 142.00 | 1014.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.45 | 0.00 | 0.00 | 0.42 | 2.98 | 0.00 | 0.00 | 3.04 | 1.22 |
| 151.00 | 1157.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.73 | 0.48 | 0.00 | 0.00 | 0.94 | 6.88 | 0.00 | 0.00 | 3.43 | 1.25 |
| 160.00 | 1300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.84 | 0.50 | 0.00 | 0.00 | 1.47 | 10.95 | 0.12 | 0.91 | 3.83 | 1.29 |

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

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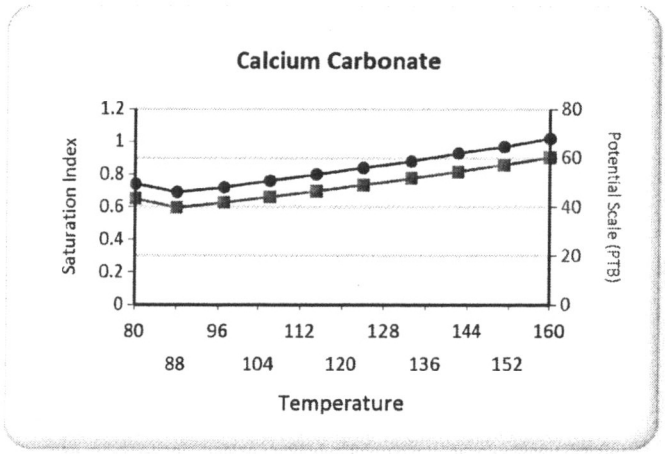
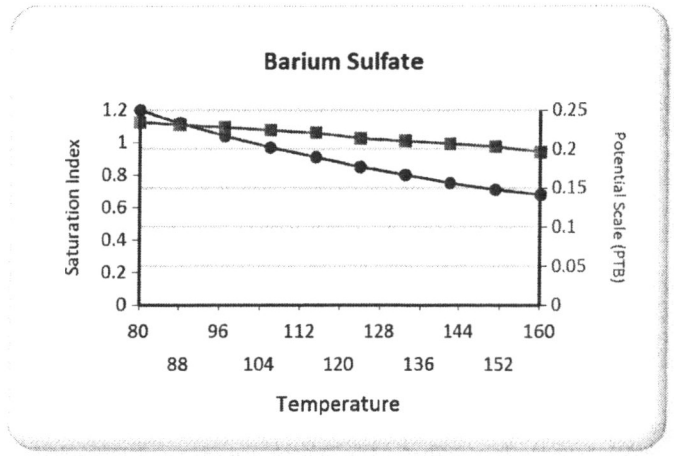
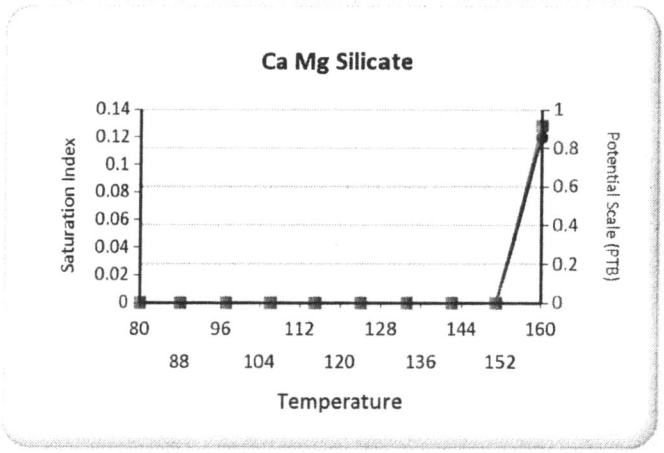
## Water Analysis Report

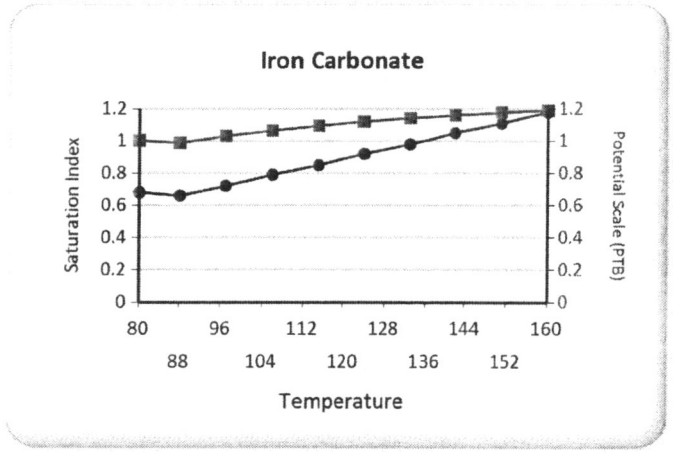
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Fe Silicate

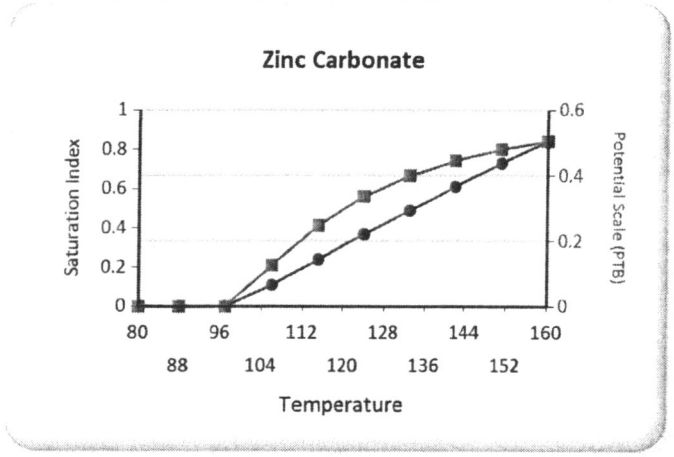
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

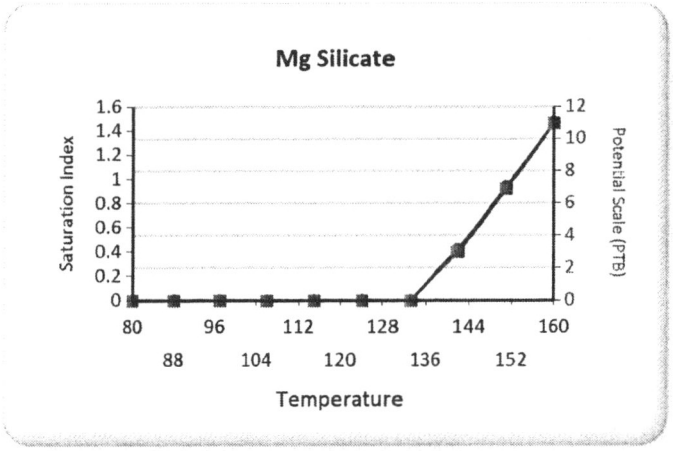


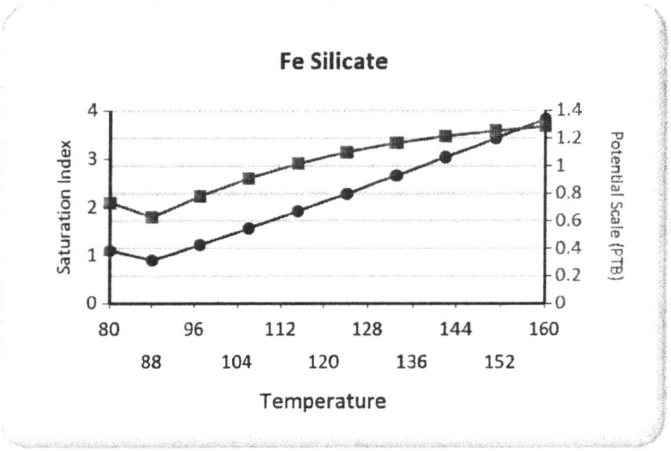




Mg Silicate
Saturation Index
Potential Scale (PTB)
Temperature
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
12
10
8
6
4
2
0
80
88
96
104
112
120
128
136
144
152
160


Fe Silicate
Saturation Index
Potential Scale (PTB)
Temperature
4
3
2
1
0
1.4
1.2
1
0.8
0.6
0.4
0.2
0
80
88
96
104
112
120
128
136
144
152
160

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

EPA

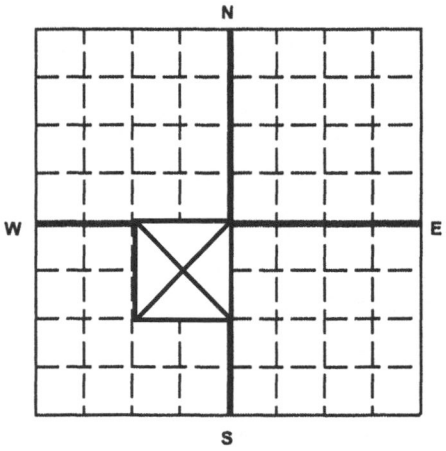
United States Environmental Protection Agency
Washington, DC 20460

# 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 | UT2736-04635 |

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

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

Surface Location 1999 ft. frm (N/S) S Line of quarter section
and 1739 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 04-11

| | | 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 | 1744 | 1764 | 121 | | 0 | 0 |
| February | 13 | 1798 | 1846 | 582 | | 0 | 0 |
| March | 13 | 1795 | 1842 | 753 | | 0 | 0 |
| April | 13 | 1836 | 1843 | 852 | | 0 | 0 |
| May | 13 | 1782 | 1860 | 830 | | 0 | 0 |
| June | 13 | 1821 | 1840 | 779 | | 0 | 0 |
| July | 13 | 1832 | 1858 | 790 | | 0 | 0 |
| August | 13 | 1830 | 1854 | 867 | | 0 | 0 |
| September | 13 | 1809 | 1843 | 933 | | 0 | 0 |
| October | 13 | 1820 | 1843 | 983 | | 0 | 0 |
| November | 13 | 1837 | 1872 | 916 | | 0 | 0 |
| December | 13 | 1845 | 1857 | 896 | | 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 |

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

TAB | YELLOW | BLUE | OBI
~

U2 Entered
Date 3/17/14
Initial DB

**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 ENERGY INC**
Well Name: **UTE TRIBAL 04-11 INJ**
Sample Point: **Wellhead**
Sample Date: **1/8/2014**
Sample ID: **WA-263005**

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): | 1.003 |
| pH: | 8.10 |
| Calculated TDS (mg/L): | 8572.94 |
| 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): | 2965.80 | Chloride (Cl): | 4000.00 |
| Potassium (K): | 31.00 | Sulfate ($SO_4$): | 277.00 |
| Magnesium (Mg): | 39.00 | Bicarbonate ($HCO_3$): | 1146.80 |
| Calcium (Ca): | 84.00 | Carbonate ($CO_3$): | |
| Strontium (Sr): | 4.00 | Acetic Acid ($CH_3COO$) | |
| Barium (Ba): | 2.00 | Propionic Acid ($C_2H_5COO$) | |
| Iron (Fe): | 1.40 | Butanoic Acid ($C_3H_7COO$) | |
| Zinc (Zn): | 0.31 | Isobutyric Acid ($(CH_3)_2CHCOO$) | |
| Lead (Pb): | 0.01 | Fluoride (F): | |
| Ammonia $NH_3$: | | Bromine (Br): | |
| Manganese (Mn): | 0.22 | Silica ($SiO_2$): | 21.40 |

**Notes:**
**B=3 Al=.04 Li=.55**

(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 | 1.21 | 43.69 | 1.65 | 1.16 | 0.00 | 0.00 | 1.18 | 0.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 73.00 | 157.00 | 1.21 | 42.86 | 1.50 | 1.15 | 0.00 | 0.00 | 1.24 | 0.96 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 86.00 | 300.00 | 1.24 | 44.63 | 1.37 | 1.14 | 0.00 | 0.00 | 1.32 | 0.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 443.00 | 1.27 | 46.59 | 1.26 | 1.13 | 0.00 | 0.00 | 1.40 | 0.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 113.00 | 585.00 | 1.31 | 48.69 | 1.16 | 1.11 | 0.00 | 0.00 | 1.48 | 0.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 126.00 | 728.00 | 1.36 | 50.90 | 1.08 | 1.09 | 0.00 | 0.00 | 1.56 | 0.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 140.00 | 871.00 | 1.41 | 53.15 | 1.01 | 1.07 | 0.00 | 0.00 | 1.63 | 0.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 153.00 | 1014.00 | 1.46 | 55.42 | 0.94 | 1.06 | 0.00 | 0.00 | 1.71 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 166.00 | 1157.00 | 1.52 | 57.64 | 0.89 | 1.04 | 0.00 | 0.00 | 1.78 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 180.00 | 1300.00 | 1.58 | 59.77 | 0.85 | 1.02 | 0.00 | 0.00 | 1.85 | 1.00 | 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

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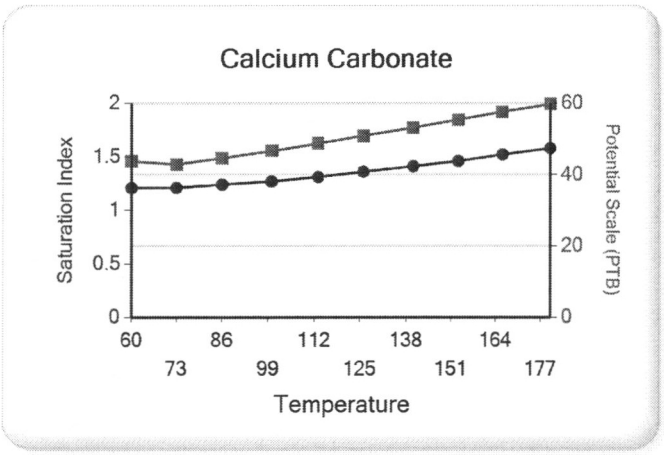
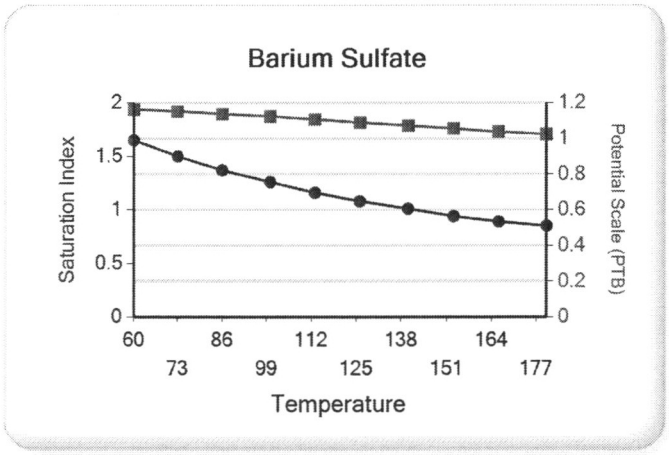
## Water Analysis Report

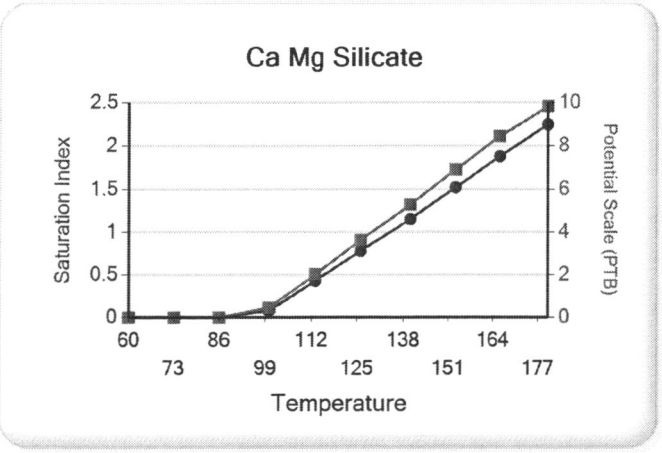
| | | Hemihydrate CaSO4~0.5H2O | | Anhydrate CaSO4 | | Calcium Fluoride | | Zinc Carbonate | | Lead Sulfide | | Mg Silicate | | Ca Mg Silicate | | Fe Silicate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temp (°F) | PSI | SI | PTB | SI | PTB | SI | PTB | SI | PTB | 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 | 1.03 |
| 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 | 4.11 | 1.03 |
| 86.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.02 | 0.00 | 0.00 | 0.34 | 1.49 | 0.00 | 0.00 | 4.46 | 1.04 |
| 100.00 | 443.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.09 | 0.00 | 0.00 | 0.96 | 4.09 | 0.08 | 0.47 | 4.83 | 1.06 |
| 113.00 | 585.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.43 | 0.13 | 0.00 | 0.00 | 1.59 | 6.90 | 0.43 | 2.02 | 5.24 | 1.07 |
| 126.00 | 728.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.15 | 0.00 | 0.00 | 2.22 | 9.94 | 0.78 | 3.62 | 5.66 | 1.07 |
| 140.00 | 871.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.76 | 0.17 | 0.00 | 0.00 | 2.87 | 13.16 | 1.15 | 5.27 | 6.09 | 1.08 |
| 153.00 | 1014.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.91 | 0.18 | 0.00 | 0.00 | 3.51 | 16.42 | 1.52 | 6.90 | 6.54 | 1.08 |
| 166.00 | 1157.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.05 | 0.19 | 0.00 | 0.00 | 4.16 | 19.49 | 1.88 | 8.45 | 6.99 | 1.08 |
| 180.00 | 1300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.19 | 0.20 | 0.00 | 0.00 | 4.79 | 22.05 | 2.25 | 9.82 | 7.45 | 1.09 |

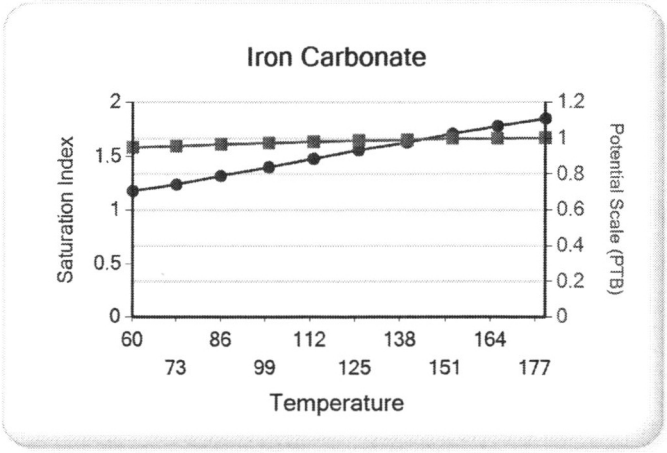
These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Fe Silicate

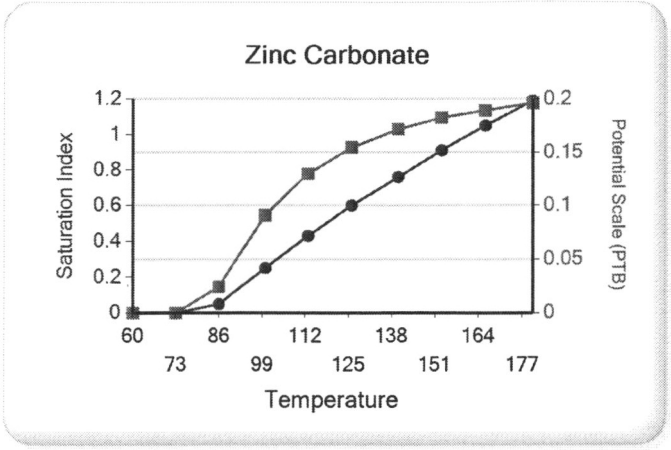
These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Carbonate Zinc Carbonate Mg Silicate Ca Mg Silicate Fe Silicate

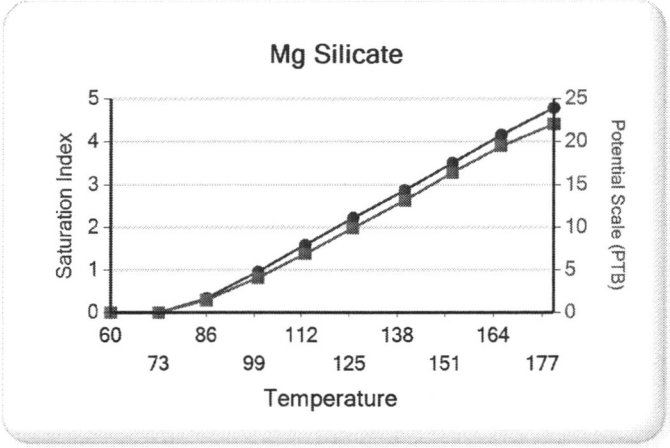


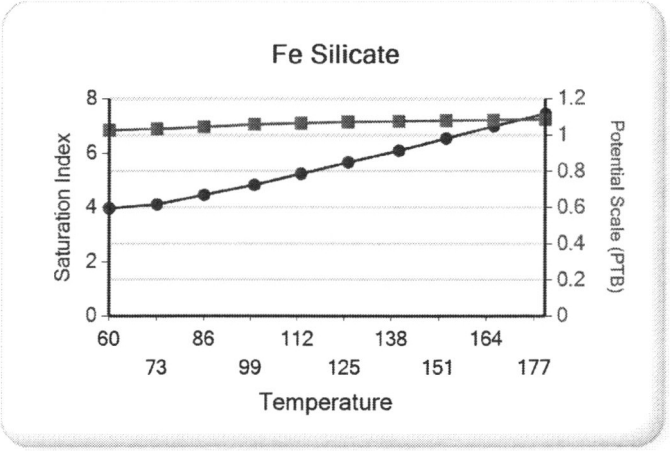




Zinc Carbonate
Saturation Index
Potential Scale (PTB)
Temperature
1.2
1
0.8
0.6
0.4
0.2
0
0.2
0.15
0.1
0.05
0
60
86
112
138
164
73
99
125
151
177


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
1.2
1
0.8
0.6
0.4
0.2
0
60
86
112
138
164
73
99
125
151
177

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

AUG 27 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: AUTHORIZATION TO COMMENCE INJECTION
**Ute Tribal #04-11 (UT04635)**
**Antelope Creek Field**
EPA AREA PERMIT UT2736-00000
Duchesne County, Utah

Dear Mr. Safford:

Thank you for submitting information pertaining to Ute Tribal #04-11 to the Environmental Protection Agency (EPA) Region VIII Ground Water Program. Requirements of UIC Area Permit UT2736-00000 Part II Sections (C)(2) "Prior To Commencing Injection" required submittal of the following information:

1. **Well Rework Record (*EPA Form 7520-12*) with after conversion well schematic;** and

2. the well has successfully completed and passed a Mechanical Integrity Test (MIT), with pressure chart demonstrating **Part I (internal) mechanical integrity;** and

3. a **pore pressure survey has been determined** of the injection zones.

The conversion plan for this production well has been reviewed, and found satisfactory. EPA analysis of the cement bond log (CBL) for this well identified a minimum interval of adequate cement above, within and below the confining zone (3964' to 4100'), pursuant to Region VIII Ground Water Section Guidance No. 34. Therefore, it is determinant that the annulus cement in the Ute Tribal #04-11 provides an effective barrier to upper movement of fluids through vertical channels adjacent to the wellbore.

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All required information has been submitted, and has been reviewed and approved by the EPA. Petroglyph has complied with all pertinent conditions of UIC Area Permit UT2736-00000 Part II Section (C)(2). Therefore, effective upon your receipt of this letter, Administrative approval hereby is granted for injection into the Ute Tribal #04-11 under the conditions of UIC Area Permit UT2736-00000. The Director has determined that the **maximum surface injection pressure for the Ute Tribal #04-11 shall not exceed 1900 psig. per UIC Final Area Permit UT2736-00000, Part II. Section C.5.(b), dated July 12, 1994. Until such time that a step-rate injectivity test (SRT) has been performed and approved by the EPA, the initial maximum surface injection pressure (MSIP) for the Ute Tribal #04-11 shall not exceed 1900 psig.**

Please be reminded that it is the responsibility of the permittee to be aware of, and to comply with, all conditions of the Permit. Effective upon receipt of this letter, EPA administration of this well is transferred to Mr. Al Craver, Compliance Officer in the Office of Enforcement, Compliance, and Environmental Justice Technical Enforcement Program, who is your point of contact for routine compliance matters and reports.

Please send all reporting forms and other required correspondence to Mr. Craver at the address listed below, referencing **EPA WELL ID: UT04635** on all reports and correspondence.

Mr. Al Craver,
Technical Enforcement Program, Mail Code 8ENF-T
U.S. Environmental Protection Agency
999 18th Street, Suite 300
Denver, Colorado, USA, 80202-2466

If you have any questions concerning this authorization or the Permit, please contact Mr. Dan Jackson of my staff at 303.312.6155 or Mr. Craver at 303.312.7821.

Sincerely,

D. Edwin Hogle
Director
Ground Water Program

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

Ms. Elaine Willie, Environmental Coordinator
Ute Indian 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

Mr. Nathan Wiser
8ENF-T

U.S. Postal Service
CERTIFIED MAIL RECEIPT
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| Return Receipt Fee (Endorsement Required) | | |
| Restricted Delivery Fee (Endorsement Required) | | |
| Total Postage & Fees | $ | AUG 27 2001 |

Sent To Mr. Micheal Safford
Operations Coordinator
Street, Apt. No.; or PO Box No. Petroglyph Operating Co., Inc.
City, State, ZIP+4 P.O. BOX 607
Roosevelt, UT 84066

PS Form 3800, January 2001 See Reverse for Instructions