# Federal 18 #1T Remediation System
# 2016 1st Quarter Report

* OCD Email to Operator on pg 2.

**Submitted By:**
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**EHS Coordinator**
**XTO Energy, Inc.**
**505-333-3683**

**Submitted to:**
**Brandon Powell**
**New Mexico Oil Conservation Division**
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**Aztec, New Mexico**
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**April 2016**

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## Smith, Cory, EMNRD

**From:** Smith, Cory, EMNRD
**Sent:** Monday, May 02, 2016 2:05 PM
**To:** Hixon, Logan (Logan_Hixon@xtoenergy.com)
**Cc:** McDaniel, James (James_McDaniel@xtoenergy.com); Powell, Brandon, EMNRD; Fields, Vanessa, EMNRD
**Subject:** 2016 1st Quarter Report Federal 18 #1T API# 30-045-33864 3RP-1034

Mr. Hixon,

The OCD has received XTO submitted 2016 1st Quarter Report for the Federal 18 #1. In response to XTO's request to discontinue gas analysis in water well 1737 due to minimal pressure. Please provide the OCD with a current low pressure Gas analysis of water well 1737 so we may evaluate the constituents prior to approving XTO's request.

If you have any questions please give me a call.

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**Introduction**

The purpose of this report is to summarize the current on-site activities involving venting gas and producing water from a former coal bed methane gas well at the Federal 18 #1T. The casing of this well has been modified to vent gas and purge water from the Ojo Alamo Formation. The setup and initial installation of this system is detailed in a report submitted to Brandon Powell, New Mexico Oil Conservation Division (OCD), in November, 2010. This quarterly report details operations from January 1, 2016 through March 31, 2016.

**History**

The vacuum system at the Federal 18 #1T is being operated as part of an on going effort between the OCD and XTO Energy, Inc. (XTO) to vent gas from the Nacimiento formation just above the Ojo Alamo Formation. Gas was recently found in the Nacimiento formation which could have come from several contributing sources. The Federal 1 #18 (30-045-09466), located in Section 10 of Township 30N, Range 13W and approximately 2,600' to the south-west of water well SJ-01737, was plugged in 1988 by Southern Union Oil Company. This well only had an initial surface casing of 200' when it was drilled in 1959. Section 18 also has one (1) additional well plugged by XTO Energy, Inc. in 2010. Section 19 of Township 30N, Range 12W has two (2) historically plugged wells. Approximately 4,400' to the south of water well SJ-01737, the Dansby #2 (30-045-09402) was plugged by Don Trader, Inc. in 1954 with a total depth of 1980' and a surface casing of only 100', and the second was a well plugged by Amoco Production in 1988. There are also three (3) additional wells plugged by Texacoma in 1997 in Section 19. There are additionally numerous oil and gas wells being operated by local exploration and production companies in the area. In Section 18, there are three (3) wells being operated by XTO Energy, Inc., and two (2) wells being operated by ConocoPhillips as Burlington Resources. In Section 19, there are nine (9) wells being operated by XTO Energy, Inc. In Section 7, there are seven (7) wells being operated by XTO Energy, Inc, and four (4) wells being operated by Robert L Bayless Producers, LLC. Furthermore, there is naturally occurring gas in the formation according to statements from local water well drillers, and a casing leak was discovered at the New Mexico Federal N #3E well site, (located in Unit D, Section 18, Township 30N, Range 12W, San Juan County, New Mexico). This leak was identified as a result of discovery of gas in a local water well (SJ 1737) in April, 2010. Bradenhead pressures were observed at several XTO wells in the area. The New Mexico Federal N #3E, the New Mexico Federal N #3F and the New Mexico Federal N #3 all had bradenhead pressure tests performed. The bradenhead pressure from the New Mexico Federal N #3E was 17 psi, indicating a leak in the casing. The casing leak was repaired, and the New Mexico Federal N #3E was put back into operation. In agreement with the OCD, a nearby gas well scheduled to be plugged, Federal 18 #1T, was modified to act as a venting well by setting a plug at approximately 513 feet. Perforations were made in the casing at 437 feet and 457 feet in order to assess the groundwater and vent gas from the Nacimiento.

On September 24, 2010, a swab rig was used to determine if the well would produce water using the perforations. The swab rig recovered approximately 2 barrels of water, indicating that the perforations would produce water. A sample collected during the swab returned results above

Water Quality Control Commission (WQCC) standards for benzene, total xylenes, and total chlorides; see attached ***Federal 18 #1T Water Results Table***. Due to the low pH and high chlorides, it was inferred that the acid used to dissolve cement during perforation activities may have infiltrated the aquifer, causing the increased levels shown in the sampling results. XTO recommended pumping the aquifer until sampling results were below the WQCC standards for BTEX and chlorides.

A pump was installed in the Federal 18 #1T on November 9, 2010 at approximately 485 feet. During the pump installation, the water level was checked using a Keck ET Long water level indicator. The static water level was found to be approximately 402.20 feet. The pump was initially set to operate four (4) times a day for 15 minutes, purging approximately 260 gallons per day. During swab and pump installation activities, no gas was found flowing from the well.

On November 11, 2010, a small vacuum pump was installed at the Federal 18 #1T to determine if gas could be vented. The discharge from the vacuum was checked using a MSA 4-Gas Monitor, which confirmed that methane was being vented from the vacuum pump discharge. The vacuum pump operates at a discharge rate of three (3) standard cubic feet per minute (scfm), which is equivalent to approximately six (6) actual cubic feet per minute (acfm) based on elevation. This volume was calculated using the conversion factors provided by the vacuum pump manufacturer, Becker. The vacuum pump initially held a vacuum of approximately -12 inches of mercury on the casing of the Federal 18 #1T during operation. Both the vacuum pump and the water pump were powered by a portable generator placed on-site.

The water pump was plumbed into the existing water lines on site, so that all water would pump into the 210 barrel water tank left on-site from production activities. Water piping above ground was wrapped with heat trace and insulation to prevent freezing.

The system was electrified on February 3, 2011 to prevent down time due to generator maintenance issues.

**1st Quarter Activities**

During the 1st quarter of 2016, the system ran continuously with no down time. As of March 25, 2016, approximately 16,529.6 cubic feet (MCF) of gas has been vented from the Federal 18 #1T casing, with the system venting approximately 60.4 MCF per week during operation, while maintaining an average casing pressure of -10 inches of mercury on the Federal 18 #1T casing.

A total of 650,850 gallons of water have been removed from the Federal 18 #1T as of March 28, 2016. The attached ***Federal 18 #1T Water Results Table*** shows that that benzene concentrations have rebounded in the first quarter with one (1) sampling event (March 28, 2016) returning results above the WQCC standard at 38 ppb. Chloride levels have remained constant through the quarter, remaining steady at 21.6 ppm. pH values remained constant in the quarter, returning results of 6.86. TDS continues to be above WQCC standards at 2230 ppm, but background levels (1,400 ppm) in water well SJ 1737 are historically above WQCC standards as well.

The pressure at well SJ 1737 was checked over the course of the quarter. The pressure was checked by shutting in the casing for a minimum of one week prior to reading the pressure gauge. The pressure readings and average barometric pressures are outlined in the attached ***Well SJ 1731 Casing Pressures Table***. The pressure did not seem to show a correlation to the barometric pressure or temperature, and remained fairly constant over the course of the quarter. The casing pressure in the water well SJ 1737 has shown an overall decrease from 9 oz in January of 2011 to 2.5 oz. in March 2016. An overall decreasing trend has existed in the water well casing since 2011.

**Recommendations**

Groundwater samples will continue to be collected quarterly to monitor the benzene concentration in this well. Chlorides, pH, TDS and EC remained constant over the fourth quarter, and are very close to the background levels obtained in water well 1737. XTO proposes the continued operation of the vacuum pump and water pump at the Federal 18 #1T, Groundwater samples will continue to be collected on a quarterly basis until benzene levels remain below the WQCC standards for four (4) consecutive quarters. An alternative sampling schedule may be recommended at that time.

XTO proposes to discontinue gas analysis in water well 1737 due to the minimal pressure that appears on the casing. XTO will continue to monitor the pressure on the casing at water well 1737.

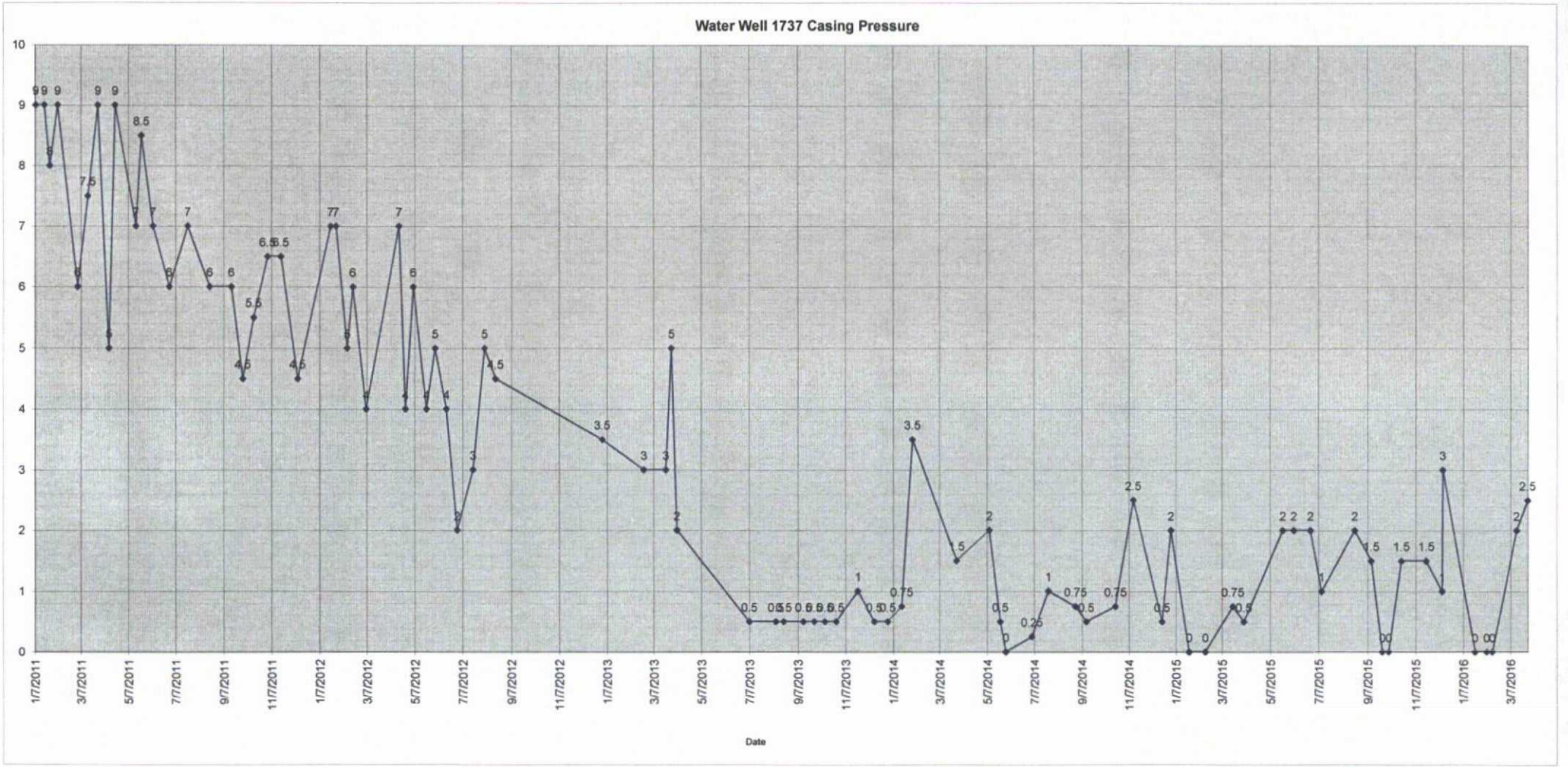
Logan Hixon
EHS Coordinator
XTO Energy, Inc.
Western Division

## Well SJ 1737 Casing Pressures

| Date | Casing Pressure (oz) | Average |
|---|---|---|
| 1/7/2011 | 9 | 0.818 |
| 1/18/2011 | 9 | 0.818 |
| 1/25/2011 | 8 | 1.143 |
| 2/4/2011 | 9 | 0.900 |
| 3/2/2011 | 6 | 0.231 |
| 3/15/2011 | 7.5 | 0.577 |
| 3/28/2011 | 9 | 0.692 |
| 4/11/2011 | 5 | 0.357 |
| 4/19/2011 | 9 | 1.125 |
| 5/16/2011 | 7 | 0.259 |
| 5/23/2011 | 8.5 | 1.214 |
| 6/7/2011 | 7 | 0.467 |
| 6/28/2011 | 6 | 0.286 |
| 7/22/2011 | 7 | 0.292 |
| 8/19/2011 | 6 | 0.214 |
| 9/16/2011 | 6 | 0.214 |
| 9/30/2011 | 4.5 | 0.321 |
| 10/14/2011 | 5.5 | 0.393 |
| 11/1/2011 | 6.5 | 0.361 |
| 11/18/2011 | 6.5 | 0.382 |
| 12/9/2011 | 4.5 | 0.214 |
| 1/20/2012 | 7 | 0.167 |
| 1/27/2012 | 7 | 1.000 |
| 2/10/2012 | 5 | 0.357 |
| 2/17/2012 | 6 | 0.857 |
| 3/5/2012 | 4 | 0.235 |
| 4/16/2012 | 7 | 0.167 |
| 4/24/2012 | 4 | 0.500 |
| 5/4/2012 | 6 | 0.600 |
| 5/21/2012 | 4 | 0.235 |
| 6/1/2012 | 5 | 0.455 |
| 6/15/2012 | 4 | 0.286 |
| 6/29/2012 | 2 | 0.143 |
| 7/19/2012 | 3 | 0.150 |
| 8/3/2012 | 5 | 0.333 |
| 8/17/2012 | 4.5 | 0.321 |
| 12/31/2012 | 3.5 | 0.026 |
| 2/22/2013 | 3 | 0.057 |
| 3/22/2013 | 3 | 0.107 |
| 3/29/2013 | 5 | 0.714 |
| 4/5/2013 | 2 | 0.286 |
| 7/6/2013 | 0.5 | 0.005 |
| 8/9/2013 | 0.5 | 0.015 |
| 8/19/2013 | 0.5 | 0.050 |
| 9/13/2013 | 0.5 | 0.020 |
| 9/27/2013 | 0.5 | 0.036 |
| 10/11/2013 | 0.5 | 0.036 |
| 10/25/2013 | 0.5 | 0.036 |
| 11/22/2013 | 1 | 0.036 |
| 12/13/2013 | 0.5 | 0.024 |

## Well SJ 1737 Casing Pressures

| | | |
|---|---|---|
| 12/30/2013 | 0.5 | 0.029 |
| 1/17/2014 | 0.75 | 0.042 |
| 1/31/2014 | 3.5 | 0.250 |
| 3/28/2014 | 1.5 | 0.027 |
| 5/9/2014 | 2 | 0.048 |
| 5/23/2014 | 0.5 | 0.036 |
| 5/30/2014 | 0 | 0.000 |
| 7/3/2014 | 0.25 | 0.007 |
| 7/25/2014 | 1 | 0.045 |
| 8/29/2014 | 0.75 | 0.021 |
| 9/12/2014 | 0.5 | 0.036 |
| 10/3/2015 | 0 | 0.000 |
| 10/20/2014 | 0.75 | -0.002 |
| 11/12/2014 | 2.5 | 0.109 |
| 12/19/2014 | 0.5 | 0.014 |
| 12/31/2014 | 2 | 0.167 |
| 1/23/2015 | 0 | 0.000 |
| 2/13/2015 | 0 | 0.000 |
| 3/20/2015 | 0.75 | 0.021 |
| 4/3/2015 | 0.5 | 0.036 |
| 5/22/2015 | 2 | 0.041 |
| 6/5/2015 | 2 | 0.143 |
| 6/26/2015 | 2 | 0.095 |
| 7/10/2015 | 1 | 0.071 |
| 8/21/2015 | 2 | 0.048 |
| 9/11/2015 | 1.5 | 0.071 |
| 9/25/2015 | 0 | 0.000 |
| 10/19/2015 | 1.5 | 0.063 |
| 11/20/2015 | 1.5 | 0.047 |
| 12/10/2015 | 1 | 0.050 |
| 12/11/2015 | 3 | 3.000 |
| 1/21/2016 | 0 | 0.000 |
| 2/5/2016 | 0 | 0.000 |
| 2/12/2016 | 0 | 0.000 |
| 3/14/2016 | 2 | 0.065 |
| 3/28/2016 | 2.5 | 0.179 |


Water Well 1737 Casing Pressure
Date

# Federal 18 #1T Gas Vented

| Date | SCFM | ACFM | Gas Vented Total (MCF) |
|---|---|---|---|
| 11/24/2010 | 5 | 10 | 14.4 |
| 12/2/2010 | 3 | 6 | 89.13 |
| 12/3/2010 | 3 | 6 | 97.73 |
| 12/7/2010 | 3 | 6 | 123.53 |
| 12/9/2010 | 5 | 10 | 152.33 |
| 12/10/2010 | 3 | 6 | 160.93 |
| 12/13/2010 | 3 | 6 | 178.13 |
| 12/16/2011 | 4 | 8 | 212.69 |
| 12/17/2011 | 3.5 | 7 | 222.77 |
| 12/20/2011 | 3 | 6 | 248.57 |
| | | | |

Irratic readings due to freezing temperature and down time due to generator failures

| | | | |
|---|---|---|---|
| 2/9/2011 | NA | NA | 540.6 |
| 2/17/2011 | 3 | 6 | 601 |
| 2/24/2011 | 3 | 6 | 661.4 |
| 3/3/2011 | 3 | 6 | 721.8 |
| 3/10/2011 | 3 | 6 | 782.2 |
| 3/17/2011 | 3 | 6 | 842.6 |
| 3/24/2011 | 3 | 6 | 903 |
| 3/31/2011 | 3 | 6 | 963.4 |
| 4/7/2011 | 3 | 6 | 1023.8 |
| 4/14/2011 | 3 | 6 | 1084.2 |
| 4/21/2011 | 3 | 6 | 1144.6 |
| 4/28/2011 | 3 | 6 | 1205 |
| 5/5/2011 | 3 | 6 | 1265.4 |
| 5/12/2011 | 3 | 6 | 1325.8 |
| 5/19/2011 | 3 | 6 | 1386.2 |
| 5/26/2011 | 3 | 6 | 1446.6 |
| 6/2/2011 | 3 | 6 | 1507 |
| 6/9/2011 | 3 | 6 | 1567.4 |
| 6/16/2011 | 3 | 6 | 1627.8 |
| 6/23/2011 | 3 | 6 | 1688.2 |
| 6/30/2011 | 3 | 6 | 1748.6 |
| 7/7/2011 | 3 | 6 | 1792 |
| 7/14/2011 | 3 | 6 | 1852.4 |
| 7/21/2011 | 3 | 6 | 1912.8 |
| 7/28/2011 | 3 | 6 | 1973.2 |
| 8/5/2011 | 3 | 6 | 2033.6 |
| 8/12/2011 | 3 | 6 | 2094 |
| 8/19/2011 | 3 | 6 | 2154.4 |
| 8/26/2011 | 3 | 6 | 2214.8 |
| 9/2/2011 | 3 | 6 | 2275.2 |
| 9/9/2011 | 3 | 6 | 2335.6 |
| 9/16/2011 | 3 | 6 | 2396 |
| 9/23/2011 | 3 | 6 | 2456.4 |
| 9/30/2011 | 3 | 6 | 2516.8 |
| 10/7/2011 | 3 | 6 | 2577.2 |
| 10/14/2011 | 3 | 6 | 2637.6 |
| 10/21/2011 | 3 | 6 | 2698 |

# Federal 18 #1T Gas Vented

| Date | SCFM | ACFM | Gas Vented Total (MCF) |
|---|---|---|---|
| 10/28/2011 | 3 | 6 | 2758.4 |
| 11/4/2011 | 3 | 6 | 2818.8 |
| 11/11/2011 | 3 | 6 | 2879.2 |
| 11/18/2011 | 3 | 6 | 2939.6 |
| 11/25/2011 | 3 | 6 | 3000 |
| 12/2/2011 | 3 | 6 | 3060.4 |
| 12/9/2011 | 3 | 6 | 3120.8 |
| 12/16/2011 | 3 | 6 | 3181.2 |
| 12/23/2011 | 3 | 6 | 3241.6 |
| 12/30/2011 | 3 | 6 | 3302 |
| 1/6/2012 | 3 | 6 | 3362.4 |
| 1/13/2012 | 3 | 6 | 3422.8 |
| 1/20/2012 | 3 | 6 | 3483.2 |
| 1/27/2012 | 3 | 6 | 3543.6 |
| 2/3/2012 | 3 | 6 | 3604 |
| 2/10/2012 | 3 | 6 | 3664.4 |
| 2/17/2012 | 3 | 6 | 3724.8 |
| 2/24/2012 | 3 | 6 | 3785.2 |
| 3/2/2012 | 3 | 6 | 3845.6 |
| 3/9/2012 | 3 | 6 | 3906 |
| 3/16/2012 | 3 | 6 | 3966.4 |
| 3/23/2012 | 3 | 6 | 4026.8 |
| 3/30/2012 | 3 | 6 | 4087.2 |
| 4/6/2012 | 3 | 6 | 4147.6 |
| 4/13/2012 | 3 | 6 | 4208 |
| 4/20/2012 | 3 | 6 | 4268.4 |
| 4/27/2012 | 3 | 6 | 4328.8 |
| 5/4/2012 | 3 | 6 | 4389.2 |
| 5/11/2012 | 3 | 6 | 4449.6 |
| 5/18/2012 | 3 | 6 | 4510 |
| 5/25/2012 | 3 | 6 | 4570.4 |
| 6/1/2012 | 3 | 6 | 4630.8 |
| 6/8/2012 | 3 | 6 | 4691.2 |
| 6/15/2012 | 3 | 6 | 4751.6 |
| 6/22/2012 | 3 | 6 | 4812 |
| 6/29/2012 | 3 | 6 | 4872.4 |
| 7/6/2012 | 3 | 6 | 4932.8 |
| 7/13/2012 | 3 | 6 | 4993.2 |
| 7/20/2012 | 3 | 6 | 5053.6 |
| 7/27/2012 | 3 | 6 | 5114 |
| 8/3/2012 | 3 | 6 | 5174.4 |
| 8/10/2012 | 3 | 6 | 5234.8 |
| 8/17/2012 | 3 | 6 | 5295.2 |
| 8/24/2012 | 3 | 6 | 5355.6 |
| 8/31/2012 | 3 | 6 | 5416 |
| 9/7/2012 | 3 | 6 | 5476.4 |
| 9/14/2012 | 3 | 6 | 5536.8 |
| 9/21/2012 | 3 | 6 | 5597.2 |
| 9/28/2012 | 3 | 6 | 5657.6 |
| 10/5/2012 | 3 | 6 | 5718 |
| 10/12/2012 | 3 | 6 | 5778.4 |
| 10/19/2012 | 3 | 6 | 5838.8 |

# Federal 18 #1T Gas Vented

| Date | SCFM | ACFM | Gas Vented Total (MCF) |
|---|---|---|---|
| 10/26/2012 | 3 | 6 | 5899.2 |
| 11/2/2012 | 3 | 6 | 5959.6 |
| 11/9/2012 | 3 | 6 | 6020 |
| 11/16/2012 | 3 | 6 | 6080.4 |
| 11/23/2012 | 3 | 6 | 6140.8 |
| 11/30/2012 | 3 | 6 | 6201.2 |
| 12/7/2012 | 3 | 6 | 6261.6 |
| 12/14/2012 | 3 | 6 | 6322 |
| 12/21/2012 | 3 | 6 | 6382.4 |
| 12/28/2012 | 3 | 6 | 6442.8 |
| 1/4/2013 | 3 | 6 | 6503.2 |
| 1/11/2013 | 3 | 6 | 6563.6 |
| 1/18/2013 | 3 | 6 | 6624 |
| 1/25/2013 | 3 | 6 | 6684.4 |
| 2/1/2013 | 3 | 6 | 6744.8 |
| 2/8/2013 | 3 | 6 | 6805.2 |
| 2/15/2013 | 3 | 6 | 6865.6 |
| 2/22/2013 | 3 | 6 | 6926 |
| 3/1/2013 | 3 | 6 | 6986.4 |
| 3/8/2013 | 3 | 6 | 7046.8 |
| 3/15/2013 | 3 | 6 | 7107.2 |
| 3/22/2013 | 3 | 6 | 7167.6 |
| 3/29/2013 | 3 | 6 | 7228 |
| 4/5/2013 | 3 | 6 | 7288.4 |
| 4/12/2013 | 3 | 6 | 7348.8 |
| 4/19/2013 | 3 | 6 | 7409.2 |
| 4/26/2013 | 3 | 6 | 7469.6 |
| 5/3/2013 | 3 | 6 | 7530 |
| 5/10/2013 | 3 | 6 | 7590.4 |
| 5/17/2013 | 3 | 6 | 7650.8 |
| 5/24/2013 | 3 | 6 | 7711.2 |
| 5/31/2013 | 3 | 6 | 7771.6 |
| 6/7/2013 | 3 | 6 | 7832 |
| 6/14/2013 | 3 | 6 | 7892.4 |
| 6/21/2013 | 3 | 6 | 7952.8 |
| 6/28/2013 | 3 | 6 | 8013.2 |
| 7/5/2013 | 3 | 6 | 8073.6 |
| 7/12/2013 | 3 | 6 | 8134 |
| 7/19/2013 | 3 | 6 | 8194.4 |
| 7/26/2013 | 3 | 6 | 8254.8 |
| 8/2/2013 | 3 | 6 | 8315.2 |
| 8/9/2013 | 3 | 6 | 8375.6 |
| 8/16/2013 | 3 | 6 | 8436 |
| 8/23/2013 | 3 | 6 | 8496.4 |
| 8/30/2013 | 3 | 6 | 8556.8 |
| 9/6/2013 | 0 | 0 | 8556.8 |
| 9/13/2013 | 3 | 6 | 8617.2 |
| 9/20/2013 | 3 | 6 | 8677.6 |
| 9/27/2013 | 3 | 6 | 8738 |
| 10/4/2013 | 3 | 6 | 8798.4 |
| 10/11/2013 | 3 | 6 | 8858.8 |
| 10/18/2013 | 3 | 6 | 8919.2 |

# Federal 18 #1T Gas Vented

| Date | SCFM | ACFM | Gas Vented Total (MCF) |
|---|---|---|---|
| 10/25/2013 | 3 | 6 | 8979.6 |
| 11/1/2013 | 3 | 6 | 9040 |
| 11/8/2013 | 3 | 6 | 9100.4 |
| 11/15/2013 | 3 | 6 | 9160.8 |
| 11/22/2013 | 3 | 6 | 9221.2 |
| 11/29/2013 | 3 | 6 | 9281.6 |
| 12/6/2013 | 3 | 6 | 9342 |
| 12/13/2013 | 3 | 6 | 9402.4 |
| 12/20/2013 | 3 | 6 | 9462.8 |
| 12/27/2013 | 3 | 6 | 9523.2 |
| 1/3/2014 | 3 | 6 | 9583.6 |
| 1/10/2014 | 3 | 6 | 9644 |
| 1/17/2014 | 3 | 6 | 9704.4 |
| 1/24/2014 | 3 | 6 | 9764.8 |
| 1/31/2014 | 3 | 6 | 9825.2 |
| 2/7/2014 | 3 | 6 | 9885.6 |
| 2/14/2014 | 3 | 6 | 9946 |
| 2/21/2014 | 3 | 6 | 10006.4 |
| 2/28/2014 | 3 | 6 | 10066.8 |
| 3/7/2014 | 3 | 6 | 10127.2 |
| 3/14/2014 | 3 | 6 | 10187.6 |
| 3/21/2014 | 3 | 6 | 10248 |
| 3/28/2014 | 3 | 6 | 10308.4 |
| 4/4/2014 | 3 | 6 | 10368.8 |
| 4/11/2014 | 3 | 6 | 10429.2 |
| 4/18/2014 | 3 | 6 | 10489.6 |
| 4/25/2014 | 3 | 6 | 10550 |
| 5/2/2014 | 3 | 6 | 10610.4 |
| 5/9/2014 | 3 | 6 | 10670.8 |
| 5/16/2014 | 3 | 6 | 10731.2 |
| 5/23/2014 | 3 | 6 | 10791.6 |
| 5/30/2014 | 3 | 6 | 10852 |
| 6/6/2014 | 3 | 6 | 10912.4 |
| 6/13/2014 | 3 | 6 | 10972.8 |
| 6/20/2014 | 3 | 6 | 11033.2 |
| 6/27/2014 | 3 | 6 | 11093.6 |
| 7/4/2014 | 3 | 6 | 11154 |
| 7/11/2014 | 3 | 6 | 11214.4 |
| 7/18/2014 | 3 | 6 | 11274.8 |
| 7/25/2014 | 3 | 6 | 11335.2 |
| 8/1/2014 | 3 | 6 | 11395.6 |
| 8/8/2014 | 3 | 6 | 11456 |
| 8/15/2014 | 3 | 6 | 11516.4 |
| 8/22/2014 | 3 | 6 | 11576.8 |
| 8/29/2014 | 3 | 6 | 11637.2 |
| 9/5/2014 | 3 | 6 | 11697.6 |
| 9/12/2014 | 3 | 6 | 11758 |
| 9/19/2014 | 3 | 6 | 11818.4 |
| 9/26/2014 | 3 | 6 | 11878.8 |
| 10/3/2014 | 3 | 6 | 11939.2 |
| 10/10/2014 | 3 | 6 | 11999.6 |
| 10/17/2014 | 3 | 6 | 12060 |

# Federal 18 #1T Gas Vented

| Date | SCFM | ACFM | Gas Vented Total (MCF) |
|---|---|---|---|
| 10/24/2014 | 3 | 6 | 12120.4 |
| 10/31/2014 | 3 | 6 | 12180.8 |
| 11/7/2014 | 3 | 6 | 12241.2 |
| 11/14/2014 | 3 | 6 | 12301.6 |
| 11/21/2014 | 3 | 6 | 12362 |
| 11/28/2014 | 3 | 6 | 12422.4 |
| 12/5/2014 | 3 | 6 | 12482.8 |
| 12/12/2014 | 3 | 6 | 12543.2 |
| 12/19/2014 | 3 | 6 | 12603.6 |
| 12/26/2014 | 3 | 6 | 12603.6 |
| 1/2/2015 | 3 | 6 | 12664 |
| 1/9/2015 | 3 | 6 | 12724.4 |
| 1/16/2015 | 3 | 6 | 12784.8 |
| 1/23/2015 | 3 | 6 | 12845.2 |
| 1/30/2015 | 3 | 6 | 12905.6 |
| 2/6/2015 | 3 | 6 | 12966 |
| 2/13/2015 | 3 | 6 | 13026.4 |
| 2/20/2015 | 3 | 6 | 13086.8 |
| 2/27/2015 | 3 | 6 | 13147.2 |
| 3/6/2015 | 3 | 6 | 13207.6 |
| 3/13/2015 | 3 | 6 | 13268 |
| 3/20/2015 | 3 | 6 | 13328.4 |
| 3/27/2015 | 3 | 6 | 13388.8 |
| 4/3/2015 | 3 | 6 | 13449.2 |
| 4/10/2015 | 3 | 6 | 13509.6 |
| 4/17/2015 | 3 | 6 | 13570 |
| 4/24/2015 | 3 | 6 | 13630.4 |
| 5/1/2015 | 3 | 6 | 13690.8 |
| 5/8/2015 | 3 | 6 | 13751.2 |
| 5/15/2015 | 3 | 6 | 13811.6 |
| 5/22/2015 | 3 | 6 | 13872 |
| 5/29/2015 | 3 | 6 | 13932.4 |
| 6/5/2015 | 3 | 6 | 13992.8 |
| 6/12/2015 | 3 | 6 | 14053.2 |
| 6/19/2015 | 3 | 6 | 14113.6 |
| 6/26/2015 | 3 | 6 | 14174 |
| 7/3/2015 | 3 | 6 | 14234.4 |
| 7/10/2015 | 3 | 6 | 14294.8 |
| 7/17/2015 | 3 | 6 | 14355.2 |
| 7/24/2015 | 3 | 6 | 14415.6 |
| 7/31/2015 | 3 | 6 | 14476 |
| 8/7/2015 | 3 | 6 | 14536.4 |
| 8/14/2015 | 3 | 6 | 14596.8 |
| 8/21/2015 | 3 | 6 | 14657.2 |
| 8/28/2015 | 3 | 6 | 14717.6 |
| 9/4/2015 | 3 | 6 | 14778 |
| 9/11/2015 | 3 | 6 | 14838.4 |
| 9/18/2015 | 3 | 6 | 14898.8 |
| 9/25/2015 | 3 | 6 | 14959.2 |
| 10/2/2015 | 3 | 6 | 15019.6 |
| 10/9/2015 | 3 | 6 | 15080 |
| 10/16/2015 | 3 | 6 | 15140.4 |

# Federal 18 #1T Gas Vented

| Date | SCFM | ACFM | Gas Vented Total (MCF) |
|---|---|---|---|
| 10/23/2015 | 3 | 6 | 15200.8 |
| 10/30/2015 | 3 | 6 | 15261.2 |
| 11/6/2015 | 3 | 6 | 15321.6 |
| 11/13/2015 | 3 | 6 | 15382 |
| 11/20/2015 | 3 | 6 | 15442.4 |
| 11/27/2015 | 3 | 6 | 15502.8 |
| 12/4/2015 | 3 | 6 | 15563.2 |
| 12/11/2015 | 3 | 6 | 15623.6 |
| 12/18/2015 | 3 | 6 | 15684 |
| 12/25/2015 | 3 | 6 | 15744.4 |
| 1/1/2016 | 3 | 6 | 15804.8 |
| 1/8/2016 | 3 | 6 | 15865.2 |
| 1/15/2016 | 3 | 6 | 15925.6 |
| 1/22/2016 | 3 | 6 | 15986 |
| 1/29/2016 | 3 | 6 | 16046.4 |
| 2/5/2016 | 3 | 6 | 16106.8 |
| 2/12/2016 | 3 | 6 | 16167.2 |
| 2/19/2016 | 3 | 6 | 16227.6 |
| 2/26/2016 | 3 | 6 | 16288 |
| 3/4/2016 | 3 | 6 | 16348.4 |
| 3/11/2016 | 3 | 6 | 16408.8 |
| 3/18/2016 | 3 | 6 | 16469.2 |
| 3/25/2016 | 3 | 6 | 16529.6 |

# Federal 18 #1T Water Results

| Date | Lab | Benzene (ppb) | Toluene (ppb) | Ethylbenzene (ppb) | Xylene (ppb) | Chlorides (ppm) | TDS (ppm) | EC (umhos/cm) | pH | Purge Water Volume |
|---|---|---|---|---|---|---|---|---|---|---|
| NA | NA | 10 | 750 | 750 | 620 | 250 | 1000 | NA | 6 thru 9 | NA |
| 9/24/2010 | ESC | **150** | BDL | 76 | **670** | NS | NS | NS | NS | NA |
| 9/24/2010 | ESC | **190** | 170 | 24 | 210 | **6800** | **13000** | 18000 | 6.1 | NA |
| 9/24/2010 | Etech | **143** | 221 | 63.6 | **950** | NS | NS | NS | NS | NA |
| 9/24/2010 | Etech | **320** | 377 | 31.8 | 568 | **7150** | **11100** | 16000 | **5.84** | NA |
| 12/10/2011 | Hall | NS | NS | NS | NS | **2800** | **7610** | 8900 | 6.36 | 3032.5 |
| 1/5/2011 | Hall | **67** | 93 | 7.9 | 25 | NS | NS | NS | NS | 7,798 |
| 1/5/2011 | ESC | **73** | 99 | 10 | 39 | **1600** | **4800** | 6000 | 6.6 | 7,798 |
| 1/29/2011 | ESC | **60** | 93 | 10 | 33 | **930** | NS | 4900 | 6.4 | 10791.0 |
| 2/28/2011 | ESC | **42** | 60 | 6.1 | 20 | **550** | **3400** | 4000 | 6.7 | 14795.0 |
| 4/1/2011 | ESC | **23** | 27 | 1.8 | 6.8 | **260** | **2700** | 3100 | 6.8 | 31237.5 |
| 4/29/2011 | ESC | **29** | 28 | 2.4 | 7.3 | 140 | **2600** | 2900 | 6.9 | 50217.0 |
| 5/31/2011 | ESC | **14** | 19 | 1.4 | 4.9 | 89 | **2500** | 2800 | 6.7 | 76513.0 |
| 6/14/2011 | ESC | **55** | 81 | 2.8 | 15 | 73 | **2500** | 2700 | 6.7 | 88120.0 |
| 6/30/2011 | ESC | **52** | 67 | 2.6 | 12 | 61 | **2500** | 2700 | 6.9 | 101208.5 |
| 8/15/2011 | ESC | **21** | 25 | 1.2 | 5.8 | 44 | **2500** | 2600 | 6.8 | 140267.0 |
| 9/2/2011 | ESC | **10** | 12 | 0.64 | 3.2 | 41 | **2500** | 2600 | 7.2 | 155801.0 |
| 9/16/2011 | ESC | 9.6 | 11 | 0.64 | 3 | 38 | **2400** | 2500 | 7.2 | 168040.0 |
| 9/30/2011 | ESC | 7.2 | 8.7 | 0.64 | 2.5 | 35 | **2500** | 2600 | 7 | 180392.5 |
| 10/28/2011 | ESC | 5.1 | BDL | 1.8 | 2.7 | 31 | **2300** | 2600 | 6.9 | 205,220 |
| 11/30/2011 | ESC | 4 | BDL | 3.9 | 2 | 27 | **2500** | 2600 | 7.1 | 233,487.5 |
| 12/30/2011 | ESC | 3.4 | BDL | BDL | 2.9 | 27 | **2500** | 2500 | 7.5 | 261,390.5 |
| 4/3/2012 | ESC | 6 | BDL | BDL | 1.6 | NS | NS | NS | NS | 351,300 |
| 4/9/2012 | ESC | NS | NS | NS | NS | 19 | **2400** | 2400 | 7.4 | NA |
| 7/3/2012 | ESC | 5.3 | BDL | BDL | BDL | 16 | **2300** | 2400 | 7.4 | NA |
| 7/6/2012 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 441,053 |
| 9/19/2012 | NA | NA | NA | NA | NA | NA | NA | NA | NA | 521,271 |
| 9/27/2012 | ESC | 6.2 | BDL | BDL | BDL | 15 | **2300** | 2500 | 7.1 | NA |
| 12/14/2012 | NA | NS | NS | NS | NS | NS | NS | NS | NS | 598,540 |
| 12/31/2012 | Etech | **13.9** | 1.1 | ND | 3.3 | 15.5 | **2690** | 2440 | 7.05 | 604,689 |
| 1/23/2013 | ESC | **160** | 190 | BDL | 26 | 15 | **2400** | 2500 | 8 | PUMP SHUT OFF |
| 2/22/2013 | ESC | 7.1 | 77 | BDL | 1.8 | 15 | **2100** | 2500 | 7.1 | 605,860 |
| 5/2/2013 | ESC | 9 | 6.9 | BDL | BDL | 15 | **2400** | 2600 | 7.5 | 612,601 |
| 8/19/2013 | ESC | **20** | 11 | BDL | 2.3 | 16 | **2200** | 2600 | 7.2 | NA |
| 9/23/2013 | ESC | **13** | 11 | BDL | 2.2 | 16 | **2300** | 2500 | 7.1 | 621,744 |
| 11/25/2013 | ESC | 4.6 | 5.2 | BDL | BDL | 15 | **2200** | 2700 | 7.7 | 631,430 |
| 2/4/2014 | ESC | | | | | | | | | 636,120 |
| 10/1/2015 | ESC | **54.2** | 57 | 1.37 | 9.77 | 21.3 | **2260** | 2640 | 6.98 | 639,410 |
| 10/20/2015 | ESC | **42.3** | 39.9 | 0.964 | 7.06 | 18.1 | **2330** | 1460 | 7.09 | 642,650 |
| 3/28/2016 | ESC | **38** | 34.1 | 0.835 | 4.82 | 21.6 | **2230** | 2570 | 6.86 | 650,850 |
| 11/5/2010 | ESC | ND | 5.2 | ND | ND | 15 | **1400** | 2600 | 7.2 | NA |

BDL = Below Detection Limits
NS = Not Sampled
Values in **BOLD** exceed WQCC Standards
Baseline Sample (Well SJ 1737)
WQCC Standards

# ANALYTICAL REPORT

April 05, 2016

## XTO Energy - San Juan Division

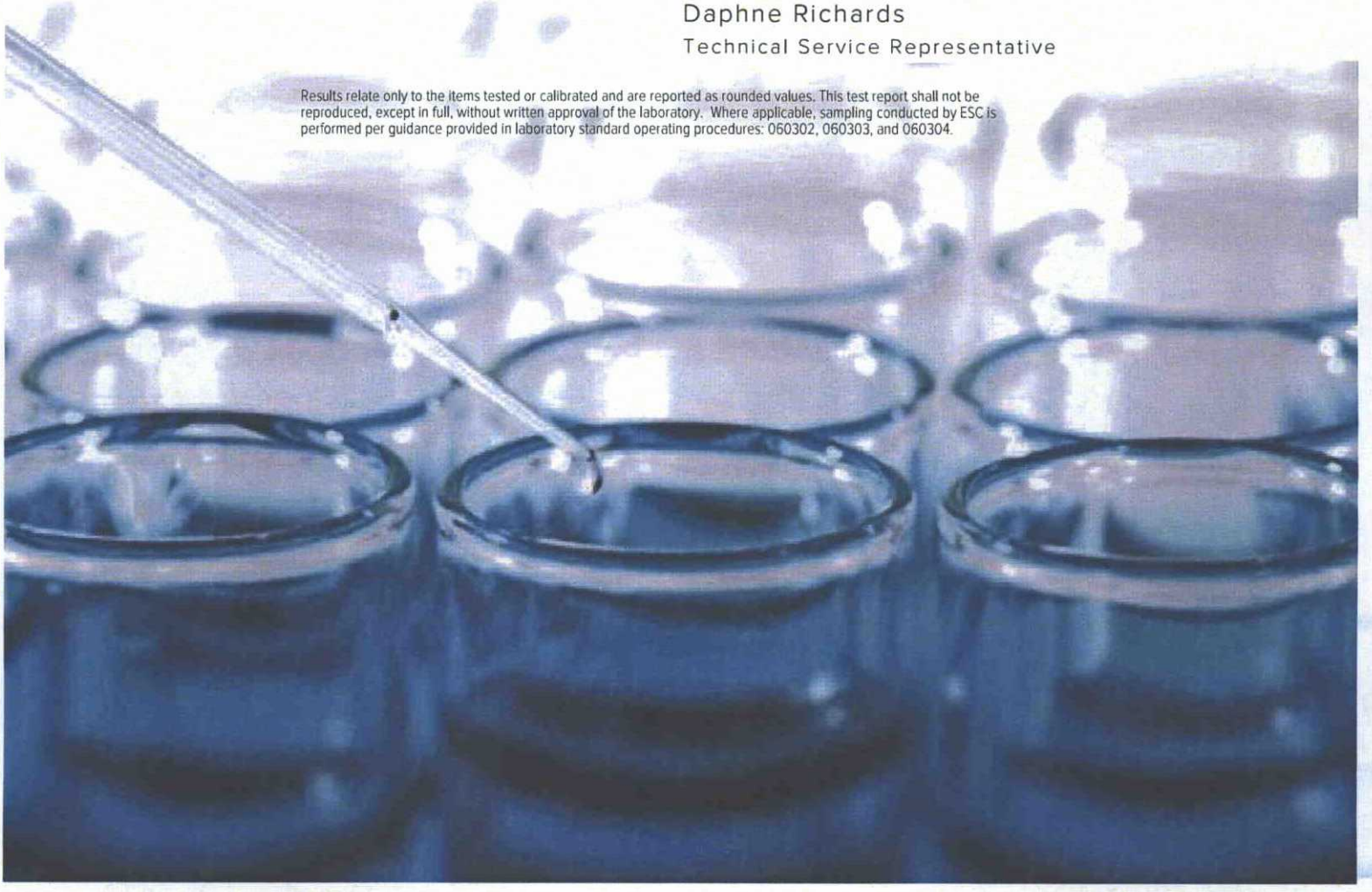
| | |
|---|---|
| Sample Delivery Group: | L826193 |
| Samples Received: | 03/29/2016 |
| Project Number: | |
| Description: | Federal 18-1T |

Report To: Logan Hixon
382 County Road 3100
Aztec, NM 87410

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Technical Service Representative





FARLH-32816-11:50 L826193-01 GW

| Collected by | Collected date/time | Received date/time |
|---|---|---|
| Logan Hixon | 03/28/16 11:50 | 03/29/16 09:00 |

| Method | Batch | Dilution | Preparation date/time | Analysis date/time | Analyst |
|---|---|---|---|---|---|
| Gravimetric Analysis by Method 2540 C-2011 | WG860316 | 1 | 03/30/16 13:43 | 03/30/16 14:47 | MF |
| Volatile Organic Compounds (GC) by Method 8021B | WG861023 | 1 | 04/01/16 20:16 | 04/01/16 20:16 | LRL |
| Wet Chemistry by Method 9040C | WG860329 | 1 | 03/30/16 07:59 | 03/30/16 07:59 | AMC |
| Wet Chemistry by Method 9050A | WG860747 | 1 | 03/31/16 15:19 | 03/31/16 15:19 | SJM |
| Wet Chemistry by Method 9056A | WG860551 | 1 | 03/31/16 17:32 | 03/31/16 17:32 | DJD |

All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Technical Service Representative

## Sample Handling and Receiving

**The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.**

| ESC Sample ID | Project Sample ID | Method |
|---|---|---|
| L826193-01 | FARLH-32816-11:50 | 9040C |

## Gravimetric Analysis by Method 2540 C-2011

| Analyte | Result mg/l | Qualifier | RDL mg/l | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Dissolved Solids | 2230 | | 10.0 | 1 | 03/30/2016 14:47 | WG860316 |

## Wet Chemistry by Method 9040C

| Analyte | Result su | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| pH | 6.86 | | 1 | 03/30/2016 07:59 | WG860329 |

Sample Narrative:
9040C L826193-01 WG860329: 6.86 at 22.1c

## Wet Chemistry by Method 9050A

| Analyte | Result umhos/cm | Qualifier | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|
| Specific Conductance | 2570 | | 1 | 03/31/2016 15:19 | WG860747 |

## Wet Chemistry by Method 9056A

| Analyte | Result mg/l | Qualifier | RDL mg/l | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Chloride | 21.6 | | 1.00 | 1 | 03/31/2016 17:32 | WG860551 |

## Volatile Organic Compounds (GC) by Method 8021B

| Analyte | Result mg/l | Qualifier | RDL mg/l | Dilution | Analysis date / time | Batch |
|---|---|---|---|---|---|---|
| Benzene | 0.0380 | | 0.000500 | 1 | 04/01/2016 20:16 | WG861023 |
| Toluene | 0.0341 | | 0.00500 | 1 | 04/01/2016 20:16 | WG861023 |
| Ethylbenzene | 0.000835 | | 0.000500 | 1 | 04/01/2016 20:16 | WG861023 |
| Total Xylene | 0.00482 | | 0.00150 | 1 | 04/01/2016 20:16 | WG861023 |
| *(S) a,a,a-Trifluorotoluene(PID)* | *102* | | *55.0-122* | | *04/01/2016 20:16* | WG861023 |

## Method Blank (MB)

(MB) R3125660-1 03/30/16 14:47

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|---|---|---|---|---|
| Dissolved Solids | U | | 2.82 | 10.0 |

## Original Sample (OS) • Duplicate (DUP)

(OS) L825795-01 03/30/16 14:47 • (DUP) R3125660-4 03/30/16 14:47

| Analyte | Original Result mg/l | DUP Result mg/l | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Dissolved Solids | 27.0 | 27.0 | 1 | 0.000 | | 5 |

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3125660-2 03/30/16 14:47 • (LCSD) R3125660-3 03/30/16 14:47

| Analyte | Spike Amount mg/l | LCS Result mg/l | LCSD Result mg/l | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|
| Dissolved Solids | 8800 | 8700 | 8410 | 98.9 | 95.6 | 85.0-115 | | | 3.39 | 5 |

## Original Sample (OS) • Duplicate (DUP)

(OS) L826184-01 03/30/16 07:59 • (DUP) WG860329-1 03/30/16 07:59

| Analyte | Original Result | DUP Result | Dilution | DUP RPD | DUP Qualifier | DUP RPD Limits |
|---|---|---|---|---|---|---|
| | su | su | | % | | % |
| pH | 7.39 | 7.40 | 1 | 0.135 | | 1 |

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG860329-2 03/30/16 07:59 • (LCSD) WG860329-3 03/30/16 07:59

| Analyte | Spike Amount | LCS Result | LCSD Result | LCS Rec. | LCSD Rec. | Rec. Limits | LCS Qualifier | LCSD Qualifier | RPD | RPD Limits |
|---|---|---|---|---|---|---|---|---|---|---|
| | su | su | su | % | % | % | | | % | % |
| pH | 6.43 | 6.40 | 6.41 | 99.5 | 99.7 | 98.5-102 | | | 0.156 | 1 |

## Method Blank (MB)

(MB) WG860747-1 03/31/16 15:19

| Analyte | MB Result umhos/cm | MB Qualifier | MB MDL umhos/cm | MB RDL umhos/cm |
|---|---|---|---|---|
| Specific Conductance | 1.97 | | | |

## Original Sample (OS) • Duplicate (DUP)

(OS) L824230-01 03/31/16 15:19 • (DUP) WG860747-4 03/31/16 15:19

| Analyte | Original Result umhos/cm | DUP Result umhos/cm | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Specific Conductance | 10100 | 10100 | 1 | 0.698 | | 20 |

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG860747-2 03/31/16 15:19 • (LCSD) WG860747-3 03/31/16 15:19

| Analyte | Spike Amount umhos/cm | LCS Result umhos/cm | LCSD Result umhos/cm | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 653 | 663 | 664 | 102 | 102 | 90.0-110 | | | 0.151 | 20 |

## Method Blank (MB)

(MB) R3125473-1 03/31/16 11:31

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|---|---|---|---|---|
| Chloride | U | | 0.0519 | 1.00 |

## Original Sample (OS) • Duplicate (DUP)

(OS) L825467-14 03/31/16 12:53 • (DUP) R3125473-4 03/31/16 13:09

| Analyte | Original Result mg/l | DUP Result mg/l | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Chloride | 0.160 | 0.153 | 1 | 0 | | 15 |

## Original Sample (OS) • Duplicate (DUP)

(OS) L826191-03 03/31/16 20:49 • (DUP) R3125473-6 03/31/16 21:05

| Analyte | Original Result mg/l | DUP Result mg/l | Dilution | DUP RPD % | DUP Qualifier | DUP RPD Limits % |
|---|---|---|---|---|---|---|
| Chloride | 13.4 | 13.0 | 1 | 3 | | 15 |

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3125473-2 03/31/16 11:47 • (LCSD) R3125473-3 03/31/16 12:04

| Analyte | Spike Amount mg/l | LCS Result mg/l | LCSD Result mg/l | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 40.0 | 39.0 | 38.9 | 97 | 97 | 80-120 | | | 0 | 15 |

## Original Sample (OS) • Matrix Spike (MS)

(OS) L825621-18 03/31/16 13:26 • (MS) R3125473-5 03/31/16 13:42

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MS Rec. % | Dilution | Rec. Limits % | MS Qualifier |
|---|---|---|---|---|---|---|---|
| Chloride | 50.0 | ND | 49.0 | 98 | 1 | 80-120 | |

## Method Blank (MB)

(MB) R3125629-2 04/01/16 05:28

| Analyte | MB Result mg/l | MB Qualifier | MB MDL mg/l | MB RDL mg/l |
|---|---|---|---|---|
| Benzene | U | | 0.000190 | 0.000500 |
| Toluene | U | | 0.000180 | 0.00500 |
| Ethylbenzene | U | | 0.000160 | 0.000500 |
| Total Xylene | U | | 0.000510 | 0.00150 |
| *(S) a,a,a-Trifluorotoluene(PID)* | *102* | | | *55.0-122* |

## Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3125629-1 04/01/16 04:05 • (LCSD) R3125629-3 04/01/16 06:54

| Analyte | Spike Amount mg/l | LCS Result mg/l | LCSD Result mg/l | LCS Rec. % | LCSD Rec. % | Rec. Limits % | LCS Qualifier | LCSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0500 | 0.0481 | 0.0435 | 96.1 | 87.1 | 70.0-130 | | | 9.89 | 20 |
| Toluene | 0.0500 | 0.0519 | 0.0472 | 104 | 94.4 | 70.0-130 | | | 9.57 | 20 |
| Ethylbenzene | 0.0500 | 0.0529 | 0.0482 | 106 | 96.3 | 70.0-130 | | | 9.37 | 20 |
| Total Xylene | 0.150 | 0.164 | 0.149 | 109 | 99.6 | 70.0-130 | | | 9.08 | 20 |
| *(S) a,a,a-Trifluorotoluene(PID)* | | | | *102* | *103* | *55.0-122* | | | | |

## Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L826165-01 04/01/16 10:39 • (MS) R3125629-4 04/01/16 07:51 • (MSD) R3125629-5 04/01/16 08:12

| Analyte | Spike Amount mg/l | Original Result mg/l | MS Result mg/l | MSD Result mg/l | MS Rec. % | MSD Rec. % | Dilution | Rec. Limits % | MS Qualifier | MSD Qualifier | RPD % | RPD Limits % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0500 | 0.0134 | 0.0566 | 0.0568 | 86.4 | 86.8 | 1 | 57.2-131 | | | 0.290 | 20 |
| Toluene | 0.0500 | 0.00000926 | 0.0444 | 0.0439 | 88.8 | 87.7 | 1 | 63.7-134 | | | 1.23 | 20 |
| Ethylbenzene | 0.0500 | 0.000168 | 0.0495 | 0.0493 | 98.7 | 98.2 | 1 | 67.5-135 | | | 0.560 | 20 |
| Total Xylene | 0.150 | 0.00103 | 0.154 | 0.153 | 102 | 101 | 1 | 65.9-138 | | | 0.690 | 20 |
| *(S) a,a,a-Trifluorotoluene(PID)* | | | | | *108* | *108* | | *55.0-122* | | | | |

## Abbreviations and Definitions

| | |
|---|---|
| SDG | Sample Delivery Group. |
| MDL | Method Detection Limit. |
| RDL | Reported Detection Limit. |
| ND,U | Not detected at the Reporting Limit (or MDL where applicable). |
| RPD | Relative Percent Difference. |
| (dry) | Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils]. |
| Original Sample | The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG. |
| (S) | Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media. |
| Rec. | Recovery. |
| SDL | Sample Detection Limit. |
| MQL | Method Quantitation Limit. |
| Unadj. MQL | Unadjusted Method Quantitation Limit. |

| Qualifier | Description |
|---|---|
| | The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG. |

# ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

## State Accreditations

| | | | |
|---|---|---|---|
| Alabama | 40660 | Nevada | TN-03-2002-34 |
| Alaska | UST-080 | New Hampshire | 2975 |
| Arizona | AZ0612 | New Jersey–NELAP | TN002 |
| Arkansas | 88-0469 | New Mexico | TN00003 |
| California | 01157CA | New York | 11742 |
| Colorado | TN00003 | North Carolina | Env375 |
| Conneticut | PH-0197 | North Carolina [1] | DW21704 |
| Florida | E87487 | North Carolina [2] | 41 |
| Georgia | NELAP | North Dakota | R-140 |
| Georgia [1] | 923 | Ohio–VAP | CL0069 |
| Idaho | TN00003 | Oklahoma | 9915 |
| Illinois | 200008 | Oregon | TN200002 |
| Indiana | C-TN-01 | Pennsylvania | 68-02979 |
| Iowa | 364 | Rhode Island | 221 |
| Kansas | E-10277 | South Carolina | 84004 |
| Kentucky [1] | 90010 | South Dakota | n/a |
| Kentucky [2] | 16 | Tennessee [14] | 2006 |
| Louisiana | AI30792 | Texas | T 104704245-07-TX |
| Maine | TN0002 | Texas [5] | LAB0152 |
| Maryland | 324 | Utah | 6157585858 |
| Massachusetts | M-TN003 | Vermont | VT2006 |
| Michigan | 9958 | Virginia | 109 |
| Minnesota | 047-999-395 | Washington | C1915 |
| Mississippi | TN00003 | West Virginia | 233 |
| Missouri | 340 | Wisconsin | 9980939910 |
| Montana | CERT0086 | Wyoming | A2LA |
| Nebraska | NE-OS-15-05 | | |

## Third Party & Federal Accreditations

| | | | |
|---|---|---|---|
| A2LA – ISO 17025 | 1461.01 | AIHA | 100789 |
| A2LA – ISO 17025 [5] | 1461.02 | DOD | 1461.01 |
| Canada | 1461.01 | USDA | S-67674 |
| EPA–Crypto | TN00003 | | |

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**

XTO ENERGY
Western Division

| | | |
|---|---|---|
| Quote Number | Page ___ of ___ | |
| XTO Contact: Logan | XTO Contact Phone #: 505-386-8018 | |
| Email Results to: James, Kurt, Logan Rex | | |
| Well Site/Location: Federal 18-1T | API Number | Saturday Delivery (Y / N) |
| Collected By: Logan H | Samples on Ice (Y / N) | Turnaround: (X) Standard; ___ Next Day; ___ Two Day; ___ Three Day; ___ Same Day; Date Needed ___ |
| Company: XTO | Test Reason | |
| Signature: Log H | Gray Areas for Lab Use Only! | |

Analysis/Container: BTEX (8021); EC; pH; TDS; Chlorides

Lab Information

Office Abbreviations
Farmington = FAR
Durango = DUR
Bakken = BAK
Raton = RAT
Piceance = PC
Roosevelt = RSV
La Barge = LB
Orangeville = OV

I228

| Sample ID | Sample Name | Media | Date | Time | Preservative | No. of Conts. | Sample Number |
|---|---|---|---|---|---|---|---|
| FARLH-32816-11:50 | GW | GW | 3-29 | 11:50 | Cool | 2-voc 3-500 mL | L8216193-01 |

Media: Filter = F Soil = S Wastewater = WW Groundwater = GW Drinking Waster = DW Sludge = SG Surface Water = SW Air = A Drill Mud = DM Other = OT

| | | | | | |
|---|---|---|---|---|---|
| Relinquished By: (Signature) Log H | Date: 3-28-16 | Time: 1215 | Received By: (Signature) | Number of Bottles: 5 | Sample Condition |
| Relinquished By: (Signature) | Date: | Time: | | Temperature: 3.6 | Other Information GW |
| Relinquished By: (Signature) | Date: | Time: | Received for Lab by: (Signature) Yolanda | Date: 3-29-16 Time: 900 | |

Comments: 6127 6739 3884

* Sample ID will be the office and sampler-date-military time FARJM-MMDDYY-1200