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Drilling and Soil Vapor Extraction Report
Concho
BKU Satellite G Battery
32.81624°, -104.01595°
Eddy County, New Mexico

PREPARED BY:
Talon/LPE
921 N. Bivins Street
Amarillo, Texas 79107

PREPARED FOR:
Mr. Ike Tavarez
COG Operating LLC
600 W Illinois Avenue
Midland, TX 79701

Project ID: 700778.140.03

February 14, 2020

DRILLING AND SOIL VAPOR EXTRACTION REPORT

Concho
BKU Satellite G Battery
32.81624°, -104.01595°
Eddy County, New Mexico

TALON/LPE PROJECT NO. 700778.140.01

Prepared by:

Trevor Cardenas
Project Manager

Jason Shubert
Regional Manager

Talon/LPE
921 N. Bivins
Amarillo, Texas 79107

February 14, 2020

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APPENDICES

1.0 INTRODUCTION AND OBJECTIVES

Talon/LPE (Talon) is pleased to submit this Drilling and High Vacuum Soil Vapor Extraction (SVE) report for Concho – BKU Satellite G Battery, located at 32.81624°, -104.01595° Loco Hills, Eddy County, New Mexico. The scope of work included additional horizontal and vertical delineation of hydrocarbon contamination at the above-mentioned location. More specifically, the advancement of five (5) boreholes (SVE-1, SVE-2, SVE-3, SVE-4, and SVE-5) and one (1) 48-hour High Vacuum SVE recovery event. The location of these SVE wells can be seen on the site map as Figure 1 in Appendix A.

1.1 Site History

According to the State of New Mexico C-141 Initial Report a release of approximately nine (9) barrels (bbls) of produced water and eight (8) bbls of oil were released into the subsurface soils by result of corrosion in the flowline at the BKU Satellite G Battery on March 27, 2019. Emergency response actions were initiated to recover all free-standing liquids. The emergency response efforts reported recovery of approximately 2 bbls of oil and 3 bbls of produced water by means of vacuum truck. The visual impacts measured approximately 20 ft by 65 ft. The New Mexico Oil Conservation District C-141 form can be found in Appendix D.

Tetra Tech, Inc (Tetra Tech) performed a Site Assessment/Characterization in April 2019. The shallowest depth to groundwater below the impacted area was reported as 266 ft below ground surface (bgs). Furthermore, the release was outside the specified radii for nearest significant watercourses, residences, schools, hospitals, churches, or incorporated municipal boundaries.

A risk-based evaluation has been performed for the Site in accordance with New Mexico Oil Conservation District (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases. The guidelines provide recommended remedial action levels (RRAL) for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), and Total Petroleum Hydrocarbons (TPH) in contaminated soils. Regulations were determined to be 10 mg/kg for benzene, 50 mg/kg for Total BTEX, 2500 mg/kg for Total TPH (GRO + DRO + ORO), and 20,000 mg/kg for chlorides.

1.2 Site Chronology

- March 27, 2019 Approximately 8 bbls of oil and 9 bbls of produced water was released into the subsurface soil due to a hole in the flowline. Free-standing liquid recovery was reported to be approximately 2 bbls of oil and 3 bbls of produced water.

- April 4, 2019 Tetra Tech completed a Site Characterization and Risk-Based evaluation to determine the RRAL concentrations for soil contamination. (Benzene = 10mg/Kg, BTEX = 50 mg/Kg, Total TPH = 2,500 mg/Kg, and Chlorides = 20,000 mg/Kg).

- April 16, 2019 Tetra Tech advanced two (2) boreholes (BH-1 and BH-2) in efforts to achieve horizontal delineation from the release source area. Borehole (BH-1 and BH-2) were advanced to total depths of 90 ft and 60 ft bgs, respectively.

- May 13, 2019 Tetra Tech advanced one (1) borehole (BH-3) in efforts to achieve vertical delineation from the release source area. Borehole (BH-3) was advanced to a total depth of approximately 145-150 bgs. Impacts are estimated to extend approximately 95 ft bgs.

- October 16, 2019 Tetra Tech advanced eight (8) boreholes (North, N-1, East, South, S-1, West, W-1, and W-2) in efforts to achieve full horizontal delineation of the soil contamination. The boreholes were advanced to depths ranging from 20 ft bgs to 90 ft bgs.

- October 23, 2019 Talon installed one (1) Soil Vapor Extraction well (SVE-1). SVE-1 was drilled to a depth of 100 ft bgs. Talon advanced an additional boring (SVE-5) 50 ft bgs however; this well was plugged and abandon by the on-site geologist after data interpretation revealed no evidence of contamination.

- October 24, 2019 Talon installed two (3) additional Soil Vapor Extraction wells (SVE-2, SVE-3, and SVE-4). SVE-2 was drilled to a depth of 100 feet; SVE-3 and SVE-4 were drilled to a depth of 50 feet.

- October 29, 2019 Talon performed one (1) 48-hour Soil Vapor Extraction event utilizing all four (4) completed SVE wells (SVE-1, SVE-2, SVE-3, and SVE-4).

2.0 SITE ACTIVITIES

The following section presents a summary of the Drilling and SVE recovery activities conducted at the Concho-BKU Satellite G Battery site in October 2019. The goal of these activities was to obtain current site data in order to evaluate the next appropriate corrective action.

2.1 Drilling

On October 23 and 24, 2019, Talon utilized an air rotary drilling rig to advanced five (5) 7 7/8-inch boreholes at the site in order to install soil vapor extraction wells. Three (3) of the boreholes were advanced to approximately 50 ft bgs (SVE-3, SVE-4 and SVE-5). The additional two (2) boreholes were advanced to approximately 100 ft bgs (SVE-1 and SVE-2). Immediately following drilling activities four (4) of the five boreholes (SVE-1, SVE-2, SVE-3 and SVE-4) were completed using 4-inch inside diameter, flush-threaded schedule 40 PVC casing and screen; with a No. 10 continuous slot-screen (0.010 inch) interval which extends from 50 ft to 100 ft in the deep wells (SVE-1 and SVE-2) and approximately 7 ft to 50 ft in the shallow wells (SVE-3 and SVE-4). In efforts to allow the maximum infiltration of vapor phase separated hydrocarbons (PSH) into the wells; silica sand was used as a filter material around the screen. Following the installation of the filter pack, 3/8-inch bentonite chips were placed into the remaining annual space of each well and properly hydrated. Wells were completed approximately 3 ft above ground surface with 3ft x 3ft x 4-inch concrete pads. The borehole placements and total depths were determined by the on-site geologist. The fifth borehole extended out of the zone of contamination; which was determined by the lack of vapor readings and olfactory evidence (SVE-5). Well construction logs are included in Appendix E.

During the advancement of soil borings, soil samples were collected at five (5) foot intervals for field lithologic analysis and head-space analysis. Head-space analyses were performed using a calibrated MultiRAE photoionization detector (PID). The retrieved soil samples from each boring were physically examined and characterized by the field geologist using the Unified Soil Classification System (ASTM D2487-85). Due to extensive vapor readings and olfactory evidence nineteen (19) retrieved soil samples were properly prepared, preserved, containerized, labeled and relinquished to Xenco Laboratories in Stafford, Texas under chain of custody for analytical testing. The collected samples were analyzed for BTEX via method 8260, and Total Petroleum Hydrocarbons (TPH) via method TX1005.

2.2 High Vacuum Soil Vapor Extraction

On October 29, 2019, Talon conducted a 48-hour High Vacuum SVE event on four (4) SVE wells (SVE-1, SVE-2, SVE-3, and SVE-4) located at the BKU Satellite G Battery site in Loco Hills, Eddy County, New Mexico. The objective of this event was to induce airflow in the subsurface with an applied vacuum extraction enhancing the in-situ volatilization of contaminants and capture of soil vapors from the impacted soils. The SVE event was conducted utilizing an SVE extraction pump capable of generating vacuum up to 25" hg. Off gas vapors extracted from the extraction wells were destroyed using a propane-fired 1000-SCFM thermal oxidizer capable of processing 172.96 lbs/hr of gasoline.

A total of 48 hours (2.0 days) of vapor recovery was performed on SVE-1, SVE-2, SVE-3, and SVE-4 during the October 2019 event. The volume of vapor removed during this event is shown to reflect the portions of off-gas vapor. Air removal rates were calculated from velocity measurements recorded at the influent manifold prior to entry into the SVE unit. Vapor recovery and air flow data has been detailed and can found in Table 2 in Appendix B. Influent air samples were collected over the course of the event and submitted for laboratory analysis in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. Influent samples from the event were tested for Total-Gas Analysis (Hydrocarbon Composition) by GPA 2261-C6+. The laboratory analytical results can be found in Appendix H.

2.3 Investigation Derived Waste

All accumulated investigation derived waste (drill cuttings) were stock piled along the excavated trench at the client's discretion. Further corrective action will be initiated therefore an individual waste disposal event was not conducted. The procedure used during this drilling phase was developed to facilitate planning and implementation of well replacement and installation in accordance with 19.27.4 NMAC.

3.0 INVESTIGATION RESULTS

Talon has reviewed the laboratory analytical data report and certifies that the data has been evaluated for technical acceptability, including problems and anomalies associated with the data, and that a determination of the usability of the analytical data with regard to project objectives has been made. Please refer to Appendix G for a full explanation of chemical constituents detected.

3.1 Drilling Analytical Results

As referenced, soil samples were retrieved from two (2) SVE wells (SVE-1 and SVE-5) and submitted to Xenco Laboratory for BTEX analysis via method 8260. This method may be used for the analysis of the aliphatic hydrocarbon fraction in the light ends of petroleum hydrocarbons.

Benzene concentrations reported for SVE-1 soil sample analysis ranged from <0.000208 mg/kg at 90 ft bgs to 66.2 mg/kg at 10 ft bgs. Benzene concentrations reported from SVE-5 soil sample analysis ranged from <0.000208 mg/kg at 40 and 50 ft bgs to 0.0122 mg/kg at 5 ft bgs.

Toluene concentrations reported for SVE-1 soil sample analysis ranged from <0.00101 mg/kg at 90 ft bgs to 171 mg/kg at 10 ft bgs. Toluene concentrations reported for SVE-5 soil sample analysis ranged from <0.000998 mg/kg at 20 ft bgs to 0.00481 mg/kg at 5 ft bgs.

Ethylbenzene concentrations reported for SVE-1 soil sample analysis ranged from <0.000338 mg/kg at 90 ft bgs to 133 mg/kg at 10 ft bgs. Ethylbenzene concentrations reported for SVE-5 soil sample analysis ranged from <0.000335 mg/kg at 20 ft bgs to 0.000461 mg/kg at 10 ft bgs.

Total Xylene concentrations reported for SVE-1 soil sample analysis ranged from <0.000439 mg/kg at 90 ft bgs to 88 mg/kg at 20 ft bgs. Total Xylene concentrations reported for SVE-5 soil sample analysis ranged from <0.000436 mg/kg at 20 ft bgs to 0.000511 mg/kg at 10 ft bgs.

Total Petroleum Hydrocarbons (TPH) were tested using the 8015 method. This method can be used to determine the concentrations of non-halogenated volatile organic compounds and semi volatile organic compounds by gas chromatography.

TPH concentrations reported for SVE-1 soil sample analysis ranged from 25.2 mg/kg at 90 ft bgs to 21700 mg/kg at 10 ft bgs. TPH concentrations reported for SVE-5 soil sample analysis ranged from <9.92 mg/kg at 5 ft bgs to 10.1 mg/kg at 20 ft bgs.

3.2 High Vacuum Soil Vapor Extraction Results

A total of 48-hours of soil vapor recovery was performed on SVE-1, SVE-2, SVE-3, and SVE-4 during the October 2019 event. SVE field logs can be found in Attachment 5.

The volume of vapor removed during the SVE event is shown to reflect as off-gas vapor. Air removal rates were calculated from velocity measurements recorded at the influent manifold prior to entry into the SVE unit. Vapor recovery and air flow data has been detailed and can be found in Table 2 of Appendix B Influent air samples were collected over the course of the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. Both influent samples from the event were tested for Total-Gas Analysis (Hydrocarbon Composition) by GPA 2261-C6+. Laboratory analytical can be found in Attachment 6.

Based on a combination of field vapor screening and collected laboratory samples, an estimated total of **140.26 equivalent gallons of hydrocarbons as off-gas vapor (Total)** were removed during the event. The calculations used to estimate the off-gas vapor mass recovered reflect the mass of total hydrocarbons recovered and does not necessarily equate to an equal mass of the product released. The mass recovery calculations may be affected by variations in the specific gravity of hydrocarbon released, age of release, activity of aerobic and/or anaerobic processes, and site specific geochemical factors.

The cumulative air flow measurements for the SVE event was calculated using a combination of field data measurements and Preso® B+ manufacturer provided formulas. **Air flow rates extracted from the SVE wells averaged 372.72 SCFM** during the event.

3.2.1 Air Quality

Influent air samples were collected during each event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. The maximum influent concentration was recorded as 10,310 ppmv for Hydrocarbon Composition.

3.2.2 System Operation Data and Mass Recovery Calculations

Formulae:

$$\text{Concentration (C\_mg/l)} = \frac{\text{C\_ppmv x Mol. wt. in mg(estimated) x 1000 x 0.000001}}{\text{0.0821 x Temp (K)}}$$

$$\text{Recovery Rate (lbs/hr)} = \frac{\text{(C\_mg/l) x 2.2 x (Flowrate) x 60 x28.32}}{\text{1,000,000}}$$

Recovery (lbs) = (lbs/hr) x (hrs)

$$\text{Correction Factor (CF)} = \frac{\text{PID Reading(ppm)}}{\text{PID Reading at Time of Laboratory Analysis}}$$

$$\frac{\text{8.34 lbs}}{\text{gallon water}} \times \text{0.82 average specific gravity of light crude (estimated)} = \frac{\text{6.84 lbs light crude}}{\text{gallon}}$$

3.2.3 Radius of Influence

The radius of influence (ROI) is defined as the greatest distance from an extraction well at which a sufficient vacuum and vapor flow can be induced to adequately enhance volatilization and extraction of contaminant in the soils. A general rule for the ROI is considered to be the distance from the extraction well at which a vacuum (in H2O) of 0.1-inch is observed.

Talon recorded an average of 3.16 (in H2O) vacuum pressure in SVE-2 and 1.15 (in H2O) vacuum pressure in SVE-3 while performing the high vacuum soil extraction event on SVE-1 over a 12-hour duration. During the 12-hour event conducted on SVE-4 Talon recorded average vacuum pressures of 2.85 (in H2O) and 3.19 (in H2O) in SVE-2 and SVE-3 respectively.

According to the vacuum pressures observed Talon can achieve a **minimum ROI of 35 feet** from each soil vapor extraction well while operating at an air flow rate of approximately 350 standard cubic feet per minute (scfm).

4.0 CONCLUSIONS AND RECOMMENDATIONS

Talon conducted a series of investigation activities (Drilling and Soil Vapor Extraction Event) to remove soil contamination at the Concho-BKU Satellite G Battery site in efforts to prevent the spread of the contaminants to a broader soil contaminated area or potentially groundwater.

4.1 Conclusions

Five (5) soil borings were advanced in/around the point of release in order to obtain vapor head-space readings and soil samples for analysis. Four (4) of the five soil borings were completed as SVE wells with total depths of 50 ft and 100 ft bgs. The SVE wells are screened at intervals to create an upper and lower zone of vapor extraction.

One (1) 48-hour high vacuum soil extraction event was conducted approximately a week following the installation of SVE wells. An estimated total of **140.26** equivalent gallons of hydrocarbons as off-gas vapor (Total) was removed during the event. A **minimum ROI of 35 feet** was observed at the upper and lower zones of contamination during this event.

4.2 Recommendations

Talon recommends continuing corrective action to include six (6) monthly events of high vacuum soil extraction on wells (SVE-1, SVE-2, SVE-3, and SVE-4) in order to obtain additional site data to evaluate the next appropriate corrective action.

Following the completion of SVE events; soil sampling analysis should be conducted and compared to the site specific RRAL levels in order to evaluate soil concentrations; ultimately in efforts to submit closure for the spill release.

APPENDIX A

FIGURES

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Drafted: 4/13/2020
1 in = 30 ft
Drafted By: NRC

Concho
BKU Satellite G Battery
Eddy County, New Mexico
Attachment 1 - Site Update Map

CONCHO

FIGURE 2

BKU SATELLITE G BATTERY
(32.813690°,-104.018250°)

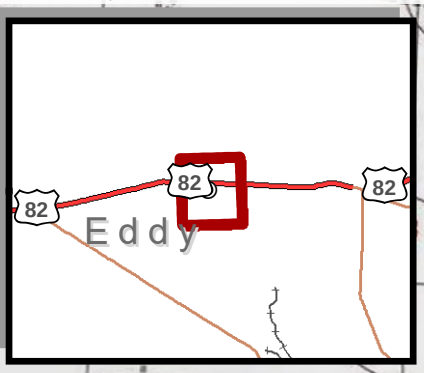
OVERVIEW MAP

EDDY COUNTY, NEW MEXICO

Project : 212C-MD-01711	
Date : 06/06/2019	
File : H:\GIS\212C-MD-01711	

MAPPED BY: MISTI MORGAN

SOURCE: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



OVERALL VIEW 1:735,333

BKU SAT G BATTERY

0 2,000 4,000 Feet

1 inch = 2,000 feet

LEGEND

◉ SITE LOCATION

CONCHO

FIGURE 3

BKU SATELLITE G BATTERY
(32.813690°,-104.018250°)

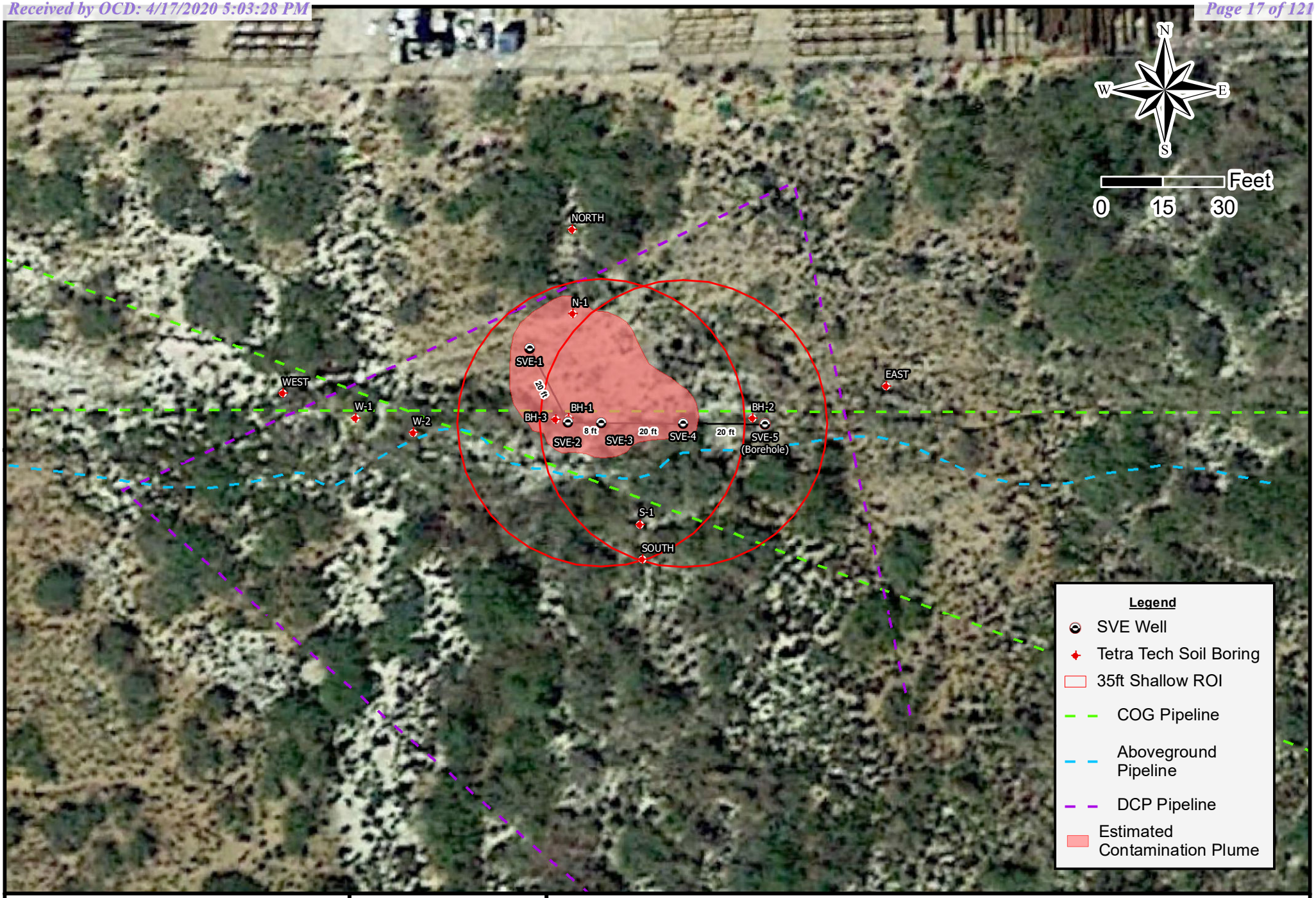
TOPOGRAPHIC MAP

EDDY COUNTY, NEW MEXICO

Project : 212C-MD-01711	
Date : 06/06/2019	
File : H:\GIS\212C-MD-01711	

MAPPED BY: MISTI MORGAN

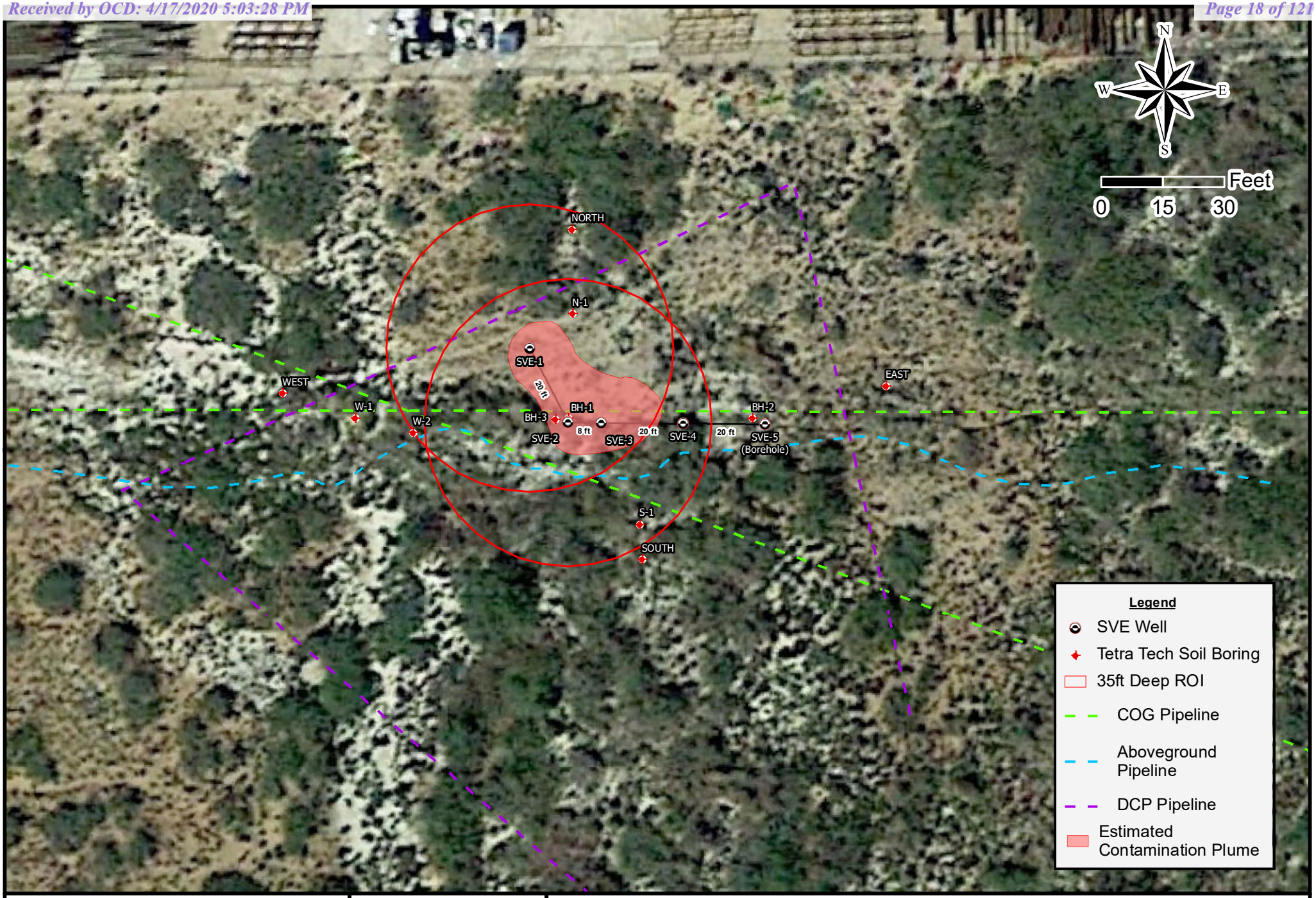
SOURCE: Esri, Copyright:© 2013 National Geographic Society, i-cubed



TALON LPE

Drafted: 4/13/2020
1 in = 30 ft
Drafted By: NRC

Concho
BKU Satellite G Battery
Eddy County, New Mexico
Attachment 1 - Shallow Zone Radius of Influence Map



TALON LPE

Drafted: 4/13/2020
1 in = 30 ft
Drafted By: NRC

Concho
BKU Satellite G Battery
Eddy County, New Mexico
Attachment 1 - Deep Zone Radius of Influence Map

APPENDIX B

TABLES

Concho
BKU Satellite G Battery
Eddy County, New Mexico
Soil Investigation

Sample Designation	Depth bgs (ft)	Date Sampled	Concentration (mg/Kg)								
			TPH				BTEX				
			Gasoline Range Hydrocarbons (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Hydrocarbons (MRO)	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX
			Recommended Remediation Action Level			2500	10				50
BH-1 (Tetra Tech)	1	04/16/19	2120	18000	2590	22710	1.63	11.8	13.2	19.4	46.03
	3	04/16/19	908	5740	818	7466	1.03	9.84	12.1	18.3	41.27
	5	04/16/19	2030	5220	681	7931	2.04	9.27	19.8	27.9	59.01
	7	04/16/19	2480	5480	771	8731	7.77	<0.504	25.8	25.4	58.9
	10	04/16/19	522	1650	213	2385	-	-	-	-	-
	15	04/16/19	2740	6030	802	9572	-	-	-	-	-
	20	04/16/19	1010	3700	489	5199	2	6.1	13.5	17.5	39.1
	25	04/16/19	4230	7250	988	12468	-	-	-	-	-
	30	04/16/19	2090	3620	488	6198	6	35.8	25.4	32.3	99.5
	35	04/16/19	3230	5810	755	9795	6.87	89.6	76.1	99.1	271.67
	40	04/16/19	1120	5110	654	6884	1.53	11.3	12.3	16.8	41.93
	45	04/16/19	4080	6600	896	11576	-	-	-	-	-
	50	04/16/19	3370	6830	732	10932	4.89	129	115	148	396.89
	55	04/16/19	2360	5830	668	8858	-	-	-	-	-
	60	04/16/19	2640	4380	567	7587	6.67	77.6	61.7	78.5	224.47
	70	04/16/19	3490	5620	705	9815	6.09	95.1	79.5	103	283.69
	80	04/16/19	3790	6250	766	10806	5.23	85.2	76.3	96.7	263.43
	90	04/16/19	1660	5720	698	8078	0.902	18.5	24	34.2	77.60
BH-2 (Tetra Tech)	1	04/16/19	385	19700	2570	22655	0.0125	<0.0499	0.0796	0.607	0.812
	3	04/16/19	21.8	1020	173	1215	0.0948	0.0517	0.158	0.217	0.5215
	5	04/16/19	25.3	195	26	246	0.086	0.0336	0.101	0.146	0.3666
	7	04/16/19	3590	17700	2020	23310	<0.990	4.35	1.76	10.8	16.9
	10	04/16/19	371	1900	227	2498	<0.202	<0.202	1.85	4.05	5.9
	15	04/16/19	1860	5300	720	7880	-	-	-	-	-
	20	04/16/19	107	832	101	1040	-	-	-	-	-
	25	04/16/19	866	3530	329	4725	-	-	-	-	-
	30	04/16/19	304	2310	221	2835	<0.200	<0.200	1.74	3.28	5.02
	50	04/16/19	<15	38.7	<15.0	39	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	60	04/16/19	<15	16.8	<15.0	17	<0.00201	<0.00201	<0.00201	<0.00201	<0.00201
BH-3 (Tetra Tech)	85	05/13/19	1530	5010	549	7089	10	39.4	32.4	42.3	124.1
	95	05/13/19	300	2730	263	3293	<0.00199	<0.00199	0.0945	0.0741	0.169
	100	05/13/19	59.1	860	93.5	1013	<0.00198	0.0154	0.038	0.652	0.119
	105	05/13/19	55.6	768	87.5	911	0.00221	0.0329	0.0661	0.104	0.205
	110	05/13/19	19.1	205	25.1	249	<0.00200	<0.00200	0.00418	0.00799	0.0122
	115	05/13/19	33.3	660	79.1	772	<0.00201	0.00546	0.02	0.0336	0.0591
	120	05/13/19	30.2	474	58.5	563	<0.00199	0.00309	0.0297	0.0397	0.0725
	125	05/13/19	17.5	308	35.5	361	<0.00199	<0.00199	0.0107	0.0171	0.0278
	130	05/13/19	<14.9	<14.9	<14.9	<14.9	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	135	05/13/19	16.3	208	20.3	245	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198
	140	05/13/19	<15.0	50.4	<15.0	50	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202
	145	05/13/19	<15.0	28.4	<15.0	28	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199
	150	05/13/19	<15.0	<15.0	<15.0	<15.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200

Concho
BKU Satellite G Battery
Eddy County, New Mexico
Soil Investigation

Sample Designation	Depth bgs (ft)	Date Sampled	Concentration (mg/Kg)								
			TPH				BTEX				
			Gasoline Range Hydrocarbons (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Hydrocarbons (MRO)	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX
			Recommended Remediation Action Level			2500	10				50
N-1 Horizontal (Tetra Tech)	5	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199
	10	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	15	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199
	20	10/16/19	<49.8	371	<49.8	371	<0.00202	<0.00202	0.0106	0.0106	0.0252
	25	10/16/19	184	949	101	1234	0.00623	0.255	1.85	0.859	2.97023
	30	10/16/19	498	3690	387	4575	0.113	4.19	7.47	13.8	25.573
	35	10/16/19	237	1290	136	1663	0.355	4.68	5.95	9.1	20.085
	40	10/16/19	495	3630	400	4525	0.22	5.76	7.3	10.8	24.08
	45	10/16/19	787	4380	454	5621	0.523	10.3	14.4	19.4	44.623
	50	10/16/19	546	3760	404	4710	0.245	9.55	13.1	18.2	41.095
	60	10/16/19	<49.9	141	<49.9	141	0.00653	0.028	0.0168	0.0247	0.07603
	70	10/16/19	<50.0	117	<50.0	117	0.0032	0.0133	0.00724	0.0107	0.03444
S-1 Horizontal (Tetra Tech)	5	10/16/19	<50.0	<50.0	<50.0	<50.0	0.00211	0.00763	<0.00199	<0.00199	0.00974
	10	10/16/19	<49.9	<49.9	<49.9	<49.9	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202
	15	10/16/19	<49.8	439	49.9	489	<0.00198	0.00819	0.0502	0.0922	0.151
	20	10/16/19	<50.0	83.8	<50.0	84	<0.0201	<0.0201	<0.0201	<0.0201	<0.0201
	25	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	30	10/16/19	<49.9	<49.9	<49.9	<49.9	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198
	35	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
E - Horizontal	5	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	10	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.0201	<0.0201	<0.0201	<0.0201	<0.0201
	15	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	20	10/16/19	<49.8	<49.8	<49.8	<49.8	<0.00202	<0.00202	<0.00202	<0.00202	<0.00202
W-1 Horizontal (Tetra Tech)	5	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	10	10/16/19	<49.9	<49.9	<49.9	<49.9	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199
	15	10/16/19	<49.9	<49.9	<49.9	<49.9	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	20	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.0201	<0.0201	<0.0201	<0.0201	<0.0201
W-2 Horizontal (Tetra Tech)	5	10/16/19	<49.9	<49.9	<49.9	<49.9	<0.00198	<0.00198	<0.00198	<0.00198	<0.00198
	10	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199
	15	10/16/19	83.6	762	77.6	923	<0.00199	0.0351	0.322	0.507	0.864
	20	10/16/19	<50.0	<50.0	<50.0	<50.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
	25	10/16/19	<49.8	<49.8	<49.8	<49.8	<0.00199	<0.00199	<0.00199	<0.00199	<0.00199
	30	10/16/19	<49.9	<49.9	<49.9	<49.9	<0.0201	<0.0201	<0.0201	<0.0201	<0.0201
SVE-1 (Talon)	5	10/23/19	502.0	5590.0	811.0	6900.0	1.32	.876	0.153	6.68	9.03
	10	10/23/19	6570.0	13500.0	1590.0	21700.0	66.2	171	133	170	540
	15	10/23/19	1630.0	4800.0	701.0	7130.0	5.65	25.8	33	44.9	109
	20	10/23/19	3050.0	5060.0	536.0	8650.0	33.9	78.3	74.2	88	274
	30	10/23/19	769.0	4040.0	431.0	5240.0	4.31	14.9	20.4	27.3	66.9
	40	10/23/19	3500.0	6240.0	555.0	10300.0	26.3	130	72.8	87.8	317
	50	10/23/19	2600.0	5220.0	474.0	8290.0	23	113	58.6	71.4	266
	60	10/23/19	2070.0	4670.0	450.0	7190.0	12.8	72.2	52.2	66.1	203
	70	10/23/19	2090.0	5700.0	485.0	8280.0	16.5	96.1	69.7	87.6	270
	80	10/23/19	1750.0	5780.0	526.0	8060.0	9.55	64	48	60.8	182
	90	10/23/19	10.0	15.2	<9.98	25.2	<0.000208	<0.00101	<0.000338	<0.000439	<0.000208
	100	10/23/19	23.5	277.0	39.8	340.0	0.000439	0.00605	0.0380	0.0758	0.12

Concho
BKU Satellite G Battery
Eddy County, New Mexico
Soil Investigation

Sample Designation	Depth bgs (ft)	Date Sampled	Concentration (mg/Kg)								
			TPH				BTEX				
			Gasoline Range Hydrocarbons (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Hydrocarbons (MRO)	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX
			Recommended Remediation Action Level			2500	10				50
SVE-5 (Talon)	5	10/23/19	<9.92	<9.92	<9.92	<9.92	0.0122	0.00481	0.000461	<0.000438	0.0175
	10	10/23/19	<9.99	<9.99	<9.99	<9.99	0.00283	0.00232	0.000401	0.000511	0.00606
	15	10/23/19	<9.95	<9.95	<9.95	<9.95	0.00804	0.00389	0.000400	<0.000437	0.0123
	20	10/23/19	10.1	<9.96	<9.96	10.1	0.000409	<0.000998	<0.000335	<0.000436	0.000409
	30	10/23/19	<9.99	<9.99	<9.99	<9.99	0.00211	0.00111	<0.000335	<0.000436	0.00322
	40	10/23/19	<9.98	<9.98	<9.98	<9.98	<0.000207	<0.001	<0.000336	<0.000438	<0.000207
	50	10/23/19	<9.94	<9.94	<9.94	<9.94	<0.000208	<0.001	<0.000337	<0.000438	<0.000208

(-) Not Analyzed

BOLD - Above Recommend Remediation Action Levels (RRAL)

Table October 2019
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°F)	Vacuum (In. hg)	Vacuum (In. h20)	Differential pressure (In. h20)	Flow (SCFM)	FID Readings (ppm)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
10:00	1	38	9.0	122.4	110.5	317.09	50000	26580.00	26580.00	1.00	26580	33.82	40.09	40.09	40.09
11:00	1	46	9.0	122.4	112.6	317.54	50000	-	26580.00	1.00	26580	33.28	39.51	39.51	79.59
12:00	1	50	9.0	122.4	114.3	318.68	50000	-	26580.00	1.00	26580	33.02	39.34	39.34	118.93
13:00	1	58	9.0	122.4	124.8	330.41	50000	-	26580.00	1.00	26580	32.51	40.16	40.16	159.09
14:00	1	62	9.0	122.4	125.9	330.59	50000	-	18900.00	1.00	18900	22.70	28.06	28.06	187.14
15:00	1	66	9.0	122.4	127.3	331.16	50000	18900.00	18900.00	1.00	18900	22.53	27.89	27.89	215.03
16:00	1	70	9.0	122.4	128.1	330.94	50000	-	18900.00	1.00	18900	22.36	27.66	27.66	242.70
17:00	1	68	9.0	122.4	126.9	330.01	50000	-	18900.00	1.00	18900	22.45	27.69	27.69	270.39
18:00	1	62	9.0	122.4	127.3	332.42	50000	-	26310.00	1.00	26310	31.94	39.70	39.70	310.08
19:00	1	57	9.0	122.4	126.8	333.37	50000	-	26310.00	1.00	26310	32.25	40.19	40.19	350.28
20:00	1	52	9.0	122.4	127.0	335.26	50000	26310.00	26310.00	1.00	26310	32.57	40.82	40.82	391.09
21:00	1	50	9.0	122.4	126.9	335.78	50000		26310.00	1.00	26310	32.70	41.04	41.04	432.13
22:00	1	50	10.0	136	118.3	316.38	50000	6380.00	6380.00	1.00	6380	7.85	9.28	9.28	441.42
23:00	1	50	10.0	136	111.4	307.02	50000	-	6380.00	1.00	6380	7.85	9.01	9.01	450.42
0:00	1	50	10.0	136	113.6	310.03	50000	-	6380.00	1.00	6380	7.85	9.09	9.09	459.52
1:00	1	50	10.0	136	112.9	309.08	50000	-	6380.00	1.00	6380	7.85	9.07	9.07	468.58
2:00	1	46	10.0	136	113.3	310.85	50000	-	4950.00	1.00	4950	6.08	7.07	7.07	475.65
3:00	1	44	10.0	136	113.1	311.19	50000	4950.00	4950.00	1.00	4950	6.11	7.10	7.10	482.76
4:00	1	44	10.0	136	113.5	311.74	50000	-	4950.00	1.00	4950	6.11	7.12	7.12	489.87
5:00	1	44	10.0	136	113.1	311.19	50000	-	4950.00	1.00	4950	6.11	7.10	7.10	496.98
6:00	1	42	10.0	136	113.6	312.49	50000	-	3570.00	1.00	3570	4.39	5.13	5.13	502.11
7:00	1	42	10.0	136	113.3	312.08	50000	-	3570.00	1.00	3570	4.39	5.12	5.12	507.23
8:00	1	42	10.0	136	113.8	312.77	50000	3570.00	3570.00	1.00	3570	4.39	5.13	5.13	512.36
9:00	1	42	10.0	136	114.1	313.18	50000	-	3570.00	1.00	3570	4.39	5.14	5.14	517.50
Averages:		51.04	9.50	129.20	118.43	320.05	50000.00						Total	517.50	

PSH Mass Recovered in Vapor Phase = 79.49 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (influent 3)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(ppmv)	(Grams)	(atm)	(atm.liter/K. mole)	(F)	(K)	(C_mg/l)
26580	28.8644	1	0.0821	38	276.333333	33.8174422

Inputs are the green values.
Calculated values are yellow.
Constants are purple values.
Outpus are the blue values.

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =	517.50	lbs
	79.49	gallons
PSH Mass Recovered in Liquid Phase =	0.00	lbs
	0.00	gallons
TOTAL =	517.50	lbs
	79.49	gallons

Gallons removed determined at time of pick up

PSH Volume in Gallons= 0
PSH Mass in Pounds= 0

% Total Hydrocarbon to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0.005		50.00
Iso-Butane (C4H10)	58.12	0.004		40.00
N-Butane (C4H10)	58.12	0.02		200.00
Iso-Pentane (C4H12)	72.15	0.075		750.00
N-Pentane (C5H12)	72.15	0.175		1750.00
Hexane+ (C6H14)	86.18	2.379		23790.00
			Total	26580.00

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		97.3390
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		1.8100
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0030
Iso-Butane (C4H10)	58.1222	0.0342	0.0020
N-Butane (C4H10)	58.1222	0.1286	0.0100
Iso-Pentane (C4H12)	72.1488	0.1885	0.0300
N-Pentane (C5H12)	72.1488	0.0907	0.0700
Hexane+	97.3966	0.3366	0.7360
	Total	0.8332	100
	Calculated MW		28.8644

% Total Hydrocarbon to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0.002		20.00
Iso-Butane (C4H10)	58.12	0.004		40.00
N-Butane (C4H10)	58.12	0.01		100.00
Iso-Pentane (C4H12)	72.15	0.04		400.00
N-Pentane (C5H12)	72.15	0.094		940.00
Hexane+ (C6H14)	86.18	1.74		17400.00
			Total	18900.00

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		98.4310
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		0.9750
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0010
Iso-Butane (C4H10)	58.1222	0.0342	0.0020
N-Butane (C4H10)	58.1222	0.1286	0.0050
Iso-Pentane (C4H12)	72.1488	0.1885	0.0160
N-Pentane (C5H12)	72.1488	0.0907	0.0370
Hexane+	97.3966	0.3366	0.5330
	Total	0.8332	100
	Calculated MW		28.5674

% Total Hydrocarbon to ppmv - Influent 3

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0.005		50.00
Iso-Butane (C4H10)	58.12	0.004		40.00
N-Butane (C4H10)	58.12	0.018		180.00
Iso-Pentane (C4H12)	72.15	0.078		780.00
N-Pentane (C5H12)	72.15	0.183		1830.00
Hexane+ (C6H14)	86.18	2.343		23430.00
			Total	26310.00

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		97.2480
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		1.9090
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0030
Iso-Butane (C4H10)	58.1222	0.0342	0.0020
N-Butane (C4H10)	58.1222	0.1286	0.0090
Iso-Pentane (C4H12)	72.1488	0.1885	0.0310
N-Pentane (C5H12)	72.1488	0.0907	0.0730
Hexane+	97.3966	0.3366	0.7250
	Total	0.8332	100
	Calculated MW		28.8740

% Total Hydrocarbon to ppmv - Influent 4

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0		0.00
Iso-Pentane (C4H12)	72.15	0.005		50.00
N-Pentane (C5H12)	72.15	0.01		100.00
Hexane+ (C6H14)	86.18	0.623		6230.00
			Total	6380.00

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		97.1370
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		2.6660
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0000
Iso-Butane (C4H10)	58.1222	0.0342	0.0000
N-Butane (C4H10)	58.1222	0.1286	0.0000
Iso-Pentane (C4H12)	72.1488	0.1885	0.0020
N-Pentane (C5H12)	72.1488	0.0907	0.0040
Hexane+	97.3966	0.3366	0.1910
	Total	0.8332	100
	Calculated MW		28.5776

% Total Hydrocarbon to ppmv - Influent 5

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0		0.00
Iso-Pentane (C4H12)	72.15	0.003		30.00
N-Pentane (C5H12)	72.15	0.008		80.00
Hexane+ (C6H14)	86.18	0.484		4840.00
			Total	4950.00

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		98.5470
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		1.3020
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0000
Iso-Butane (C4H10)	58.1222	0.0342	0.0000
N-Butane (C4H10)	58.1222	0.1286	0.0000
Iso-Pentane (C4H12)	72.1488	0.1885	0.0010
N-Pentane (C5H12)	72.1488	0.0907	0.0030
Hexane+	97.3966	0.3366	0.1470
	Total	0.8332	100
	Calculated MW		28.3280

% Total Hydrocarbon to ppmv - Influent 6

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0		0.00
Iso-Pentane (C4H12)	72.15	0.003		30.00
N-Pentane (C5H12)	72.15	0.003		30.00
Hexane+ (C6H14)	86.18	0.351		3510.00
			Total	3570.00

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		99.6730
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		0.2190
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0000
Iso-Butane (C4H10)	58.1222	0.0342	0.0000
N-Butane (C4H10)	58.1222	0.1286	0.0000
Iso-Pentane (C4H12)	72.1488	0.1885	0.0010
N-Pentane (C5H12)	72.1488	0.0907	0.0010
Hexane+	97.3966	0.3366	0.1060
	Total	0.8332	100
	Calculated MW		28.1255

Table October 2019
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°)	Vacuum (In. hg)	Vacuum (In. h20)	Differential pressure (In. h20)	Flow (SCFM)	FID Readings (ppm)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
10:00	1	44	4.0	54.4	164.2	427.56	50000	10310.00	10310.00	1.00	10310	12.81	20.47	20.47	20.47
11:00	1	44	4.0	54.4	164.7	428.21	50000	-	10310.00	1.00	10310	12.81	20.50	20.50	40.97
12:00	1	48	4.0	54.4	163.0	424.32	50000	-	10310.00	1.00	10310	12.71	20.15	20.15	61.13
13:00	1	50	4.0	54.4	163.2	423.74	50000	-	10310.00	1.00	10310	12.66	20.05	20.05	81.18
14:00	1	50	4.0	54.4	163.5	424.13	50000	-	10310.00	1.00	10310	12.66	20.07	20.07	101.24
15:00	1	52	4.0	54.4	163.4	423.17	50000	-	10310.00	1.00	10310	12.61	19.94	19.94	121.19
16:00	1	52	4.0	54.4	162.7	422.27	50000	-	10310.00	1.00	10310	12.61	19.90	19.90	141.09
17:00	1	56	4.0	54.4	161.9	419.59	50000	-	10310.00	1.00	10310	12.51	19.62	19.62	160.71
18:00	1	56	4.0	54.4	161.2	418.68	50000	-	10310.00	1.00	10310	12.51	19.58	19.58	180.29
19:00	1	52	4.0	54.4	160.5	419.40	50000	-	9620.00	1.00	9620	11.75	18.43	18.43	198.71
20:00	1	46	4.0	54.4	161.3	422.93	50000	-	9620.00	1.00	9620	11.89	18.80	18.80	217.52
21:00	1	44	4.0	54.4	160.9	423.24	50000	9620.00	9620.00	1.00	9620	11.94	18.89	18.89	236.41
22:00	1	44	4.0	54.4	160.7	422.98	50000	-	9620.00	1.00	9620	11.94	18.88	18.88	255.29
23:00	1	40	4.0	54.4	161.3	425.46	50000	-	9620.00	1.00	9620	12.04	19.14	19.14	274.43
0:00	1	40	4.0	54.4	160.2	424.01	50000	-	9620.00	1.00	9620	12.04	19.08	19.08	293.51
1:00	1	40	4.0	54.4	160.5	424.40	50000	-	9620.00	1.00	9620	12.04	19.10	19.10	312.60
2:00	1	38	4.0	54.4	161.3	426.31	50000	-	9620.00	1.00	9620	12.08	19.26	19.26	331.86
3:00	1	32	4.0	54.4	160.9	428.37	50000	-	4440.00	1.00	4440	5.64	9.04	9.04	340.90
4:00	1	32	4.0	54.4	161.2	428.77	50000	-	4440.00	1.00	4440	5.64	9.05	9.05	349.94
5:00	1	32	4.0	54.4	161.4	429.04	50000	-	4440.00	1.00	4440	5.64	9.05	9.05	359.00
6:00	1	28	4.0	54.4	161.7	431.19	50000	-	4440.00	1.00	4440	5.69	9.17	9.17	368.17
7:00	1	28	4.0	54.4	161.8	431.33	50000	-	4440.00	1.00	4440	5.69	9.17	9.17	377.34
8:00	1	28	4.0	54.4	161.2	430.53	50000	4440.00	4440.00	1.00	4440	5.69	9.16	9.16	386.50
9:00	1	30	4.0	54.4	161.3	429.78	50000	-	4440.00	1.00	4440	5.67	9.10	9.10	395.60
Averages:		41.92	4.00	54.40	161.83	425.39	50000.00						Total	395.60	

PSH Mass Recovered in Vapor Phase = 60.77 gallons

FID maximum Concentration = 50,000 PPM

Ex: Conversion from ppmv to mg/L (influent 3)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(ppmv)	(Grams)	(atm)	(atm.liter/K. mole)	(F)	(K)	(C_mg/l)
10310	28.5224	1	0.0821	44	279.666667	12.8074165

Inputs are the green values.
Calculated values are yellow.
Constants are purple values.
Outpus are the blue values.

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =	913.11	lbs
	140.26	gallons
PSH Mass Recovered in Liquid Phase =	0.00	lbs
	0.00	gallons
TOTAL =	**913.11**	**lbs**
	140.26	**gallons**

Gallons removed determined at time of pick up

PSH Volume in Gallons=	0
PSH Mass in Pounds=	0

% Total Hydrocarbon to ppmv - Influent 7

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0.004		40.00
Iso-Pentane (C4H12)	72.15	0.033		330.00
N-Pentane (C5H12)	72.15	0.066		660.00
Hexane+ (C6H14)	86.18	0.928		9280.00
			Total	**10310.00**

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		97.8520
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		1.8230
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0000
Iso-Butane (C4H10)	58.1222	0.0342	0.0000
N-Butane (C4H10)	58.1222	0.1286	0.0020
Iso-Pentane (C4H12)	72.1488	0.1885	0.0130
N-Pentane (C5H12)	72.1488	0.0907	0.0260
Hexane+	97.3966	0.3366	0.2840
	Total	0.8332	100
	Calculated MW		**28.5224**

% Total Hydrocarbon to ppmv - Influent 8

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0.004		40.00
Iso-Pentane (C4H12)	72.15	0.025		250.00
N-Pentane (C5H12)	72.15	0.063		630.00
Hexane+ (C6H14)	86.18	0.87		8700.00
			Total	**9620.00**

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		97.9350
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		1.7620
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0000
Iso-Butane (C4H10)	58.1222	0.0342	0.0000
N-Butane (C4H10)	58.1222	0.1286	0.0020
Iso-Pentane (C4H12)	72.1488	0.1885	0.0100
N-Pentane (C5H12)	72.1488	0.0907	0.0250
Hexane+	97.3966	0.3366	0.2660
	Total	0.8332	100
	Calculated MW		**28.4984**

% Total Hydrocarbon to ppmv - Influent 9

Compound	Molecular Weight (g/mol)	Vol. %	=	ppmv
Methane (CH4)	16.04	0		0.00
Ethane (C2H6)	30.07	0		0.00
Propane (C3H8)	44.10	0		0.00
Iso-Butane (C4H10)	58.12	0		0.00
N-Butane (C4H10)	58.12	0.002		20.00
Iso-Pentane (C4H12)	72.15	0.028		280.00
N-Pentane (C5H12)	72.15	0.063		630.00
Hexane+ (C6H14)	86.18	0.351		3510.00
			Total	**4440.00**

Molecular Weight Calculations

component	Molecular Weight (g/mol)		mol%
Nitrogen (N2)	28.016		98.0030
Methane (CH4)	16.0425		0.0000
Carbon Dioxide (CO2)	44.011		1.6910
Ethane (C2H6)	30.069	0.0221	0.0000
Propane (C3H8)	44.0956	0.0325	0.0000
Iso-Butane (C4H10)	58.1222	0.0342	0.0000
N-Butane (C4H10)	58.1222	0.1286	0.0010
Iso-Pentane (C4H12)	72.1488	0.1885	0.0110
N-Pentane (C5H12)	72.1488	0.0907	0.0250
Hexane+	97.3966	0.3366	0.2690
	Total	0.8332	100
	Calculated MW		**28.4893**

APPENDIX C

PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPHIC DOCUMENTATION

Facility Name: Concho-BKU Satellite G Battery
Location: 32.81624°, -104.01595°
Project Number: 700778.140.02

Prepared by: Trevor Cardenas
Photographer: Multiple
Photograph Date: October 2019

PHOTOGRAPH NO. 1

Description:
Initial site assessment
(September 05, 2019)

PHOTOGRAPH NO. 2

Description:
Initial site assessment
(September 05, 2019)

PHOTOGRAPHIC DOCUMENTATION

Facility Name: Concho-BKU Satellite G Battery
Location: 32.81624°, -104.01595°
Project Number: 700778.140.02

Prepared by: Trevor Cardenas
Photographer: Multiple
Photograph Date: October 2019

PHOTOGRAPH NO. 3

Description:
SVE Well Installation
(October 23, 2019)

PHOTOGRAPH NO. 4

Description:
SVE Well Installation
(October 23, 2019)

PHOTOGRAPHIC DOCUMENTATION

Facility Name: Concho-BKU Satellite G Battery
Location: 32.81624°, -104.01595°
Project Number: 700778.140.02

Prepared by: Trevor Cardenas
Photographer: Multiple
Photograph Date: October 2019

PHOTOGRAPH NO. 5

Description:
SVE – 1 Completion
(October 25, 2019)

PHOTOGRAPH NO. 6

Description:
SVE – 2 and 3 Completion
(October 25, 2019)

PHOTOGRAPHIC DOCUMENTATION

Facility Name: Concho-BKU Satellite G Battery
Location: 32.81624°, -104.01595°
Project Number: 700778.140.02

Prepared by: Trevor Cardenas
Photographer: Multiple
Photograph Date: October 2019

PHOTOGRAPH NO. 7

Description:
SVE – 3 and 4 Completion
(October 25, 2019)

PHOTOGRAPH NO. 8

Description:
Four (4) SVE Well Completions
(October 25, 2019)

APPENDIX D

NMEDOCD FORM C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # *(assigned by OCD)*
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# *(if applicable)*

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release		

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☐ The source of the release has been stopped.
☐ The impacted area has been secured to protect human health and the environment.
☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: DeAnn Grant _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	_____ (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☐ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☐ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☐ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☐ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☐ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☐ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☐ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☐ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

APPENDIX E

BORING LOGS

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-5 (Borehole)
TOTAL DEPTH: 50'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Talon/LPE
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. ___ Length _____ Slot Size _____
CASING: Diam. ___ Length _____ Type _____
DATE DRILLED: October 23, 2019
LONGITUDE:

PAGE 1 of 2

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
0								0
5						5'	Light Gray Caliche & Rock Fragments to Brown Clay, Dry	5
			0.2		5'-7'5"	5'	SAA	
10			0.0		10'-12'5"		Brown Clay w/ Rock Fragments, Moist	10
15			0.1		15'-17'5"	15'	Brown to Reddish Brown Clay w/ Rock Fragments, Moist	15
20			0.0		20'-22'5"		SAA	20
25								25
30			0.0				SAA	30

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-5 (Borehole)
TOTAL DEPTH: 50'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Talon/LPE
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. ___ Length _____ Slot Size _____
CASING: Diam. ___ Length _____ Type _____
DATE DRILLED: October 23, 2019
LONGITUDE:

PAGE 2 of 2

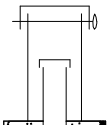
DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
35					30'-32'5"			35
40			0.0		40'-42'5"	40'	Reddish Brown Silty Sand w/ Trace Clay, Moist	40
45								45
50			0.0		50'-52'5"	50'	Bottom Hole	50
55								55
60								60

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-1 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 23, 2019
LONGITUDE:

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
0						0'		0
5						5'	Light Brown Silt w/ Sand and Trace Gravel, Dry, Strong Odor	5
10			403.0		5'-7'5"	5'	Light Brown to Tan Sand w/ Reddish Brown Clay, Staining, Moist, Strong Odor	10
15			355.9		10'-12'5"	10'	Reddish Brown Clay w/ Staining, Moist, Strong Odor	15
20			518.8		15'-17'5"	20'	Reddish Brown Clay w/ Staining, Moist, Strong Odor	20
25			350.8		20'-22'5"		Reddish Brown Silt w/ Some Sand and Clay, Moist, Strong Odor	25

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-1 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 23, 2019
LONGITUDE:

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
30						30'		30
			359.6		30'-32'5"		Reddish Brown Fine Grainded Sand with Clay and Silt, Moist, Strong Odor	
35								35
40			392.4		40'-42'5"		Reddish Brown Fine Grained Sand w/ Trace Silts/Clays, Moist, Strong Odor	40
45								45
50			338.5		50'-52'5"		SAA, Strong Odor	50
55								55

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-1 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 23, 2019
LONGITUDE:

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
60			381.6		60'-62'5"		Reddish Brown Silty Sand to Reddish Brown Silty Clay, Moist with Trace Rock Fragments, Strong Odor	60
65								65
70			308.8		70'-72'5"		SAA, Strong Odor	70
75								75
80			357.7		80'-82'5"		SAA, Strong Odor	80
85								85

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-1 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 23, 2019
LONGITUDE:

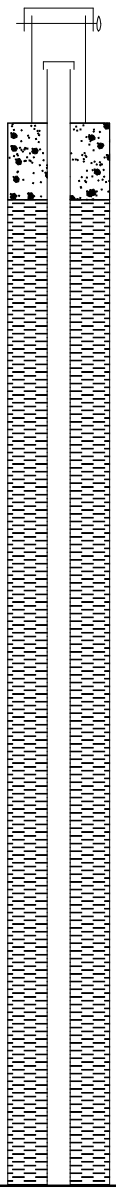
DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
90			3.2		90'-92'5"		SAA	90
95								95
100						100'		100
			68.0		100'-102'5"		Bottom Hole	
105								105
110								110
115								115

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-2 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
0							Light Brown - Light Grey Caliche and Rock Fragments, Odor Present	0
5						8'		5
10						10'	Reddish Brown Clay w/ Rock Fragments, Moist, Odor Present	10
15							Reddish Brown Clay w/ Rock Fragments and Sand, Moist, Odor Present	15
20						20'		20
25							Rock Fragments with Reddish Brown Silty Sand, Odor Present	25

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-2 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
30						30'		30
							Reddish Brown Sand w/ Silt and Trace Rock Fragments	
35								35
40							SAA, Odor Present	40
45								45
50						50'		50
							SAA, Odor Present	
55								55

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-2 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
60							SAA, Odor Present	60
65								65
70							SAA, Odor Present	70
75								75
80							SAA, Odor Present	80
85								85

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-2 (Deep)
TOTAL DEPTH: 100'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 50' Slot Size 0.010
CASING: Diam. 4" Length 53' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:

PAGE 4 of 4

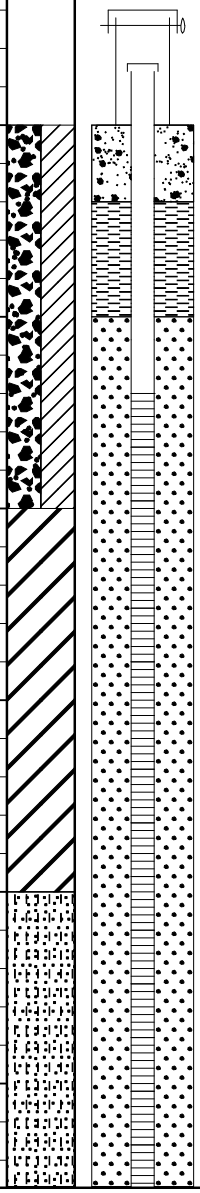
DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
90							Reddish Brown Clay w/ Rock Fragments, Odor Present	90
95								95
100						100'		100
							Bottom Hole	
105								105
110								110
115								115

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-3 (Shallow)
TOTAL DEPTH: 52'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 45' Slot Size 0.010
CASING: Diam. 4" Length 10' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:



DEPTH (FT.)	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM
0	0'	
	0'	Light Brown Clay with Caliche and Rock Fragments, Odor Present
10	10'	
		Reddish Brown Clay with Rock Fragments, Moist, Odor Present
20	20'	
		Reddish Brown Silty Sand with Some Rock Fragments, Odor Present
25		

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-3 (Shallow)
TOTAL DEPTH: 52'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 45' Slot Size 0.010
CASING: Diam. 4" Length 10' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:

PAGE 2 of 2

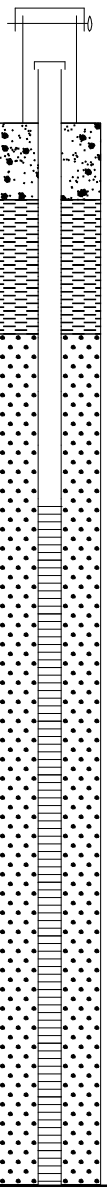
DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
30							SAA, Odor Present	30
35								35
40							SAA, Odor Present	40
45								45
50								50
						52'	Bottom Hole	
55								55

REMARKS:

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-4 (Shallow)
TOTAL DEPTH: 52'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 40' Slot Size 0.010
CASING: Diam. 4" Length 11' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
0						0'		0
5							Brown Sandy Clady w/ Rock Fragments, Moist, Odor Present	5
10						10'		10
15							Reddish Brown w/ Rock Fragments, Moist, Odor Present	15
20						20'		20
25							Reddish Brown Silty Sand w/ some Rock Fragments, Odor Present	25

REMARKS:

TALON LPE

SOIL BORING / MONITORING WELL LOG

PROJECT: COG BKU Satellite G
PROJECT NUMBER: 700778.140.01
CLIENT:
BORING / WELL NUMBER: SVE-4 (Shallow)
TOTAL DEPTH: 52'
SURFACE ELEVATION:
GEOLOGIST: Brent Eberhard
LATITUDE:

DRILLING COMPANY: Talon/LPE
DRILLER: Gabe Perez
DRILLING METHOD: Air Rotary
BORE HOLE DIAMETER: 7 7/8"
SCREEN: Diam. 4" Length 40' Slot Size 0.010
CASING: Diam. 4" Length 11' Type PVC
DATE DRILLED: October 24, 2019
LONGITUDE:

PAGE 2 of 2

DEPTH (FT.)	Soil Symbol	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT.)
30							SAA, Odor Present	30
35								35
40							Reddish Brown Silty Sand w/ Clay, Odor Present	40
45								45
50						52'		50
55							Bottom Hole	55

REMARKS:

TETRA TECH

Borehole ID:
BH-1

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Lea County, New Mexico
Coordinates : 32.81369, -104.01825
Elevation : NA

Date : Tuesday, April 16, 2019
Sampler : Joe Tyler, Mike Carmona
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Silty sand, HO, HS	396	5,510
			704	4,910
5		Sandy clay w/ pea gravel, HO, HS	1,005	295
			1,920	170
10		Silty clay, HO, LS	952	136
15			1,470	260
20			1,360	230
25		Silty clayey sand, HO	1,621	215
30		Silty sand, HO	2,931	212
35		Silty sand w/few gravel, HO	1,864	170
40		Silty sand, HO	877	100
45		Silty sand, HO, (encountered moisture)	941	140
50		Silty sand, HO	1,260	94
55		Silty sand, HO	1,240	-
60		Silty sand w/few gravel, HO	1,182	-
65			1,110	-
70		Silty sand, HO	1,260	-
75				
80			1,360	-
85				
90		Silty sand, HO	951	90
95		Total Depth = 90' due to poor drilling circulation down-hole caused by characteristics of drilling through sand.		
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
BH-2

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Lea County, New Mexico
Coordinates : 32.81625, -104.01578
Elevation : NA

Date : Tuesday, April 16, 2019
Sampler : Joe Tyler, Mike Carmona
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Silty sand, LO	188	681
			130	2,160
5		Silty sandy clay w/few gravel, HO	100	126
			370	113
10		Silty sandy clay, HO	450	140
15			510	136
20			360	130
25		Silty sand, HO	930	125
30			781	120
35		Silty sand, LO	22	130
40			72	150
45			229	-
50		Silty sand, no odor	13	-
55				
60		Silty sand w/few gravel, no odor	9	100
		Total Depth = 60' due to field testing dilineation		
65				
70				
75				
80				
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
West Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816250, -104.016071
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown silty sand, no odor	71	46.2
				44.6
		Light brown sand, no odor		
5			93.6	<1.0
		Brown/red sand, no odor		<1.0
10			170	<1.0
15				5.6
20			115	2.1
25				0.3
		Terminate @25'		
30				
35				
40				
45				
50				

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50				
55				
60				
65				
70				
75				
80				
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
West 1 Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816234, -104.016013
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown silty sand, no odor	62.1	8.5
				11.4
		Tan brown sand, no odor	59.7	2.2
5				1.1
		Brown sand, no odor		
			103	1.2
10		Brown/red sand, no odor		
				0.4
15		Brown/red sand, light odor		
			157	4.5
20		Brown/red sand, no odor		
				0.9
25		Terminate bore @25'		
30				
35				
40				
45				
50				

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50				
55				
60				
65				
70				
75				
80				
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
West 2 Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816225, -104.015967
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown silty sand, no odor	57.1	1.1
		Tan brown sand, no odor		1.8
			86.4	1.0
5		Brown sand, no odor		1.3
		Brown sand, no odor		
				0.8
10		Brown/red sand, no odor		
			2.57ppt	609
15				
				39.1
20		Red/brown sand, light odor		
			1.17ppt	11.7
25				
				5.9
30				
			287	8.5
35				
				12.2
40		Red brown sand, moderate odor		
			479	23.2
45				
50				37.8

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50		Red brown sand, moderate odor		
55				
60		Red brown sand, no odor		49.7
65				
70				3.1
75				
80				4.3
		Terminate bore @80'		
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
South Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816144, -104.015873
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown silty sand, no odor	75.8	3.1
				2.6
		Light brown sand, no odor	62.7	0.7
5				2.3
		Brown sand, no odor		
10			72.3	1.1
15				1.9
20			71.6	1.1
25			86.4	0.8
		Terminate bore @25		
30				
35				
40				
45				
50				

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50				
55				
60				
65				
70				
75				
80				
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
South 1 Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816187, -104.015875
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown silty sand, no odor	56.7	0.8
				1.3
		Light brown sand, no odor	71.3	1.7
5		Brown sand, no odor		4.6
			107.6	3.1
10		Brown sand, high odor	3.67ppt	298
15			3.14ppt	76.7
20		Brown/red sand, light odor		30.6
25			1.16ppt	12
30		Brown/red sand, little/no odor		1.2
35				
40			9.87ppt	2.7
		Terminate bore @40'		
45				
50				

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50				
55				
60				
65				
70				
75				
80				
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
East Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816300, -104.015678
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown sand, no odor	76.1	2.6
		Brown sand, light odor		15.5
		▼		
		Tan sand, no odor	103	2.5
5		▼		
		Brown sand, no odor		1.9
			115	1.1
10				
				0.5
15				
		▼	89.7	0.7
20		Terminate bore @20'		
25				
30				
35				
40				
45				
50				

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50				
55				
60				
65				
70				
75				
80				
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
North Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816397, -104.015929
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown sand, no odor	59.6	0.2
		Tan sand, no odor		0.4
5		Brown sand, no odor	103	0.9
				0.4
10			101	0.7
15		Red brown sand, no odor		0.1
20			114	0.2
25		Terminate @25'		1.1
30				
35				
40				
45				
50				

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50				
55				
60				
65				
70				
75				
80				
85				
90				
95				
100				

* *H.O. = Heavy Odor*
* *H.S. = Heavy Staining*
* *L.O. = Low Odor*
* *L.S. = Low Staining*

TETRA TECH

Borehole ID:
North 1 Horizontal

Soil Drilling Log with Field Testing Results

Project Name : COG BKU Sat. G Battery
Project No. : 212C-MD-01711
Location : Eddy County, NM
Coordinates : 32.816342, -104.015928
Elevation : NA

Date : Wednesday, October 16, 2019
Sampler : Devin Dominguez
Driller : Scarborough Drilling
Method : Air Rotary

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
0		Brown sand, no odor	59.7	0.1
				0.3
		Tan brown sand, no odor		
5			106	0.1
				0.1
		Brown sand, no odor		
10			110	0.3
		Red brown sand, no odor		
15				0.7
20		Red brown sand, high odor	1.46ppt	81.9
25				351
30			2.11ppt	602
35				911
40			2.87ppt	552
45				996
50			2.16ppt	947

Depth (ft.)	WL	Soil Description	Organic Analyzer (ppm)	Chloride Field Test (ppm)
50		Red brown sand, high odor		
55				
60				73.4
65				
70				57.4
75				
80		Red brown sand, light odor		11.1
85				
90				15.1
		Terminate bore @90'		
95				
100				

* H.O. = Heavy Odor
* H.S. = Heavy Staining
* L.O. = Low Odor
* L.S. = Low Staining

APPENDIX F

FIELD NOTES

10/23/2019 — Concho BKU Satellite 6 Survey, Artesia, NM — ~70-80°F

8:45 Arrived on-site
9:05 Met with Ike Tavarez with Concho and did site reconnaissance
10:00 Completed JSEA and had safety tailgate meeting
10:30 Began setting rig up on SVE-1 (Deep well)
10:40 Begin Drilling
11:10 Begin Sampling & Placing on ice & screening w/ PID.
13:20 Break for Lunch
14:20 Resume Drilling/sampling at SVE-1 (Deep well)
15:30 Obtained final Sample at 100ft.
15:45 Began reaming out borehole for preparation to set SVE well.
17:00 Begin Setting well. (4")
50ft. of screen and 55ft. of Riser.
17:22 Begin pouring Sand (8/16)
Used 45 bags to 48ft. bgs
17:35 Begin pouring bentonite (13 bags) to 2 ft. bgs.

10/23/19 (continued) — Concho BKU Satellite 6, Artesia, NM

18:00 Begin setting up on SVE-5 (~~Shallow wells~~) (Borehole)
18:14 Begin Drilling / Sampling
Samples placed on ice immediately after taken.
19:50 Final Sample taken at 50ft.
No Odor in any Sample,
Highest PID reading was 0.2.
20:00 Boring was Plugged and Abandoned with Bentonite
20 bags.
21:30 Departed site

END

10/24/2019 Concho BKU Satellite 4 Cloudy
Artesia, NM ~40°F

8:15 Arrived on-site.
8:30 Safety Meeting
9:00 Set up Rig on SVE-2 (Deep)
9:20 Begin Drilling SVE-2 (Deep)
11:00 Reached TD @ ~100ft.
11:10 Set 50ft of Screen and 50ft of Riser.
11:20 Set Sand (8/16) to 47ft bgs (29) bags.
11:35 Placed Bentonite Hole Plug to 2 ft. bgs. (15)
12:00 Departed site for Lunch & to get Supplies
13:30 Repacked sample cooler with Fresh ice. Filled out Chain of Custody, packed cooler with Chain and Put Custody seals on.
14:45 Arrived on-site. Beginning to lightly rain/sleet.
15:00 Set up Rig on SVE-3 (shallow)
15:15 Begin drilling.
15:55 Finished Drilling, TD @ 52ft.
16:05 Begin Setting Well, Screen set to ~~6ft.~~ 7ft bgs. (

10/24/2019 (continued) Concho BKU Satellite 4
Artesia, NM

16:10 Begin placing Sand, Sand Set to 5 ft bgs. (23 bags)
16:20 Begin Placing Hole plug bentonite. Bentonite set to 2ft. bgs (2 bags)
~~16~~
16:30 Set up on SVE-4 (shallow) and begin drilling. Sleet/light rain has stopped.
16:55 Boring Terminated @ 52ft. bgs.
17:00 Set Screen and riser down hole, boring collapsed to 47ft.
17:20 Reamed out hole to 53ft and attempted to set riser & screen. Hole collapsed to 48ft.
17:30 Begin Setting well at 48ft. Screen placed from 48-8ft bgs. Sand placed to 5.5ft. bgs. (20 bags) Hole Plug bentonite Placed to 2ft. bgs. (2 bags)
18:00 Cleaned up trash & loaded Supplies.
18:45 Departed Site

END

10/25 Conoco BKU Satellite G — 32-36F
Artesia, NM

8:15 Arrived on-site
8:30 Site Safety Meeting
8:45 Begin Constructing Surface Completions. Concrete Placed from 2ft bgs to Surface. Pads are 3'x3'x4"
10:30 Finished Completions. Wrote Well Names and approximate Depths inside Well Protector Lids.
11:00 Departed Site

END

MDPE FIELD NOTES

Site Name: COG BKU Satellite G				Event #:	
Location: Loco Hills NM				Arrive at site: 0800	
Date: 10-29-19					
Job#: 700778.140.02		SRS:		Start Vac: 0900	10-29
Phase:		Unit:	1107	Stop Vac: 0900	10-31
Onsite Personnel: B Huntington E Bridges				Leave Site: 0930	(10-31)

GAUGING DATA

WELL#	BEFORE			AFTER			COMMENTS
	PSH	GW	PSH-T	PSH	GW	PSH-T	
SVE 1							100 ft
SVE 2							100 ft
SVE 3							50 ft
SVE 4							50 ft
INFLUENT	1	CGE	10-29	1000	FID		>50K
	2		10-29	1500	FID		>50K
	3		10-29	2000	FID		>50K
	4		10-29	2200	FID		>50K
	5		10-30	0300	FID		>50K
	6		10-30	0800	FID		>50K
WASTE:	H2O:			PSH:			TOTAL (GAL):

Sample Name		Analysis	Date:	Time:	Comments:	
INFLUENT	7	CGE	10-30	1000	FID= >50K	
INFLUENT	8	CGE	10-30	2100	FID= >50K	
INFLUENT	9	CGE	10-31	0800	FID= >50K	
EFFLUENT	1	CGE	10-30	2100	FID= >50K	

Notes:

700778.140.02

1107

Start Date 10-29-19

1102 (12HR 100') (12HR 50')

TIME	SAMPLE TAKEN	Well Flow: Inflent temp. (°f)	Well Flow: Diff. Pressure (INH20) 2" Preso	Well Flow: Vac (In Hg)	FID Composite (PPM)	Propane Tank (%-size)	EXHAUST TEMP F	Well Data / COMMENTS: SVE-1 (100') VAC (INH2O)	SVE-2 VAC (INH2O)	SVE 3 VAC (INH2O)	SVE 4 VAC (INH2O)	VAC (INH2O)
0900												
1000	X	38	110.5	9.0	>50K		1450	16.3	∅	∅	X (crossed out)	
1100		46	112.6	9.0	>50K		1439	15.9	3.6	1.4	X (crossed out)	
1200		50	114.3	9.0	>50K		1432	16.5	3.5	1.4	X (crossed out)	
1300		58	124.8	9.0	>50K		1431	16.2	3.3	1.4	X (crossed out)	
1400		62	125.9	9.0	>50K		1433	16.1	3.1	1.1	X (crossed out)	
1500	X-2	66	127.3	9.0	>50K		1435	16.0	3.0	.9	X (crossed out)	
1600		70	128.1	9.0	>50K		1435	15.9	2.9	.7	X (crossed out)	
1700		68	126.9	9.0	>50K		1431	16.4	3.3	1.2	X (crossed out)	
1800		62	127.3	9.0	>50K		1429	15.7	3.1	1.0	X (crossed out)	
1900		57	126.8	9.0	>50K		1434	16.3	2.8	1.4	X (crossed out)	
2000	X-3	52	127.0	9.0	>50K		1431	16.6	3.2	1.1	X (crossed out)	
2100		50	126.9	9.0	>50K		1433	15.9	3.0	1.2	X (crossed out)	
2200	X-4	50	118.3	10.0	>50K		1437	X (crossed out)	2.6	3.3	31.7	
2300		50	111.4	10.0	>50K		1438	X (crossed out)	2.4	3.1	31.6	
2400		50	113.6	10.0	>50K		1437	X (crossed out)	3.0	3.2	32.0	
0100		50	112.9	10.0	>50K		1439	X (crossed out)	2.9	3.0	32.4	
0200		46	113.3	100	>50K		1440	X (crossed out)	2.8	3.4	32.1	
0300	X-5	44	113.1	100	>50K		1438	X (crossed out)	3.0	3.1	32.5	
0400		44	113.5	100	>50K		1444	X (crossed out)	3.1	3.1	32.2	
0500		44	113.1	10.0	>50K		1440	X (crossed out)	2.8	3.2	32.4	
0600		42	115.6	100	>50K		1437	X (crossed out)	2.9	3.1	32.6	
0700		42	115.5	10.0	>50K		1459	X (crossed out)	2.8	3.1	32.5	
0800	X-6	42	113.8	10.0	>50K		1441	X (crossed out)	2.9	3.3	32.4	
0900		42	114.1	10.0	>50K		1439	X (crossed out)	3.0	3.4	32.5	

Session 1 (1000–2100)

Session 2 (2100–0900)

Soil Vacuum Influence

Observation Well
Extraction Well (EW)
Distance (ft) to EW
Time:

700778.140.02

1107

Start Date 10-30-19 (24 HR All wells)

TIME	SAMPLE TAKEN	Well Flow: Inflent temp. (°f)	Well Flow: Diff. Pressure (INH2O) 2" Preso	Well Flow: Vac (In Hg)	FID Composite (PPM)	Propane Tank (%-size)	EXHAUST TEMP F	Well Data: COMMENTS	SVE1 VAC (INH2O)	SVE2 VAC (INH2O)	SVE3 VAC (INH2O)	SVE4 VAC (INH2O)	VAC (INH2O)
0900													
1000	X-7	44	164.2	4	250K		1417		11.8	14.5	16.6	15.9	
1100		44	164.7	4	250K		1422		12.1	14.0	16.2	16.2	
1200		48	163.0	4	250K		1430		12.4	14.7	16.4	15.7	
1300		50	163.2	4	250K		1428		12.2	14.3	16.1	16.3	
1400		50	163.5	4	250K		1434		12.5	14.9	16.7	16.0	
1500		52	163.4	4	250K		1432		11.4	14.2	15.9	15.4	
1600		52	162.7	4	250K		1427		11.9	14.6	16.8	15.7	
1700		52	161.9	4	250K		1433		11.6	14.2	16.4	15.0	
1800		56	161.2	4	250K		1430		12.0	14.8	16.7	15.5	
1900		52	160.5	4	250K		1429		12.1	15.3	17.0	15.3	
2000		46	161.3	4	250K		1431		12.0	15.0	17.4	15.7	
2100	X-8	44	160.9	4	250K		1428		12.3	15.4	17.2	15.6	
2200		44	160.7	4	250K		1427		12.0	15.2	16.7	15.9	
2300		40	161.3	4	250K		1429		12.1	15.1	16.9	15.5	
0000		40	160.2	4	250K		1430		12.6	14.9	16.2	15.4	
0100		40	160.5	4	250K		1426		12.4	15.3	16.5	15.1	
0200		38	161.3	4	250K		1429		12.9	15.2	16.8	15.0	
0300		32	160.9	4	250K		1427		12.7	15.4	16.9	15.4	
0400		32	161.2	4	250K		1430		12.3	15.7	16.1	15.5	
0500		32	161.4	4	250K		1424		12.5	15.6	16.6	15.2	
0600		28	161.7	4	250K		1429		12.1	15.9	16.7	15.9	
0700		28	161.8	4	250K		1431		12.7	15.3	16.8	15.0	
0800	X-9	28	161.2	4	250K		1422		12.4	15.2	16.1	15.4	
0900		30	161.3	4	250K		1429		12.2	15.5	16.3	15.6	

Soil Vacuum Influence

Observation Well
Extraction Well (EW)
Distance (ft) to EW
Time:

APPENDIX G

SOIL LABORATORY ANALYTICAL REPORT

Analytical Report 641222

for

Talon/LPE

Project Manager: Jason Shubert

Concho BKU, Artesia, NM

700778.140.01

04-NOV-19

Collected By: Client

4147 Greenbriar Dr.
Stafford, TX 77477

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

Table of Contents

04-NOV-19

Project Manager: **Jason Shubert**
Talon/LPE
921 N. Bivins
Amarillo, TX 79107

Reference: XENCO Report No(s): **641222**
Concho BKU, Artesia, NM
Project Address:

Jason Shubert:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 641222. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 641222 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample Cross Reference 641222

Talon/LPE, Amarillo, TX

Concho BKU, Artesia, NM

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SVE-1-5'	S	10-23-19 11:10	5 ft	641222-001
SVE-1-10'	S	10-23-19 11:15	10 ft	641222-002
SVE-1-15'	S	10-23-19 11:23	15 ft	641222-003
SVE-1-20'	S	10-23-19 11:30	20 ft	641222-004
SVE-1-30'	S	10-23-19 11:42	30 ft	641222-005
SVE-1-40'	S	10-23-19 11:58	40 ft	641222-006
SVE-1-50'	S	10-23-19 12:12	50 ft	641222-007
SVE-1-60'	S	10-23-19 12:28	60 ft	641222-008
SVE-1-70'	S	10-23-19 12:53	70 ft	641222-009
SVE-1-80'	S	10-23-19 13:10	80 ft	641222-010
SVE-1-90'	S	10-23-19 15:05	90 ft	641222-011
SVE-1-100'	S	10-23-19 15:30	100 ft	641222-012
SVE-5-5'	S	10-23-19 18:14	5 ft	641222-013
SVE-5-10'	S	10-23-19 18:20	10 ft	641222-014
SVE-5-15'	S	10-23-19 18:30	15 ft	641222-015
SVE-5-20'	S	10-23-19 18:40	20 ft	641222-016
SVE-5-30'	S	10-23-19 19:00	30 ft	641222-017
SVE-5-40'	S	10-23-19 19:25	40 ft	641222-018
SVE-5-50'	S	10-23-19 19:50	50 ft	641222-019

Version: 1.%

CASE NARRATIVE

Client Name: Talon/LPE

Project Name: Concho BKU, Artesia, NM

Project ID:	*700778.140.01*	Report Date:	*04-NOV-19*
Work Order Number(s):	*641222*	Date Received:	*10/28/2019*

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3106126 BTEX by SW 8260C
SW8260CBTEX
Batch 3106126,
Lab Sample ID 641222-005 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Ethylbenzene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 641222-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019.
The Laboratory Control Sample for Ethylbenzene is within laboratory Control Limits, therefore the data was accepted.
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3106169 BTEX by SW 8260C
Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3106206 TPH by SW8015 Mod
Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected.
Samples affected are: 641222-007,641222-004,641222-008,641222-009,641222-010,641222-003,641222-002,641222-005.

Certificate of Analytical Results
641222

Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-5'** Matrix: Soil Sample Depth: 5 ft

Lab Sample Id: 641222-001 Date Collected: 10.23.19 11.10 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.09

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**502**	99.2	19.8	mg/kg	10.31.19 19:18		2
Diesel Range Organics (DRO)	C10C28DRO	**5590**	99.2	19.8	mg/kg	10.31.19 19:18		2
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**811**	99.2	19.8	mg/kg	10.31.19 19:18		2
Total TPH	PHC635	**6900**		19.8	mg/kg	10.31.19 19:18		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	74	70 - 135	%		
o-Terphenyl	107	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106169 Date Prep: 11.01.19 10.50

Prep seq: 7689417

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**1.32**	0.0504	0.0104	mg/kg	11.01.19 13:49		50
Toluene	108-88-3	**0.876**	0.252	0.0504	mg/kg	11.01.19 13:49		50
Ethylbenzene	100-41-4	**0.153**	0.0504	0.0169	mg/kg	11.01.19 13:49		50
m,p-Xylenes	179601-23-1	**2.54**	0.101	0.0220	mg/kg	11.01.19 13:49		50
o-Xylene	95-47-6	**4.14**	0.0504	0.0496	mg/kg	11.01.19 13:49		50
Total Xylenes	1330-20-7	**6.68**		0.0220	mg/kg	11.01.19 13:49		
Total BTEX		**9.03**		0.0104	mg/kg	11.01.19 13:49		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	94	53 - 142	%		
1,2-Dichloroethane-D4	96	53 - 150	%		
Toluene-D8	119	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-10'** Matrix: Soil Sample Depth: 10 ft

Lab Sample Id: 641222-002 Date Collected: 10.23.19 11.15 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.12

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**6570**	248	49.5	mg/kg	10.31.19 19:36		5
Diesel Range Organics (DRO)	C10C28DRO	**13500**	248	49.5	mg/kg	10.31.19 19:36		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**1590**	248	49.5	mg/kg	10.31.19 19:36		5
Total TPH	PHC635	**21700**		49.5	mg/kg	10.31.19 19:36		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	122	70 - 135	%		
o-Terphenyl	191	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**66.2**	0.998	0.207	mg/kg	10.31.19 20:47		1000
Toluene	108-88-3	**171**	9.98	2.00	mg/kg	11.01.19 15:56	D	2000
Ethylbenzene	100-41-4	**133**	0.998	0.335	mg/kg	10.31.19 20:47		1000
m,p-Xylenes	179601-23-1	**117**	2.00	0.436	mg/kg	10.31.19 20:47		1000
o-Xylene	95-47-6	**52.5**	0.998	0.983	mg/kg	10.31.19 20:47		1000
Total Xylenes	1330-20-7	**170**		0.436	mg/kg	10.31.19 20:47		
Total BTEX		**540**		0.207	mg/kg	11.01.19 15:56		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	90	53 - 142	%		
1,2-Dichloroethane-D4	89	53 - 150	%		
Toluene-D8	113	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-15'** Matrix: Soil Sample Depth: 15 ft

Lab Sample Id: 641222-003 Date Collected: 10.23.19 11.23 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.15

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**1630**	248	49.6	mg/kg	10.31.19 19:54		5
Diesel Range Organics (DRO)	C10C28DRO	**4800**	248	49.6	mg/kg	10.31.19 19:54		5
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**701**	248	49.6	mg/kg	10.31.19 19:54		5
Total TPH	PHC635	**7130**		49.6	mg/kg	10.31.19 19:54		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	99	70 - 135	%		
o-Terphenyl	166	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**5.65**	0.199	0.0411	mg/kg	10.31.19 18:19		200
Toluene	108-88-3	**25.8**	0.994	0.199	mg/kg	10.31.19 18:19		200
Ethylbenzene	100-41-4	**33.0**	0.497	0.167	mg/kg	11.01.19 14:10	D	500
m,p-Xylenes	179601-23-1	**31.8**	0.398	0.0868	mg/kg	10.31.19 18:19		200
o-Xylene	95-47-6	**13.1**	0.199	0.196	mg/kg	10.31.19 18:19		200
Total Xylenes	1330-20-7	**44.9**		0.0868	mg/kg	10.31.19 18:19		
Total BTEX		**109**		0.0411	mg/kg	11.01.19 14:10		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	87	53 - 142	%		
1,2-Dichloroethane-D4	90	53 - 150	%		
Toluene-D8	117	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-20'** Matrix: Soil Sample Depth: 20 ft

Lab Sample Id: 641222-004 Date Collected: 10.23.19 11.30 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.18

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**3050**	49.9	9.97	mg/kg	10.31.19 20:12		1
Diesel Range Organics (DRO)	C10C28DRO	**5060**	99.7	19.9	mg/kg	11.01.19 12:19	D	2
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**536**	49.9	9.97	mg/kg	10.31.19 20:12		1
Total TPH	PHC635	**8650**		9.97	mg/kg	11.01.19 12:19		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	96	70 - 135	%		
o-Terphenyl	166	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**33.9**	0.502	0.104	mg/kg	10.31.19 19:02		500
Toluene	108-88-3	**78.3**	5.02	1.00	mg/kg	11.01.19 14:31	D	1000
Ethylbenzene	100-41-4	**74.2**	0.502	0.169	mg/kg	10.31.19 19:02		500
m,p-Xylenes	179601-23-1	**60.8**	1.00	0.219	mg/kg	10.31.19 19:02		500
o-Xylene	95-47-6	**27.2**	0.502	0.494	mg/kg	10.31.19 19:02		500
Total Xylenes	1330-20-7	**88.0**		0.219	mg/kg	10.31.19 19:02		
Total BTEX		**274**		0.104	mg/kg	11.01.19 14:31		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	89	53 - 142	%		
1,2-Dichloroethane-D4	92	53 - 150	%		
Toluene-D8	114	70 - 130	%		

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641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-30'** Matrix: Soil Sample Depth: 30 ft

Lab Sample Id: 641222-005 Date Collected: 10.23.19 11.42 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.27

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**769**	49.5	9.90	mg/kg	10.31.19 21:06		1
Diesel Range Organics (DRO)	C10C28DRO	**4040**	49.5	9.90	mg/kg	10.31.19 21:06		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**431**	49.5	9.90	mg/kg	10.31.19 21:06		1
Total TPH	PHC635	**5240**		9.90	mg/kg	10.31.19 21:06		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	149	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**4.31**	0.101	0.0209	mg/kg	10.31.19 13:45		100
Toluene	108-88-3	**14.9**	0.505	0.101	mg/kg	10.31.19 13:45		100
Ethylbenzene	100-41-4	**20.4**	0.202	0.0678	mg/kg	10.31.19 18:41	DX	200
m,p-Xylenes	179601-23-1	**19.7**	0.202	0.0441	mg/kg	10.31.19 13:45		100
o-Xylene	95-47-6	**7.58**	0.101	0.0995	mg/kg	10.31.19 13:45		100
Total Xylenes	1330-20-7	**27.3**		0.0441	mg/kg	10.31.19 13:45		
Total BTEX		**66.9**		0.0209	mg/kg	10.31.19 18:41		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	92	53 - 142	%		
1,2-Dichloroethane-D4	90	53 - 150	%		
Toluene-D8	116	70 - 130	%		

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Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-40'** Matrix: Soil Sample Depth: 40 ft

Lab Sample Id: 641222-006 Date Collected: 10.23.19 11.58 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.30

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**3500**	49.9	9.98	mg/kg	10.31.19 21:43		1
Diesel Range Organics (DRO)	C10C28DRO	**6240**	99.8	20.0	mg/kg	11.01.19 12:56	D	2
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**555**	49.9	9.98	mg/kg	10.31.19 21:43		1
Total TPH	PHC635	**10300**		9.98	mg/kg	11.01.19 12:56		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	97	70 - 135	%		
o-Terphenyl	130	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**26.3**	0.990	0.205	mg/kg	10.31.19 21:08		1000
Toluene	108-88-3	**130**	4.95	0.990	mg/kg	10.31.19 21:08		1000
Ethylbenzene	100-41-4	**72.8**	0.990	0.332	mg/kg	10.31.19 21:08		1000
m,p-Xylenes	179601-23-1	**60.9**	1.98	0.432	mg/kg	10.31.19 21:08		1000
o-Xylene	95-47-6	**26.9**	0.990	0.975	mg/kg	10.31.19 21:08		1000
Total Xylenes	1330-20-7	**87.8**		0.432	mg/kg	10.31.19 21:08		
Total BTEX		**317**		0.205	mg/kg	10.31.19 21:08		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	90	53 - 142	%		
1,2-Dichloroethane-D4	89	53 - 150	%		
Toluene-D8	107	70 - 130	%		

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Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-50'** Matrix: Soil Sample Depth: 50 ft

Lab Sample Id: 641222-007 Date Collected: 10.23.19 12.12 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.33

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**2600**	49.5	9.90	mg/kg	10.31.19 22:01		1
Diesel Range Organics (DRO)	C10C28DRO	**5220**	99.0	19.8	mg/kg	11.01.19 13:14	D	2
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**474**	49.5	9.90	mg/kg	10.31.19 22:01		1
Total TPH	PHC635	**8290**		9.90	mg/kg	11.01.19 13:14		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	154	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**23.0**	0.499	0.103	mg/kg	10.31.19 19:23		500
Toluene	108-88-3	**113**	4.99	0.998	mg/kg	11.01.19 14:52	D	1000
Ethylbenzene	100-41-4	**58.6**	0.499	0.168	mg/kg	10.31.19 19:23		500
m,p-Xylenes	179601-23-1	**49.7**	0.998	0.218	mg/kg	10.31.19 19:23		500
o-Xylene	95-47-6	**21.7**	0.499	0.492	mg/kg	10.31.19 19:23		500
Total Xylenes	1330-20-7	**71.4**		0.218	mg/kg	10.31.19 19:23		
Total BTEX		**266**		0.103	mg/kg	11.01.19 14:52		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	89	53 - 142	%		
1,2-Dichloroethane-D4	90	53 - 150	%		
Toluene-D8	108	70 - 130	%		

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Sample Id: **SVE-1-60'** Matrix: Soil Sample Depth: 60 ft

Lab Sample Id: 641222-008 Date Collected: 10.23.19 12.28 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.36

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**2070**	49.6	9.92	mg/kg	10.31.19 22:19		1
Diesel Range Organics (DRO)	C10C28DRO	**4670**	49.6	9.92	mg/kg	10.31.19 22:19		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**450**	49.6	9.92	mg/kg	10.31.19 22:19		1
Total TPH	PHC635	**7190**		9.92	mg/kg	10.31.19 22:19		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	92	70 - 135	%		
o-Terphenyl	148	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**12.8**	0.496	0.103	mg/kg	10.31.19 19:44		500
Toluene	108-88-3	**72.2**	4.96	0.992	mg/kg	11.01.19 15:13	D	1000
Ethylbenzene	100-41-4	**52.2**	0.496	0.167	mg/kg	10.31.19 19:44		500
m,p-Xylenes	179601-23-1	**45.6**	0.992	0.217	mg/kg	10.31.19 19:44		500
o-Xylene	95-47-6	**20.5**	0.496	0.489	mg/kg	10.31.19 19:44		500
Total Xylenes	1330-20-7	**66.1**		0.217	mg/kg	10.31.19 19:44		
Total BTEX		**203**		0.103	mg/kg	11.01.19 15:13		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	87	53 - 142	%		
1,2-Dichloroethane-D4	87	53 - 150	%		
Toluene-D8	111	70 - 130	%		

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Talon/LPE, Amarillo, TX
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Sample Id: **SVE-1-70'** Matrix: Soil Sample Depth: 70 ft

Lab Sample Id: 641222-009 Date Collected: 10.23.19 12.53 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.39

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**2090**	49.5	9.89	mg/kg	10.31.19 22:37		1
Diesel Range Organics (DRO)	C10C28DRO	**5700**	98.9	19.8	mg/kg	11.01.19 12:56	D	2
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**485**	49.5	9.89	mg/kg	10.31.19 22:37		1
Total TPH	PHC635	**8280**		9.89	mg/kg	11.01.19 12:56		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	164	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**16.5**	0.503	0.104	mg/kg	10.31.19 20:05		500
Toluene	108-88-3	**96.1**	5.03	1.01	mg/kg	11.01.19 15:34	D	1000
Ethylbenzene	100-41-4	**69.7**	0.503	0.169	mg/kg	10.31.19 20:05		500
m,p-Xylenes	179601-23-1	**60.3**	1.01	0.220	mg/kg	10.31.19 20:05		500
o-Xylene	95-47-6	**27.3**	0.503	0.495	mg/kg	10.31.19 20:05		500
Total Xylenes	1330-20-7	**87.6**		0.220	mg/kg	10.31.19 20:05		
Total BTEX		**270**		0.104	mg/kg	11.01.19 15:34		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	88	53 - 142	%		
1,2-Dichloroethane-D4	84	53 - 150	%		
Toluene-D8	113	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-80'** Matrix: Soil Sample Depth: 80 ft

Lab Sample Id: 641222-010 Date Collected: 10.23.19 13.10 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.42

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**1750**	50.0	9.99	mg/kg	10.31.19 22:55		1
Diesel Range Organics (DRO)	C10C28DRO	**5780**	99.9	20.0	mg/kg	11.01.19 13:14	D	2
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**526**	50.0	9.99	mg/kg	10.31.19 22:55		1
Total TPH	PHC635	**8060**		9.99	mg/kg	11.01.19 13:14		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	90	70 - 135	%		
o-Terphenyl	167	70 - 135	%		**

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**9.55**	0.504	0.104	mg/kg	10.31.19 20:26		500
Toluene	108-88-3	**64.0**	2.52	0.504	mg/kg	10.31.19 20:26		500
Ethylbenzene	100-41-4	**48.0**	0.504	0.169	mg/kg	10.31.19 20:26		500
m,p-Xylenes	179601-23-1	**41.4**	1.01	0.220	mg/kg	10.31.19 20:26		500
o-Xylene	95-47-6	**19.4**	0.504	0.496	mg/kg	10.31.19 20:26		500
Total Xylenes	1330-20-7	**60.8**		0.220	mg/kg	10.31.19 20:26		
Total BTEX		**182**		0.104	mg/kg	10.31.19 20:26		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	89	53 - 142	%		
1,2-Dichloroethane-D4	84	53 - 150	%		
Toluene-D8	110	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-90'** Matrix: Soil Sample Depth: 90 ft

Lab Sample Id: 641222-011 Date Collected: 10.23.19 15.05 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.45

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**9.98**	49.9	9.98	mg/kg	11.01.19 10:30	J	1
Diesel Range Organics (DRO)	C10C28DRO	**15.2**	49.9	9.98	mg/kg	11.01.19 10:30	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.98	49.9	9.98	mg/kg	11.01.19 10:30	U	1
Total TPH	PHC635	**25.2**		9.98	mg/kg	11.01.19 10:30	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	80	70 - 135	%		
o-Terphenyl	101	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000208	0.00101	0.000208	mg/kg	10.31.19 17:37	U	1
Toluene	108-88-3	<0.00101	0.00503	0.00101	mg/kg	10.31.19 17:37	U	1
Ethylbenzene	100-41-4	<0.000338	0.00101	0.000338	mg/kg	10.31.19 17:37	U	1
m,p-Xylenes	179601-23-1	<0.000439	0.00201	0.000439	mg/kg	10.31.19 17:37	U	1
o-Xylene	95-47-6	<0.000991	0.00101	0.000991	mg/kg	10.31.19 17:37	U	1
Total Xylenes	1330-20-7	<0.000439		0.000439	mg/kg	10.31.19 17:37	U	
Total BTEX		<0.000208		0.000208	mg/kg	10.31.19 17:37	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	98	53 - 142	%		
1,2-Dichloroethane-D4	104	53 - 150	%		
Toluene-D8	100	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-1-100'** Matrix: Soil Sample Depth: 100 ft

Lab Sample Id: 641222-012 Date Collected: 10.23.19 15.30 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.48

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**23.5**	49.6	9.91	mg/kg	10.31.19 19:54	J	1
Diesel Range Organics (DRO)	C10C28DRO	**277**	49.6	9.91	mg/kg	10.31.19 19:54		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	**39.8**	49.6	9.91	mg/kg	10.31.19 19:54	J	1
Total TPH	PHC635	**340**		9.91	mg/kg	10.31.19 19:54		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	94	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.000439**	0.000998	0.000207	mg/kg	10.31.19 14:48	J	1
Toluene	108-88-3	**0.00605**	0.00499	0.000998	mg/kg	10.31.19 14:48		1
Ethylbenzene	100-41-4	**0.0380**	0.000998	0.000335	mg/kg	10.31.19 14:48		1
m,p-Xylenes	179601-23-1	**0.0459**	0.00200	0.000436	mg/kg	10.31.19 14:48		1
o-Xylene	95-47-6	**0.0299**	0.000998	0.000983	mg/kg	10.31.19 14:48		1
Total Xylenes	1330-20-7	**0.0758**		0.000436	mg/kg	10.31.19 14:48		
Total BTEX		**0.120**		0.000207	mg/kg	10.31.19 14:48		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	87	53 - 142	%		
1,2-Dichloroethane-D4	99	53 - 150	%		
Toluene-D8	104	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-5-5'** Matrix: Soil Sample Depth: 5 ft

Lab Sample Id: 641222-013 Date Collected: 10.23.19 18.14 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.51

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.92	49.6	9.92	mg/kg	10.31.19 20:12	U	1
Diesel Range Organics (DRO)	C10C28DRO	<9.92	49.6	9.92	mg/kg	10.31.19 20:12	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.92	49.6	9.92	mg/kg	10.31.19 20:12	U	1
Total TPH	PHC635	<9.92		9.92	mg/kg	10.31.19 20:12	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	90	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.0122**	0.00100	0.000207	mg/kg	10.31.19 15:09		1
Toluene	108-88-3	**0.00481**	0.00501	0.00100	mg/kg	10.31.19 15:09	J	1
Ethylbenzene	100-41-4	**0.000461**	0.00100	0.000336	mg/kg	10.31.19 15:09	J	1
m,p-Xylenes	179601-23-1	<0.000438	0.00200	0.000438	mg/kg	10.31.19 15:09	U	1
o-Xylene	95-47-6	<0.000987	0.00100	0.000987	mg/kg	10.31.19 15:09	U	1
Total Xylenes	1330-20-7	<0.000438		0.000438	mg/kg	10.31.19 15:09	U	
Total BTEX		**0.0175**		0.000207	mg/kg	10.31.19 15:09		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	99	53 - 142	%		
1,2-Dichloroethane-D4	98	53 - 150	%		
Toluene-D8	98	70 - 130	%		

Certificate of Analytical Results
641222

Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-5-10'** Matrix: Soil Sample Depth: 10 ft

Lab Sample Id: 641222-014 Date Collected: 10.23.19 18.20 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.54

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.99	50.0	9.99	mg/kg	10.31.19 20:30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<9.99	50.0	9.99	mg/kg	10.31.19 20:30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.99	50.0	9.99	mg/kg	10.31.19 20:30	U	1
Total TPH	PHC635	<9.99		9.99	mg/kg	10.31.19 20:30	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	88	70 - 135	%		
o-Terphenyl	87	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.00283**	0.00100	0.000207	mg/kg	10.31.19 15:30		1
Toluene	108-88-3	**0.00232**	0.00501	0.00100	mg/kg	10.31.19 15:30	J	1
Ethylbenzene	100-41-4	**0.000401**	0.00100	0.000336	mg/kg	10.31.19 15:30	J	1
m,p-Xylenes	179601-23-1	**0.000511**	0.00200	0.000438	mg/kg	10.31.19 15:30	J	1
o-Xylene	95-47-6	<0.000987	0.00100	0.000987	mg/kg	10.31.19 15:30	U	1
Total Xylenes	1330-20-7	**0.000511**		0.000438	mg/kg	10.31.19 15:30	J	
Total BTEX		**0.00606**		0.000207	mg/kg	10.31.19 15:30		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	99	53 - 142	%		
1,2-Dichloroethane-D4	101	53 - 150	%		
Toluene-D8	99	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-5-15'** Matrix: Soil Sample Depth: 15 ft

Lab Sample Id: 641222-015 Date Collected: 10.23.19 18.30 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.57

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.95	49.8	9.95	mg/kg	10.31.19 20:48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<9.95	49.8	9.95	mg/kg	10.31.19 20:48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.95	49.8	9.95	mg/kg	10.31.19 20:48	U	1
Total TPH	PHC635	<9.95		9.95	mg/kg	10.31.19 20:48	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	88	70 - 135	%		
o-Terphenyl	87	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.00804**	0.00100	0.000207	mg/kg	10.31.19 15:51		1
Toluene	108-88-3	**0.00389**	0.00500	0.00100	mg/kg	10.31.19 15:51	J	1
Ethylbenzene	100-41-4	**0.000400**	0.00100	0.000336	mg/kg	10.31.19 15:51	J	1
m,p-Xylenes	179601-23-1	<0.000437	0.00200	0.000437	mg/kg	10.31.19 15:51	U	1
o-Xylene	95-47-6	<0.000985	0.00100	0.000985	mg/kg	10.31.19 15:51	U	1
Total Xylenes	1330-20-7	<0.000437		0.000437	mg/kg	10.31.19 15:51	U	
Total BTEX		**0.0123**		0.000207	mg/kg	10.31.19 15:51		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	96	53 - 142	%		
1,2-Dichloroethane-D4	94	53 - 150	%		
Toluene-D8	99	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-5-20'** Matrix: Soil Sample Depth: 20 ft

Lab Sample Id: 641222-016 Date Collected: 10.23.19 18.40 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 15.00

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	**10.1**	49.8	9.96	mg/kg	10.31.19 21:06	J	1
Diesel Range Organics (DRO)	C10C28DRO	<9.96	49.8	9.96	mg/kg	10.31.19 21:06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.96	49.8	9.96	mg/kg	10.31.19 21:06	U	1
Total TPH	PHC635	**10.1**		9.96	mg/kg	10.31.19 21:06	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	89	70 - 135	%		
o-Terphenyl	88	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.000409**	0.000998	0.000207	mg/kg	10.31.19 16:13	J	1
Toluene	108-88-3	<0.000998	0.00499	0.000998	mg/kg	10.31.19 16:13	U	1
Ethylbenzene	100-41-4	<0.000335	0.000998	0.000335	mg/kg	10.31.19 16:13	U	1
m,p-Xylenes	179601-23-1	<0.000436	0.00200	0.000436	mg/kg	10.31.19 16:13	U	1
o-Xylene	95-47-6	<0.000983	0.000998	0.000983	mg/kg	10.31.19 16:13	U	1
Total Xylenes	1330-20-7	<0.000436		0.000436	mg/kg	10.31.19 16:13	U	
Total BTEX		**0.000409**		0.000207	mg/kg	10.31.19 16:13	J	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	99	53 - 142	%		
1,2-Dichloroethane-D4	106	53 - 150	%		
Toluene-D8	100	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-5-30'** Matrix: Soil Sample Depth: 30 ft

Lab Sample Id: 641222-017 Date Collected: 10.23.19 19.00 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 15.03

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.99	50.0	9.99	mg/kg	10.31.19 21:43	U	1
Diesel Range Organics (DRO)	C10C28DRO	<9.99	50.0	9.99	mg/kg	10.31.19 21:43	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.99	50.0	9.99	mg/kg	10.31.19 21:43	U	1
Total TPH	PHC635	<9.99		9.99	mg/kg	10.31.19 21:43	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	93	70 - 135	%		
o-Terphenyl	92	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	**0.00211**	0.000998	0.000207	mg/kg	10.31.19 16:34		1
Toluene	108-88-3	**0.00111**	0.00499	0.000998	mg/kg	10.31.19 16:34	J	1
Ethylbenzene	100-41-4	<0.000335	0.000998	0.000335	mg/kg	10.31.19 16:34	U	1
m,p-Xylenes	179601-23-1	<0.000436	0.00200	0.000436	mg/kg	10.31.19 16:34	U	1
o-Xylene	95-47-6	<0.000983	0.000998	0.000983	mg/kg	10.31.19 16:34	U	1
Total Xylenes	1330-20-7	<0.000436		0.000436	mg/kg	10.31.19 16:34	U	
Total BTEX		**0.00322**		0.000207	mg/kg	10.31.19 16:34		

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	100	53 - 142	%		
1,2-Dichloroethane-D4	106	53 - 150	%		
Toluene-D8	97	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-5-40'** Matrix: Soil Sample Depth: 40 ft

Lab Sample Id: 641222-018 Date Collected: 10.23.19 19.25 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 15.06

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.98	49.9	9.98	mg/kg	10.31.19 22:01	U	1
Diesel Range Organics (DRO)	C10C28DRO	<9.98	49.9	9.98	mg/kg	10.31.19 22:01	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.98	49.9	9.98	mg/kg	10.31.19 22:01	U	1
Total TPH	PHC635	<9.98		9.98	mg/kg	10.31.19 22:01	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	92	70 - 135	%		
o-Terphenyl	90	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000207	0.00100	0.000207	mg/kg	10.31.19 16:55	U	1
Toluene	108-88-3	<0.00100	0.00501	0.00100	mg/kg	10.31.19 16:55	U	1
Ethylbenzene	100-41-4	<0.000336	0.00100	0.000336	mg/kg	10.31.19 16:55	U	1
m,p-Xylenes	179601-23-1	<0.000438	0.00200	0.000438	mg/kg	10.31.19 16:55	U	1
o-Xylene	95-47-6	<0.000987	0.00100	0.000987	mg/kg	10.31.19 16:55	U	1
Total Xylenes	1330-20-7	<0.000438		0.000438	mg/kg	10.31.19 16:55	U	
Total BTEX		<0.000207		0.000207	mg/kg	10.31.19 16:55	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	101	53 - 142	%		
1,2-Dichloroethane-D4	104	53 - 150	%		
Toluene-D8	99	70 - 130	%		

Certificate of Analytical Results
641222
Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **SVE-5-50'** Matrix: Soil Sample Depth: 50 ft

Lab Sample Id: 641222-019 Date Collected: 10.23.19 19.50 Date Received: 10.28.19 10.00

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 15.09

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<9.94	49.7	9.94	mg/kg	10.31.19 22:19	U	1
Diesel Range Organics (DRO)	C10C28DRO	<9.94	49.7	9.94	mg/kg	10.31.19 22:19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<9.94	49.7	9.94	mg/kg	10.31.19 22:19	U	1
Total TPH	PHC635	<9.94		9.94	mg/kg	10.31.19 22:19	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	91	70 - 135	%		
o-Terphenyl	90	70 - 135	%		

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000208	0.00100	0.000208	mg/kg	10.31.19 17:16	U	1
Toluene	108-88-3	<0.00100	0.00502	0.00100	mg/kg	10.31.19 17:16	U	1
Ethylbenzene	100-41-4	<0.000337	0.00100	0.000337	mg/kg	10.31.19 17:16	U	1
m,p-Xylenes	179601-23-1	<0.000438	0.00201	0.000438	mg/kg	10.31.19 17:16	U	1
o-Xylene	95-47-6	<0.000989	0.00100	0.000989	mg/kg	10.31.19 17:16	U	1
Total Xylenes	1330-20-7	<0.000438		0.000438	mg/kg	10.31.19 17:16	U	
Total BTEX		<0.000208		0.000208	mg/kg	10.31.19 17:16	U	

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	101	53 - 142	%		
1,2-Dichloroethane-D4	111	53 - 150	%		
Toluene-D8	98	70 - 130	%		

Certificate of Analytical Results

641222

Talon/LPE, Amarillo, TX

Concho BKU, Artesia, NM

Sample Id: **7689354-1-BLK** Matrix: Solid Sample Depth:

Lab Sample Id: 7689354-1-BLK Date Collected: Date Received:

Analytical Method: TPH by SW8015 Mod Prep Method: 8015

Analyst: ISU % Moist: Tech: ISU

Seq Number: 3106206 Date Prep: 10.31.19 14.00

Prep seq: 7689354

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Gasoline Range Hydrocarbons (GRO)	PHC610	<10.0	50.0	10.0	mg/kg	10.31.19 18:24	U	1
Diesel Range Organics (DRO)	C10C28DRO	<10.0	50.0	10.0	mg/kg	10.31.19 18:24	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<10.0	50.0	10.0	mg/kg	10.31.19 18:24	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
1-Chlorooctane	77	70 - 135	%		
o-Terphenyl	96	70 - 135	%		

Sample Id: **7689379-1-BLK** Matrix: Solid Sample Depth:

Lab Sample Id: 7689379-1-BLK Date Collected: Date Received:

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106126 Date Prep: 10.31.19 11.00

Prep seq: 7689379

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000207	0.00100	0.000207	mg/kg	10.31.19 13:02	U	1
Toluene	108-88-3	<0.00100	0.00500	0.00100	mg/kg	10.31.19 13:02	U	1
Ethylbenzene	100-41-4	<0.000336	0.00100	0.000336	mg/kg	10.31.19 13:02	U	1
m,p-Xylenes	179601-23-1	<0.000437	0.00200	0.000437	mg/kg	10.31.19 13:02	U	1
o-Xylene	95-47-6	<0.000985	0.00100	0.000985	mg/kg	10.31.19 13:02	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	96	53 - 142	%		
1,2-Dichloroethane-D4	97	53 - 150	%		
Toluene-D8	100	70 - 130	%		

Certificate of Analytical Results
641222

Talon/LPE, Amarillo, TX
Concho BKU, Artesia, NM

Sample Id: **7689417-1-BLK** Matrix: Solid Sample Depth:

Lab Sample Id: 7689417-1-BLK Date Collected: Date Received:

Analytical Method: BTEX by SW 8260C Prep Method: 5030B

Analyst: CRL % Moist: Tech: CRL

Seq Number: 3106169 Date Prep: 11.01.19 10.50

Prep seq: 7689417

Parameter	CAS Number	Result	MQL	SDL	Units	Analysis Date	Flag	Dil Factor
Benzene	71-43-2	<0.000207	0.00100	0.000207	mg/kg	11.01.19 13:28	U	1
Toluene	108-88-3	<0.00100	0.00500	0.00100	mg/kg	11.01.19 13:28	U	1
Ethylbenzene	100-41-4	<0.000336	0.00100	0.000336	mg/kg	11.01.19 13:28	U	1
m,p-Xylenes	179601-23-1	<0.000437	0.00200	0.000437	mg/kg	11.01.19 13:28	U	1
o-Xylene	95-47-6	<0.000985	0.00100	0.000985	mg/kg	11.01.19 13:28	U	1

Surrogate	% Recovery	Limits	Units	Analysis Date	Flag
Dibromofluoromethane	95	53 - 142	%		
1,2-Dichloroethane-D4	95	53 - 150	%		
Toluene-D8	100	70 - 130	%		

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: Concho BKU, Artesia, NM

Work Orders : 641222,

Project ID: 700778.140.01

Lab Batch #: 3106126 **Sample:** 7689379-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/31/19 10:30

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0489	0.0500	98	53-142	
1,2-Dichloroethane-D4	0.0496	0.0500	99	53-150	
Toluene-D8	0.0513	0.0500	103	70-130	

Lab Batch #: 3106126 **Sample:** 7689379-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/31/19 10:51

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0488	0.0500	98	53-142	
1,2-Dichloroethane-D4	0.0497	0.0500	99	53-150	
Toluene-D8	0.0513	0.0500	103	70-130	

Lab Batch #: 3106126 **Sample:** 641222-005 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/31/19 11:17

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0491	0.0500	98	53-142	
1,2-Dichloroethane-D4	0.0505	0.0500	101	53-150	
Toluene-D8	0.0564	0.0500	113	70-130	

Lab Batch #: 3106126 **Sample:** 641222-005 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/31/19 11:38

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0484	0.0500	97	53-142	
1,2-Dichloroethane-D4	0.0482	0.0500	96	53-150	
Toluene-D8	0.0569	0.0500	114	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

Form 2 - Surrogate Recoveries

Project Name: Concho BKU, Artesia, NM

Work Orders : 641222,

Project ID: 700778.140.01

Lab Batch #: 3106126 **Sample:** 7689379-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/31/19 13:02

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0481	0.0500	96	53-142	
1,2-Dichloroethane-D4	0.0487	0.0500	97	53-150	
Toluene-D8	0.0499	0.0500	100	70-130	

Lab Batch #: 3106169 **Sample:** 7689417-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/01/19 10:28

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0492	0.0500	98	53-142	
1,2-Dichloroethane-D4	0.0498	0.0500	100	53-150	
Toluene-D8	0.0511	0.0500	102	70-130	

Lab Batch #: 3106169 **Sample:** 7689417-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/01/19 10:49

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0491	0.0500	98	53-142	
1,2-Dichloroethane-D4	0.0504	0.0500	101	53-150	
Toluene-D8	0.0510	0.0500	102	70-130	

Lab Batch #: 3106169 **Sample:** 641222-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/01/19 11:42

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0495	0.0500	99	53-142	
1,2-Dichloroethane-D4	0.0497	0.0500	99	53-150	
Toluene-D8	0.0582	0.0500	116	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

Form 2 - Surrogate Recoveries

Project Name: Concho BKU, Artesia, NM

Work Orders : 641222,

Project ID: 700778.140.01

Lab Batch #: 3106169 **Sample:** 641222-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 11/01/19 12:03

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0495	0.0500	99	53-142	
1,2-Dichloroethane-D4	0.0493	0.0500	99	53-150	
Toluene-D8	0.0551	0.0500	110	70-130	

Lab Batch #: 3106169 **Sample:** 7689417-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/01/19 13:28

SURROGATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0476	0.0500	95	53-142	
1,2-Dichloroethane-D4	0.0477	0.0500	95	53-150	
Toluene-D8	0.0502	0.0500	100	70-130	

Lab Batch #: 3106206 **Sample:** 7689354-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/31/19 18:24

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	76.5	100	77	70-135	
o-Terphenyl	47.8	50.0	96	70-135	

Lab Batch #: 3106206 **Sample:** 7689354-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 10/31/19 19:00

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	85.6	100	86	70-135	
o-Terphenyl	47.0	50.0	94	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

Form 2 - Surrogate Recoveries

Project Name: Concho BKU, Artesia, NM

Work Orders : 641222,

Project ID: 700778.140.01

Lab Batch #: 3106206 **Sample:** 641222-004 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/31/19 20:30

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.0	100	99	70-135	
o-Terphenyl	86.6	50.0	173	70-135	**

Lab Batch #: 3106206 **Sample:** 641222-004 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 10/31/19 20:48

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.3	100	94	70-135	
o-Terphenyl	67.8	50.1	135	70-135	

Lab Batch #: 3106206 **Sample:** 7689354-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 11/01/19 16:53

SURROGATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	87.9	100	88	70-135	
o-Terphenyl	48.9	50.0	98	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Version: 1.%

BS / BSD Recoveries

Project Name: Concho BKU, Artesia, NM

Work Order #: 641222 **Project ID:** 700778.140.01

Analyst: CRL **Date Prepared:** 10/31/2019 **Date Analyzed:** 10/31/2019

Lab Batch ID: 3106126 **Sample:** 7689379-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000207	0.0500	0.0426	85	0.0500	0.0461	92	8	62-132	25	
Toluene	<0.00100	0.0500	0.0427	85	0.0500	0.0463	93	8	66-124	25	
Ethylbenzene	<0.000336	0.0500	0.0438	88	0.0500	0.0475	95	8	71-134	25	
m,p-Xylenes	<0.000437	0.100	0.0861	86	0.100	0.0936	94	8	69-128	25	
o-Xylene	<0.000985	0.0500	0.0435	87	0.0500	0.0470	94	8	72-131	25	

Analyst: CRL **Date Prepared:** 11/01/2019 **Date Analyzed:** 11/01/2019

Lab Batch ID: 3106169 **Sample:** 7689417-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.000207	0.0500	0.0439	88	0.0500	0.0509	102	15	62-132	25	
Toluene	<0.00100	0.0500	0.0434	87	0.0500	0.0499	100	14	66-124	25	
Ethylbenzene	<0.000336	0.0500	0.0441	88	0.0500	0.0508	102	14	71-134	25	
m,p-Xylenes	<0.000437	0.100	0.0872	87	0.100	0.100	100	14	69-128	25	
o-Xylene	<0.000985	0.0500	0.0434	87	0.0500	0.0503	101	15	72-131	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Concho BKU, Artesia, NM

Work Order #: 641222 **Project ID:** 700778.140.01

Analyst: ISU **Date Prepared:** 10/31/2019 **Date Analyzed:** 11/01/2019

Lab Batch ID: 3106206 **Sample:** 7689354-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<10.0	1000	1030	103	1000	1060	106	3	70-135	35	
Diesel Range Organics (DRO)	<10.0	1000	999	100	1000	1030	103	3	70-135	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: Concho BKU, Artesia, NM

Work Order # : 641222 **Project ID:** 700778.140.01

Lab Batch ID: 3106126 **QC- Sample ID:** 641222-005 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/31/2019 **Date Prepared:** 10/31/2019 **Analyst:** CRL

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	4.31	5.05	9.08	94	5.05	9.02	93	1	62-132	25	
Toluene	14.9	5.05	18.9	79	5.05	19.1	83	1	66-124	25	
Ethylbenzene	21.3	5.05	24.6	65	5.05	24.8	69	1	71-134	25	X
m,p-Xylenes	19.7	10.1	27.2	74	10.1	27.6	78	1	69-128	25	
o-Xylene	7.58	5.05	11.7	82	5.05	11.8	84	1	72-131	25	

Lab Batch ID: 3106169 **QC- Sample ID:** 641222-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/01/2019 **Date Prepared:** 11/01/2019 **Analyst:** CRL

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by SW 8260C Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	1.32	2.52	3.95	104	2.52	4.05	108	3	62-132	25	
Toluene	0.876	2.52	3.34	98	2.52	3.52	105	5	66-124	25	
Ethylbenzene	0.153	2.52	2.63	98	2.52	2.77	104	5	71-134	25	
m,p-Xylenes	2.54	5.04	7.41	97	5.04	7.78	104	5	69-128	25	
o-Xylene	4.14	2.52	6.67	100	2.52	6.99	113	5	72-131	25	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Form 3 - MS / MSD Recoveries

Project Name: Concho BKU, Artesia, NM

Work Order # : 641222 **Project ID:** 700778.140.01

Lab Batch ID: 3106206 **QC- Sample ID:** 641222-004 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 10/31/2019 **Date Prepared:** 10/31/2019 **Analyst:** ISU

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH by SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	3050	1000	4020	97	1000	3970	92	1	70-135	35	
Diesel Range Organics (DRO)	5510	1000	6580	107	1000	6530	102	1	70-135	35	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

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Norcross, Georgia (770-449-8800)
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Tampa, Florida (813-620-2000)
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CHAIN OF CUSTODY

Page 2 Of 2

Xenco Quote #
Xenco Job # 641222

Client / Reporting Information

Company Name / Branch: Talon/LPE
Company Address: 921 N Bivins
Email: bebehard@talonlpe.com Phone No: (615) 509-3310
Project Contact: Jason Shubert
Samplers's Name: Brent Eberhard

Project Information

Project Name/Number: 700778.140.01
Project Location: Concho BKU Artesia, NM
Invoice To: Talon/LPE
PO Number: 700778.140.01

Analytical Information

No.	Field ID / Point of Collection	Sample Depth	Date	Time	Matrix	# of bottles	HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	8260 BTEX	8015 TPH	Field Comments
1	SVE-1-90'	90'	10/23	15:05	S	1								X	X	X	
2	SVE-1-100'	100'	10/23	15:30	S	1								X	X	X	
3	SVE-5-5'	5'	10/23	18:14	S	1								X	X	X	
4	SVE-5-10'	10'	10/23	18:20	S	1								X	X	X	
5	SVE-5-15'	15'	10/23	18:30	S	1								X	X	X	
6	SVE-5-20'	20'	10/23	18:40	S	1								X	X	X	
7	SVE-5-30'	30'	10/23	19:00	S	1								X	X	X	
8	SVE-5-40'	40'	10/23	19:25	S	1								X	X	X	
9	SVE-5-50'	50'	10/23	19:50	S	1								X	X	X	
10																	

Matrix Codes

A= Air
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
WW= Waste Water
W = Wipe
O = Oil
WW= Waste Water

Turnaround Time (Business days)

- [ ] Same Day TAT
- [x] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 3:00 pm

Data Deliverable Information

- [x] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

Relinquished by	Date Time	Received By	Relinquished By	Date Time	Received By
1 Relinquished by Sampler: [signature]	10/28 14:00	1 FedEx	2 FedEx	10/29/19 10:0?	2 [signature]
3 Relinquished by:	Date Time:	3 Received By:	4 Relinquished By:	Date Time:	4 Received By:
5 Relinquished by:	Date Time:	5 Received By:	Custody Seal #	Preserved where applicable	On Ice [x]

IR ID:HOU-068 C/F:+0.2
Temp: 1.6 Corrected: 1.8

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to XENCO Laboratories and its affiliates, subcontractors and assigns XENCO's standard terms and conditions of service unless pre

CHAIN OF CUSTODY

Page 1 Of 2

XENCO LABORATORIES

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Norcross, Georgia (770-449-8800)
Lakeland, Florida (863-646-8526)
Tampa, Florida (813-620-2000)
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Xenco Quote #
Xenco Job # 641222

Client / Reporting Information

Company Name / Branch: Talon / LPE
Company Address: 921 N Bivins
Email: beberhard@talonlpe.com
Phone No: (615) 509-3310
Project Contact:
Samplers's Name: Brent Eberhard

Project Information

Project Name/Number: 700778.140.01
Project Location: Concho BKU Artesia, NM
Invoice To: Talon / LPE
PO Number: 700778.140.01

Analytical Information

Matrix Codes

A= Air
S = Soil/Sed/Solid
GW =Ground Water
DW = Drinking Water
P = Product
SW = Surface water
SL = Sludge
WW= Waste Water
W = Wipe
O = Oil

WW= Waste Water

No.	Field ID / Point of Collection	Collection: Sample Depth	Collection: Date	Collection: Time	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH/Zn Acetate	HNO3	H2SO4	NaOH	NaHSO4	MEOH	NONE	8260 BTEX	8015 TPH										Field Comments
1	SVE-1-5'	5'	10/23	11:10	S	1								X	X	X										
2	SVE-1-10'	10'	10/23	11:15	S	1								X	X	X										
3	SVE-1-15'	15'	10/23	11:23	S	1								X	X	X										
4	SVE-1-20'	20'	10/23	11:30	S	1								X	X	X										
5	SVE-1-30'	30'	10/23	11:42	S	1								X	X	X										
6	SVE-1-40'	40'	10/23	11:58	S	1								X	X	X										
7	SVE-1-50'	50'	10/23	12:12	S	1								X	X	X										
8	SVE-1-60'	60'	10/23	12:28	S	1								X	X	X										
9	SVE-1-70'	70'	10/23	12:53	S	1								X	X	X										
10	SVE-1-80'	80'	10/23	13:10	S	1								X	X	X										

Turnaround Time (Business days)

- [ ] Same Day TAT
- [x] 5 Day TAT
- [ ] Next Day EMERGENCY
- [ ] 7 Day TAT
- [ ] 2 Day EMERGENCY
- [ ] Contract TAT
- [ ] 3 Day EMERGENCY

TAT Starts Day received by Lab, if received by 3:00 pm

Data Deliverable Information

- [x] Level II Std QC
- [ ] Level IV (Full Data Pkg /raw data)
- [ ] Level III Std QC+ Forms
- [ ] TRRP Level IV
- [ ] Level 3 (CLP Forms)
- [ ] UST / RG -411
- [ ] TRRP Checklist

Notes:

FED-EX / UPS: Tracking #

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by	Date Time	Received By	Relinquished By	Date Time	Received By
1	Sampler	10/25 14:00	Fed Ex	Fed Ex	10/25/22	
3						
5				Custody Seal #	Preserved where applicable	On Ice

IR ID:HOU-068 C/F:+0.2
Temp: 1.6 Corrected: 1.8

FedEx
TRK# 0201 7767 7892 1404

MON – 28 OCT AA
STANDARD OVERNIGHT

XH SGRA

77071
TX – US IAH

#2638992 10/26 567J3/2A3C/05A2

DY SEAL

Sample No.

Time Collected

nature)

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Talon/LPE

Date/ Time Received: 10/28/2019 10:00:00 AM

Work Order #: 641222

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	1.8
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**Yes**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: LM

PH Device/Lot#: HOU-068

Checklist completed by: Lesia Minor Date: 10/28/2019

Lesia Minor

Checklist reviewed by: Jessica Kramer Date: 10/29/2019

Jessica Kramer

APPENDIX H

AIR LABORATORY ANALYTICAL REPORT

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-001A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 1	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/29/2019 10:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 14:23:20 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	97.339	94.579		GPM TOTAL C2+	0.360
Methane	NIL	NIL		GPM TOTAL C3+	0.360
Carbon Dioxide	1.810	2.763		GPM TOTAL iC5+	0.355
Ethane	NIL	NIL	NIL		
Propane	0.003	0.005	0.001		
Iso-butane	0.002	0.004	0.001		
n-Butane	0.010	0.020	0.003		
Iso-pentane	0.030	0.075	0.011		
n-Pentane	0.070	0.175	0.025		
Hexanes Plus	0.736	2.379	0.319		
	100.000	100.000	0.360		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9955	3.2176
Calculated Molecular Weight	28.83	93.19
Compressibility Factor	0.9996	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	42	5113
Water Sat. Gas Base BTU	41	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-002A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 2	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/29/2019 15:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 14:37:19 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	98.431	96.607		GPM TOTAL C2+	0.253
Methane	NIL	NIL		GPM TOTAL C3+	0.253
Carbon Dioxide	0.975	1.503		GPM TOTAL iC5+	0.250
Ethane	NIL	NIL	NIL		
Propane	0.001	0.002	NIL		
Iso-butane	0.002	0.004	0.001		
n-Butane	0.005	0.010	0.002		
Iso-pentane	0.016	0.040	0.006		
n-Pentane	0.037	0.094	0.013		
Hexanes Plus	0.533	1.740	0.231		
	100.000	100.000	0.253		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9855	3.2176
Calculated Molecular Weight	28.54	93.19
Compressibility Factor	0.9996	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	30	5113
Water Sat. Gas Base BTU	29	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-003A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 3	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/29/2019 20:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 14:51:48 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	97.248	94.456		GPM TOTAL C2+	0.357
Methane	NIL	NIL		GPM TOTAL C3+	0.357
Carbon Dioxide	1.909	2.913		GPM TOTAL iC5+	0.352
Ethane	NIL	NIL	NIL		
Propane	0.003	0.005	0.001		
Iso-butane	0.002	0.004	0.001		
n-Butane	0.009	0.018	0.003		
Iso-pentane	0.031	0.078	0.011		
n-Pentane	0.073	0.183	0.026		
Hexanes Plus	0.725	2.343	0.315		
	100.000	100.000	0.357		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9958	3.2176
Calculated Molecular Weight	28.84	93.19
Compressibility Factor	0.9996	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	42	5113
Water Sat. Gas Base BTU	41	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-004A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 4	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/29/2019 22:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 15:04:52 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	97.137	95.255		GPM TOTAL C2+	0.085
Methane	NIL	NIL		GPM TOTAL C3+	0.085
Carbon Dioxide	2.666	4.107		GPM TOTAL iC5+	0.085
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	0.002	0.005	0.001		
n-Pentane	0.004	0.010	0.001		
Hexanes Plus	0.191	0.623	0.083		
	100.000	100.000	0.085		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9863	3.2176
Calculated Molecular Weight	28.57	93.19
Compressibility Factor	0.9996	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	10	5113
Water Sat. Gas Base BTU	10	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
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Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-005A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 5	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/30/2019 03:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 15:18:07 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	98.547	97.482		GPM TOTAL C2+	0.065
Methane	NIL	NIL		GPM TOTAL C3+	0.065
Carbon Dioxide	1.302	2.023		GPM TOTAL iC5+	0.065
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	0.001	0.003	NIL		
n-Pentane	0.003	0.008	0.001		
Hexanes Plus	0.147	0.484	0.064		
	100.000	100.000	0.065		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9777	3.2176
Calculated Molecular Weight	28.32	93.19
Compressibility Factor	0.9997	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	8	5113
Water Sat. Gas Base BTU	8	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-006A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 6	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/30/2019 08:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 15:31:09 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	99.673	99.300		GPM TOTAL C2+	0.046
Methane	NIL	NIL		GPM TOTAL C3+	0.046
Carbon Dioxide	0.219	0.343		GPM TOTAL iC5+	0.046
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	0.001	0.003	NIL		
n-Pentane	0.001	0.003	NIL		
Hexanes Plus	0.106	0.351	0.046		
	100.000	100.000	0.046		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9708	3.2176
Calculated Molecular Weight	28.12	93.19
Compressibility Factor	0.9997	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	6	5113
Water Sat. Gas Base BTU	5	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-007A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 7	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/30/2019 10:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 15:43:49 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	97.852	96.155		GPM TOTAL C2+	0.138
Methane	NIL	NIL		GPM TOTAL C3+	0.138
Carbon Dioxide	1.823	2.814		GPM TOTAL iC5+	0.137
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	0.002	0.004	0.001		
Iso-pentane	0.013	0.033	0.005		
n-Pentane	0.026	0.066	0.009		
Hexanes Plus	0.284	0.928	0.123		
	100.000	100.000	0.138		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9843	3.2176
Calculated Molecular Weight	28.51	93.19
Compressibility Factor	0.9996	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	16	5113
Water Sat. Gas Base BTU	16	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110296-008A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Influent 8	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/30/2019 21:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 15:56:21 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	97.935	96.316		GPM TOTAL C2+	0.129
Methane	NIL	NIL		GPM TOTAL C3+	0.129
Carbon Dioxide	1.762	2.722		GPM TOTAL iC5+	0.128
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	0.002	0.004	0.001		
Iso-pentane	0.010	0.025	0.004		
n-Pentane	0.025	0.063	0.009		
Hexanes Plus	0.266	0.870	0.115		
	100.000	100.000	0.129		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9835	3.2176
Calculated Molecular Weight	28.48	93.19
Compressibility Factor	0.9996	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	15	5113
Water Sat. Gas Base BTU	15	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

SPL, Inc.

Analysis Request Chain of Custody Record

SPL		SPL Work Order No.:	SPL Work Order No.:	Acct. Mate Code:	Dept. Code	SPL Page 1 of 2	
Report To: (Company Name):	Talon LPE	Project/Station Name: COG BKU Sat G	Project/Station Number: 700778.14002	Project/Station Location: @ Loco Hills		Requested TAT	
Address	921 N. Bivins					☐ 24hr *	
City/State/Zip	Amarillo, Texas 79107	Special Instructions:				☐ 48hr *	
Contact:	Jason Shubert					☐ 72hr *	
Phone:	806-467-0607 Fax: 806-467-0622					☐ Standard	
Invoice To: (Company Name):	Talon LPE	Indicate Billing Type.	Net 30 day Acct. ☐	Check #	Cash Recv'd $	☐ Other Indicate Below	
Address	921 N Bivins		Credit Card ☐	Contact SPL, Inc for CC payment arrangements.			
City/State/Zip	Amarillo, Texas 79107	* Terms: Cylinders will be rented for $10/cyl. All cylinders checked out are to be returned within 21 days, whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.	Requested Analysis				
Contact:	Jason Shubert						
Phone:	806-467-0607 Fax: 806-467-0622						
PO / Ref. No.:							
Contract/Proposal #:						* Surcharges May Apply	

Sample ID & Point	Sample Date	Sample Time	Sample Type (Gas/Liq. Solid)	Duplicate	Composite	Spot	Cylinder Tracking Info * Cylinder #	Date Out	Date In	C6+	Comments
INFluent 1	10-29	1000	Gas							X	
INFluent 2	10-29	1500								X	
INFluent 3	10-29	2000								X	
INFluent 4	10-29	2200								X	
INFluent 5	10-30	0300								X	
INFluent 6	10-30	0800								X	
INFluent 7	10-30	1000								X	
INFluent 8	10-30	2100								X	

Sampled By-Print Name: B Hurtado Company Name:

Signature:

Relinquished By-Print Name: B Hurtado	Date: 10/31	Time:	Received By-Print Name: Signature:	Date:	Time:
Relinquished By-Print Name: Signature:	Date:	Time:	Received By-Print Name: Signature:	Date:	Time:
Relinquished By-Print Name: Signature:	Date:	Time:	Received By-Print Name: Signature: D Cullen	Date:	Time:

☐ 8820 Interchange Dr. Houston, TX 77054 (713) 660-0901

☐ 9221 Highway 23 Belle Chasse, LA 70037 (504) 391-1337

☐ P.O. Box 3079 Laurel, MS 39442 (601) 426-0642

☐ 500 Ambassador Caffery Pkwy Scott, LA 70583 (337) 237-4775

☐ 1595 US 79 South Carthage, TX 75633 (903) 693-6242

☐ 459 Hughes Dr. Traverse City, MI 49686 (616) 947-5777

Note: As a convenience to our clients, this form is available in an electronic format. Please contact one of our offices above for the form to be e-mailed to you.

Certificate of Analysis

Number: 1030-19110297-001A

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Nov. 08, 2019

Station Name: Influent 9
Station Number: 700778.140.02
Station Location: Loco Hills
Sample Point: Cog BKU Sat G
Analyzed: 11/07/2019 16:16:00 by PW

Sampled By: BH
Sample Of: Gas Spot
Sample Date: 10/31/2019 08:00
Sample Conditions:
Method: GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia
Nitrogen	98.003	96.414	
Methane	NIL	NIL	
Carbon Dioxide	1.691	2.613	
Ethane	NIL	NIL	NIL
Propane	NIL	NIL	NIL
Iso-butane	NIL	NIL	NIL
n-Butane	0.001	0.002	NIL
Iso-pentane	0.011	0.028	0.004
n-Pentane	0.025	0.063	0.009
Hexanes Plus	0.269	0.880	0.117
	100.000	100.000	0.130

GPM TOTAL C2+	0.130
GPM TOTAL C3+	0.130
GPM TOTAL iC5+	0.130

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9831	3.2176
Calculated Molecular Weight	28.48	93.19
Compressibility Factor	0.9996	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	15	5113
Water Sat. Gas Base BTU	15	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

Houston Laboratories
8820 Interchange Drive
Houston, TX 77054
Phone 713-660-0901

Certificate of Analysis

Number: 1030-19110297-002A

Nov. 08, 2019

Jason Shubert
Talon/LPE
921 N Bivins
Amarillo, TX 79107

Station Name:	Effluent 1	Sampled By:	BH
Station Number:	700778.140.02	Sample Of:	Gas Spot
Station Location:	Loco Hills	Sample Date:	10/30/2019 21:00
Sample Point:	Cog BKU Sat G	Sample Conditions:	
Analyzed:	11/07/2019 16:29:56 by PW	Method:	GPA-2261M

Analytical Data

Components	Mol. %	Wt. %	GPM at 14.65 psia		
Nitrogen	98.481	97.622		GPM TOTAL C2+	0.003
Methane	NIL	NIL		GPM TOTAL C3+	0.003
Carbon Dioxide	1.512	2.355		GPM TOTAL iC5+	0.003
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.007	0.023	0.003		
	100.000	100.000	0.003		

Calculated Physical Properties	Total	C6+
Relative Density Real Gas	0.9757	3.2176
Calculated Molecular Weight	28.26	93.19
Compressibility Factor	0.9997	
GPA 2172 Calculation:		
Calculated Gross BTU per ft³ @ 14.65 psia & 60°F		
Real Gas Dry BTU	NIL	5113
Water Sat. Gas Base BTU	NIL	5024

Tom Berry

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.

SPL, Inc.

Analysis Request Chain of Custody Record

SPL

SPL Work Order No.:	SPL Work Order No.:	Acct. Mate Code:	Dept. Code	SPL Page 2 of 2

Report To: (Company Name):	Talon LPE	Project/Station Name: COG BKU Sat. 6	Project/Station Number: 700778.140.02	Project/Station Location: Loco Hills
Address	921 N. Bivins	Special Instructions:		
City/State/Zip	Amarillo, Texas 79107			
Contact:	Jason Shubert			
Phone:	806-467-0607 Fax: 806-467-0622			

Requested TAT: ☐ 24hr * ☐ 48hr * ☐ 72hr * ☐ Standard ☐ Other Indicate Below

Invoice To: (Company Name):	Talon LPE	Indicate Billing Type.	☐ Net 30 day Acct. Check # Cash Recv'd $
Address	921 N Bivins		☐ Credit Card Contact SPL, Inc for CC payment arrangements.
City/State/Zip	Amarillo, Texas 79107		
Contact:	Jason Shubert		
Phone:	806-467-0607 Fax: 806-467-0622		
PO / Ref. No.:			
Contract/Proposal #:			

* Terms: Cylinders will be rented for $10/cyl. All cylinders checked out are to be returned within 21 days, whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.

Requested Analysis

* Surcharges May Apply

Sample ID & Point	Sample Date	Sample Time	Sample Type (Gas/Liq. Solid)	Duplicate	Composite	Spot	Cylinder #	Date Out	Date In	C6+	Comments
INFlu 9	10-31	0800	Gas							X	
Effluent	10-30	2100	|							X	

Sampled By-Print Name: B Huntington	Company Name:
Signature: [signature]	

Relinquished By-Print Name: B Huntington Signature: [signature]	Date: 10/31	Time:	Received By-Print Name: Signature:	Date:	Time:
Relinquished By-Print Name: Signature:	Date:	Time:	Received By-Print Name: Signature:	Date:	Time:
Relinquished By-Print Name: Signature:	Date:	Time:	Received By-Print Name: Signature: D. Cullen	Date:	Time:

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☐ 9221 Highway 23 Belle Chasse, LA 70037 (504) 391-1337
☐ P.O. Box 3079 Laurel, MS 39442 (601) 428-0842
☐ 500 Ambassador Caffery Pkwy Scott, LA 70583 (337) 237-4775
☐ 1595 US 79 South Carthage, TX 75633 (903) 693-6242
☐ 459 Hughes Dr. Traverse City, MI 49686 (616) 947-5777

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District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 5036

CONDITIONS

Operator: COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701	OGRID: 229137
	Action Number: 5036
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	7/26/2022