SITE CHARACTERIZATION REPORT

Buffalo Valley Compressor Station
Chaves County, New Mexico

Prepared for:

370 17th St., Suite 2500
Denver, CO 80202

Prepared by:

6899 Pecos Street, Unit C
Denver, Colorado 80221

September 8, 2016

Table of Contents

Tables

Figures

Appendices

1. INTRODUCTION

Tasman Geosciences, Inc. (Tasman) has prepared this Site Characterization Report (SCR) on behalf of DCP Midstream, LP (DCP) to document and present the results of field activities that were conducted to characterize subsurface soil conditions at the Buffalo Valley Compressor Station (Site) located in Chaves County, New Mexico (Figure 1). The Site characterization activities discussed herein were completed on August 8, 2016, and recommendations for the Site have been included.

2. SITE LOCATION AND BACKGROUND

The Site is located in New Mexico Oil Conservation Division (OCD) District 2, Unit O (Southwest Quarter of the Southeast Quarter of Section 1, Township 15 South, Range 27 East of the Sixth Principal Meridian [Figure 1]). The facility coordinates are 33.038843 degrees north and -104.187643 degrees west. The Site occupies approximately 4.4 acres of land that is leased to DCP from the State of New Mexico.

During Site decommissioning activities that were initiated during the second quarter 2016, DCP was performing trenching activities to re-route buried utilities through the facility. While trenching, potential petroleum hydrocarbon impacted soil originating from an apparent historical release of an unknown quantity was discovered in the northwest portion of the Site at approximately five (5) feet below ground surface (bgs). Trenching activities continued toward the south east and petroleum hydrocarbon impacts appeared to increase in thickness approaching the surface. Additionally, small amounts of liquid material resembling condensate and water infiltrated at two locations on the west side of the trench. However, the liquid did not continuously flow into the trench and was not considered to be related to groundwater. To determine if the liquid was petroleum hydrocarbon based, which could result in subsequent soil impacts, a sample of the liquid (H601372-1) was collected on June 22, 2016. The liquid was submitted to Cardinal Laboratories (Cardinal) in Hobbs, New Mexico for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) using United States Environmental Protection Agency (USEPA) Method 8021B. Additionally, the sample submitted to Cardinal was analyzed for n-paraffins, iso-parrafins, aromatics, naphthalenes, and olefins (PIANO) for fingerprinting purposes. The laboratory analytical reports for the BTEX and PIANO analyses are provided in Appendix A and the results are discussed in Section 4.4.

Subsequent to re-routing the active below grade utilities and collecting the samples described above, the trench was backfilled and the compressor station has been shut in.

In accordance with the New Mexico Oil and Gas Conservation Commission (NMOCD) *Guidelines for Remediation of Leaks, Spills, and Releases* (*GRLSR*), a C-141 Release Notification and Corrective Action Form for the Site was submitted by email to the NMOCD District 2 office on August 3, 2016.

3. SITE RECEPTOR EVALUATION AND RISK BASED RANKING

To assess the potential for impact to human, environmental, and cultural receptors, aerial photographs and online directories were consulted and a visual reconnaissance of the surrounding area was

conducted. The Site is located immediately south and adjacent to Harriet Road in a rural area surrounded by State of New Mexico owned land that is primarily associated with livestock grazing and oil and gas production gathering. The nearest town of Hagerman, New Mexico, is located approximately 10 miles northwest of the Site. No permanent structures including habitable public and/or private buildings or residences (not related to oil and gas production activities) are located within a 1-mile radius of the Site. Because of the developed nature of the Site, no archeologically significant resources are known or expected to exist on the Site. Additionally, no historically or culturally significant buildings are known to have been previously located within 1-mile of the Site. Site visitors or workers have been limited to intermittent visits from State employees, DCP employees, or contractors who have periodically performed work activities at the Site. Subsequent to the compressor station decommissioning activities, Site visits will be greatly reduced and/or eliminated. Multiple oil and gas production pump jacks, wells, storage tanks, and ancillary piping (above and below grade) are located near the Site.

To determine the Site's Crucial Habitat Rank, the New Mexico Department of Game and Fish's Crucial Habitat Assessment Tool (NM CHAT) was consulted. The Crucial Habitat Rank was derived from a square mile hexagon grid across New Mexico and an overall Crucial Habitat Rank was assigned to each hexagon based on a categorical combination of eight (8) layers of Priority Level values where 1 is "Most Crucial" and 6 "Least Crucial." The layers include: Species of Concern, Large Natural Areas, Natural Vegetation Communities, Freshwater Integrity, Wetland and Riparian Areas, Wildlife Corridors, and Species of Economic and Recreational Importance (Terrestrial and Aquatic SERI). Based on the NM CHAT tool, the Site is located within Hexagon ID #2,040,051 which received an overall Crucial Habitat Rank of 5.

The Site is also located within an area designated by the United States Geological Survey (USGS) as a State Land Trust with a Gap Status of 4 relating to no known mandates for protection.

Additional NMOCD regulated receptor evaluation criteria and characteristics used to determine and evaluate the Site's potential risk for a reasonable probability to injure or be detrimental to public health, fresh waters, animal or plant life, property, or unreasonably interfere with the public welfare or use of the property and other potential environmental impacts are provided in the sub-section below.

3.1 NMOCD Ranking Criteria

In accordance with Section IV of the *GRLSR*, soils which are contaminated by petroleum constituents are scored according to the ranking criteria summarized below to determine their relative threat to public health, fresh waters, and the environment.

Depth to Groundwater	Ranking Score
<50 feet	20
50 - 99 feet	10
>100 feet	0

Wellhead Protection Area	Ranking Score
<1,000 feet from a water source, or; <200 feet from private domestic water source	YES = 20 NO = 0

Distance to Surface Water Body	Ranking Score
<200 horizontal feet	20
200 – 1,000 horizontal feet	10
>1,000 feet	0

Based on the ranking criteria listed above, the Site has a maximum total ranking score of 20 due to the following factors:

- The approximate depth to the shallow groundwater bearing zone is approximately 23 feet below ground surface (bgs), as identified by the New Mexico Office of the State Engineer (NMOSE). One water well located in Section 1, Township 15 South, and Range 27 East that was completed at 75 bgs contains a highest recorded static water level of 23 feet bgs. (Ranking Score 20).
- The Site is not located less than 1,000 feet from a water source or less than 200 feet from a private domestic water source. The single domestic water well location (RA-04897), identified in the bullet above, is located approximately 2,400 feet to the northeast of the Site. (Ranking Score 0).
- Based on information provided by the U.S. Fish and Wildlife Service National Wetlands Inventory (USFWS-NWI) as well as aerial photography and visual observations, the Site is not located within 1,000 horizontal feet of known surface water bodies. The nearest surface water body, identified by the USFWS-NWI as a Riverine, is located approximately 2,800 feet southeast of the Site. (Ranking Score 0).

Based on the Ranking Score of 20 identified above, the soil action levels for the Site include:

- Benzene - 10 milligrams per kilogram (mg/kg).
- Total BTEX – 50 mg/kg; and,
- Total Petroleum Hydrocarbons (TPH) – 100 mg/kg.

4.0 SITE CHARACTERIZATION

This Site characterization is based on data gathered from the trenching activities described in Section 2 as well as the sampling of nine (9) soil borings that were advanced on August 8, 2016. Borehole locations are illustrated on Figure 2. Each soil boring was advanced to an approximate depth of 6-feet bgs. The primary elements of the Site characterization field activities and the results are summarized in the following sub-Sections.

4.1 Soil Borings

Drilling activities at the Site were conducted using a combination of direct push and hollow stem auger (HSA) drilling methods. Major soil types were identified using the Unified Soil Classification System (USCS) and secondary characteristics such as grain size distribution, moisture content, density/plasticity, and visual/olfactory impacts were noted during borehole logging and soil sampling activities. Soil boring logs are included in Appendix B and the borehole global positioning system (GPS) coordinate locations were collected and are illustrated on Figure 2.

As indicated in the boring logs in Appendix B and as discussed in Section 4.2, a hard caliche layer was encountered at each boring location between two (2) and six (6) feet bgs throughout the Site. Above this layer, direct push drilling with continuous core sampling was conducted. Refusal at the caliche layer using direct push drilling methods was encountered at each boring location. Therefore, the drilling method was converted to hollow stem auger drilling and continued through the caliche layer to approximately six (6) feet bgs at each location. During HSA drilling through the caliche, the soil material was pulverized into a fine powder and as such, intact soil samples were unable to be recovered. A photograph of the pulverized caliche material around one of the boring holes is provided below for reference.

Photograph of pulverized caliche material

During direct push drilling activities and where the recovered sample volume allowed, a one quart zip-lock bag was filled half full with an aliquot of soil from the boring. Traditional headspace sampling techniques approved by the NMOCD were applied and the samples were analyzed in the field for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Select soil borings were identified based on the headspace sampling, and where possible, soil samples from those borings were collected for subsequent laboratory analysis. Soil samples were appropriately packaged and submitted under chain of custody procedures to ALS Laboratories in Fort Collins, Colorado for analysis of BTEX using USEPA Method 8260 and total volatile petroleum hydrocarbons gasoline range organics (TVPH-GRO) and total extractable petroleum hydrocarbons diesel range organics (TEPH-DRO) using USEPA Method 8015. The reported laboratory analytical concentrations for TVPH-GRO and TEPH-DRO are added together for total petroleum hydrocarbon (TPH) concentrations.

4.2 Site Geology

Based on a visual assessment that was conducted during drilling activities and an analysis of the boring logs (Appendix B), the Site geology ranges from the surficial soils primarily consisting of road base material including gravel, sand, and silt to a hard caliche bedrock material. Throughout the Site, surficial soils immediately transitioned to a soft, fine grained, and poorly graded non-plastic dry sandy silt (USCS Code ML) between 2 and four(4) feet bgs. Additionally, at two locations (BH01 and BH08), calcium deposits and fractured calcite was observed interbedded within the ML material above the caliche. At all borehole locations, a hard caliche layer was encountered below the ML interval to approximately 6 feet bgs with the exception of BH03, as described below. Groundwater was not encountered within any of the investigation soil borings.

At borehole BH03, caliche was encountered at approximately 2.8 feet bgs and continued to approximately 4 feet bgs where a soft, black stained, wet, silty sludge with a strong hydrocarbon odor was encountered. At that point, the HSA drilling auger was removed from the borehole and a hand auger was utilized to collect soil samples for headspace PID readings and laboratory analysis. Using the hand auger, the silty sludge material was observed between approximately 4-feet and 6-feet bgs. At 6-feet bgs, what appeared to be clean caliche, based on olfactory and visual observations, was again encountered. The HSA drilling auger was reintroduced into the borehole at this point to attempt to collect a soil sample from below 6-feet bgs. However, due to the characteristics of the caliche soil type, an intact soil sample was unable to be collected from that interval and drilling past that point was suspended. Separated liquid was not observed within the borehole during the investigation activities.

Elevated PID readings were noted at depths ranging from below the road base material at the surface to 3.5 feet bgs in the vicinities of BH02 and BH03 and between 4 feet and 6 feet bgs at boring BH03. The observed PID readings from each location are noted on the boring logs in Appendix B and displayed on Figure 3.

4.3 Site Surface Water Hydrology

Based on visual observations and a review of aerial photographs, surface water generally follows the Site topography to the north-northeast. Surface water from the Site flows toward an area that appears to be an intermittent flood plain during high precipitation events which is located approximately 1,000 feet north-northeast of the Site (Figure 1). Additionally, surface water from the Site has the potential to follow Harriet Road to the southeast approximately 700 feet and then continue north along the apparent flood plain topography (Figure 1). However, as discussed in Section 3.1, the Site is not located within 1,000 feet of any known or labeled surface water bodies and this floodplain area is also not considered a surface water body. According to various sources including the National Weather Service and the National Oceanic and Atmospheric Association, Hagerman, New Mexico receives an annual average between 8 and 15 inches of precipitation.

4.4 Liquid Sample Analytical Results

As described in Section 2.0, during trenching activities that occurred at the Site, liquid infiltrated the trench at two separate locations in the vicinity of soil boring BH03 (Figure 2). A sample of the liquid, which included water and a condensate like material, was collected and submitted for laboratory analysis of BTEX using USEPA Method 8021B and for fingerprinting using PIANO analysis of the condensate material. The water that was associated with the liquid sample is not anticipated to be associated or related to groundwater beneath the Site. A photograph of the collected sample is provided below for reference.

Photograph of liquid sample H601372-1

The BTEX analytical results were compared to the New Mexico Water Quality Control Commission (NMWQCC) groundwater standards and the results are summarized below:

- Benzene was above the NMWQCC standard of 0.01 milligrams per liter (mg/L) with a detected concentration of 3.12 mg/L.
- Toluene was above the NMWQCC standard of 0.75 mg/L with a detected concentration of 12.8 mg/L.
- Ethylbenzene was above the NMWQCC standard of 0.75 mg/L with a detected concentration of 1.63 mg/L.
- Total Xylenes were above the NMWQCC standard of 0.62 mg/L with a detected concentration of 13.5 mg/L.

The results of the PIANO fingerprinting analysis indicate that the carbon range of the material is between C4 and C29 with the major range observed between C7 and C12, relating to a lighter end condensate material. Additionally, the PIANO results indicate that the material is a highly degraded product due to the Iso-paraffins and napthalenes results when compared to the paraffin results. The larger percent by weight results of the iso-paraffins and napthalenes versus the parrafins indicate that biodegradation processes are occurring. The laboratory analytical report for sample H601372-1 is included in Appendix A.

4.5 Soil Sample Analytical Results

Soil impacts exceeding one or more of the NMOCD Action Levels for the Site were confirmed by PID and laboratory analysis from just below the surface to approximately 3 feet bgs in the vicinity of BH02 and BH06 and from 4-6 feet bgs in the vicinity of BH03. The soil sample analytical results are summarized below:

- Benzene was detected at a concentration above the action level of 10 milligrams per kilogram (mg/kg) in two soil borings. The detected concentrations of 11 mg/kg and 18 mg/kg were observed in BH02 at 3.5 feet bgs and BH03 at approximately 6 feet bgs, respectively.
- Total BTEX was detected at concentrations above the action level of 50 mg/kg in three soil borings. The detected concentrations exceeding the cleanup goal included 1,551 mg/kg in BH02 at 3.5 feet bgs, 639 mg/kg in BH03 at 6 feet bgs, and 411 mg/kg and 1,113 mg/kg at 1-foot and 3 feet bgs, respectively, in BH06.
- TPH was detected at concentrations above the action level of 100 mg/kg in three soil borings. The detected concentrations exceeding the action level included 22,900 mg/kg in BH02 at 3.5 feet bgs, 17,000 mg/kg in BH03 at 6 feet bgs, and 7,900 mg/kg and 23,600 mg/kg at 1-foot and 3 feet bgs, respectively, in BH06.

The soil analytical results are summarized in Table 1 and the laboratory analytical report is included in Appendix C. Due to lack of sample volume, soil samples could not be collected from boring locations BH05 or BH08. However, due to observed PID readings of 3.2 parts per million (ppm) at BH05 and 0.0 ppm at BH08 as well as olfactory and visual characteristics that were noted, petroleum hydrocarbons impacts above the action levels are not likely to have occurred within the vicinity of those locations.

A total BTEX isoconcentration map is provided as Figure 4 and a TPH isoconcentration map is provided as Figure 5 for visual reference of lateral petroleum hydrocarbon impacts. The soil analytical results for all collected samples are summarized in Table 2 and the laboratory analytical report is included in Appendix C.

5.0 CONCLUSIONS

The components of this Site Characterization were developed in accordance with published NMOCD guidance documents. The field activities and data presented herein were evaluated and used to describe the nature and extent of petroleum impacts that are known to have occurred to date at the Site, and to guide the Site Characterization.

The primary elements of the Site Characterization include a description of the Site and the surrounding area, a Site receptor evaluation, the collection of a liquid sample during trenching activities, geological logging activities associated with the installation of 9 soil borings, and the collection of soil samples to delineate the horizontal and vertical extents of hydrocarbon impacts.

Physical and laboratory analysis confirm that soil impacts exceeding one or more of the NMOCD Cleanup Goals for a Site with a Risk-Based Ranking of >19 were exceeded. Exceedances were observed between

just below the surface to approximately 3 feet bgs in the vicinity of BH02 and BH06 and between 4 and 6 feet bgs in the vicinity of BH03. The constituents of concern for the soil at these locations consist of BTEX and TPH. Based on the information that has been gathered through the field activities described herein and the estimated extent of BTEX and TPH impacted soils illustrated on Figures 4 and 5, the minimum volume of impacted soil in place at the Site is estimated at approximately 1,800 cubic yards (cy) of material.

Groundwater was not encountered during any of the field activities described herein. Based on regional data and well construction information from water well RA-04897 located approximately 2,400 feet northeast of the Site, depth to groundwater is greater than 20 feet bgs. The water that was associated with the liquid sample (H601372-1) may be attributed to localized perched water within the vicinity of BH03 and is likely bound vertically by a caliche layer that was encountered at 6 feet bgs. It is not anticipated that the water observed in the liquid sample is associated with the groundwater table. Additionally, based on analysis of the liquid sample that was collected during trenching activities, it appears that the condensate material is associated with a historic leak due to the degraded chemical compounds that were reported.

As illustrated on Figures 2 through 5, soil boring and sampling activities were not conducted on the south portion of the Site to delineate the horizontal extents of hydrocarbon impacts towards that area. Drilling activities were not conducted in the southern portion of the Site during the August 8, 2016, field activities due to ongoing compressor station equipment decommissioning activities and associated health and safety concerns. Additionally, further drilling and Site Characterization activities were not conducted to the west of BH03 due to buried utilities as well as the location of the Site access road and the proximity to Harriet Road to the north.

6.0 RECOMMENDATIONS

Recommendations for Site remediation activities have been developed based on the data provided herein. In-situ chemical oxidant (chemox) soil mixing has been chosen as the preferred remedial alternative for mitigating petroleum hydrocarbon impacted soils at the Site. Chemox soil mixing is a proven, cost-effective, and minimal footprint method that is ideally suited to addressing soil impacts in the treatment area. This process consists of physically mixing impacted soil with a dilute solution of a proprietary ratio of chemox mixtures and is designed to be implemented with minimal disturbance to areas outside the excavation and staging areas. Using this methodology, results equal to those of excavation and off-site disposal are achieved, with the elimination of haul trucks, landfilled material, imported backfill, and the associated road damage and resource consumption.

Chemox soil mixing has been chosen for the Site based on several factors including; the vertical and lateral extents of the petroleum hydrocarbon distribution; the Site-specific constituents of concern (COC) and the concentrations that were verified through laboratory analysis; and the estimated minimum volume of approximately 1,800 cy of impacted soil (2,300 cy of bulk material) that remains in-place.

Additionally, due to the ongoing Site decommissioning and demolition activities that were occurring during the August 8, 2016 investigation activities, further characterization on the southern portion of the Site was not conducted due to health and safety concerns. However, during chemox soil mixing of the existing known petroleum hydrocarbon impacted area, further delineation and Site Characterization activities can be easily implemented. Any additional soils that were not delineated during the August 8, 2016 investigation effort can be located and remediated at that time.

Once the Site decommissioning activities are complete and all ancillary above ground equipment has been removed, notification will be provided to the NMOCD prior to scheduling remediation activities.

Tables

TABLE 1
DCP BUFFALO VALLEY COMPRESSOR STATION
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH - GRO (mg/kg)	TPH - DRO (mg/kg)	TPH [2] GRO/DRO (mg/kg)
BH01 @ 3.0'	8/8/2016	3.0	1.1	<0.0067	0.0023	<0.0067	0.0019	0.0042	0.17	<6.7	<6.7
BH02 @ 3.5'	8/8/2016	3.5	1,926	**11**	**420**	**130**	**990**	**1,551**	**15,000**	**7,900**	**22,900**
BH03 @ 2.8'	8/8/2016	2.8	4.2	<0.0060	<0.0060	<0.0060	0.0	0.0034	0.27	15	15.27
BH03 @ 6.0'	8/8/2016	6.0	761	**18**	**130**	41	**450**	**639**	**7,300**	**9,700**	**17,000**
BH04 @ 2.5'	8/8/2016	2.5	11.1	<0.0061	0.0044	<0.0061	0.0050	0.0094	0.22	<5.9	<5.9
BH06 @ 1.0'	8/8/2016	1.0	1,877	2.0	77	32	**300**	**411**	**6,200**	**1,700**	**7,900**
BH06 @ 3.0'	8/8/2016	3.0	1,330	3.2	**210**	**110**	**790**	**1,113**	**17,000**	**6,600**	**23,600**
BH07 @ 3.0'	8/8/2016	3.0	3.3	0.00083	0.00860	0.00200	0.0170	0.02843	0.34	<6.6	<6.6
BH09 @ 2.5'	8/8/2016	2.5	0.0	0.003	0.045	0.010	0.077	0.135	1.4	<14	<14
NMOCD Action Levels - Soil (mg/kg) [1]				**10**	**NA**	**NA**	**NA**	**50**	**NA**	**NA**	**100**

Notes:

1). Standards for Soil are taken from NMOCD Guidelines for Remediation of Leaks, Spills and Releases, 1993, total ranking >19

2). TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

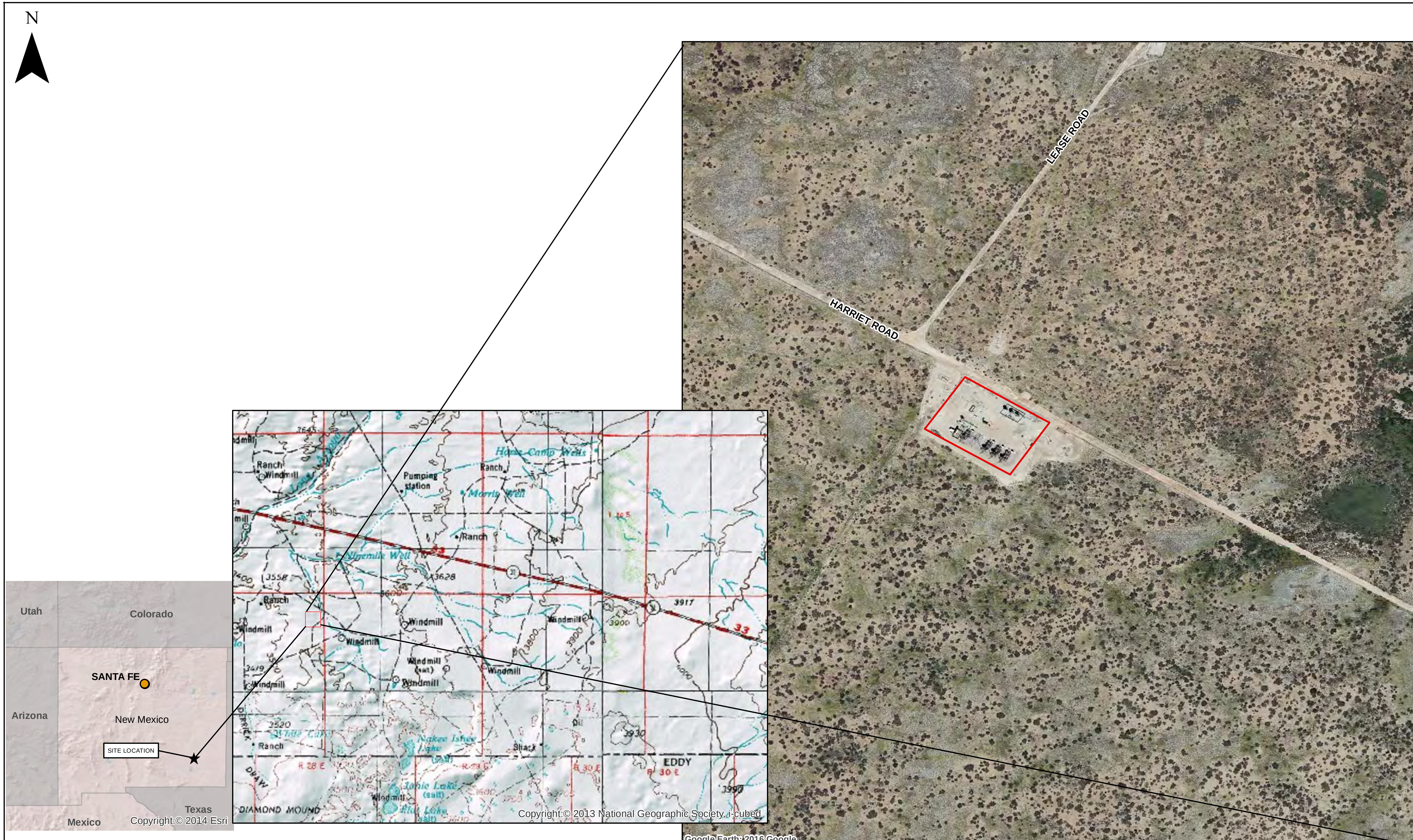
Bold indicates concentration exceeds NMOCD Action Levels.

GRO - Gasoline range organics. DRO - Diesel range organics.

mg/kg= Milligrams per kilogram. bgs - Below ground surface.

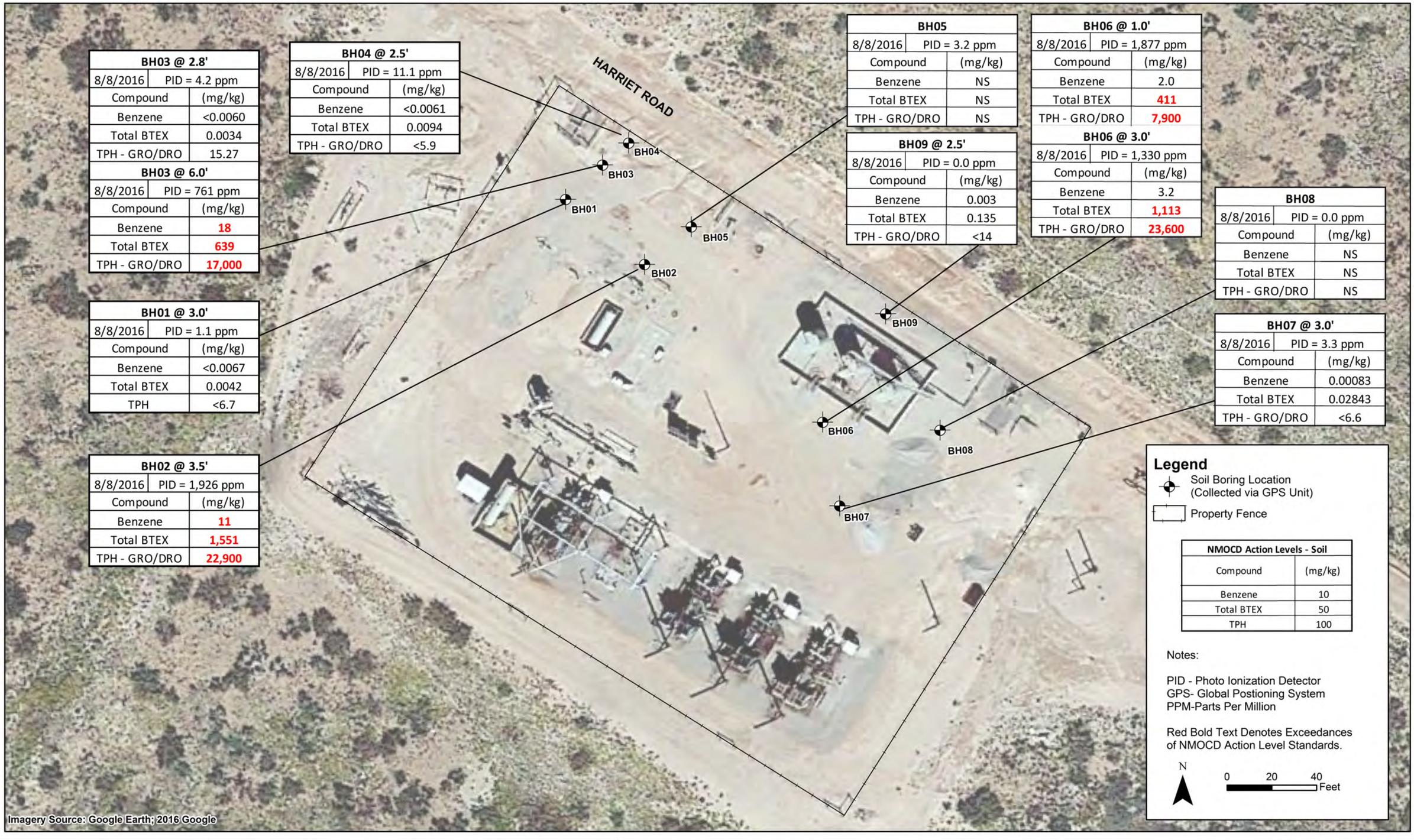
ppm - Parts per million NA - Not applicable

Figures



DATE: August 2016 DESIGNED BY: B. Humphrey DRAWN BY: D. Arnold	TASMAN GEOSCIENCES **Tasman Geosciences, Inc.** **6899 Pecos Street - Unit C** **Denver, CO 80221**	**DCP Midstream** **Buffalo Valley Compressor Station** SWSE Section 1, Township 15 South, Range 27 East Chaves County, New Mexico	Site Location Map	Figure 1

DATE: August 2016 DESIGNED BY: B. Humphrey DRAWN BY: D. Arnold	TASMAN GEOSCIENCES **Tasman Geosciences, LLC** **6899 Pecos Street - Unit C** **Denver, CO 80221**	**DCP Midstream** **Buffalo Valley Compressor Station** SWSE Section 1, Township 15 South, Range 27 East Chaves County, New Mexico	Site Map with Borehole Locations	Figure 2



BH03 @ 2.8'	
8/8/2016	PID = 4.2 ppm
Compound	(mg/kg)
Benzene	<0.0060
Total BTEX	0.0034
TPH - GRO/DRO	15.27
BH03 @ 6.0'	
8/8/2016	PID = 761 ppm
Compound	(mg/kg)
Benzene	**18**
Total BTEX	**639**
TPH - GRO/DRO	**17,000**

BH04 @ 2.5'	
8/8/2016	PID = 11.1 ppm
Compound	(mg/kg)
Benzene	<0.0061
Total BTEX	0.0094
TPH - GRO/DRO	<5.9

BH05	
8/8/2016	PID = 3.2 ppm
Compound	(mg/kg)
Benzene	NS
Total BTEX	NS
TPH - GRO/DRO	NS

BH09 @ 2.5'	
8/8/2016	PID = 0.0 ppm
Compound	(mg/kg)
Benzene	0.003
Total BTEX	0.135
TPH - GRO/DRO	<14

BH06 @ 1.0'	
8/8/2016	PID = 1,877 ppm
Compound	(mg/kg)
Benzene	2.0
Total BTEX	**411**
TPH - GRO/DRO	**7,900**
BH06 @ 3.0'	
8/8/2016	PID = 1,330 ppm
Compound	(mg/kg)
Benzene	3.2
Total BTEX	**1,113**
TPH - GRO/DRO	**23,600**

BH08	
8/8/2016	PID = 0.0 ppm
Compound	(mg/kg)
Benzene	NS
Total BTEX	NS
TPH - GRO/DRO	NS

BH07 @ 3.0'	
8/8/2016	PID = 3.3 ppm
Compound	(mg/kg)
Benzene	0.00083
Total BTEX	0.02843
TPH - GRO/DRO	<6.6

BH01 @ 3.0'	
8/8/2016	PID = 1.1 ppm
Compound	(mg/kg)
Benzene	<0.0067
Total BTEX	0.0042
TPH	<6.7

BH02 @ 3.5'	
8/8/2016	PID = 1,926 ppm
Compound	(mg/kg)
Benzene	**11**
Total BTEX	**1,551**
TPH - GRO/DRO	**22,900**

Legend

Soil Boring Location (Collected via GPS Unit)

Property Fence

NMOCD Action Levels - Soil	
Compound	(mg/kg)
Benzene	10
Total BTEX	50
TPH	100

Notes:

PID - Photo Ionization Detector
GPS- Global Postioning System
PPM-Parts Per Million

Red Bold Text Denotes Exceedances of NMOCD Action Level Standards.

N

0 20 40 Feet

DATE: August 2016
DESIGNED BY: B. Humphrey
DRAWN BY: D. Arnold

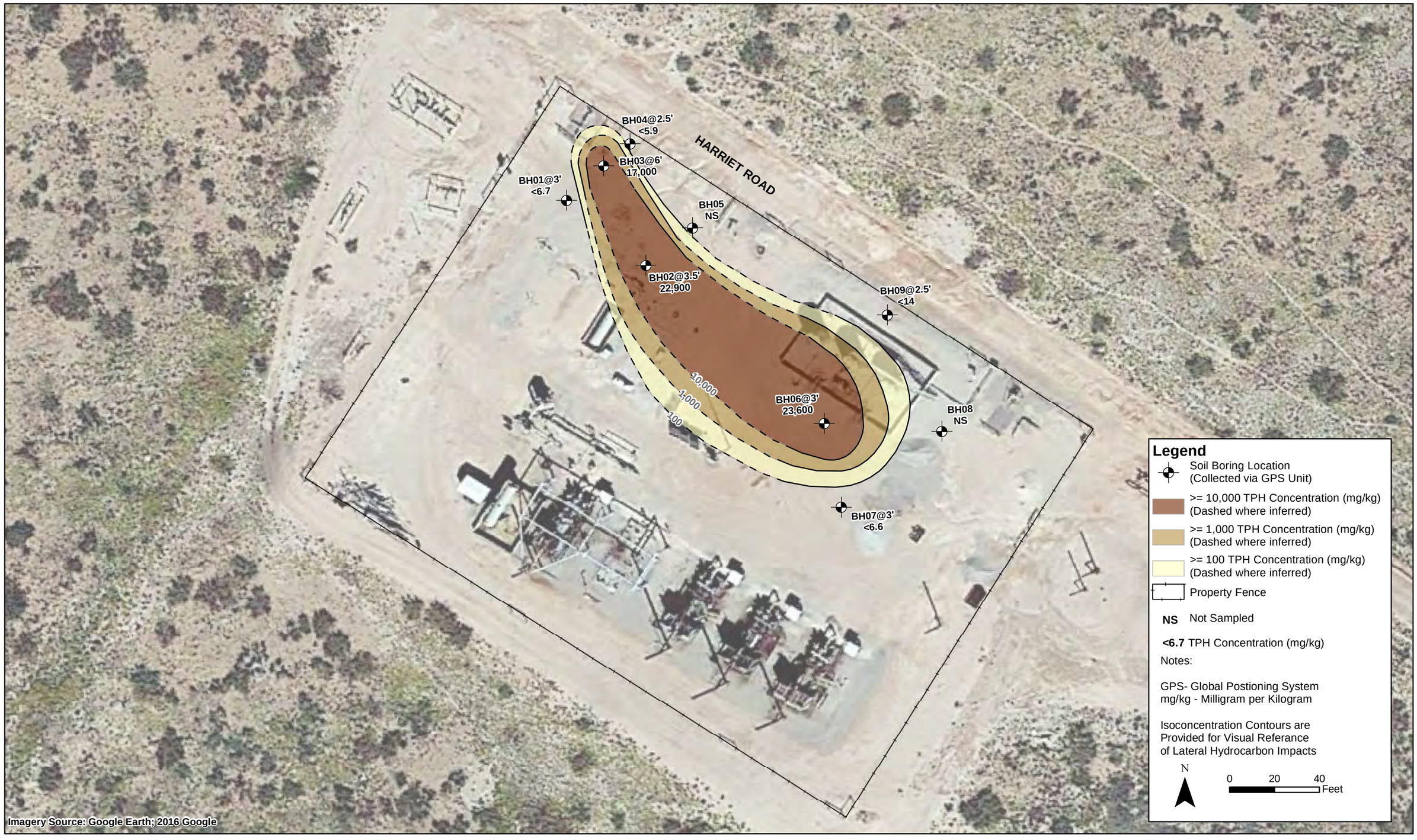
TASMAN GEOSCIENCES
Tasman Geosciences, LLC
6899 Pecos Street - Unit C
Denver, CO 80221

DCP Midstream
Buffalo Valley Compressor Station
SWSE Section 1, Township 15 South, Range 27 East
Chaves County, New Mexico

Soil Analytical Results Map
(August 8, 2016)

Figure
3

DATE: August 2016 DESIGNED BY: B. Humphrey DRAWN BY: D. Arnold	TASMAN GEOSCIENCES **Tasman Geosciences, LLC** **6899 Pecos Street - Unit C** **Denver, CO 80221**	**DCP Midstream** **Buffalo Valley Compressor Station** SWSE Section 1, Township 15 South, Range 27 East Chaves County, New Mexico	Total BTEX Isoconcentration Contour Map (August 8, 2016)	Figure 4



DATE: August 2016 DESIGNED BY: B. Humphrey DRAWN BY: D. Arnold	TASMAN GEOSCIENCES Tasman Geosciences, LLC 6899 Pecos Street - Unit C Denver, CO 80221	**DCP Midstream** **Buffalo Valley Compressor Station** SWSE Section 1, Township 15 South, Range 27 East Chaves County, New Mexico	TPH Isoconcentration Contour Map (August 8, 2016)	Figure 5

Appendix A

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

June 30, 2016

NICK CASE

DCP MIDSTREAM-CARLSBAD

2010 ORCHARD LANE

CARLSBAD, NM 88220

RE: BUFFALO VALLEY

Enclosed are the results of analyses for samples received by the laboratory on 06/22/16 11:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

DCP MIDSTREAM-CARLSBAD
NICK CASE
2010 ORCHARD LANE
CARLSBAD NM, 88220
Fax To: NONE

Received:	06/22/2016	Sampling Date:	06/22/2016
Reported:	06/30/2016	Sampling Type:	Wastewater
Project Name:	BUFFALO VALLEY	Sampling Condition:	Cool & Intact
Project Number:	710000302	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: BUFFALO VALLEY (H601372-01)

BTEX 8021B **mg/L** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**3.12**	0.100	06/27/2016	ND	0.022	111	0.0200	1.23	
Toluene*	**12.8**	0.100	06/27/2016	ND	0.021	105	0.0200	2.76	
Ethylbenzene*	**1.63**	0.100	06/27/2016	ND	0.021	103	0.0200	2.01	
Total Xylenes*	**13.5**	0.300	06/27/2016	ND	0.067	112	0.0600	0.789	
Total BTEX	**31.0**	0.600	06/27/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID *121 %* *73.7-146*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name: DCP Midstream	BILL TO
Project Manager:	P.O. #: F-281
Address:	Company:
City: State: Zip:	Attn:
Phone #: Fax #:	Address:
Project #: 710000302 Project Owner:	City:
Project Name: Buffalo Valley F-281	State: Zip:
Project Location:	Phone #:
Sampler Name: Nicholas Case	Fax #:

ANALYSIS REQUEST: BTEX 8021 * water only ✓ ; PIANO Test on crude ✓

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME
H601372 -1													6/22/16	9:02

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 6/22/16 Time: 11:00	Received By: Angela Cabrera	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 4.4°C	Sample Condition Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials) AC #75	REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

Certificate of Analysis

Analysis Number:	**16060868-001A**		
Sample ID:	H601372-1	**Date of Sample:**	06/16/16
Project:	Buffalo Valley	**Time Sampled:**	9:02 AM
Project Location:		**Date Sample Analyzed:**	06/29/16
Client	Cardninal Laboratories	**Contact(s):**	Celey Keene
Address	101 East Marland		
Suite / Department			
City	Hobbs	**State**	New Mexico **Zip** 88240
Phone	575-393-2326 **Ext**	**E-Mail**	
Fax	575-393-2476		
Color:	Very Dark	**Odor**	Aromatic
Specific Gravity @ 60° F.	0.8382	**API @ 60° F.**	37.31
Carbon Range	C4-C29	**Major Range**	C7-C12

Paraffin	17.0177	wt%	**N-Hexane**	0.331	wt%
Isoparaffins	41.1953	wt%	**Benzene**	0.084	wt%
Naphthenics	21.1336	wt%	**Ethyl Benzene**	0.444	wt%
Aromatics	20.6534	wt%	**Toluene**	1.625	wt%
Olefins	N/D	wt%	**Meta-Xylene**	2.083	wt%
Unknowns	N/D	wt%	**Para-Xylene**	0.665	wt%
2,2,4-Tri Methylpentane	0.006	wt%	**Ortho-Xylene**	0.865	wt%
			Xylenes	2.748	wt%
Calculated Research Octane	N/A		**EDB**	N/A	wt%
Lead / Manganese	N/A	wt%	**EDC**	N/A	wt%
Oxygnates	N/D	wt%	**Ethanol**	N/D	wt%
C_{17}	0.060	wt%	**C_{18}**	0.046	wt%
Pristane	0.030	wt%	**Phytane**	0.025	wt%
Naphthalene	0.430	wt%	**2-Methyl Naphthalene**	0.256	wt%
1-Methyl Naphthalene	0.175	wt%			

Gasoline Range:	C_4-C_{13} Indicators:	2,2,4-TMP, Olefins
Diesel Range:	C_7-C_{20} Indicators:	Pristane, Phytane
Condensate Range:	C_2-C_{25}+ Indicators:	No Olefins, Light & Heavies
Heavy Oil:	C_{20+}	

Comments: **N/A Not Applicable N/D None Detected**

Chris Staley
Hydrocarbon Laboratory Manager

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

Normalized to 100.0000%

Oxygenates

Compound	Mass%	Mass% Oxygen	Vol%
No Oxy Compounds Found	0.00	0.00	0.00

Molecular Weight and Relative Density Data

Group	Avg Mw.	Avg Rel. Density
C1	0.000	0.000
C2	0.000	0.000
C3	0.000	0.000
C4	58.124	0.564
C5	71.893	0.636
C6	84.537	0.733
C7	97.808	0.750
C8	115.078	0.738
C9	125.771	0.760
C10	138.599	0.785
C11	150.316	0.794
C12	161.444	0.833
C13	168.894	0.821
C14	186.839	0.758
C15	199.531	0.798
C16	209.503	0.951
C17	231.203	0.775
C18	246.240	0.777
C19	262.420	0.777
C20	274.142	0.782
C21	284.936	0.789
C22	298.362	0.792
C23	310.964	0.794
C24	325.425	0.797
C25	339.068	0.799
C26	353.516	0.800
C27	371.118	0.800
C28	384.000	0.805

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

Normalized to 100.0000%

C29	398.000	0.805
Total Sample:	132.00	0.77

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

Totals by Group Type & Carbon Number (in Mass Percent)

	Paraffins	I-Paraffins	Olefins	Napthenes	Aromatics	Unknowns	Total
C1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C4	0.00719	0.01428	0.00000	0.00000	0.00000	0.00000	0.02147
C5	0.03669	0.02700	0.00000	0.00908	0.00000	0.00000	0.07277
C6	0.33145	0.29265	0.00000	1.11561	0.08420	0.00000	1.82390
C7	1.46952	1.93553	0.00000	4.76860	1.62526	0.00000	9.79892
C8	2.85831	2.70620	0.00000	7.87932	4.21234	0.00000	17.65617
C9	3.12103	8.69382	0.00000	5.65957	3.41844	0.00000	20.89287
C10	2.81671	9.78092	0.00000	1.68871	6.92336	0.00000	21.20969
C11	2.50722	4.90418	0.00000	0.00000	1.95288	0.00000	9.36429
C12	1.66669	3.05605	0.00000	0.01275	2.43688	0.00000	7.17237
C13	0.94200	2.63258	0.00000	0.00000	0.00000	0.00000	3.57458
C14	0.46305	2.01347	0.00000	0.00000	0.00000	0.00000	2.47652
C15	0.26339	1.22221	0.00000	0.00000	0.00000	0.00000	1.48560
C16	0.10316	0.35144	0.00000	0.00000	0.00000	0.00000	0.45460
C17	0.05953	0.10939	0.00000	0.00000	0.00000	0.00000	0.16892
C18	0.04604	0.06245	0.00000	0.00000	0.00000	0.00000	0.10849
C19	0.06289	0.04604	0.00000	0.00000	0.00000	0.00000	0.10892
C20	0.04757	0.06781	0.00000	0.00000	0.00000	0.00000	0.11538
C21	0.04578	0.21387	0.00000	0.00000	0.00000	0.00000	0.25965
C22	0.04570	0.30165	0.00000	0.00000	0.00000	0.00000	0.34735
C23	0.01602	0.59136	0.00000	0.00000	0.00000	0.00000	0.60739
C24	0.03161	0.51143	0.00000	0.00000	0.00000	0.00000	0.54304
C25	0.02074	0.68093	0.00000	0.00000	0.00000	0.00000	0.70167
C26	0.03230	0.61437	0.00000	0.00000	0.00000	0.00000	0.64667
C27	0.02310	0.25653	0.00000	0.00000	0.00000	0.00000	0.27963
C28	0.00000	0.05917	0.00000	0.00000	0.00000	0.00000	0.05917
C29	0.00000	0.04998	0.00000	0.00000	0.00000	0.00000	0.04998
Total:	17.01768	41.19532	0.00000	21.13364	20.65336	0.00000	100.00000

Oxygenates 0.00000 Total C30+: 0.00000
Total Unknowns: 0.00000 Grand Total: 100.00000

Totals by Group Type & Carbon Number (in Volume Percent)

	Paraffins	I-Paraffins	Olefins	Napthenes	Aromatics	Unknowns	Total
C1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C4	0.00960	0.01979	0.00000	0.00000	0.00000	0.00000	0.02939
C5	0.04524	0.03364	0.00000	0.00941	0.00000	0.00000	0.08829
C6	0.38810	0.34334	0.00000	1.11616	0.07397	0.00000	1.92156
C7	1.65952	2.17797	0.00000	4.79907	1.44736	0.00000	10.08391
C8	3.14149	2.94260	0.00000	7.86170	4.52232	0.00000	18.46811

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Normalized to 100.0000%
Comments:

C9	3.35806	9.25149	0.00000	5.58835	3.03653	0.00000	21.23443
C10	2.97914	10.20902	0.00000	1.63067	6.03132	0.00000	20.85015
C11	2.60191	4.87053	0.00000	0.00000	1.63337	0.00000	9.10581
C12	1.70896	2.80930	0.00000	0.01231	2.11441	0.00000	6.64497
C13	0.96155	2.39875	0.00000	0.00000	0.00000	0.00000	3.36030
C14	0.46869	2.05526	0.00000	0.00000	0.00000	0.00000	2.52395
C15	0.19938	1.23711	0.00000	0.00000	0.00000	0.00000	1.43649
C16	0.10300	0.26602	0.00000	0.00000	0.00000	0.00000	0.36902
C17	0.05907	0.10922	0.00000	0.00000	0.00000	0.00000	0.16830
C18	0.04576	0.06198	0.00000	0.00000	0.00000	0.00000	0.10774
C19	0.06246	0.04576	0.00000	0.00000	0.00000	0.00000	0.10821
C20	0.04657	0.06735	0.00000	0.00000	0.00000	0.00000	0.11392
C21	0.04465	0.20939	0.00000	0.00000	0.00000	0.00000	0.25404
C22	0.04442	0.29418	0.00000	0.00000	0.00000	0.00000	0.33860
C23	0.01552	0.57476	0.00000	0.00000	0.00000	0.00000	0.59029
C24	0.03054	0.49551	0.00000	0.00000	0.00000	0.00000	0.52606
C25	0.02001	0.65793	0.00000	0.00000	0.00000	0.00000	0.67794
C26	0.03117	0.59294	0.00000	0.00000	0.00000	0.00000	0.62412
C27	0.02216	0.24758	0.00000	0.00000	0.00000	0.00000	0.26974
C28	0.00000	0.05675	0.00000	0.00000	0.00000	0.00000	0.05675
C29	0.00000	0.04794	0.00000	0.00000	0.00000	0.00000	0.04794
Total:	18.04696	42.07611	0.00000	21.01766	18.85927	0.00000	100.00000

Oxygenates	0.00000	Total C30+:	0.00000
Total Unknowns:	0.00000	Grand Total:	100.00000

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

Normalized to 100.0000%

Totals by Group Type & Carbon Number (in Mol Percent)

	Paraffins	I-Paraffins	Olefins	Napthenes	Aromatics	Unknowns	Total
C1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
C4	0.01630	0.03237	0.00000	0.00000	0.00000	0.00000	0.04867
C5	0.06700	0.04929	0.00000	0.01706	0.00000	0.00000	0.13334
C6	0.50666	0.44734	0.00000	1.74618	0.14200	0.00000	2.84217
C7	1.93188	2.54452	0.00000	6.39767	2.32356	0.00000	13.19763
C8	3.29622	3.16566	0.00000	9.24970	4.49994	0.00000	20.21151
C9	3.20556	9.02541	0.00000	5.90568	3.74658	0.00000	21.88323
C10	2.60779	9.12156	0.00000	1.58594	6.84367	0.00000	20.15896
C11	2.11296	4.34470	0.00000	0.00000	1.74897	0.00000	8.20662
C12	1.28894	2.57524	0.00000	0.00998	1.97826	0.00000	5.85242
C13	0.67306	2.11501	0.00000	0.00000	0.00000	0.00000	2.78807
C14	0.30747	1.43863	0.00000	0.00000	0.00000	0.00000	1.74610
C15	0.16925	0.81156	0.00000	0.00000	0.00000	0.00000	0.98081
C16	0.06001	0.22583	0.00000	0.00000	0.00000	0.00000	0.28584
C17	0.03261	0.06364	0.00000	0.00000	0.00000	0.00000	0.09624
C18	0.02383	0.03421	0.00000	0.00000	0.00000	0.00000	0.05804
C19	0.03085	0.02383	0.00000	0.00000	0.00000	0.00000	0.05468
C20	0.02218	0.03326	0.00000	0.00000	0.00000	0.00000	0.05544
C21	0.02033	0.09971	0.00000	0.00000	0.00000	0.00000	0.12004
C22	0.01938	0.13398	0.00000	0.00000	0.00000	0.00000	0.15336
C23	0.00650	0.25080	0.00000	0.00000	0.00000	0.00000	0.25730
C24	0.01230	0.20753	0.00000	0.00000	0.00000	0.00000	0.21983
C25	0.00774	0.26486	0.00000	0.00000	0.00000	0.00000	0.27261
C26	0.01150	0.22947	0.00000	0.00000	0.00000	0.00000	0.24097
C27	0.00793	0.09133	0.00000	0.00000	0.00000	0.00000	0.09926
C28	0.00000	0.02030	0.00000	0.00000	0.00000	0.00000	0.02030
C29	0.00000	0.01654	0.00000	0.00000	0.00000	0.00000	0.01654
Total:	16.43824	37.36658	0.00000	24.91220	21.28298	0.00000	100.00000

Oxygenates 0.00000
Total Unknowns: 0.00000

Total C30+: 0.00000
Grand Total: 100.00000

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
8.017	368.080	I4	i-butane	0.014	0.020	0.032
8.377	400.000	P4	n-butane	0.007	0.010	0.016
9.730	475.100	I5	i-pentane	0.022	0.027	0.039
9.930	482.600	I5	C5-Iso-Paraffin	0.005	0.007	0.010
10.457	500.000	P5	n-pentane	0.037	0.045	0.067
11.847	536.440	I6	2,2-dimethylbutane	0.008	0.010	0.013
13.303	564.430	N5	cyclopentane	0.009	0.009	0.017
13.390	565.880	I6	2,3-dimethylbutane	0.023	0.027	0.036
13.623	569.680	I6	2-methylpentane	0.144	0.170	0.220
14.567	583.760	I6	3-methylpentane	0.117	0.136	0.179
15.827	600.000	P6	n-hexane	0.331	0.388	0.507
17.923	626.880	I7	2,2-dimethylpentane	0.033	0.038	0.043
18.140	629.360	N6	methylcyclopentane	0.246	0.253	0.384
18.503	633.400	I7	2,4-dimethylpentane	0.055	0.064	0.073
19.040	639.130	I7	2,2,3-trimethylbutane	0.013	0.014	0.017
20.447	653.010	A6	benzene	0.084	0.074	0.142
21.083	658.820	I7	3,3-dimethylpentane	0.034	0.038	0.045
21.463	662.160	N6	cyclohexane	0.870	0.863	1.362
22.500	670.840	I7	2-methylhexane	0.600	0.683	0.789
22.693	672.390	I7	2,3-dimethylpentane	0.165	0.184	0.217
23.013	674.920	N7	1,1-dimethylcyclopentane	0.097	0.099	0.130
23.517	678.790	I7	3-methylhexane	0.754	0.848	0.992
24.270	684.380	N7	1c,3-dimethylcyclopentane	0.173	0.179	0.232
24.613	686.840	N7	1t,3-dimethylcyclopentane	0.167	0.173	0.225
24.763	687.900	N7	1t,2-dimethylcyclopentane	0.061	0.063	0.082
24.943	689.160	I7	3-ethylpentane	0.281	0.310	0.369
25.160	690.670	I8	2,2,4-trimethylpentane	0.006	0.007	0.007
26.567	700.000	P7	n-heptane	1.470	1.660	1.932
29.147	721.710	N7	methylcyclohexane	4.270	4.285	5.729
29.593	725.210	I8	C8-Iso-Paraffin	0.234	0.235	0.314
30.757	734.000	I8	2,2,3-trimethylpentane	0.196	0.211	0.226
30.950	735.420	N8	1c,2t,4-trimethylcyclopentane	0.198	0.201	0.233
31.217	737.360	I8	3,3-dimethylhexane	0.287	0.312	0.331
31.990	742.860	N8	1t,2c,3-trimethylcyclopentane	0.199	0.200	0.234
32.190	744.260	I8	2,3,4-trimethylpentane	0.096	0.103	0.110
33.017	749.910	I8	I1	0.168	0.180	0.194
33.430	752.670	I8	2,3,3-trimethylpentane	0.026	0.028	0.030
33.910	755.820	A7	toluene	1.625	1.447	2.324

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
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Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
35.017	762.870	N8	1,1,2-trimethylcyclopentane	0.323	0.323	0.380
35.197	763.990	I8	2-methyl-3-ethylpentane	0.045	0.049	0.052
35.513	765.940	I8	4-methylheptane	0.022	0.024	0.025
35.927	768.460	I8	2-methylheptane	1.446	1.599	1.667
36.150	769.800	N8	1c,2c,4-trimethylcyclopentane	0.620	0.628	0.728
36.397	771.280	I8	3-methylheptane	0.143	0.157	0.165
36.803	773.680	N8	1c,2t,3-trimethylcyclopentane	0.042	0.042	0.049
37.083	775.310	N8	1t,4-dimethylcyclohexane	1.306	1.322	1.533
37.287	776.490	N8	1,1-dimethylcyclohexane	2.035	2.012	2.389
37.597	778.270	I9	2,2,5-trimethylhexane	0.699	0.763	0.718
38.493	783.320	N8	3c-ethylmethylcyclopentane	0.306	0.308	0.360
38.873	785.420	I8	C8-Iso-Paraffin	0.038	0.038	0.044
39.100	786.650	N8	3t-ethylmethylcyclopentane	0.106	0.106	0.124
39.457	788.590	N8	2t-ethylmethylcyclopentane	0.095	0.095	0.111
39.673	789.750	N8	1,1-methylethylcyclopentane	0.189	0.187	0.222
40.037	791.680	I9	2,2,4-trimethylhexane	0.048	0.050	0.049
40.527	794.250	N8	1t,2-dimethylcyclohexane	0.841	0.837	0.987
41.647	800.000	P8	n-octane	2.858	3.141	3.296
41.830	801.060	N8	1c,4-dimethylcyclohexane	0.548	0.541	0.644
42.707	806.070	I9	C9-Iso-Paraffin	0.006	0.006	0.007
43.113	808.350	I9	I2	0.041	0.044	0.043
43.220	808.950	N8	i-propylcyclopentane	0.044	0.044	0.052
43.927	812.840	I9	C9-Iso-Paraffin	0.007	0.007	0.009
44.367	815.230	N8	N1	0.036	0.036	0.043
44.817	817.640	I9	C9-Iso-Paraffin	0.059	0.058	0.069
45.177	819.550	I9	2,3,4-trimethylhexane	0.044	0.046	0.045
45.553	821.530	I9	2,2,3,4-tetramethylpentane	0.134	0.140	0.137
45.977	823.730	N8	N2	0.013	0.013	0.016
46.417	825.990	N8	N3	0.535	0.530	0.628
46.603	826.940	N8	N4	0.034	0.033	0.039
46.797	827.920	N8	1c,2-dimethylcyclohexane	0.038	0.037	0.045
47.030	829.100	I9	2,2-dimethylheptane	0.012	0.013	0.013
47.537	831.640	N9	1,1,4-trimethylcyclohexane	1.937	1.937	2.021
47.860	833.240	I9	2,2,3-trimethylhexane	0.620	0.670	0.637
48.293	835.360	I9	C9-Iso-Paraffin	0.025	0.026	0.025
48.750	837.580	I9	2,4-dimethylheptane	0.600	0.647	0.616
49.343	840.420	I9	2,5-dimethylheptane	0.829	0.894	0.852
49.713	842.170	I9	C9-Iso-Paraffin	0.196	0.211	0.201

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
49.947	843.270	N8	ethylcyclohexane	0.041	0.040	0.048
50.247	844.670	N8	n-propylcyclopentane	0.084	0.084	0.099
50.613	846.370	I9	4,4-dimethylheptane	0.041	0.045	0.043
51.650	851.100	A8	ethylbenzene	0.444	0.396	0.551
51.953	852.470	N8	N8	0.159	0.157	0.187
52.373	854.340	I9	C9-Iso-Paraffin	0.583	0.577	0.684
52.867	856.520	I9	I3	0.113	0.119	0.116
53.110	857.580	I9	C9-Iso-Paraffin	0.023	0.024	0.024
53.370	858.710	N8	N7	0.086	0.085	0.101
53.863	860.840	A8	m-xylene	2.083	2.356	2.173
54.147	862.060	A8	p-xylene	0.665	0.752	0.694
54.477	863.460	N9	N13	0.361	0.357	0.376
54.960	865.500	A8	1,3-dimethylbenzene	0.092	0.082	0.114
55.173	866.390	I9	3,4-dimethylheptane	0.179	0.189	0.184
55.720	868.670	I9	2,3-dimethylheptane	0.216	0.230	0.222
55.947	869.600	I9	4-methyloctane	0.012	0.013	0.013
56.467	871.730	I9	I5	1.031	1.090	1.059
56.723	872.770	I9	C9-Iso-Paraffin	1.089	1.152	1.118
57.247	874.880	N9	N15	0.071	0.070	0.074
57.907	877.500	I9	2-methyloctane	0.407	0.441	0.418
58.233	878.790	I9	3-methyloctane	1.450	1.554	1.490
58.880	881.320	N9	1c,2t,4c-trimethylcyclohexane	0.056	0.056	0.059
59.097	882.150	A8	o-xylene	0.865	0.881	0.888
59.477	883.620	A8	1,2-dimethylbenzene	0.064	0.056	0.079
60.007	885.640	I9	I6	0.058	0.061	0.059
60.477	887.420	N9	N18	0.301	0.298	0.314
60.693	888.230	N9	N19	0.983	0.973	1.026
61.143	889.910	N9	N20	0.462	0.457	0.482
61.310	890.530	I9	I8	0.031	0.033	0.032
61.720	892.040	I9	I9	0.031	0.033	0.032
62.007	893.090	N9	i-butylcyclopentane	0.055	0.054	0.057
63.013	896.740	N9	N22	0.078	0.077	0.081
63.517	898.540	I9	I10	0.078	0.082	0.080
63.700	899.190	I9	C9-Iso-Paraffin	0.031	0.033	0.032
63.927	900.000	P9	n-nonane	3.121	3.358	3.206
64.297	902.800	N9	1,1-methylethylcyclohexane	0.636	0.609	0.663
64.727	906.050	I10	C10-Iso-Paraffin	0.158	0.151	0.165
64.837	906.870	N9	N25	0.077	0.075	0.080

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
65.093	908.790	N9	N26	0.056	0.055	0.059
65.587	912.460	A9	i-propylbenzene	0.117	0.105	0.129
65.770	913.820	N9	N27	0.035	0.034	0.037
66.110	916.320	I10	I11	0.232	0.245	0.215
66.313	917.810	I10	C10-Iso-Paraffin	0.086	0.091	0.080
66.510	919.240	N9	i-propylcyclohexane	0.287	0.276	0.300
66.903	922.100	I10	I12	0.132	0.139	0.122
67.273	924.770	I10	2,4-dimethyloctane	0.410	0.436	0.380
67.583	926.990	N9	N28	0.116	0.113	0.121
67.953	929.640	N9	N29	0.150	0.146	0.156
68.310	932.170	I10	2,6-dimethyloctane	0.905	0.960	0.838
68.447	933.130	I10	2,5-dimethyloctane	0.533	0.564	0.494
69.113	937.810	I10	C10-Iso-Paraffin	0.300	0.317	0.277
69.260	938.830	N10	N30	0.184	0.178	0.173
69.583	941.080	I10	I14	0.079	0.084	0.073
69.830	942.780	I10	3,3-dimethyloctane	0.939	0.981	0.869
70.117	944.760	N10	N31	0.192	0.186	0.181
70.387	946.610	A9	n-propylbenzene	0.350	0.314	0.384
70.700	948.750	I10	C10-Iso-Paraffin	0.236	0.212	0.259
70.893	950.060	I10	3-methyl-5-ethylheptane	0.237	0.251	0.219
71.260	952.540	N10	N32	0.141	0.136	0.132
71.540	954.430	A9	1,3-methylethylbenzene	0.667	0.596	0.731
71.820	956.300	A9	1,4-methylethylbenzene	0.435	0.390	0.477
72.067	957.950	N10	N33	0.015	0.014	0.014
72.373	959.990	I10	C10-Iso-Paraffin	0.122	0.118	0.115
72.673	961.970	A9	1,3,5-trimethylbenzene	0.617	0.551	0.677
72.800	962.810	I10	2,3-dimethyloctane	0.290	0.303	0.268
72.977	963.970	I10	I15	0.492	0.513	0.455
73.307	966.140	I10	I16	0.140	0.147	0.130
73.407	966.790	I10	C10-Iso-Paraffin	0.116	0.121	0.107
73.613	968.140	I10	5-methylnonane	0.350	0.369	0.324
73.850	969.670	I10	4-methylnonane	0.996	1.040	0.923
73.960	970.390	A9	1,2-methylethylbenzene	0.180	0.158	0.198
74.213	972.020	I10	2-methylnonane	0.859	0.913	0.795
74.460	973.610	I10	C10-Iso-Paraffin	0.040	0.042	0.037
74.633	974.720	I10	3-ethyloctane	0.211	0.221	0.196
74.833	976.000	N10	N35	0.234	0.225	0.219
75.073	977.540	I10	3-methylnonane	0.862	0.908	0.799

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
75.250	978.660	N10	N36	0.166	0.160	0.156
75.630	981.070	I10	I19	0.069	0.072	0.064
75.997	983.380	A9	1,2,4-trimethylbenzene	0.847	0.747	0.928
76.253	984.990	N10	i-butylcyclohexane	0.480	0.466	0.451
76.597	987.130	I10	I21	0.477	0.498	0.442
76.743	988.040	I10	C10-Iso-Paraffin	0.069	0.072	0.064
76.890	988.950	I10	I22	0.062	0.065	0.057
77.077	990.110	N10	N37	0.094	0.090	0.088
77.243	991.140	I10	C10-Iso-Paraffin	0.060	0.058	0.056
77.433	992.310	N10	1t-methyl-2-n-propylcyclohexane	0.006	0.006	0.006
77.733	994.150	I10	I24	0.150	0.156	0.139
77.937	995.400	A10	i-butylbenzene	0.256	0.232	0.251
78.190	996.940	I10	I25	0.081	0.084	0.075
78.350	997.910	A10	sec-butylbenzene	0.148	0.132	0.145
78.450	998.520	I10	C10-Iso-Paraffin	0.088	0.079	0.087
78.693	1000.000	P10	n-decane	2.817	2.979	2.608
78.913	1002.210	I11	I26	0.102	0.106	0.086
79.193	1005.030	N10	N38	0.088	0.085	0.083
79.363	1006.730	A9	1,2,3-trimethylbenzene	0.204	0.176	0.223
79.477	1007.860	I11	C11-Iso-Paraffin	0.046	0.040	0.050
79.630	1009.390	A10	1,3-methyl-i-propylbenzene	0.259	0.233	0.255
80.003	1013.110	A10	1,4-methyl-i-propylbenzene	0.114	0.102	0.111
80.237	1015.420	I11	I28	0.105	0.110	0.089
80.480	1017.820	I11	I29	0.152	0.159	0.128
80.590	1018.900	A10	2-3-dihydroindene	0.115	0.092	0.128
80.743	1020.410	I11	C11-Iso-Paraffin	0.195	0.156	0.218
80.977	1022.690	N10	sec-butylcyclohexane	0.089	0.084	0.083
81.190	1024.780	I11	I30	0.507	0.529	0.428
81.523	1028.020	A10	1,2-methyl-i-propylbenzene	0.810	0.713	0.795
81.837	1031.060	I11	C11-Iso-Paraffin	0.055	0.048	0.054
82.050	1033.120	I11	3-ethylnonane	0.871	0.904	0.734
82.517	1037.610	I11	I32	0.191	0.184	0.163
82.807	1040.390	A10	1,3-diethylbenzene	0.420	0.375	0.412
82.997	1042.200	A10	1,3-methyl-n-propylbenzene	0.283	0.254	0.278
83.173	1043.880	I11	C11-Iso-Paraffin	0.141	0.126	0.138
83.267	1044.770	I11	I33	0.266	0.278	0.225
83.397	1046.000	A10	1,4-diethylbenzene	0.122	0.109	0.119
83.523	1047.200	A10	1,4-methyl-n-propylbenzene	0.121	0.109	0.119

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
83.743	1049.280	A10	1,3-dimethyl-5-ethylbenzene	0.277	0.243	0.272
83.963	1051.350	A10	1,2-diethylbenzene	0.075	0.066	0.073
84.173	1053.320	I11	C11-Iso-Paraffin	0.077	0.067	0.075
84.313	1054.630	I11	C11-Iso-Paraffin	0.259	0.228	0.255
84.620	1057.500	I11	C11-Iso-Paraffin	0.376	0.330	0.369
84.800	1059.180	I11	I35	0.112	0.117	0.094
85.007	1061.100	I11	I36	0.054	0.057	0.046
85.187	1062.760	I11	I37	0.506	0.528	0.426
85.503	1065.690	A10	1,4,dimethyl-2-ethylbenzene	0.449	0.395	0.441
85.707	1067.560	A10	A3	0.189	0.169	0.185
85.877	1069.120	A10	1,3-dimethyl-4-ethylbenzene	0.633	0.569	0.621
86.113	1071.290	I11	I39	0.166	0.173	0.140
86.510	1074.910	A10	1,2-dimethyl-4-ethylbenzene	0.646	0.570	0.634
86.680	1076.460	I11	C11-Iso-Paraffin	0.059	0.052	0.058
86.903	1078.490	I11	I41	0.145	0.151	0.122
87.063	1079.930	A10	1,3-dimethyl-2-ethylbenzene	0.147	0.128	0.145
87.407	1083.030	I11	I42	0.119	0.125	0.101
87.597	1084.740	I11	C11-Iso-Paraffin	0.061	0.063	0.051
87.710	1085.760	I11	I43	0.183	0.191	0.154
87.840	1086.920	I11	C11-Iso-Paraffin	0.077	0.081	0.065
88.110	1089.340	A12	1,3-di-n-propylbenzene	0.149	0.129	0.121
88.313	1091.150	A11	1,4-methyl-t-butylbenzene	0.184	0.167	0.164
88.483	1092.660	A10	1,2-dimethyl-3-ethylbenzene	0.205	0.178	0.201
88.667	1094.290	I11	C11-Iso-Paraffin	0.077	0.067	0.076
88.947	1096.760	A11	1,2-ethyl-i-propylbenzene	0.207	0.179	0.184
89.313	1100.000	P11	n-undecane	2.507	2.602	2.113
89.557	1102.940	A11	1,4-ethyl-i-propylbenzene	0.143	0.124	0.127
89.740	1105.150	A10	1,2,4,5-tetramethylbenzene	0.157	0.137	0.154
89.993	1108.200	A10	1,2,3,5-tetramethylbenzene	0.168	0.146	0.165
90.163	1110.240	I12	C12-Iso-Paraffin	0.211	0.183	0.207
90.463	1113.830	I12	C12-Iso-Paraffin	0.076	0.066	0.075
90.653	1116.090	A11	1,2-methyl-t-butylbenzene	0.095	0.082	0.084
90.803	1117.880	I12	C12-Iso-Paraffin	0.110	0.096	0.098
91.017	1120.410	I12	C12-Iso-Paraffin	0.186	0.161	0.165
91.110	1121.520	I12	C12-Iso-Paraffin	0.284	0.246	0.252
91.623	1127.580	A10	5-methylindan	0.393	0.341	0.392
91.970	1131.660	I12	I44	0.343	0.352	0.265
92.143	1133.690	A10	4-methylindan	0.097	0.084	0.096

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
92.310	1135.640	I12	C12-Iso-Paraffin	0.070	0.061	0.070
92.417	1136.890	A11	1,2-ethyl-n-propylbenzene	0.345	0.299	0.307
92.550	1138.440	A10	2-methylindan	0.076	0.065	0.076
92.757	1140.840	A11	1,3-methyl-n-butylbenzene	0.108	0.094	0.096
92.853	1141.970	I12	C12-Iso-Paraffin	0.030	0.026	0.027
92.977	1143.400	A12	1,3-di-i-propylbenzene	0.087	0.075	0.071
93.120	1145.060	A11	s-pentylbenzene	0.067	0.058	0.059
93.370	1147.950	I12	C12-Iso-Paraffin	0.157	0.137	0.140
93.447	1148.830	A11	n-pentylbenzene	0.156	0.135	0.139
93.617	1150.790	N12	1t-M-2-(4-MP)cyclopentane	0.013	0.012	0.010
93.807	1152.970	A12	1,2-di-i-propylbenzene	0.111	0.096	0.090
93.907	1154.120	I12	C12-Iso-Paraffin	0.131	0.114	0.106
94.137	1156.760	I12	C12-Iso-Paraffin	0.093	0.081	0.076
94.280	1158.400	I12	C12-Iso-Paraffin	0.322	0.279	0.261
94.393	1159.690	A12	1,4-di-i-propylbenzene	0.259	0.225	0.210
94.720	1163.410	A10	tetrahydronaphthalene	0.334	0.266	0.333
94.903	1165.490	I12	C12-Iso-Paraffin	0.071	0.057	0.071
95.087	1167.560	A10	naphthalene	0.430	0.324	0.442
95.257	1169.490	A12	1-t-butyl-3,5-dimethylbenzene	0.096	0.083	0.078
95.333	1170.350	I12	C12-Iso-Paraffin	0.102	0.089	0.083
95.647	1173.880	A12	1,4-ethyl-t-butylbenzene	0.334	0.290	0.271
95.790	1175.490	I12	C12-Iso-Paraffin	0.034	0.029	0.027
95.923	1176.990	I12	C12-Iso-Paraffin	0.043	0.037	0.035
96.043	1178.330	I12	I45	0.092	0.094	0.071
96.253	1180.680	I12	I46	0.053	0.054	0.041
96.500	1183.430	I12	C12-Iso-Paraffin	0.219	0.224	0.169
96.663	1185.250	I12	I47	0.085	0.087	0.066
96.960	1188.540	I12	I48	0.243	0.249	0.188
97.167	1190.830	A12	A5	0.054	0.047	0.044
97.357	1192.920	A12	A6	0.143	0.124	0.116
97.570	1195.270	I12	C12-Iso-Paraffin	0.056	0.049	0.046
97.767	1197.440	I12	C12-Iso-Paraffin	0.043	0.037	0.035
98.000	1200.000	P12	n-dodecane	1.667	1.709	1.289
98.187	1202.550	I13	C13-Iso-Paraffin	0.181	0.186	0.140
98.320	1204.370	I13	C13-Iso-Paraffin	0.059	0.061	0.046
98.523	1207.150	I13	C13-Iso-Paraffin	0.033	0.034	0.026
98.630	1208.600	I13	C13-Iso-Paraffin	0.053	0.055	0.041
98.703	1209.600	I13	C13-Iso-Paraffin	0.038	0.039	0.029

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
98.860	1211.730	I13	C13-Iso-Paraffin	0.107	0.109	0.082
99.053	1214.350	I13	C13-Iso-Paraffin	0.105	0.107	0.081
99.267	1217.240	A12	1,3,5-triethylbenzene	0.612	0.532	0.497
99.553	1221.110	I13	C13-Iso-Paraffin	0.068	0.059	0.055
99.637	1222.230	I13	C13-Iso-Paraffin	0.041	0.036	0.033
99.743	1223.660	I13	C13-Iso-Paraffin	0.046	0.040	0.037
99.877	1225.460	I13	C13-Iso-Paraffin	0.122	0.106	0.099
99.987	1226.930	I13	C13-Iso-Paraffin	0.074	0.064	0.060
100.137	1228.940	I13	C13-Iso-Paraffin	0.018	0.016	0.015
100.280	1230.860	I13	C13-Iso-Paraffin	0.077	0.067	0.062
100.413	1232.640	I13	C13-Iso-Paraffin	0.077	0.067	0.063
100.597	1235.090	A12	1,2,4-triethylbenzene	0.074	0.064	0.060
100.817	1238.020	I13	C13-Iso-Paraffin	0.064	0.055	0.052
101.113	1241.950	A12	1,4-methyl-n-pentylbenzene	0.234	0.203	0.190
101.340	1244.950	I13	C13-Iso-Paraffin	0.084	0.073	0.069
101.480	1246.800	I13	C13-Iso-Paraffin	0.059	0.051	0.048
101.847	1251.630	I13	C13-Iso-Paraffin	0.106	0.092	0.086
102.130	1255.350	A12	n-hexylbenzene	0.283	0.245	0.230
102.303	1257.630	I13	C13-Iso-Paraffin	0.190	0.165	0.155
102.660	1262.280	I13	C13-Iso-Paraffin	0.205	0.178	0.166
103.003	1266.750	I13	I50	0.294	0.300	0.210
103.143	1268.570	I13	C13-Iso-Paraffin	0.106	0.108	0.076
103.273	1270.260	I13	C13-Iso-Paraffin	0.034	0.035	0.025
103.503	1273.230	A11	1,2,3,4,5-pentamethylbenzene	0.217	0.168	0.193
103.833	1277.490	A11	2-methylnaphthalene	0.256	0.194	0.235
104.077	1280.620	A11	1-methylnaphthalene	0.175	0.132	0.161
104.207	1282.290	I13	C13-Iso-Paraffin	0.036	0.027	0.033
104.317	1283.700	I13	C13-Iso-Paraffin	0.046	0.035	0.042
104.433	1285.190	I13	C13-Iso-Paraffin	0.014	0.010	0.013
104.557	1286.770	I13	C13-Iso-Paraffin	0.086	0.065	0.079
104.993	1292.340	I13	C13-Iso-Paraffin	0.096	0.073	0.088
105.107	1293.780	I13	C13-Iso-Paraffin	0.019	0.015	0.018
105.253	1295.640	I13	C13-Iso-Paraffin	0.094	0.071	0.086
105.597	1300.000	P13	n-tridecane	0.942	0.962	0.673
105.807	1303.140	I14	C14-Iso-Paraffin	0.066	0.067	0.047
106.040	1306.630	I14	C14-Iso-Paraffin	0.044	0.045	0.031
106.190	1308.870	I14	C14-Iso-Paraffin	0.102	0.104	0.073
106.367	1311.500	I14	C14-Iso-Paraffin	0.090	0.092	0.064

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
106.553	1314.280	I14	C14-Iso-Paraffin	0.127	0.129	0.090
106.727	1316.850	I14	C14-Iso-Paraffin	0.051	0.052	0.036
106.907	1319.520	I14	C14-Iso-Paraffin	0.044	0.045	0.032
107.027	1321.290	I14	C14-Iso-Paraffin	0.142	0.145	0.101
107.297	1325.280	I14	C14-Iso-Paraffin	0.051	0.052	0.037
107.747	1331.900	I14	C14-Iso-Paraffin	0.081	0.083	0.058
108.007	1335.710	I14	C14-Iso-Paraffin	0.041	0.042	0.029
108.133	1337.570	I14	C14-Iso-Paraffin	0.026	0.026	0.018
108.233	1339.030	I14	C14-Iso-Paraffin	0.026	0.026	0.019
108.473	1342.530	I14	C14-Iso-Paraffin	0.037	0.038	0.026
108.617	1344.620	I14	C14-Iso-Paraffin	0.033	0.033	0.023
108.767	1346.800	I14	C14-Iso-Paraffin	0.069	0.071	0.049
108.893	1348.640	I14	C14-Iso-Paraffin	0.031	0.031	0.022
109.013	1350.380	I14	C14-Iso-Paraffin	0.031	0.032	0.022
109.233	1353.570	I14	C14-Iso-Paraffin	0.090	0.092	0.064
109.430	1356.410	I14	C14-Iso-Paraffin	0.075	0.077	0.054
109.767	1361.260	I14	C14-Iso-Paraffin	0.104	0.106	0.074
109.967	1364.140	I14	C14-Iso-Paraffin	0.044	0.045	0.032
110.113	1366.250	I14	C14-Iso-Paraffin	0.115	0.117	0.082
110.260	1368.350	I14	C14-Iso-Paraffin	0.048	0.049	0.034
110.450	1371.070	I14	C14-Iso-Paraffin	0.021	0.021	0.015
110.593	1373.110	I14	C14-Iso-Paraffin	0.107	0.110	0.077
110.860	1376.920	I14	C14-Iso-Paraffin	0.010	0.010	0.007
111.150	1381.040	I14	C14-Iso-Paraffin	0.167	0.171	0.119
111.280	1382.890	I14	C14-Iso-Paraffin	0.037	0.038	0.026
111.493	1385.910	I14	C14-Iso-Paraffin	0.010	0.010	0.007
111.580	1387.130	I14	C14-Iso-Paraffin	0.006	0.006	0.005
111.987	1392.870	I14	C14-Iso-Paraffin	0.023	0.023	0.016
112.120	1394.750	I14	C14-Iso-Paraffin	0.037	0.038	0.026
112.203	1395.920	I14	C14-Iso-Paraffin	0.029	0.029	0.021
112.493	1400.000	P14	C14	0.463	0.469	0.307
112.680	1403.050	I15	C15-Iso-Paraffin	0.025	0.025	0.017
112.977	1407.900	I15	C15-Iso-Paraffin	0.126	0.128	0.084
113.260	1412.510	I15	C15-Iso-Paraffin	0.118	0.119	0.078
113.420	1415.110	I15	C15-Iso-Paraffin	0.034	0.034	0.023
113.653	1418.900	I15	C15-Iso-Paraffin	0.052	0.053	0.035
114.040	1425.150	I15	C15-Iso-Paraffin	0.043	0.043	0.028
114.303	1429.400	I15	C15-Iso-Paraffin	0.027	0.027	0.018

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
114.447	1431.710	I15	C15-Iso-Paraffin	0.024	0.024	0.016
114.637	1434.760	I15	C15-Iso-Paraffin	0.022	0.022	0.015
114.813	1437.600	I15	C15-Iso-Paraffin	0.033	0.033	0.022
115.070	1441.710	I15	C15-Iso-Paraffin	0.042	0.043	0.028
115.240	1444.420	I15	C15-Iso-Paraffin	0.029	0.030	0.020
115.420	1447.290	I15	C15-Iso-Paraffin	0.008	0.008	0.005
115.747	1452.490	I15	C15-Iso-Paraffin	0.128	0.129	0.085
115.950	1455.720	I15	C15-Iso-Paraffin	0.037	0.038	0.025
116.290	1461.110	I15	C15-Iso-Paraffin	0.058	0.058	0.038
116.420	1463.160	I15	C15-Iso-Paraffin	0.014	0.014	0.009
116.660	1466.950	I15	C15-Iso-Paraffin	0.168	0.170	0.111
116.820	1469.470	I15	C15-Iso-Paraffin	0.031	0.031	0.021
117.047	1473.030	I15	C15-Iso-Paraffin	0.068	0.069	0.045
117.227	1475.860	I15	C15-Iso-Paraffin	0.017	0.017	0.011
117.397	1478.520	I15	C15-Iso-Paraffin	0.025	0.025	0.017
117.607	1481.810	I15	C15-Iso-Paraffin	0.012	0.012	0.008
117.793	1484.720	I15	C15-Iso-Paraffin	0.027	0.027	0.018
118.110	1489.660	I15	C15-Iso-Paraffin	0.027	0.028	0.018
118.407	1494.260	I15	C15-Iso-Paraffin	0.028	0.028	0.018
118.700	1498.810	P15	C15	0.263	0.199	0.169
118.887	1502.120	I16	C16-Iso-Paraffin	0.015	0.011	0.010
119.063	1505.540	I16	C16-Iso-Paraffin	0.008	0.006	0.005
119.647	1516.780	I16	C16-Iso-Paraffin	0.034	0.026	0.022
119.967	1522.930	I16	C16-Iso-Paraffin	0.012	0.009	0.008
120.103	1525.540	I16	C16-Iso-Paraffin	0.005	0.004	0.003
120.400	1531.220	I16	C16-Iso-Paraffin	0.005	0.004	0.003
120.813	1539.090	I16	C16-Iso-Paraffin	0.017	0.013	0.011
121.047	1543.530	I16	C16-Iso-Paraffin	0.012	0.009	0.008
121.313	1548.580	I16	C16-Iso-Paraffin	0.028	0.021	0.018
121.433	1550.860	I16	C16-Iso-Paraffin	0.019	0.014	0.012
121.630	1554.570	I16	C16-Iso-Paraffin	0.022	0.017	0.014
121.723	1556.340	I16	C16-Iso-Paraffin	0.023	0.018	0.015
121.850	1558.730	I16	C16-Iso-Paraffin	0.024	0.018	0.015
121.920	1560.050	I16	C16-Iso-Paraffin	0.021	0.016	0.013
122.200	1565.310	I16	C16-Iso-Paraffin	0.023	0.018	0.015
122.587	1572.570	I16	C16-Iso-Paraffin	0.055	0.042	0.035
122.693	1574.570	I16	C16-Iso-Paraffin	0.008	0.006	0.005
122.977	1579.860	I16	C16-Iso-Paraffin	0.012	0.009	0.007

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
123.293	1585.770	I16	C16-Iso-Paraffin	0.009	0.006	0.005
124.000	1598.880	P16	C16	0.103	0.103	0.060
124.457	1608.720	I17	C17-Iso-Paraffin	0.006	0.006	0.003
124.640	1612.750	I17	C17-Iso-Paraffin	0.011	0.011	0.006
126.210	1646.950	I17	C17-Iso-Paraffin	0.008	0.008	0.005
126.503	1653.290	I17	C17-Iso-Paraffin	0.039	0.039	0.023
126.807	1659.830	I17	C17-Iso-Paraffin	0.017	0.017	0.010
127.043	1664.920	I17	C17-Iso-Paraffin	0.010	0.010	0.006
127.160	1667.420	I17	C17-Iso-Paraffin	0.006	0.006	0.004
127.400	1672.570	I17	C17-Iso-Paraffin	0.012	0.012	0.007
128.630	1698.790	P17	C17	0.060	0.059	0.033
129.093	1709.960	I18	C18-Iso-Paraffin	0.030	0.030	0.016
131.027	1756.880	I18	C18-Iso-Paraffin	0.008	0.008	0.005
131.353	1764.740	I18	C18-Iso-Paraffin	0.011	0.011	0.006
131.673	1772.410	I18	C18-Iso-Paraffin	0.013	0.013	0.007
132.760	1798.330	P18	C18	0.046	0.046	0.024
133.343	1813.470	I19	C19-Iso-Paraffin	0.025	0.025	0.013
135.227	1862.440	I19	C19-Iso-Paraffin	0.007	0.007	0.004
135.447	1868.110	I19	C19-Iso-Paraffin	0.006	0.006	0.003
135.533	1870.350	I19	C19-Iso-Paraffin	0.007	0.007	0.004
136.520	1895.650	P19	C19	0.063	0.062	0.031
138.013	1939.960	I20	C20-Iso-Paraffin	0.007	0.007	0.004
138.207	1945.760	I20	C20-Iso-Paraffin	0.007	0.007	0.003
138.603	1957.650	I20	C20-Iso-Paraffin	0.010	0.010	0.005
138.787	1963.130	I20	C20-Iso-Paraffin	0.014	0.013	0.007
138.940	1967.710	I20	C20-Iso-Paraffin	0.009	0.009	0.005
139.087	1972.080	I20	C20-Iso-Paraffin	0.020	0.020	0.010
139.997	1999.110	P20	C20	0.048	0.047	0.022
140.427	2012.360	I21	C21-Iso-Paraffin	0.011	0.011	0.005
140.620	2018.320	I21	C21-Iso-Paraffin	0.012	0.011	0.005
140.773	2023.040	I21	C21-Iso-Paraffin	0.009	0.009	0.004
141.340	2040.450	I21	C21-Iso-Paraffin	0.031	0.030	0.014
141.457	2044.020	I21	C21-Iso-Paraffin	0.011	0.011	0.005
141.560	2047.190	I21	C21-Iso-Paraffin	0.014	0.014	0.007
141.717	2051.980	I21	C21-Iso-Paraffin	0.015	0.015	0.007
141.940	2058.800	I21	C21-Iso-Paraffin	0.018	0.018	0.008
142.120	2064.290	I21	C21-Iso-Paraffin	0.024	0.023	0.011
142.397	2072.710	I21	C21-Iso-Paraffin	0.029	0.028	0.013

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Acquired: 06/28/16 12:46:01
Sample: 16060868-001A JL
Analyzed: 6/29/2016 7:34:54 AM
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:
Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
142.673	2081.120	I21	C21-Iso-Paraffin	0.040	0.039	0.019
143.240	2098.280	P21	C21	0.046	0.045	0.020
143.740	2114.510	I22	C22-Iso-Paraffin	0.013	0.012	0.006
143.913	2120.170	I22	C22-Iso-Paraffin	0.026	0.026	0.012
144.473	2138.420	I22	C22-Iso-Paraffin	0.061	0.059	0.027
144.617	2143.080	I22	C22-Iso-Paraffin	0.009	0.009	0.004
144.717	2146.330	I22	C22-Iso-Paraffin	0.018	0.018	0.008
144.863	2151.090	I22	C22-Iso-Paraffin	0.010	0.010	0.004
145.083	2158.210	I22	C22-Iso-Paraffin	0.034	0.033	0.015
145.233	2163.070	I22	C22-Iso-Paraffin	0.023	0.022	0.010
145.370	2167.480	I22	C22-Iso-Paraffin	0.018	0.018	0.008
145.577	2174.160	I22	C22-Iso-Paraffin	0.043	0.042	0.019
145.833	2182.430	I22	C22-Iso-Paraffin	0.047	0.046	0.021
146.307	2197.640	P22	C22	0.046	0.044	0.019
146.513	2204.320	I23	C23-Iso-Paraffin	0.056	0.054	0.024
146.680	2209.720	I23	C23-Iso-Paraffin	0.033	0.032	0.014
146.887	2216.400	I23	C23-Iso-Paraffin	0.026	0.025	0.011
147.033	2221.140	I23	C23-Iso-Paraffin	0.026	0.025	0.011
147.143	2224.690	I23	C23-Iso-Paraffin	0.027	0.026	0.012
147.507	2236.400	I23	C23-Iso-Paraffin	0.061	0.059	0.026
147.680	2241.980	I23	C23-Iso-Paraffin	0.118	0.115	0.050
147.947	2250.540	I23	C23-Iso-Paraffin	0.023	0.022	0.010
148.177	2257.910	I23	C23-Iso-Paraffin	0.052	0.050	0.022
148.340	2263.140	I23	C23-Iso-Paraffin	0.033	0.032	0.014
148.533	2269.320	I23	C23-Iso-Paraffin	0.040	0.038	0.017
148.647	2272.940	I23	C23-Iso-Paraffin	0.027	0.026	0.011
148.820	2278.470	I23	C23-Iso-Paraffin	0.037	0.036	0.016
149.113	2287.810	I23	C23-Iso-Paraffin	0.035	0.034	0.015
149.497	2300.000	P23	C23	0.016	0.016	0.007
149.907	2311.490	I24	C24-Iso-Paraffin	0.049	0.047	0.020
150.220	2320.250	I24	C24-Iso-Paraffin	0.020	0.020	0.008
150.367	2324.350	I24	C24-Iso-Paraffin	0.058	0.056	0.023
150.787	2336.050	I24	C24-Iso-Paraffin	0.067	0.065	0.027
151.000	2341.980	I24	C24-Iso-Paraffin	0.029	0.028	0.012
151.133	2345.680	I24	C24-Iso-Paraffin	0.048	0.046	0.019
151.307	2350.490	I24	C24-Iso-Paraffin	0.022	0.021	0.009
151.570	2357.790	I24	C24-Iso-Paraffin	0.054	0.052	0.022
151.740	2362.490	I24	C24-Iso-Paraffin	0.029	0.028	0.012

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

Normalized to 100.0000%

NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %
152.090	2372.150	I24	C24-Iso-Paraffin	0.050	0.048	0.020
152.367	2379.770	I24	C24-Iso-Paraffin	0.038	0.037	0.016
152.750	2390.310	I24	C24-Iso-Paraffin	0.035	0.033	0.014
152.893	2394.240	I24	C24-Iso-Paraffin	0.013	0.013	0.005
153.053	2398.630	P24	C24	0.032	0.031	0.012
153.480	2409.160	I25	C25-Iso-Paraffin	0.077	0.074	0.030
153.577	2411.510	I25	C25-Iso-Paraffin	0.028	0.027	0.011
153.707	2414.660	I25	C25-Iso-Paraffin	0.027	0.026	0.011
153.973	2421.130	I25	C25-Iso-Paraffin	0.049	0.047	0.019
154.190	2426.370	I25	C25-Iso-Paraffin	0.053	0.051	0.021
154.477	2433.290	I25	C25-Iso-Paraffin	0.145	0.140	0.056
154.760	2440.120	I25	C25-Iso-Paraffin	0.024	0.023	0.009
154.930	2444.220	I25	C25-Iso-Paraffin	0.051	0.049	0.020
155.120	2448.790	I25	C25-Iso-Paraffin	0.043	0.042	0.017
155.440	2456.470	I25	C25-Iso-Paraffin	0.043	0.042	0.017
155.620	2460.780	I25	C25-Iso-Paraffin	0.033	0.032	0.013
156.063	2471.380	I25	C25-Iso-Paraffin	0.021	0.020	0.008
156.463	2480.920	I25	C25-Iso-Paraffin	0.025	0.024	0.010
156.957	2492.640	I25	C25-Iso-Paraffin	0.061	0.059	0.024
157.157	2497.390	P25	C25	0.021	0.020	0.008
157.453	2503.880	I26	C26-Iso-Paraffin	0.180	0.174	0.067
157.730	2509.630	I26	C26-Iso-Paraffin	0.064	0.062	0.024
158.107	2517.450	I26	C26-Iso-Paraffin	0.025	0.024	0.009
158.360	2522.690	I26	C26-Iso-Paraffin	0.037	0.035	0.014
158.563	2526.900	I26	C26-Iso-Paraffin	0.017	0.017	0.006
158.827	2532.330	I26	C26-Iso-Paraffin	0.110	0.106	0.041
159.023	2536.390	I26	C26-Iso-Paraffin	0.034	0.032	0.013
159.377	2543.660	I26	C26-Iso-Paraffin	0.038	0.037	0.014
160.160	2559.710	I26	C26-Iso-Paraffin	0.075	0.073	0.028
160.780	2572.360	I26	C26-Iso-Paraffin	0.034	0.033	0.013
161.963	2596.360	P26	C26	0.032	0.031	0.011
163.587	2624.550	I27	C27-Iso-Paraffin	0.063	0.060	0.022
164.023	2631.930	I27	C27-Iso-Paraffin	0.095	0.092	0.034
164.323	2636.990	I27	C27-Iso-Paraffin	0.012	0.011	0.004
164.750	2644.170	I27	C27-Iso-Paraffin	0.017	0.017	0.006
165.940	2664.100	I27	C27-Iso-Paraffin	0.060	0.058	0.021
166.757	2677.680	I27	C27-Iso-Paraffin	0.009	0.009	0.003
167.987	2698.020	P27	C27	0.023	0.022	0.008

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 6/29/2016 7:35:58 AM

RawFile: M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf
Sample: 16060868-001A JL
Processed 502 Peaks
Reference File: H:\DHA Application Software\References\DHA REF1606 JL_06062016.DHA
Comments:

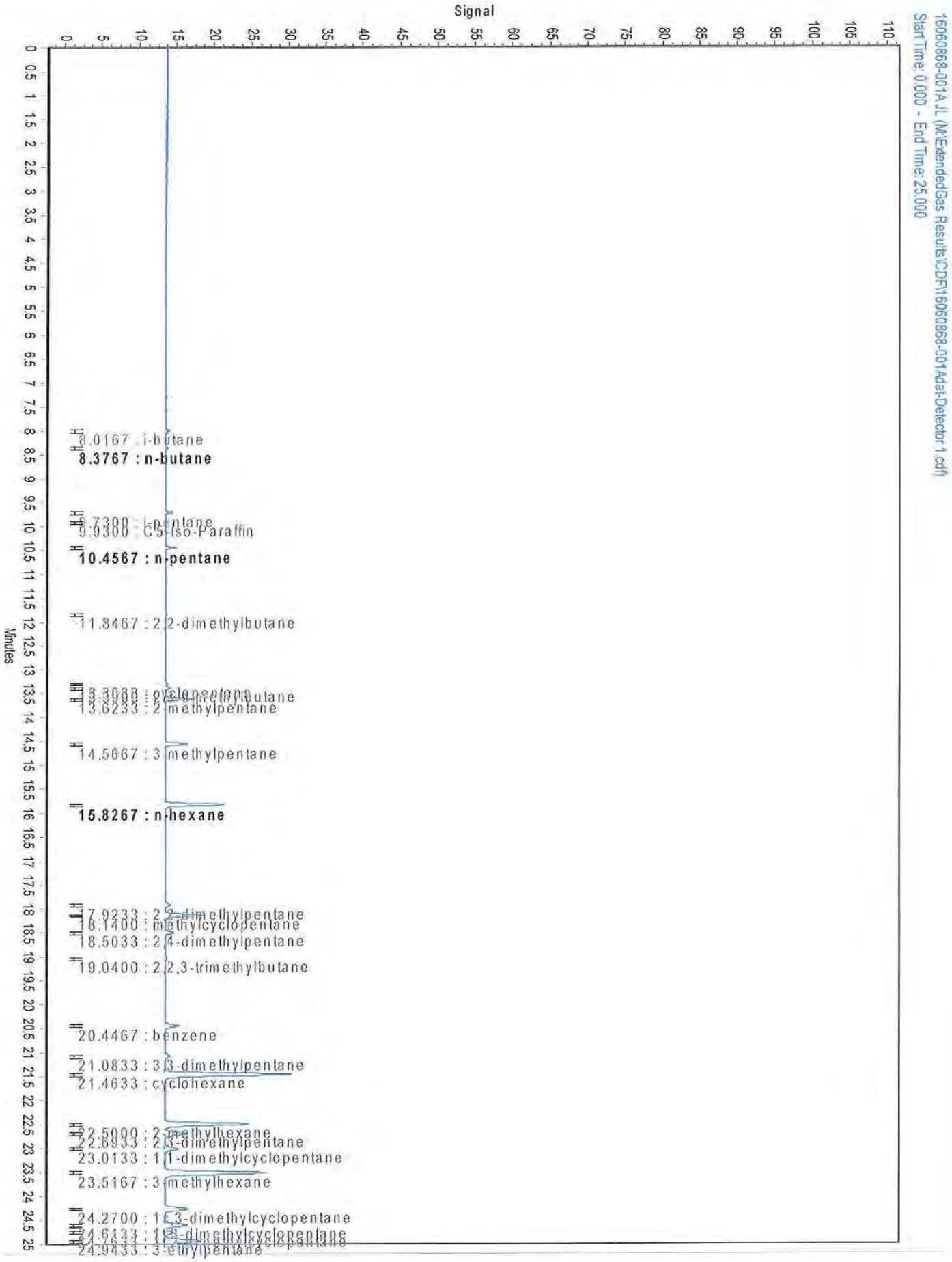
Acquired: 06/28/16 12:46:01
Analyzed: 6/29/2016 7:34:54 AM

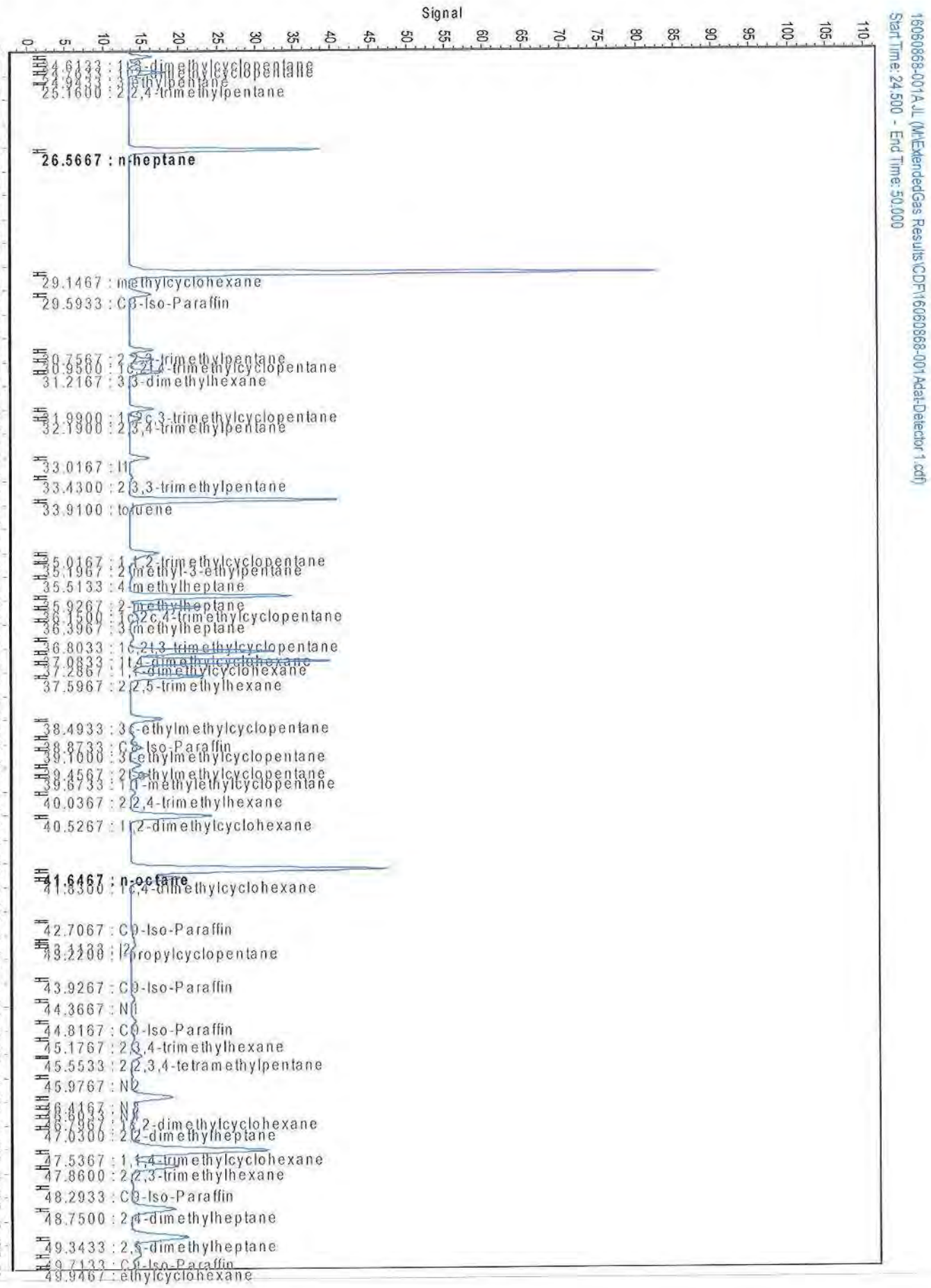
Normalized to 100.0000%

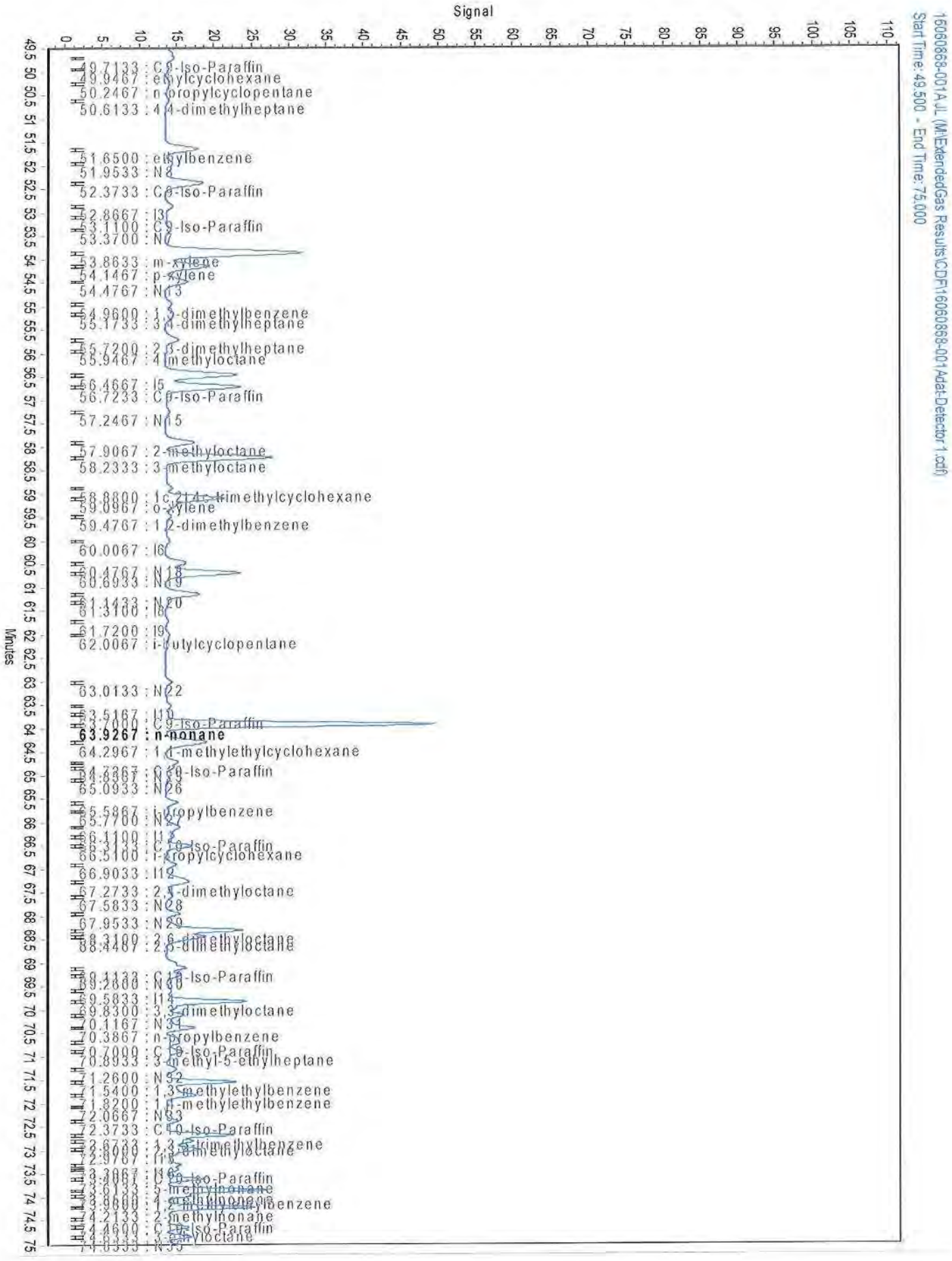
NOTE: Components with a Mol % of Less Than 0.00 Not Reported.

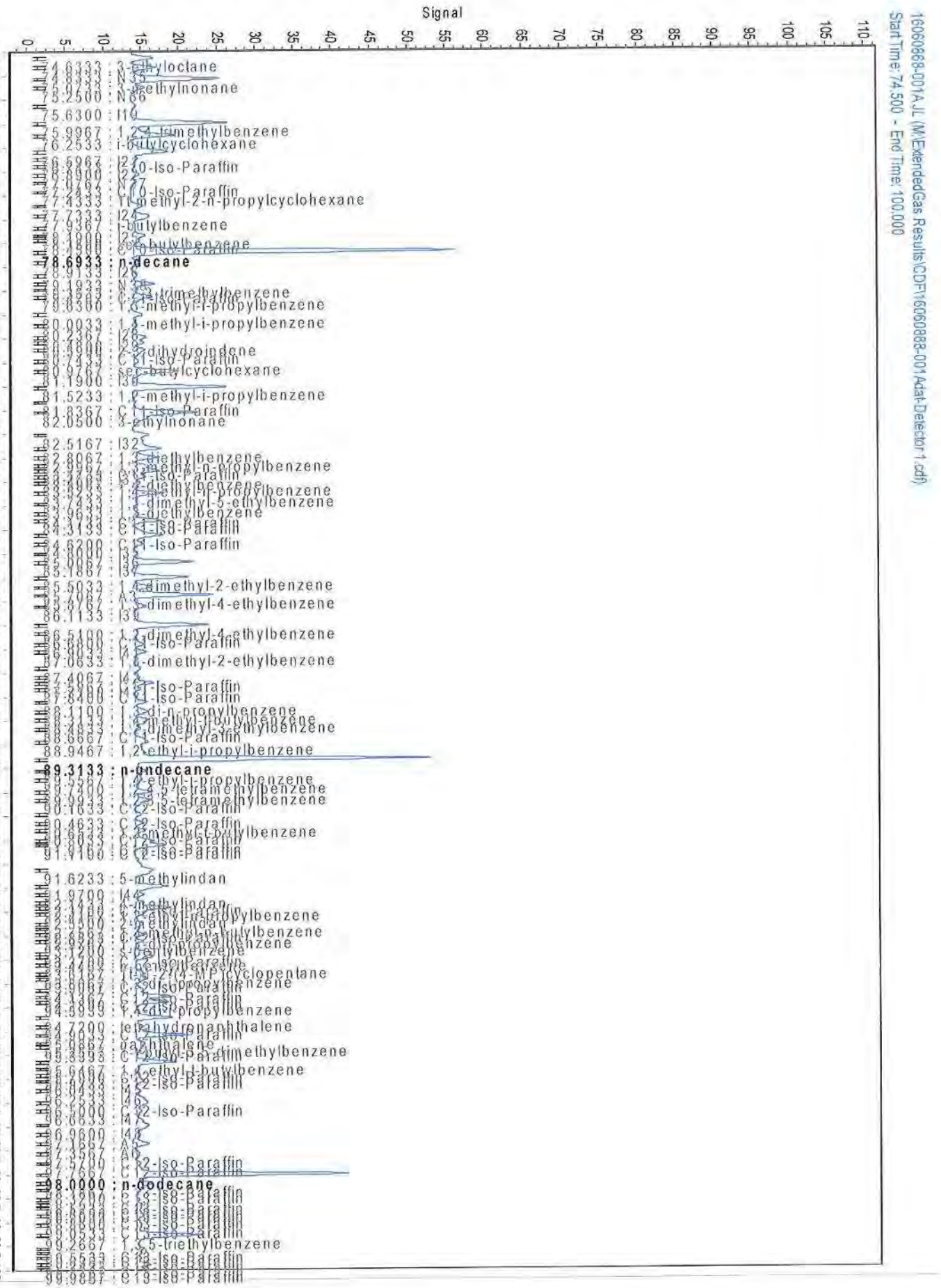
Components Listed in Chromatographic Order

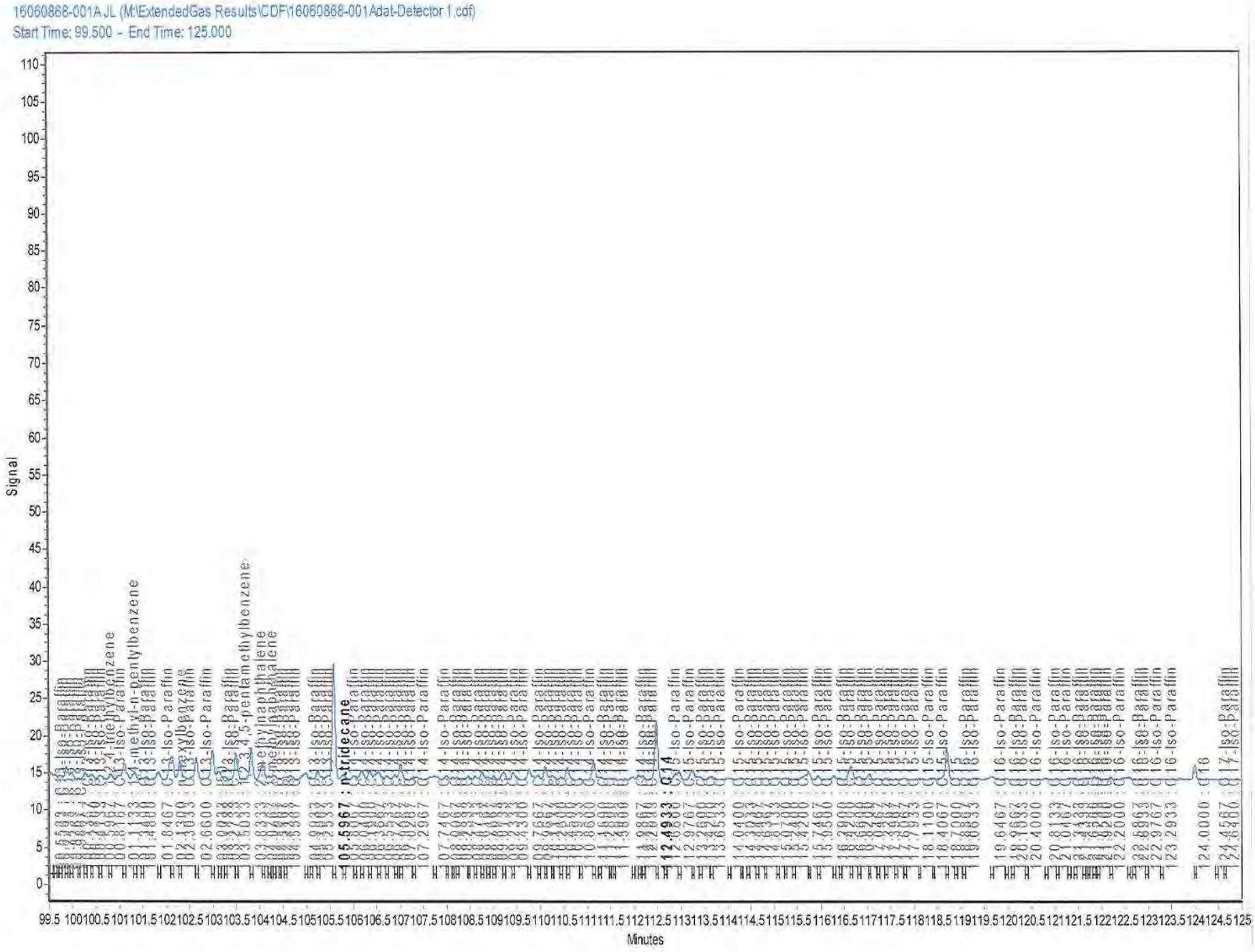
Minutes	Index	Group	Component	Mass %	Volume %	Mol %
170.350	2731.120	I28	C28-Iso-Paraffin	0.059	0.057	0.020
175.380	2799.370	P28	C28	0.000	0.000	0.000
178.123	2830.290	I29	C29-Iso-Paraffin	0.050	0.048	0.017
184.490	2899.960	P29	C29	0.000	0.000	0.000

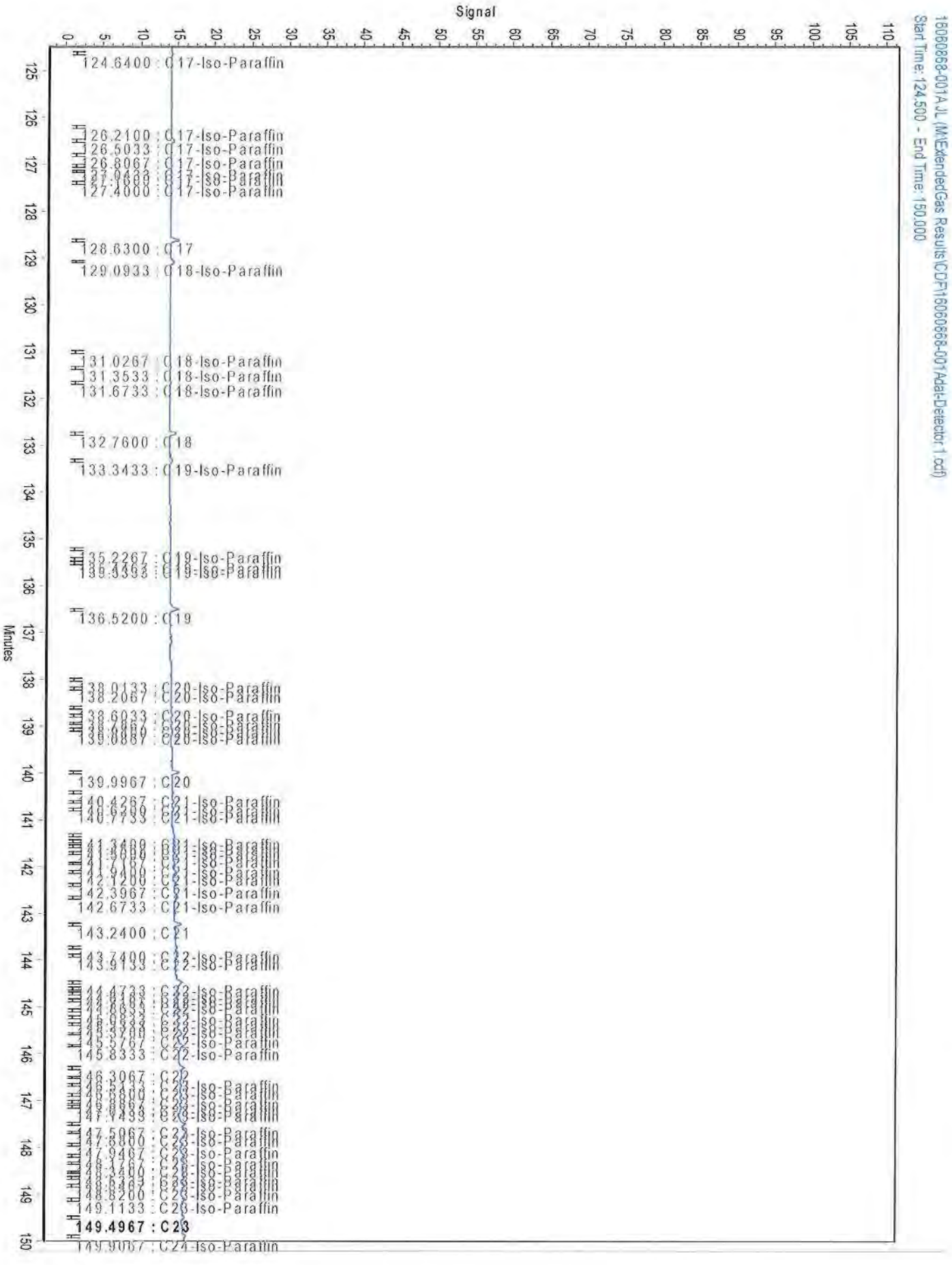

Signal
Minutes
16060868-001A.jl (M:\Extended\Gas Results\CDF\16060868-001A\dat-Detector 1.cdf)
Start Time: 0.000 - End Time: 25.000
8.0167 : i-butane
8.3767 : n-butane
9.7300 : n-pentane
9.9300 : C5-Iso-Paraffin
10.4567 : n-pentane
11.8467 : 2,2-dimethylbutane
13.3033 : cyclopentane
13.5233 : 2,3-dimethylbutane
13.6233 : 2-methylpentane
14.5667 : 3-methylpentane
15.8267 : n-hexane
17.9233 : 2,2-dimethylpentane
18.1400 : methylcyclopentane
18.5033 : 2,4-dimethylpentane
19.0400 : 2,2,3-trimethylbutane
20.4467 : benzene
21.0833 : 3,3-dimethylpentane
21.4633 : cyclohexane
22.5000 : 2-methylhexane
22.6933 : 2,3-dimethylpentane
23.0133 : 1,1-dimethylcyclopentane
23.5167 : 3-methylhexane
24.2700 : 1,3-dimethylcyclopentane
24.6133 : 1,2-dimethylcyclopentane
24.9433 : 3-ethylpentane

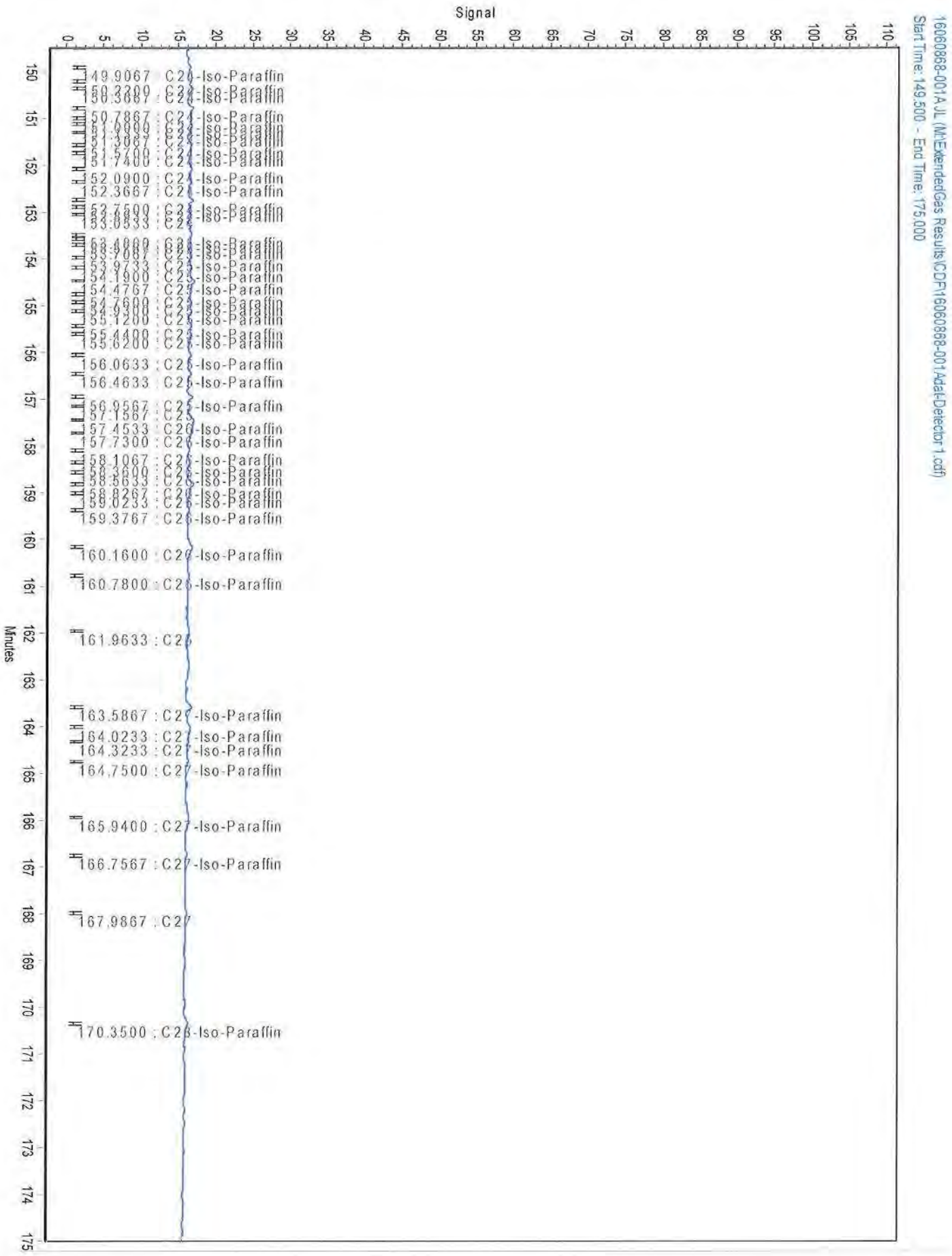

Signal
Minutes
16060868-001A.JL (M:\Extended\Gas Results\CDF\16060868-001A\dat-Detector 1.cdf)
Start Time: 24.500 - End Time: 50.000
25.1600 : 2,2,4-trimethylpentane
26.5667 : n-heptane
29.1467 : methylcyclohexane
29.5933 : C8-Iso-Paraffin
31.2167 : 3,3-dimethylhexane
32.1900 : 2,3,4-trimethylpentane
33.0167 : Nil
33.4300 : 2,3,3-trimethylpentane
33.9100 : toluene
35.5133 : 4-methylheptane
35.9267 : 2-methylheptane
36.3967 : 3-methylheptane
37.2867 : 1,2-dimethylcyclohexane
37.5967 : 2,2,5-trimethylhexane
38.4933 : 3-ethylmethylcyclopentane
38.8733 : C8-Iso-Paraffin
39.1000 : 3-ethylmethylcyclopentane
39.4567 : 2-ethylmethylcyclopentane
39.6733 : 1,1-methylethylcyclopentane
40.0367 : 2,2,4-trimethylhexane
40.5267 : 1,2-dimethylcyclohexane
41.6467 : n-octane
41.8300 : 1,4-dimethylcyclohexane
42.7067 : C9-Iso-Paraffin
43.2200 : Isopropylcyclopentane
43.9267 : C9-Iso-Paraffin
44.3667 : Nil
44.8167 : C9-Iso-Paraffin
45.1767 : 2,3,4-trimethylhexane
45.5533 : 2,2,3,4-tetramethylpentane
45.9767 : Nil
46.4167 : Nil
46.6033 : Nil
46.7967 : 1,2,2-dimethylcyclohexane
47.0300 : 2,2-dimethylheptane
47.5367 : 1,1,4-trimethylcyclohexane
47.8600 : 2,2,3-trimethylhexane
48.2933 : C9-Iso-Paraffin
48.7500 : 2,4-dimethylheptane
49.3433 : 2,5-dimethylheptane
49.7133 : C9-Iso-Paraffin
49.9467 : ethylcyclohexane

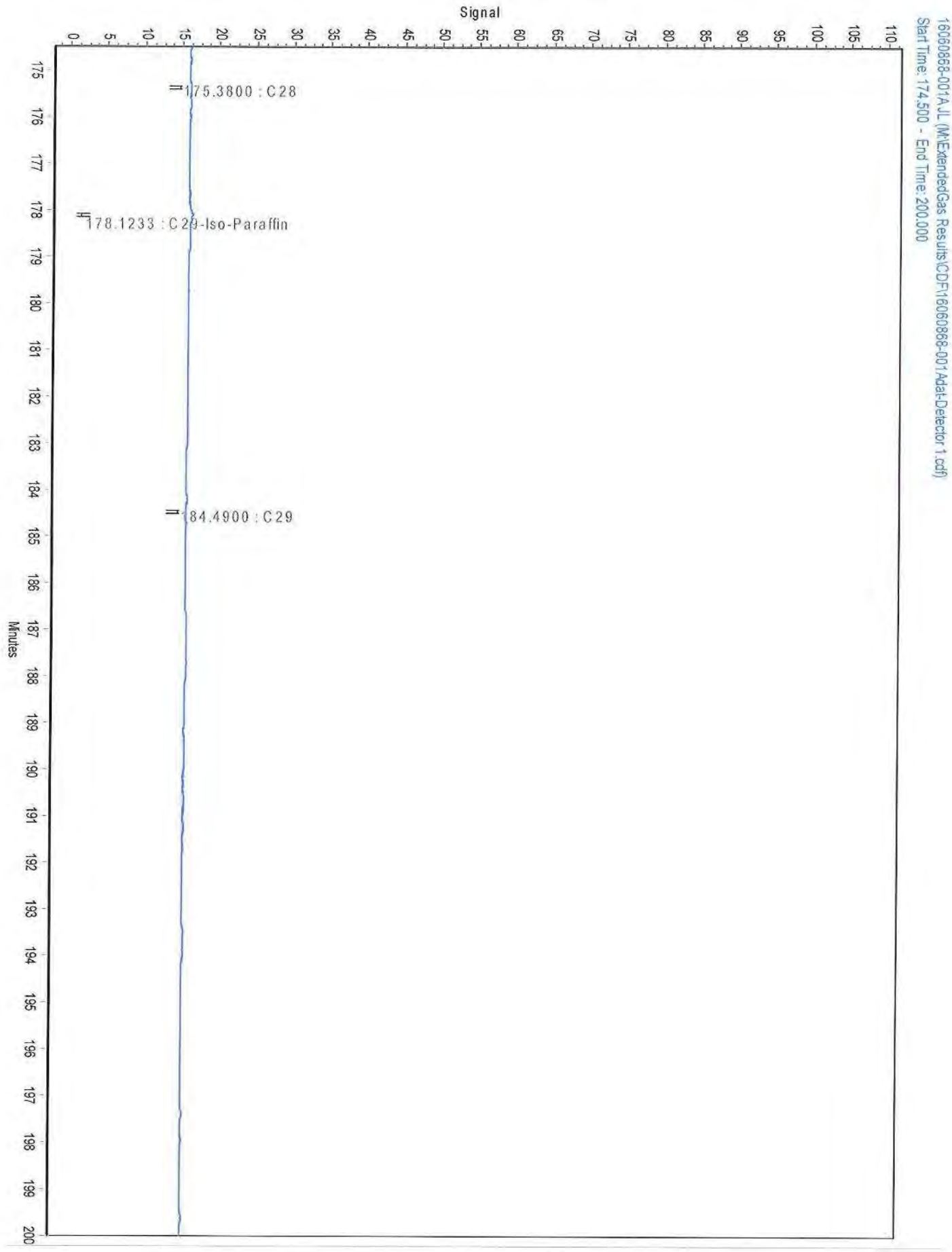

Signal
16060868-001A.JL (M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf)
Start Time: 49.500 - End Time: 75.000
Minutes
63.9267 : n-nonane


Signal
16060868-001A.JL (M:\ExtendedGas Results\CDF\16060868-001A\dat-Detector 1.cdf)
Start Time: 74.500 - End Time: 100.000
78.6933 : n-decane
89.3133 : n-undecane
98.0000 : n-dodecane
Minutes


16060868-001A JL (M:\ExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf)
Start Time: 99.500 - End Time: 125.000
Signal
Minutes
05.5967 : nTridecane
12.4933 : C14


Signal
16060868-001A JL (M:\Extended Gas Results\CDF\16060868-001Adat-Detector 1.cdf)
Start Time: 124.500 - End Time: 150.000
Minutes
124.6400 : C17-Iso-Paraffin
126.2100 : C17-Iso-Paraffin
126.5033 : C17-Iso-Paraffin
126.8067 : C17-Iso-Paraffin
127.4000 : C17-Iso-Paraffin
128.6300 : C17
129.0933 : C18-Iso-Paraffin
131.0267 : C18-Iso-Paraffin
131.3533 : C18-Iso-Paraffin
131.6733 : C18-Iso-Paraffin
132.7600 : C18
133.3433 : C19-Iso-Paraffin
136.5200 : C19
139.9967 : C20
142.3967 : C21-Iso-Paraffin
142.6733 : C21-Iso-Paraffin
143.2400 : C21
149.4967 : C23
149.9067 : C24-Iso-Paraffin


16060868-001A.JL (MrtExtendedGas Results\CDF\16060868-001Adat-Detector 1.cdf)
Start Time: 149.500 - End Time: 175.000
Signal
Minutes
49.9067 : C24-Iso-Paraffin
50.3267 : C24-Iso-Paraffin
50.7867 : C24-Iso-Paraffin
51.3067 : C24-Iso-Paraffin
51.7400 : C24-Iso-Paraffin
52.0900 : C24-Iso-Paraffin
52.3667 : C24-Iso-Paraffin
53.0533 : C24
53.9733 : C25-Iso-Paraffin
54.4767 : C25-Iso-Paraffin
55.1200 : C25-Iso-Paraffin
55.6200 : C25-Iso-Paraffin
56.0633 : C25-Iso-Paraffin
56.4633 : C25-Iso-Paraffin
56.9567 : C25-Iso-Paraffin
57.4533 : C26-Iso-Paraffin
57.7300 : C26-Iso-Paraffin
58.1067 : C26-Iso-Paraffin
58.5633 : C26-Iso-Paraffin
59.0233 : C26-Iso-Paraffin
159.3767 : C26-Iso-Paraffin
160.1600 : C26-Iso-Paraffin
160.7800 : C26-Iso-Paraffin
161.9633 : C26
163.5867 : C27-Iso-Paraffin
164.0233 : C27-Iso-Paraffin
164.3233 : C27-Iso-Paraffin
164.7500 : C27-Iso-Paraffin
165.9400 : C27-Iso-Paraffin
166.7567 : C27-Iso-Paraffin
167.9867 : C27
170.3500 : C28-Iso-Paraffin


Signal
1606868-001A.JL (M:\ExtendedGas Results\CDF\1606868-001Adat-Detector 1.cdf)
Start Time: 174.500 - End Time: 200.000
175.3800 : C28
178.1233 : C29-Iso-Paraffin
184.4900 : C29
Minutes

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Cardinal Lab	**BILL TO**	
Project Manager:	Celey Keene	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:		Phone #:	
Sampler Name:		Fax #:	

ANALYSIS REQUEST

Piano Test on Crude

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING	
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :		ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME
	H600372-1		1											6/22/16	9:02

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Angela Cabrera	Date: 6/23/16 Time: 11:00	Received By:	6/23 16:09
Relinquished By:	Date: Time:	Received By:	

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:

Delivered By: (Circle One)	Sample Condition	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:	Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No	

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

Appendix B

TASMAN GEOSCIENCES

6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH01
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil

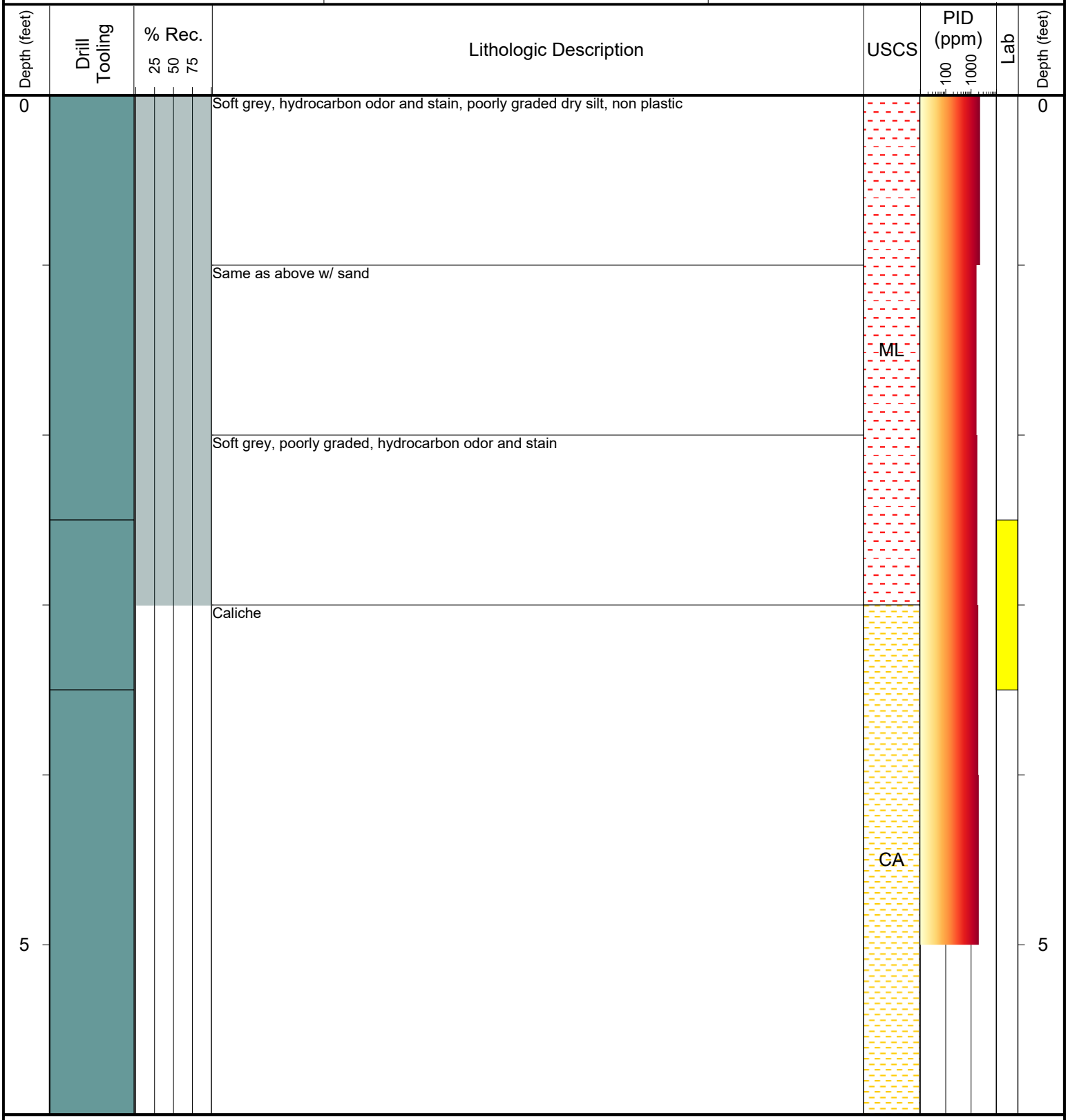
Depth (feet)	Drill Tooling	% Rec. (25, 50, 75)	Lithologic Description	USCS	PID (ppm) (100, 1000)	Lab	Depth (feet)
0			Soft white and pink fine grained poorly graded sandy silt, non plastic				0
			Same as above w/ calcium deposits	ML			
			Same as above				
			Caliche	CA			
5							5

Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH02
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil



Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES

6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH03
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil

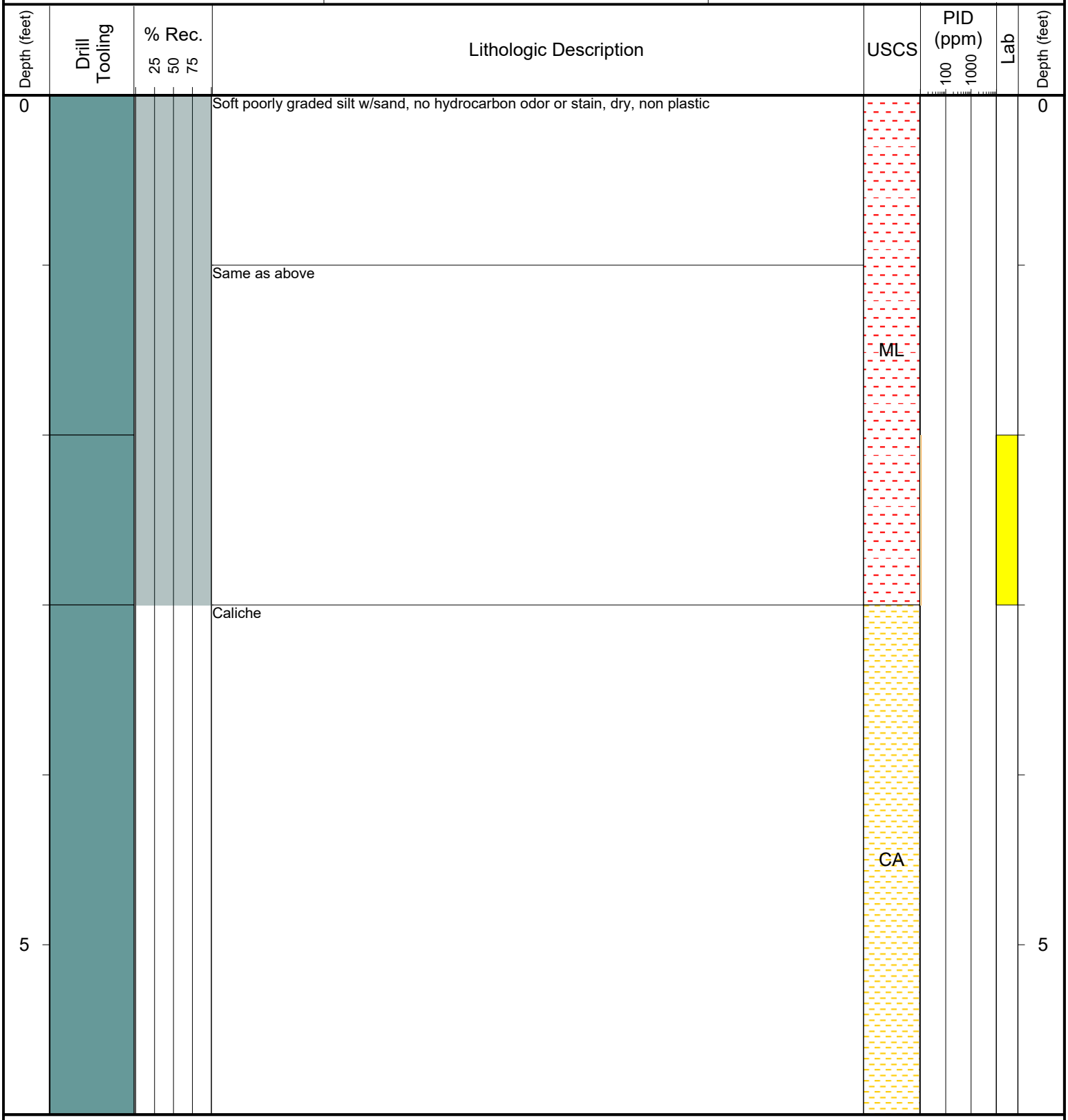
Depth (feet)	Drill Tooling	% Rec. (25, 50, 75)	Lithologic Description	USCS	PID (ppm) (100, 1000)	Lab	Depth (feet)
0			Soft white and pink fine grained poorly graded silt, dry, no hydrocarbon odor, non plastic	ML			0
			Same as above				
			Caliche	CA			
			Soft black silt, wet with hydrocarbon odor and stain	ML			
5							5

Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH04
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil



Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH05
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil

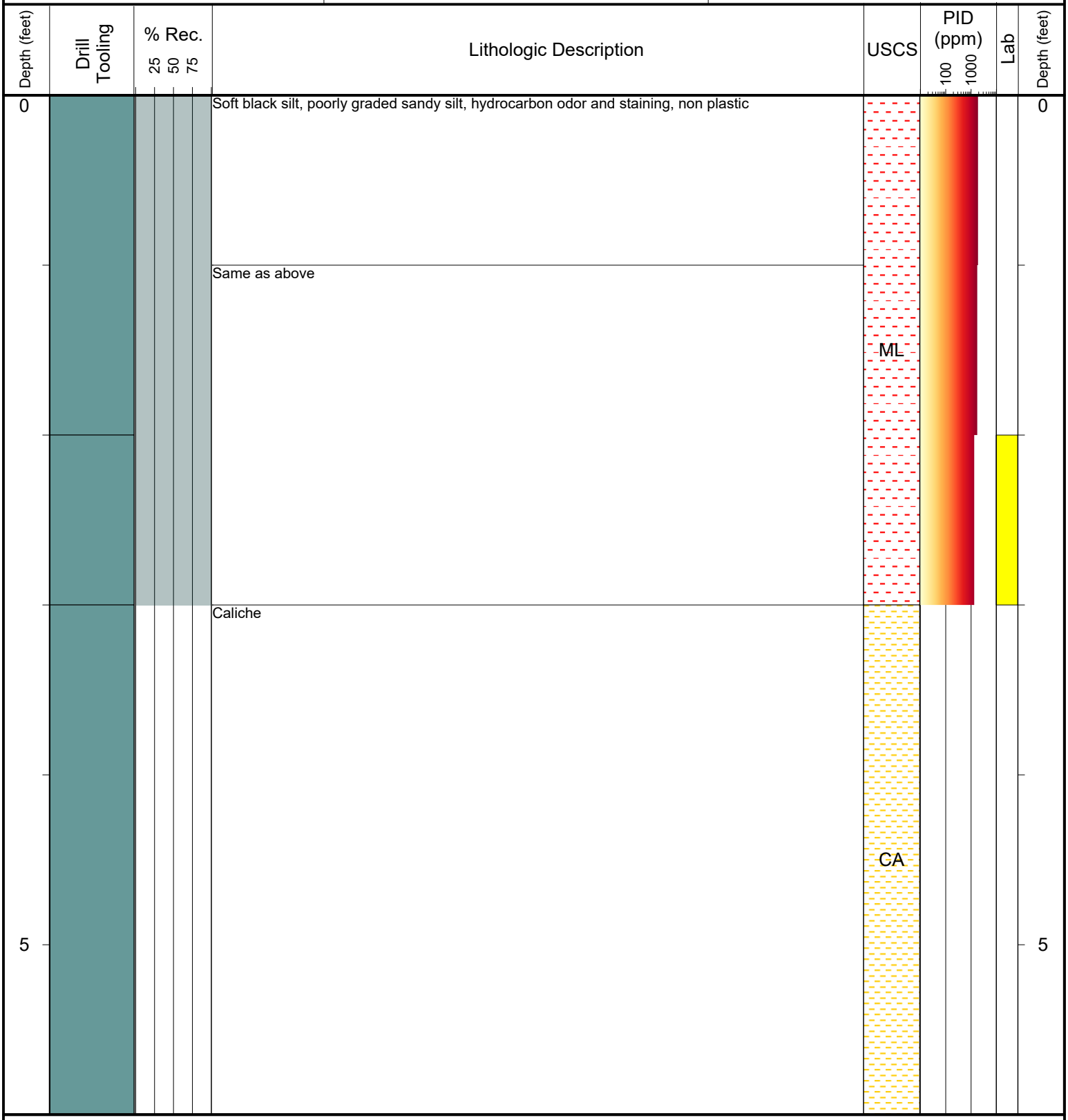
Depth (feet)	Drill Tooling	% Rec. (25, 50, 75)	Lithologic Description	USCS	PID (ppm) (100, 1000)	Lab	Depth (feet)
0			Soft white and pink sand silt, poorly graded, no hydrocarbon odor or staining, non plastic	ML			0
			Caliche	CA			
5							5

Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH06
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil



Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES
6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH07
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 5	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil

Depth (feet)	Drill Tooling	% Rec. (25, 50, 75)	Lithologic Description	USCS	PID (ppm) (100, 1000)	Lab	Depth (feet)
0			Soft reddish brown sandy silt, dry, no hydrocarbon odor or staining, non plastic				0
			Medium tan silt, non plastic, dry, no hydrocarbon odor or staining	ML			
			Pink medium density silt w/ calcite, frac (micro) no hydrocarbon odor or staining				
			Caliche	CA			
5							5

Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES

6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH08
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil

Depth (feet)	Drill Tooling	% Rec. (25, 50, 75)	Lithologic Description	USCS	PID (ppm) (100, 1000)	Lab	Depth (feet)
0			Fine silt, dry, grey, no odor				0
			Fine silt, moist/wet, light tan/brown, no odor	ML			
			Medium density, pink silt w/ calcite, frac (micro), no hydrocarbon odor or staining				
			Caliche				
5				CA			5

Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

TASMAN GEOSCIENCES

6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: DCP Midstream, LP	**Buffalo Compressor Station**
LOGGED BY: Brent Everett	
PROJECT MANAGER: Brian Humphrey	**BORING / WELL ID:** BH09
DRILLING CONTRACTOR: Tasman Geosciences	
DRILLING EQUIPMENT: AMS Powerprobe	**LOCATION:** Chaves County, NM
DRILL BIT SIZE (INCHES): 2.25"	**NORTHING (CO STATE PLANE):** Not Surveyed
DATE STARTED - COMPLETED: 08/08/16 - 08/08/16	**EASTING (CO STATE PLANE):** Not Surveyed
TOTAL BORING DEPTH (FT. BGS): 6	**GROUND ELEVATION (FT. AMSL):** Not Surveyed
DEPTH TO WATER (FT. BGS): Not Applicable ▼	**ABANDONMENT METHOD:** Backfilled w/ Native Soil

Depth (feet)	Drill Tooling	% Rec. (25, 50, 75)	Lithologic Description	USCS	PID (ppm) (100, 1000)	Lab	Depth (feet)
0			Soft dense tan sandy silt				0
			Loose red/brown fine to coarse grained sand w/ clay, no hydrocarbon odor or staining, dry, non plastic	ML			
			Caliche	CA			
5							5

Drill Tooling / Sample Method:
- Solid Stem Auger
- Hollow Stem Auger
- Split Spoon Sampler
- CME Continuous Sample Tube

Laboratory Sample Types:
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab

Appendix C

Thursday, August 18, 2016

Brian Humphrey
Tasman Geosciences
6899 Pecos, Unit C
Denver, CO 80221

Re: ALS Workorder: 1608183
Project Name: Buffalo Valley Comp Station
Project Number: 710000302

Dear Mr. Humphrey:

Nine soil samples were received from Tasman Geosciences, on 8/10/2016. The samples were scheduled for the following analyses:

GC/MS Volatiles
Total Extractable Petroleum Hydrocarbons (Diesel)
Total Volatile Petroleum Hydrocarbons (Gasoline)

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Amy R. Wolf
Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

1608183

GC/MS Volatiles:
The samples were analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C.

The recoveries for several compounds in the matrix spikes were low outside of acceptance criteria. The recoveries of these compounds in the laboratory control samples were within control limits, which suggest the outliers in the matrix spikes may have been due to matrix effects, so no further action was taken.

All remaining acceptance criteria were met.

GRO:
The samples were analyzed following the current revision of SOP 425 generally based on SW-846 Methods 8000C and 8015D. TVPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C6 to C10.

All matrix spike recoveries were within acceptance criteri. with the following exceptios:

Spiked Compound	QC Sample	Direction
Gasoline range organics	MS	Low

The recovery for gasoline range organics in the laboratory control sample and laboratory control sample duplicate were within control limits, which suggest the outliers in the matrix spikes may have been due to matrix effects, so no further action was taken.

The surrogate recoveries for samples 1608183-2 and -7 were outside control limits (high). Inspection of the chromatograms indicated co-elution of the surrogate peak with target component peaks(s), biasing the surrogate results high. No further action was taken.

All remaining acceptance criteria were met.

DRO:
The samples were analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All acceptance criteria were met.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1608183
Client Name: Tasman Geosciences
Client Project Name: Buffalo Valley Comp Station
Client Project Number: 710000302
Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
BH01 @ 3'	1608183-1		SOIL	08-Aug-16	10:20
BH02 @ 3.5'	1608183-2		SOIL	08-Aug-16	9:28
BH03 @ 2.8'	1608183-3		SOIL	08-Aug-16	10:03
BH03 @ 6'	1608183-4		SOIL	08-Aug-16	11:40
BH04 @ 2.5'	1608183-5		SOIL	08-Aug-16	10:14
BH06 @ 1'	1608183-6		SOIL	08-Aug-16	12:03
BH06 @ 3'	1608183-7		SOIL	08-Aug-16	12:10
BH07 @ 3'	1608183-8		SOIL	08-Aug-16	12:40
BH09 @ 2.5'	1608183-9		SOIL	08-Aug-16	13:20

ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Turnaround time for samples received after 2 p.m. will be calculated beginning from the next business day.

Turnaround time for samples received Saturday will be calculated beginning from the next business day.

ALS WORKORDER # 1608183

PAGE 1 of 1

DISPOSAL BY LAB or RETURN

PROJECT NAME	Buffalo Valley Comp. Station	TURNAROUND TIME	Standard	SAMPLER	B. Everett
PROJECT No.		SITE ID			
		EDD FORMAT			
COMPANY NAME	Tasman Geosciences	PURCHASE ORDER			
SEND REPORT TO	bhumphrey@tasman-geo.com	BILL TO COMPANY	DCP Midstream		
ADDRESS	6899 Pecos St. Unit C	INVOICE ATTN TO			
CITY / STATE / ZIP	Denver, Colorado 80221	ADDRESS	370 17th st #2500		
PHONE	303-487-3228	CITY / STATE / ZIP	Denver, CO 80202		
FAX		PHONE	303-633-2900		
E-MAIL (send report)	swweathers@dcpmidstream.com	FAX			
		E-MAIL	swweathers@dcpmidstream.com		

PARAMETER/METHOD REQUEST FOR ANALYSIS

A: BTEX 8260
B: TPH-GRO, TPH-DRO 8015
C:
D:
E:
F:
G:
H:
I:
J:

LAB ID	FIELD ID	MATRIX	SAMPLE DATE	SAMPLE TIME	# OF BOTTLES	PRESERVATIVE	QC	A	B	C	D	E	F	G	H	I	J	SEE NOTES SECTION
1	BH01 @ 3'	soil	8/8/16	1020	1-4oz	ice		X	X									
2	BH02 @ 3.5'	soil	8/8/16	0928	1-4oz	ice		X	X									
3	BH03 @ 2.8'	soil	8/8/16	1003	1-4oz	ice		X	X									
4	BH03 @ 6'	soil	8/8/16	1140	1-4oz	ice		X	X									
5	BH04 @ 2.5'	soil	8/8/16	1014	1-4oz	ice		X	X									
6	BH06 @ 1'	soil	8/8/16	1203	1-4oz	ice		X	X									
7	BH06 @ 3'	soil	8/8/16	1210	1-4oz	ice		X	X									
8	BH07 @ 3'	soil	8/8/16	1240	1-4oz	ice		X	X									
9	BH09 @ 2.5	soil	8/8/16	1320	1-4oz	ice		X	X									

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

NOTES

REPORT LEVEL / QC REQUIRED

- Summary (Standard QC)
- LEVEL II (Standard QC)
- LEVEL III (Std QC + forms)
- LEVEL IV (Std QC + forms + raw)

PRESERVATION KEY: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaOH/ZnAcetate 6-NaHSO4 7-4°C 8-Other

Form 202r9

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	Brent Everett	Brent Everett	8/10/16	1135
RECEIVED BY	C Trimble	C Trimble	8-10-16	1135
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Tasman Workorder No: 1608183

Project Manager: ARV Initials: RLR Date: 8/10/16

1. Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		(YES)	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7. Were airbills / shipping documents present and/or removable?	(DROP OFF)	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	(N/A)	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	(N/A)	YES	NO
16. Were the samples shipped on ice?		(YES)	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 (#4)	RAD ONLY	(YES)	NO

Cooler #:	1							
Temperature (°C):	<6.0°C							
No. of custody seals on cooler:	0							
DOT Survey/ Acceptance Information — External µR/hr reading:	NA							
Background µR/hr reading:	10							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO (NA) (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO (NA) Contact: _____ Date/Time: _____

Project Manager Signature / Date: 8/10/16

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

Form 201r24.xls (06/04/2012)

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH01 @ 3'	**Lab ID:**	1608183-1
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 10:20	**Percent Moisture:**	25.2

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/11/2016**		PrepBy: **JFN**
Diesel Range Organics	ND		6.7	MG/KG	1	8/11/2016 19:07
Surr: O-TERPHENYL	*97*		*49-114*	*%REC*	1	8/11/2016 19:07
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**0.17**	J	**0.61**	**MG/KG**	1	8/11/2016 14:44
Surr: 2,3,4-TRIFLUOROTOLUENE	*103*		*76-126*	*%REC*	1	8/11/2016 14:44
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/11/2016**		PrepBy: **JXK**
BENZENE	ND		6.7	UG/KG	1	8/11/2016 18:47
TOLUENE	**2.3**	J	**6.7**	**UG/KG**	1	8/11/2016 18:47
ETHYLBENZENE	ND		6.7	UG/KG	1	8/11/2016 18:47
M+P-XYLENE	**1.9**	J	**6.7**	**UG/KG**	1	8/11/2016 18:47
O-XYLENE	ND		6.7	UG/KG	1	8/11/2016 18:47
TOTAL XYLENES	**1.9**	J	**5**	**UG/KG**	1	8/11/2016 18:47
Surr: DIBROMOFLUOROMETHANE	*104*		*61-134*	*%REC*	1	8/11/2016 18:47
Surr: TOLUENE-D8	*90*		*57-135*	*%REC*	1	8/11/2016 18:47
Surr: 4-BROMOFLUOROBENZENE	*98*		*52-151*	*%REC*	1	8/11/2016 18:47

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH02 @ 3.5'	**Lab ID:**	1608183-2
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 09:28	**Percent Moisture:**	23.6

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/11/2016**		PrepBy: **JFN**
Diesel Range Organics	**7900**	LMH	**130**	**MG/KG**	20	8/11/2016 19:34
Surr: O-TERPHENYL	*70*		*49-114*	*%REC*	20	8/11/2016 19:34
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**15000**	GH	**310**	**MG/KG**	2500	8/11/2016 22:21
Surr: 2,3,4-TRIFLUOROTOLUENE	*137*	*	*76-126*	*%REC*	2500	8/11/2016 22:21
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/12/2016**		PrepBy: **JXK**
BENZENE	**11000**		**3300**	**UG/KG**	500	8/12/2016 17:36
TOLUENE	**420000**		**33000**	**UG/KG**	5000	8/12/2016 18:01
ETHYLBENZENE	**130000**		**33000**	**UG/KG**	5000	8/12/2016 18:01
M+P-XYLENE	**780000**		**33000**	**UG/KG**	5000	8/12/2016 18:01
O-XYLENE	**200000**		**33000**	**UG/KG**	5000	8/12/2016 18:01
TOTAL XYLENES	**990000**		**5**	**UG/KG**	1	8/12/2016 18:01
Surr: DIBROMOFLUOROMETHANE	*106*		*61-134*	*%REC*	500	8/12/2016 17:36
Surr: DIBROMOFLUOROMETHANE	*103*		*61-134*	*%REC*	5000	8/12/2016 18:01
Surr: TOLUENE-D8	*93*		*57-135*	*%REC*	5000	8/12/2016 18:01
Surr: TOLUENE-D8	*93*		*57-135*	*%REC*	500	8/12/2016 17:36
Surr: 4-BROMOFLUOROBENZENE	*100*		*52-151*	*%REC*	5000	8/12/2016 18:01
Surr: 4-BROMOFLUOROBENZENE	*100*		*52-151*	*%REC*	500	8/12/2016 17:36

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH03 @ 2.8'	**Lab ID:**	1608183-3
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 10:03	**Percent Moisture:**	16.9

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/15/2016**		PrepBy: **JFN**
Diesel Range Organics	**15**	Z	**12**	**MG/KG**	1	8/16/2016 11:19
Surr: O-TERPHENYL	*96*		*49-114*	*%REC*	1	8/16/2016 11:19
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**0.27**	J	**0.56**	**MG/KG**	1	8/11/2016 15:06
Surr: 2,3,4-TRIFLUOROTOLUENE	*94*		*76-126*	*%REC*	1	8/11/2016 15:06
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/11/2016**		PrepBy: **JXK**
BENZENE	ND		6	UG/KG	1	8/11/2016 20:09
TOLUENE	ND		6	UG/KG	1	8/11/2016 20:09
ETHYLBENZENE	ND		6	UG/KG	1	8/11/2016 20:09
M+P-XYLENE	**3.4**	J	**6**	**UG/KG**	1	8/11/2016 20:09
O-XYLENE	ND		6	UG/KG	1	8/11/2016 20:09
TOTAL XYLENES	**3.4**	J	**5**	**UG/KG**	1	8/11/2016 20:09
Surr: DIBROMOFLUOROMETHANE	*111*		*61-134*	*%REC*	1	8/11/2016 20:09
Surr: TOLUENE-D8	*90*		*57-135*	*%REC*	1	8/11/2016 20:09
Surr: 4-BROMOFLUOROBENZENE	*102*		*52-151*	*%REC*	1	8/11/2016 20:09

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH03 @ 6'	**Lab ID:**	1608183-4
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 11:40	**Percent Moisture:**	21.8

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/11/2016**		PrepBy: **JFN**
Diesel Range Organics	**9700**	LMH	**150**	**MG/KG**	25	8/11/2016 16:02
Surr: O-TERPHENYL	*70*		*49-114*	*%REC*	25	8/11/2016 16:02
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**7300**	GH	**290**	**MG/KG**	2500	8/11/2016 22:41
Surr: 2,3,4-TRIFLUOROTOLUENE	*119*		*76-126*	*%REC*	2500	8/11/2016 22:41
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/12/2016**		PrepBy: **JXK**
BENZENE	**18000**		**6400**	**UG/KG**	1000	8/12/2016 18:26
TOLUENE	**130000**		**6400**	**UG/KG**	1000	8/12/2016 18:26
ETHYLBENZENE	**41000**		**6400**	**UG/KG**	1000	8/12/2016 18:26
M+P-XYLENE	**360000**		**6400**	**UG/KG**	1000	8/12/2016 18:26
O-XYLENE	**87000**		**6400**	**UG/KG**	1000	8/12/2016 18:26
TOTAL XYLENES	**450000**		**5**	**UG/KG**	1	8/12/2016 18:26
Surr: DIBROMOFLUOROMETHANE	*105*		*61-134*	*%REC*	1000	8/12/2016 18:26
Surr: TOLUENE-D8	*95*		*57-135*	*%REC*	1000	8/12/2016 18:26
Surr: 4-BROMOFLUOROBENZENE	*99*		*52-151*	*%REC*	1000	8/12/2016 18:26

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH04 @ 2.5'	**Lab ID:**	1608183-5
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 10:14	**Percent Moisture:**	17.7

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/11/2016**		PrepBy: **JFN**
Diesel Range Organics	ND		5.9	MG/KG	1	8/11/2016 20:53
Surr: O-TERPHENYL	*98*		*49-114*	*%REC*	1	8/11/2016 20:53
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**0.22**	J	**0.53**	**MG/KG**	1	8/11/2016 15:27
Surr: 2,3,4-TRIFLUOROTOLUENE	*92*		*76-126*	*%REC*	1	8/11/2016 15:27
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/11/2016**		PrepBy: **JXK**
BENZENE	ND		6.1	UG/KG	1	8/11/2016 20:37
TOLUENE	**4.4**	J	**6.1**	**UG/KG**	1	8/11/2016 20:37
ETHYLBENZENE	ND		6.1	UG/KG	1	8/11/2016 20:37
M+P-XYLENE	**5**	J	**6.1**	**UG/KG**	1	8/11/2016 20:37
O-XYLENE	ND		6.1	UG/KG	1	8/11/2016 20:37
TOTAL XYLENES	**5**	J	**5**	**UG/KG**	1	8/11/2016 20:37
Surr: DIBROMOFLUOROMETHANE	*108*		*61-134*	*%REC*	1	8/11/2016 20:37
Surr: TOLUENE-D8	*89*		*57-135*	*%REC*	1	8/11/2016 20:37
Surr: 4-BROMOFLUOROBENZENE	*102*		*52-151*	*%REC*	1	8/11/2016 20:37

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH06 @ 1'	**Lab ID:**	1608183-6
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 12:03	**Percent Moisture:**	24.0

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/11/2016**		PrepBy: **JFN**
Diesel Range Organics	**1700**	L	**52**	**MG/KG**	8	8/11/2016 17:21
Surr: O-TERPHENYL	*96*		*49-114*	*%REC*	8	8/11/2016 17:21
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**6200**	GH	**250**	**MG/KG**	2000	8/11/2016 23:02
Surr: 2,3,4-TRIFLUOROTOLUENE	*126*		*76-126*	*%REC*	2000	8/11/2016 23:02
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/12/2016**		PrepBy: **JXK**
BENZENE	**2000**		**1300**	**UG/KG**	200	8/12/2016 19:22
TOLUENE	**77000**		**13000**	**UG/KG**	2000	8/12/2016 19:50
ETHYLBENZENE	**32000**		**1300**	**UG/KG**	200	8/12/2016 19:22
M+P-XYLENE	**230000**		**13000**	**UG/KG**	2000	8/12/2016 19:50
O-XYLENE	**64000**		**13000**	**UG/KG**	2000	8/12/2016 19:50
TOTAL XYLENES	**300000**		**5**	**UG/KG**	1	8/12/2016 19:50
Surr: DIBROMOFLUOROMETHANE	*102*		*61-134*	*%REC*	200	8/12/2016 19:22
Surr: DIBROMOFLUOROMETHANE	*103*		*61-134*	*%REC*	2000	8/12/2016 19:50
Surr: TOLUENE-D8	*92*		*57-135*	*%REC*	2000	8/12/2016 19:50
Surr: TOLUENE-D8	*87*		*57-135*	*%REC*	200	8/12/2016 19:22
Surr: 4-BROMOFLUOROBENZENE	*99*		*52-151*	*%REC*	2000	8/12/2016 19:50
Surr: 4-BROMOFLUOROBENZENE	*96*		*52-151*	*%REC*	200	8/12/2016 19:22

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH06 @ 3'	**Lab ID:**	1608183-7
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 12:10	**Percent Moisture:**	24.1

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/11/2016**		PrepBy: **JFN**
Diesel Range Organics	**6600**	L	**130**	**MG/KG**	20	8/11/2016 16:55
Surr: O-TERPHENYL	*89*		*49-114*	*%REC*	20	8/11/2016 16:55
Gasoline Range Organics			**SW8015**	Prep Date: **8/12/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**17000**	ZG	**320**	**MG/KG**	2500	8/12/2016 13:48
Surr: 2,3,4-TRIFLUOROTOLUENE	*166*	*	*76-126*	*%REC*	2500	8/12/2016 13:48
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/12/2016**		PrepBy: **JXK**
BENZENE	**3200**		**1300**	**UG/KG**	200	8/12/2016 20:21
TOLUENE	**210000**		**33000**	**UG/KG**	5000	8/12/2016 20:52
ETHYLBENZENE	**110000**		**33000**	**UG/KG**	5000	8/12/2016 20:52
M+P-XYLENE	**660000**		**33000**	**UG/KG**	5000	8/12/2016 20:52
O-XYLENE	**130000**		**33000**	**UG/KG**	5000	8/12/2016 20:52
TOTAL XYLENES	**790000**		**5**	**UG/KG**	1	8/12/2016 20:21
Surr: DIBROMOFLUOROMETHANE	*102*		*61-134*	*%REC*	200	8/12/2016 20:21
Surr: DIBROMOFLUOROMETHANE	*100*		*61-134*	*%REC*	5000	8/12/2016 20:52
Surr: TOLUENE-D8	*94*		*57-135*	*%REC*	5000	8/12/2016 20:52
Surr: TOLUENE-D8	*72*		*57-135*	*%REC*	200	8/12/2016 20:21
Surr: 4-BROMOFLUOROBENZENE	*99*		*52-151*	*%REC*	5000	8/12/2016 20:52
Surr: 4-BROMOFLUOROBENZENE	*95*		*52-151*	*%REC*	200	8/12/2016 20:21

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH07 @ 3'	**Lab ID:**	1608183-8
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 12:40	**Percent Moisture:**	25.1

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/11/2016**		PrepBy: **JFN**
Diesel Range Organics	ND		6.6	MG/KG	1	8/11/2016 21:46
Surr: O-TERPHENYL	*99*		*49-114*	*%REC*	1	8/11/2016 21:46
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**0.34**	J	**0.62**	**MG/KG**	1	8/11/2016 20:55
Surr: 2,3,4-TRIFLUOROTOLUENE	*83*		*76-126*	*%REC*	1	8/11/2016 20:55
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/11/2016**		PrepBy: **JXK**
BENZENE	**0.83**	J	**6.6**	**UG/KG**	1	8/11/2016 21:04
TOLUENE	**8.6**		**6.6**	**UG/KG**	1	8/11/2016 21:04
ETHYLBENZENE	**2**	J	**6.6**	**UG/KG**	1	8/11/2016 21:04
M+P-XYLENE	**13**		**6.6**	**UG/KG**	1	8/11/2016 21:04
O-XYLENE	**4.1**	J	**6.6**	**UG/KG**	1	8/11/2016 21:04
TOTAL XYLENES	**17**	J	**5**	**UG/KG**	1	8/11/2016 21:04
Surr: DIBROMOFLUOROMETHANE	*108*		*61-134*	*%REC*	1	8/11/2016 21:04
Surr: TOLUENE-D8	*93*		*57-135*	*%REC*	1	8/11/2016 21:04
Surr: 4-BROMOFLUOROBENZENE	*104*		*52-151*	*%REC*	1	8/11/2016 21:04

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH09 @ 2.5'	**Lab ID:**	1608183-9
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 13:20	**Percent Moisture:**	27.6

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			**SW8015M**	Prep Date: **8/15/2016**		PrepBy: **JFN**
Diesel Range Organics	ND		14	MG/KG	1	8/16/2016 11:45
Surr: O-TERPHENYL	*95*		*49-114*	*%REC*	1	8/16/2016 11:45
Gasoline Range Organics			**SW8015**	Prep Date: **8/11/2016**		PrepBy: **JFN**
GASOLINE RANGE ORGANICS	**1.4**	G	**0.66**	**MG/KG**	1	8/11/2016 21:17
Surr: 2,3,4-TRIFLUOROTOLUENE	*105*		*76-126*	*%REC*	1	8/11/2016 21:17
Dissolved GC/MS Volatiles			**SW8260**	Prep Date: **8/11/2016**		PrepBy: **JXK**
BENZENE	**3**	J	**6.8**	**UG/KG**	1	8/11/2016 21:33
TOLUENE	**45**		**6.8**	**UG/KG**	1	8/11/2016 21:33
ETHYLBENZENE	**10**		**6.8**	**UG/KG**	1	8/11/2016 21:33
M+P-XYLENE	**63**		**6.8**	**UG/KG**	1	8/11/2016 21:33
O-XYLENE	**14**		**6.8**	**UG/KG**	1	8/11/2016 21:33
TOTAL XYLENES	**77**		**5**	**UG/KG**	1	8/11/2016 21:33
Surr: DIBROMOFLUOROMETHANE	*105*		*61-134*	*%REC*	1	8/11/2016 21:33
Surr: TOLUENE-D8	*87*		*57-135*	*%REC*	1	8/11/2016 21:33
Surr: 4-BROMOFLUOROBENZENE	*104*		*52-151*	*%REC*	1	8/11/2016 21:33

Client:	Tasman Geosciences	**Date:**	*18-Aug-16*
Project:	710000302 Buffalo Valley Comp Station	**Work Order:**	1608183
Sample ID:	BH09 @ 2.5'	**Lab ID:**	1608183-9
Legal Location:		**Matrix:**	SOIL
Collection Date:	8/8/2016 13:20	**Percent Moisture:**	27.6

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed

Explanation of Qualifiers

Radiochemistry:

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

LT - Result is less than requested MDC but greater than achieved MDC.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met.

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample.

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel
- mineral spirits
- motor oil
- Stoddard solvent
- bunker C

Batch ID: **HC160811-100-1** Instrument ID: **FUELS-1** Method: **SW8015M**

DUP Sample ID: **1608183-2** Units: **MG/KG** Analysis Date: **8/11/2016 20:00**

Client ID: **BH02 @ 3.5'** Run ID: **HC160811-8A** Prep Date: **8/11/2016** DF: **20**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	7370	129						7900		30	LMH
Surr: O-TERPHENYL	11.1		16.1		69	49-114					

LCS Sample ID: **HC160811-100** Units: **MG/KG** Analysis Date: **8/11/2016 17:48**

Client ID: Run ID: **HC160811-8A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	130	5	125		104	81-129				20	
Surr: O-TERPHENYL	10.2		12.5		82	49-114					

LCSD Sample ID: **HC160811-100** Units: **MG/KG** Analysis Date: **8/11/2016 18:14**

Client ID: Run ID: **HC160811-8A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	131	5	125		105	81-129		130	1	20	
Surr: O-TERPHENYL	10.3		12.5		82	49-114			0		

MB Sample ID: **HC160811-100** Units: **MG/KG** Analysis Date: **8/11/2016 15:07**

Client ID: Run ID: **HC160811-8A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	ND	5									
Surr: O-TERPHENYL	10.9		12.5		87	49-114					

MS Sample ID: **1608183-5** Units: **MG/KG** Analysis Date: **8/11/2016 21:20**

Client ID: **BH04 @ 2.5'** Run ID: **HC160811-8A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	144	5.98	150	5.9	97	81-129				20	
Surr: O-TERPHENYL	13.8		15		92	49-114					

The following samples were analyzed in this batch:

QC BATCH REPORT

Batch ID: **hc160811-61-1** Instrument ID: **FUELS-1** Method: **SW8015**

LCS Sample ID: **hc160811-61** Units: **MG/KG** Analysis Date: **8/11/2016 10:03**
Client ID: Run ID: **HC160811-6A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	2.54	0.5	2.5		102	79-118				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.512		0.5		102	76-126					

LCSD Sample ID: **hc160811-61** Units: **MG/KG** Analysis Date: **8/11/2016 18:01**
Client ID: Run ID: **HC160811-6A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	2.43	0.5	2.5		97	79-118		2.54	5	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.504		0.5		101	76-126			1		

MB Sample ID: **hc160811-61** Units: **MG/KG** Analysis Date: **8/11/2016 10:24**
Client ID: Run ID: **HC160811-6A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	0.5									
Surr: 2,3,4-TRIFLUOROTOLUENE	0.45		0.5		90	76-126					

MB Sample ID: **hc160811-61M** Units: **MG/KG** Analysis Date: **8/11/2016 12:05**
Client ID: Run ID: **HC160811-6A** Prep Date: **8/11/2016** DF: **50**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	5									
Surr: 2,3,4-TRIFLUOROTOLUENE	4.76		5		95	76-126					

MS Sample ID: **1608183-3** Units: **MG/KG** Analysis Date: **8/11/2016 21:38**
Client ID: **BH03 @ 2.8'** Run ID: **HC160811-6A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	7.07	0.532	10.6	0.27	64	79-118				40	*
Surr: 2,3,4-TRIFLUOROTOLUENE	0.567		0.532		107	76-126					

The following samples were analyzed in this batch:

QC BATCH REPORT

Batch ID: **HC160812-61-1** Instrument ID: **FUELS-1** Method: **SW8015**

LCS Sample ID: **HC160812-61** Units: **MG/KG** Analysis Date: **8/12/2016 11:17**
Client ID: Run ID: **HC160812-6A** Prep Date: **8/12/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	2.34	0.5	2.5		94	79-118				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.487		0.5		97	76-126					

LCSD Sample ID: **HC160812-61** Units: **MG/KG** Analysis Date: **8/12/2016 17:31**
Client ID: Run ID: **HC160812-6A** Prep Date: **8/12/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	2.4	0.5	2.5		96	79-118		2.34	3	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.502		0.5		100	76-126			3		

MB Sample ID: **HC160812-61** Units: **MG/KG** Analysis Date: **8/12/2016 11:39**
Client ID: Run ID: **HC160812-6A** Prep Date: **8/12/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	0.5									
Surr: 2,3,4-TRIFLUOROTOLUENE	0.437		0.5		87	76-126					

MB Sample ID: **HC160812-61M** Units: **MG/KG** Analysis Date: **8/12/2016 13:19**
Client ID: Run ID: **HC160812-6A** Prep Date: **8/12/2016** DF: **50**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	5									
Surr: 2,3,4-TRIFLUOROTOLUENE	4.71		5		94	76-126					

The following samples were analyzed in this batch:

QC BATCH REPORT

Batch ID: **HC160815-101-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS Sample ID: **HC160815-101** Units: **MG/KG** Analysis Date: **8/16/2016 10:26**
Client ID: Run ID: **HC160816-8A** Prep Date: **8/15/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	127	5	125		102	81-129				20	
Surr: O-TERPHENYL	10		12.5		80	49-114					

LCSD Sample ID: **HC160815-101** Units: **MG/KG** Analysis Date: **8/16/2016 10:52**
Client ID: Run ID: **HC160816-8A** Prep Date: **8/15/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	128	5	125		103	81-129		127	1	20	
Surr: O-TERPHENYL	10		12.5		80	49-114			0		

MB Sample ID: **HC160815-101** Units: **MG/KG** Analysis Date: **8/16/2016 10:00**
Client ID: Run ID: **HC160816-8A** Prep Date: **8/15/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	ND	5									
Surr: O-TERPHENYL	10.6		12.5		85	49-114					

MS Sample ID: **1608183-9** Units: **MG/KG** Analysis Date: **8/16/2016 12:12**
Client ID: **BH09 @ 2.5'** Run ID: **HC160816-8A** Prep Date: **8/15/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	435	13.5	338	14	129	81-129				20	
Surr: O-TERPHENYL	35.2		33.8		104	49-114					

The following samples were analyzed in this batch:

Batch ID: **VL160811-2-1** Instrument ID: **HPV1** Method: **SW8260**

LCS Sample ID: **VL160811-2** Units: **UG/KG** Analysis Date: **8/11/2016 11:04**

Client ID: Run ID: **VL160811-2A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	41.2	5	40		103	73-126				30	
TOLUENE	36.3	5	40		91	71-127				30	
ETHYLBENZENE	36.9	5	40		92	74-127				30	
M+P-XYLENE	75.4	5	80		94	79-126				30	
O-XYLENE	37.1	5	40		93	77-125				30	
Surr: DIBROMOFLUOROMETHANE	52.2		50		104	61-134					
Surr: TOLUENE-D8	45.7		50		91	57-135					
Surr: 4-BROMOFLUOROBENZENE	50.4		50		101	52-151					

LCSD Sample ID: **VL160811-2** Units: **UG/KG** Analysis Date: **8/11/2016 11:37**

Client ID: Run ID: **VL160811-2A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	42.8	5	40		107	73-126		41.2	4	30	
TOLUENE	37.2	5	40		93	71-127		36.3	2	30	
ETHYLBENZENE	37.2	5	40		93	74-127		36.9	1	30	
M+P-XYLENE	74.4	5	80		93	79-126		75.4	1	30	
O-XYLENE	38.4	5	40		96	77-125		37.1	3	30	
Surr: DIBROMOFLUOROMETHANE	53		50		106	61-134			2		
Surr: TOLUENE-D8	45.1		50		90	57-135			1		
Surr: 4-BROMOFLUOROBENZENE	51.7		50		103	52-151			3		

MB Sample ID: **VL160811-2** Units: **UG/KG** Analysis Date: **8/11/2016 12:37**

Client ID: Run ID: **VL160811-2A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	ND	5									
TOLUENE	ND	5									
ETHYLBENZENE	ND	5									
M+P-XYLENE	ND	5									
O-XYLENE	ND	5									
TOTAL XYLENES	ND	5									
Surr: DIBROMOFLUOROMETHANE	53.5		50		107	61-134					
Surr: TOLUENE-D8	46.4		50		93	57-135					
Surr: 4-BROMOFLUOROBENZENE	50.3		50		101	52-151					

QC BATCH REPORT

Batch ID: **VL160811-2-1** Instrument ID: **HPV1** Method: **SW8260**

MS Sample ID: **1608183-1** Units: **UG/KG** Analysis Date: **8/11/2016 19:14**

Client ID: **BH01 @ 3'** Run ID: **VL160811-2A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	48.2	6.59	52.8	6.7	91	73-126				30	
TOLUENE	40.2	6.59	52.8	2.3	72	71-127				30	
ETHYLBENZENE	38	6.59	52.8	6.7	72	74-127				30	*
M+P-XYLENE	77.4	6.59	106	1.9	72	79-126				30	*
O-XYLENE	40.3	6.59	52.8	6.7	76	77-125				30	*
Surr: DIBROMOFLUOROMETHANE	72.1		65.9		109	61-134					
Surr: TOLUENE-D8	57.8		65.9		88	57-135					
Surr: 4-BROMOFLUOROBENZENE	65.9		65.9		100	52-151					

MSD Sample ID: **1608183-1** Units: **UG/KG** Analysis Date: **8/11/2016 19:41**

Client ID: **BH01 @ 3'** Run ID: **VL160811-2A** Prep Date: **8/11/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	51.2	6.65	53.2	6.7	96	73-126		48.2	6	30	
TOLUENE	42.7	6.65	53.2	2.3	76	71-127		40.2	6	30	
ETHYLBENZENE	41.2	6.65	53.2	6.7	78	74-127		38	8	30	
M+P-XYLENE	83.8	6.65	106	1.9	77	79-126		77.4	8	30	*
O-XYLENE	43	6.65	53.2	6.7	81	77-125		40.3	6	30	
Surr: DIBROMOFLUOROMETHANE	72.9		66.5		110	61-134			1		
Surr: TOLUENE-D8	61.1		66.5		92	57-135			6		
Surr: 4-BROMOFLUOROBENZENE	67.3		66.5		101	52-151			2		

The following samples were analyzed in this batch:

Batch ID: **VL160812-2-1** Instrument ID: **HPV1** Method: **SW8260**

LCS Sample ID: **VL160812-2** Units: **UG/KG** Analysis Date: **8/12/2016 13:48**

Client ID: Run ID: **VL160812-2A** Prep Date: **8/12/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	42.9	5	40		107	73-126				30	
TOLUENE	36	5	40		90	71-127				30	
ETHYLBENZENE	36.7	5	40		92	74-127				30	
M+P-XYLENE	74	5	80		92	79-126				30	
O-XYLENE	37.2	5	40		93	77-125				30	
Surr: DIBROMOFLUOROMETHANE	54		50		108	61-134					
Surr: TOLUENE-D8	44.4		50		89	57-135					
Surr: 4-BROMOFLUOROBENZENE	50.5		50		101	52-151					

LCSD Sample ID: **VL160812-2** Units: **UG/KG** Analysis Date: **8/12/2016 14:16**

Client ID: Run ID: **VL160812-2A** Prep Date: **8/12/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	43.2	5	40		108	73-126		42.9	1	30	
TOLUENE	37.1	5	40		93	71-127		36	3	30	
ETHYLBENZENE	37.9	5	40		95	74-127		36.7	3	30	
M+P-XYLENE	76.7	5	80		96	79-126		74	4	30	
O-XYLENE	38.5	5	40		96	77-125		37.2	4	30	
Surr: DIBROMOFLUOROMETHANE	54.2		50		108	61-134			0		
Surr: TOLUENE-D8	45.8		50		92	57-135			3		
Surr: 4-BROMOFLUOROBENZENE	51.5		50		103	52-151			2		

MB Sample ID: **VL160812-2** Units: **UG/KG** Analysis Date: **8/12/2016 15:05**

Client ID: Run ID: **VL160812-2A** Prep Date: **8/12/2016** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	ND	5									
TOLUENE	ND	5									
ETHYLBENZENE	ND	5									
M+P-XYLENE	ND	5									
O-XYLENE	ND	5									
TOTAL XYLENES	ND	5									
Surr: DIBROMOFLUOROMETHANE	53.7		50		107	61-134					
Surr: TOLUENE-D8	45.9		50		92	57-135					
Surr: 4-BROMOFLUOROBENZENE	49.4		50		99	52-151					

QC BATCH REPORT

Batch ID: **VL160812-2-1** Instrument ID: **HPV1** Method: **SW8260**

MB Sample ID: **VL160812-2M** Units: **UG/KG** Analysis Date: **8/12/2016 15:29**

Client ID: Run ID: **VL160812-2A** Prep Date: **8/12/2016** DF: **50**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BENZENE	ND	250									
TOLUENE	ND	250									
ETHYLBENZENE	ND	250									
M+P-XYLENE	ND	250									
O-XYLENE	ND	250									
TOTAL XYLENES	ND	5									
Surr: DIBROMOFLUOROMETHANE	2640		2500		105	61-134					
Surr: TOLUENE-D8	2270		2500		91	57-135					
Surr: 4-BROMOFLUOROBENZENE	2530		2500		101	52-151					

The following samples were analyzed in this batch: