NewFields

LETTER OF TRANSMITTAL

To:

Latysha Pakratz
Montana DEQ Petroleum Tank Section

From:

Levi McKay, NewFields

We are sending you the following items:

Line Number	Copies Enclosed	Description
1	1	Cleanup Plan (AC-04), Former LeeAnn's Motel, Facility ID 43-01701, release 1537, Workplan 33918
2		
3		
4		

☐For your files ☒For your review/approval ☐Per your request

☐Return of loaned document/materials ☐Sign and return ☐Please call

☐ _____

Remarks:

Latysha, At your earliest convenience, please review the attached. We are hoping to get this approved by the Petrofund Board at the March meeting. If it pushes to their May meeting we can live with it, but thought maybe might have the time to review ASAP ☺. Hope you are well.

Copy To: Martina Wilson, Fort Peck Tries; Greg Davis EPA

Signed: L. McKay

Contaminated Soil Excavation and Disposal Corrective Action Work Plan (AC-04)

Former LeeAnns Motel
150 F Street
Poplar, Montana
Facility ID: 43-01701, Release: 1537
Work Plan: 33918

Prepared for:
Fort Peck Tribes
Office of Environmental Protection
511 Medicine Bear Road
P.O. Box 1027
Poplar, Montana 59255

Prepared by:
NewFields Companies, LLC
700 SW Higgins, Suite 15
Missoula, Montana 59803

NewFields

February 2020
Project 350.0143.016

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1.0 INTRODUCTION AND SITE BACKGROUND

NewFields Companies, LLC (NewFields) has prepared this Contaminated Soil Excavation and Disposal Corrective Action Work Plan (CAP) for cleanup at the former LeeAnns Motel property (site) located at 150 F Street in Poplar, Montana as shown on **Figures 1** and **2**. NewFields completed this CAP on behalf of the current site owner, Mr. Keith Red Elk, in response to correspondence from the Montana Department of Environmental Quality (DEQ) dated August 2, 2019. The work outlined in this CAP will be funded by the Fort Peck & Assiniboine Tribes (FPT) Section 128(a) Tribal Response funds and the Montana Petroleum Tank Release Compensation Fund (Petrofund), and therefore this plan was prepared to satisfy the requirements of the Environmental Protection Agency (EPA) Brownfields Program and the Montana Petrofund.

1.1 PREVIOUS ASSESSMENT AND CLEANUP ACTIONS, AND REGULATORY SITE STATUS

An automotive fueling station operated on the northeast corner of the site for an unknown period (NewFields, 2018). Underground storage tanks (USTs) were reportedly installed on the property in 1963 and last used in 1965. Petroleum release #1537 was discovered at the site in March 1990 during removal of two 3,000-gallon USTs and one 4,000-gallon diesel UST. **Figure 2** shows the approximate location of the UST basins. Holes were discovered in two of the USTs. The soil sample collected west of the diesel tank contained 14,620 milligrams per kilogram (mg/kg) total petroleum hydrocarbons (TPH) and the soil sample collected east end of the diesel tank had a concentration of 8,190 mg/kg TPH. During the UST removal, approximately 60 cubic yards (cy) of impacted soil were removed and hauled to the local landfill and disposed. More details on these historical USTs and remedial actions completed to address petroleum releases during tank removals is provided in the NewFields (2018) Additional Remedial Investigation Report (RIR-02) in **Appendix A**.

In May 2006, two monitoring wells (MW-1 and MW-2) were installed. MW-1 was installed in the former gasoline UST basin and MW-2 in the former diesel UST basin. Concentrations of Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH) were above DEQ Tier 1 Risk-Based Screening Levels (RBSLs) in both samples in May 2006. In May 2012, groundwater samples collected from both MW-1 and MW-2 showed elevated concentrations of gasoline constituents, with EPH fractions elevated in MW-2.

In October of 2013, thirteen soil borings (**Figure 3**) were completed and three additional monitoring wells (MW-3, MW-4, and MW-5) were installed by JBR Environmental Consultants, Inc. (JBR, 2013). Soil samples from eight of the soil borings exceeded RBSLs for either VPH or EPH constituents. Two of the newly-installed wells (MW-3 and MW-4) contained sufficient water to collect a sample, but MW-5 did not. Groundwater samples from each of the four monitoring wells exceeded RBSLs for VPH or EPH constituents.

In 2018, a Laser-Induced Florescence (LIF) investigation conducted by NewFields identified petroleum-impacted subsurface soil between 4 and 10 feet bgs in most LIF borings (NewFields 2018). LIF and soil boring locations are shown on **Figure 2** and **Figure 3**. A deeper, secondary zone of signal response was identified approximately 12 to 20 feet bgs in borings associated with the former diesel UST.

Contaminant concentrations in laboratory soil samples from four confirmation borings did slightly correlate with LIF response observed with the Ultra Violet Optical Screening Tool (UVOST®). Confirmation borings contained concentrations above Montana Tier 1 Risk-Based Screening Levels (RBSLs) for volatile petroleum hydrocarbons (VPH) and/or extractable petroleum hydrocarbons (EPH) constituents. Results from groundwater samples collected from four existing monitoring wells (MW-1 through MW-4) showed groundwater at the Site is impacted with petroleum compounds at concentrations above Montana Tier 1 RBSLs. **Figure 4** shows the most recent groundwater TPH and EPH sample results and the estimated direction of groundwater flow. Groundwater has been observed in wells from depths of approximately 7-10 feet bgs (NewFields 2017).

The presence of subsurface petroleum soil contamination poses a risk of vapor intrusion for current and future structures, a risk of exposure to future construction workers who might excavate subsurface soils, and is a source of contamination to the groundwater. Soil contamination has reached underlying groundwater, and the presence of potentially-impacted groundwater is a concern for both water quality of the shallow unconfined aquifer in Poplar. The dissolved-phase groundwater plume is estimated to encompass much of the site; extending from the former northern gasoline UST to the west and from the former southern diesel UST basin southeast to 1st Ave West.

On August 2, 2019, based on the results of previous investigations, the DEQ requested this Standardized Contaminated Soil Excavation and Disposal Corrective Action Work Plan (WP) AC-04 for the cleanup of the site. The scope of work requested included the following:

- Excavation, transport, and disposal of petroleum contaminated soil
- Post-excavation soil sampling
- Analysis for petroleum constituents in soil post excavation as required by the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases
- Laboratory data validation
- Preparation of a Release Closure Plan
- Preparation of a Standardized Contaminated Soil Excavation and Disposal Report (AR-04)

2.0 SUMMARY OF SITE CONDITIONS

2.1 SITE SETTING

The site is located in Poplar, Montana (**Figure 1**). As shown in **Figure 2**, the site has five structures: a former laundry building, three motel buildings, and a shop/abandoned gas station building. The northern-most motel building burned in February 2014, and the Fort Peck Tribes will be demolishing all of the buildings except the shop building in the northeastern corner of the site in the spring of 2020. The Site is bordered to the west by 2nd Avenue West, to the east by 1st Avenue West, and to the north by F Street West (concurrent with U.S. Highway 2). Another abandoned gas station is located west of the Site across 2nd Avenue West. The US Postal Service and an unoccupied office building are located across the alley to the south of the Site.

The locations of the site sewer and water lines shown on **Figure 5** are approximate, as these lines are depicted in several different locations on various available maps and historical figures. A natural gas service line runs through the diesel- impacted soil area to the shop building. Electrical utilities are located above ground.

2.2 GEOLOGY, HYDROGEOLOGY, AND SOILS

The geology surrounding Poplar ranges from Cretaceous to Quaternary in age. Based on the Source Water Delineation and Assessment Report for Poplar prepared by DEQ (2002), the city is built on Wisconsin-age glacial till ranging from 56 to 100 feet in thickness. To the south of Poplar, Quaternary alluvium is present across the Missouri River valley ranging from 30 to 100 feet in thickness. North of Poplar, Quaternary alluvium blankets the Poplar river valley ranging from 22 to 56 feet in thickness. Underlying the alluvium and glacial deposits is up to 1000 feet of Upper Cretaceous Bearpaw shale (DEQ, 2002).

Three hydrostratigraphic units underlie the City of Poplar: perched saturated zones, the alluvium and glacial deposits aquifer, and the bedrock aquifer (Bearpaw shale) (Tetra Tech, 1990). The perched saturated zones exist in more permeable lenses of sandy clay or sandy silt within the clayey till. The extent of perched saturated zones is unknown but they likely exist throughout Poplar (Tetra Tech, 1990). Beneath the fine-grained glacial till is a semi-confined, unconsolidated sand and gravel aquifer made up of alluvium and glacial deposits. The three wells that supply the City of Poplar are situated near the Poplar River, and are completed at depths of approximately 80 to 90 feet below ground surface (bgs). All three wells are finished in the unconsolidated, semi-confined aquifer within Pleistocene to Holocene Missouri River alluvium and glacial deposits. Static water levels measured at the time the City water supply wells were drilled (1946, 1975 and 1979) ranged from 17.5 to 45 feet bgs. The Bearpaw shale aquifer, beneath the sand and gravel aquifer, at an approximate depth ranging from 70-150 feet bgs, has limited use and generally wells are located in the glacially eroded and weathered upper portions of the formation.

Shallow groundwater flow beneath Poplar is complicated by a leaky municipal water system, and has multiple apparent flow directions based on measurement of water elevations in monitoring wells (DEQ, 2002). Based on the U.S. Geological Survey (USGS) Poplar topographic quadrangle (1:24,000-scale), the

flow direction of shallow groundwater in most of Poplar is likely to the south toward the Missouri River, with possible west to southwest flow near the Poplar River (**Figure 1**). Information provided by DEQ (DEQ, 2002) indicates that groundwater in Poplar flows either to the northeast or southwest, depending on the location. The Montana Bureau of Mines and Geology (MBMG) Ground-Water Information Center (GWIC) database (MBMG, 2018) contains records for 48 wells in Section 12. Well depths ranged from 16 to 117 feet bgs. The average static water level is listed as 20 feet bgs.

The City of Poplar has a public water system to serve its nearly 3,000 residents (DEQ Public Water System ID #00310). The public water system was in operation until 2012, when the supply wells were shut down due to the migration of brine contamination from historic oil and natural gas drilling located north of Poplar (USGS, 2014). The non-operational water supply wells are located more than 1,300 feet cross-gradient from the Site. Each of the wells is screened at depths greater than or equal to 57 feet below ground surface (ft bgs), completed in quaternary gravels located below the thick (approximately 50 feet) sequence of glacial till that is located immediately below the ground surface throughout Poplar (DEQ, 2002). In 2012, the City of Poplar was connected to the newly formed Assiniboine & Sioux Rural Water Supply System (ASRWSS). The ASRWSS sources raw water directly from the Missouri River near Wolf Point, approximately 16 miles downgradient of the Site (Watson, 2002). The raw intake water is treated at a water treatment plant near Wolf Point and transmitted via pipeline to Poplar.

2.3 Contaminants of Concern

Contaminants of concern for soils and groundwater at the site include the following:

- Gasoline – VPH;
- Diesel Fuel – EPH; and
- Volatile Organic Compounds (VOCs; ethylene dibromide [EDB] and 1,2 dichloroethane [1,2-DCA])

3.0 PROPOSED REMEDIAL ACTIONS

3.1 OBJECTIVES AND TIMING OF THE REMEDIAL EXCAVATION

The overall objective of the remedial action is to remove existing contaminated subsurface soil in the vicinity of known sources to reduce health risks and allow for site redevelopment and eventual site closure from the DEQ. It's is anticipated implementation of remedial actions that the quality of shallow groundwater will improve such the site may be placed in a groundwater monitoring status in accordance with DEQ guidance, and eventually closed via natural attenuation. Due to the concentration of contaminants in groundwater, it may take up to 10 years before petroleum constituent levels in groundwater lower to below applicable DEQ groundwater risk-based screening levels and standards. Without removal of the surface contaminated soil, groundwater contamination would likely remain at levels above the standards indefinitely. The landowner would like to obtain an official status of groundwater monitoring post implementation of the remedial action to provide assurance to him and future lenders or purchasers that the DEQ doesn't anticipate further remedial actions, with the exception of groundwater monitoring.

As shown in the proposed project schedule included in **Appendix B**, remedial actions would occur in late May 2020. To meet this schedule several stakeholders would need to meet the timelines shown in the proposed schedule.

3.2 PROJECT COORDINATION

All work will be coordinated with the Montana Department of Environmental Quality Petroleum Tank Cleanup Section. The oversight engineer will work to secure bids for the remedial components of the proposed site cleanup. The engineer will also obtain the necessary encroachment permits with the Montana Department of Transportation to excavate within the US Highway 2 right-of-way, the City of Poplar and private utility companies to locate public and private utilities prior to soil excavation.

3.3 HEALTH AND SAFETY

All staff associated with this project will have sufficient training to safely, effectively, and efficiently perform assigned tasks. A Health and Safety Plan (HASP) is included in **Appendix C**. Field staff on the project will have received Occupational Safety and Health Administration (OSHA) 40-hour Hazardous Waste Operations and Emergency Response safety training and follow-on 8-hour refresher training. The Project Manager and the Health and Safety Coordinator will ensure field staff including subcontractors, have appropriate training.

3.4 UTILITY DISCONNECT AND CAPPING

Figure 5 shows the approximate locations of public utilities adjacent to and on the Site. Buried public utilities include water lines along 2nd Ave W; sanitary sewer lines underlying Highway 2, 2nd Ave W, and the alley south of the property boundary; and a gas service lines under 2nd Ave West and the alley south of the property boundary running towards the Shop Building and between Motel Units (**Figure 2**). Depths of burial for water lines range between approximately 8 to 10 feet bgs, and sewer line burial

depths range between approximately 11.5 to 14 feet bgs. Depth to groundwater measurements in Site monitoring wells range from 7.9 to 9.0 feet bgs. The groundwater water table is likely above the elevation of water and sewer lines, and as such, these utilities may create a preferential migration pathway for petroleum contaminates in vapor and groundwater.

Private water, sewer, and gas lines on the site have been capped, as part of the Tribes building demolition project. All public utilities on the site will be located by calling the Utility Notification Center and hiring a private locator to ensure all proposed excavations will not impact utilities that will remain on site. The abandoned gas service line running to the shop building will be removed during excavation work and then reinstalled post excavation.

3.5 Contaminated Soil Excavation

Figure 5 shows the approximate areal footprint of the excavations proposed for the site. The overall location and dimensions of the excavations are based on previous investigation work, and in particular, the LIF investigation completed in 2018. The goal is to remove the primary sources of contaminated soil impacting groundwater. Two excavations are proposed: one north of the shop building in the vicinity of the former gasoline tank basin and a second excavation east of the shop building in the former diesel tank basin.

Based on the LIF investigation, the subsurface soil excavation in the diesel tank basin will be to a depth of approximately 20 feet bgs. Assuming an excavation depth of 20 feet bgs, a total volume of approximately 1,563 cubic yards will be excavated. Clean overburden soil is anticipated from ground surface to approximately 5 feet bgs. Based on this assumption, approximately 1,016 cubic yards would be petroleum-impacted. The contaminated soils will be disposed at the Valley County Landfill in Glasgow, Montana.

Subsurface soils in the former gasoline tank basin will be excavated to groundwater at approximately 10 feet bgs. Assuming an excavation depth of 10 feet bgs, the total volume of approximately 724 cubic yards will be excavated. Clean overburden soil is anticipated from ground surface to approximately 3 feet bgs. Based on this assumption, approximately 455 cubic yards would be petroleum-impacted.

Excavation sidewalls will be sloped based on the soil type (silts and clays) to maintain safe working conditions. Due to the limited property size and the truck turnaround time for disposal of contaminated soils in Glasgow, exhumed overburden and contaminated soils will be temporarily staged onsite. During excavation, soils will be visual observed and field-screened using a Photoionization Detector (PID) to 1) determine what soils are overburden and what soils are contaminated, and 2) the final depth and extent of the excavation. Soils that have PID measurements of greater than 100 ppm will be considered contaminated, thus requiring disposal at the landfill.

3.6 Soil Confirmation Sampling

Upon completion of the excavation, discrete confirmation samples will be collected from the sidewalls of the excavation to characterize the post-excavation soil conditions. Confirmation soil samples shall consist of a minimum of one sample for every per 25 lineal feet of pit sidewall. Based on the depth to

groundwater, excavation bottom samples are not proposed. Based on this frequency, an estimated 16-18 sidewall confirmation samples will be collected (9 from each excavation area). Additional confirmation samples may be required to assess the post-excavation residual soil contamination. The depth and location of each confirmation soil sample will be recorded by a NewFields scientist using a GPS device with sub-meter accuracy.

Confirmation soil samples will be submitted under chain-of-custody to Pace Analytical in Billings, Montana for analysis of volatile petroleum hydrocarbons (VPH) and extractable hydrocarbon (EPH) screen by Massachusetts methods as shown on **Table 3-1**. Should the EPH screen concentration for any soil sample exceed 200 milligrams per kilogram (mg/kg), analysis of petroleum fractions will be completed.

Prior to initiating the soil removal, two composite soil samples will also be collected of the backfill material that will be used to fill excavation to demonstrate that the material is clean. Backfill material samples will be analyzed for EPH Screen, VPH, and RRCA metals.

Table 3-1. Soil and Groundwater Sample Analytical Methods

Constituents of Potential Concern (COPCs)	Sampling Details			
	Method	Container	Preservative	Time to Extract/Time to Analyze
Petroleum Release Area				
Extractable Petroleum Hydrocarbons (EPH)	**Soil:** MADEP EPH Screen [1] **Groundwater:** MADEP EPH	**Soil:** 8 oz. jar **Groundwater:** 2 1,000 mL bottles	**Soil:** < 6°C; no head space **Groundwater:** Sulfuric to pH <2, <6°C	**Soil:** 7/14 days **Groundwater :** 7/14 days
Volatile Petroleum Hydrocarbons (VPH)	**Soil:** MADEP VPH **Groundwater:** MADEP VPH	**Soil:** 8 oz. jar **Groundwater:** 3 40mL VOAs	**Soil:** < 6°C; no head space **Groundwater:** Hydrochloric acid to pH < 2	**Soil:** 7/28 days **Groundwater:** 7/14 days
Lead Scavengers (EDB) & (DCA)	Method 8011	**Groundwater:** 3 40mL VOAs	**Groundwater:** Hydrochloric acid to pH < 2	**Groundwater:** 7/14 days

Notes:
MADEP - Massachusetts Department of Environmental Protection
EPA - United States Environmental Protection Agency
[1] EPH Fractions will be analyzed if the EPH Screen result is above 200 milligrams per kilogram (mg/kg) in soil and 1,000 µg/L in water

3.7 Groundwater Removal and Backfilling

On this project, where soils will be excavated to groundwater, there is an opportunity to reduce source mass in the groundwater and shorten the time necessary for groundwater quality improvement by removing groundwater from the excavations during the soil removal. Therefore, to reduce the time required for post-excavation natural attenuation of contaminants in groundwater, we propose to remove the highly-contaminated groundwater from the excavation. During soil removal, up to 10,000 gallons of groundwater from the excavations would be removed using vacuum trucks. The groundwater removed will be hauled to a licensed disposal facility in Billings for disposal.

Backfilling and compaction of the excavation will be completed by the approved earth work contractor. Clean backfill will be returned to the excavation and compacted in 18-24 inch lifts. Following completion of backfilling and compaction, the excavation area will be re-surfaced to match existing site conditions.

3.8 Monitoring Well Installation and Removal and Replacement

Two additional monitoring wells (MW-6 and MW-7) are proposed approximately 25 feet west and south of MW-4 to delineate the extent of groundwater impacts on the site, as shown on **Figure 6**. Monitoring wells MW-1, MW-2, and MW-3 will be removed and abandoned in accordance with state regulations and replaced with wells MW-1R, MW-2R, and MW-3R after the excavation to maintain sources well at the facility. A reasonable effort will be made to preserve MW-3 located on the western boundary of the proposed gasoline UST basin excavation.

Replacement monitoring wells will be installed at the approximate the same locations as the original well locations shown on **Figure 6**. The replacement wells will be installed to 20 feet below ground surface, or to 10 feet below the first encountered groundwater, whichever is deeper. The wells will be constructed of 2-inch diameter PVC casing, and will be screened across the water table with 0.010-inch factory slotted well screen. A 10/20 silica sand filter pack will be placed around the PVC pipe to 2 feet above the screened interval. Bentonite chips will be placed above the filter pack to approximately 1 foot below ground surface. Following installation, the well will be developed and the top of casing will be surveyed by a Professional Land Surveyor to a vertical and horizontal datum. A steel, traffic-rated flush mount well box set in concrete will be used as the surface completion for the wells. The wells will be equipped with a locking J-plug cap.

3.9 Groundwater Sampling Post Excavation

Figure 6 shows the wells that will be sampled after backfilling of the excavation. In total, seven monitoring wells will be sampled (MW-1 through MW-7). To sample the well, it will be purged prior to collection of a groundwater sample using low-flow purging techniques. During purging, specific conductivity (SC), pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), turbidity, and temperature will be measured, respectively. Purging will continue until field parameters have stabilized in accordance with DEQ guidelines and the Fort Peck Tribes Quality Assurance Project Plan. Prior to and during well purging, water levels will be measured using a decontaminated electric water level probe. Purge water will be discharged to the ground on the site.

Following well purging, groundwater samples will be collected into laboratory-provided containers and labeled with a unique identification number corresponding with the associated monitoring well. Groundwater samples will be packaged and shipped under chain of custody to Pace Analytical Services, Inc. in Billings, Montana for analysis of VPH, EPH, and lead scavengers (1,2-Dichloroethane [DCA], 1,2-Dibromoethane [EDB]) as indicated in **Table 3-1**.

3.10 Quality Control Sampling

Field and laboratory quality control (QC) sampling will be completed in accordance the NewFields SOPs. The following field QC samples will be collected:

- A laboratory-provided trip blank (TB) will accompany the sample coolers containing samples for VPH analysis. The trip blank will be analyzed for VPH constituents.
- One equipment rinse blank (ERB) sample will be collected during the confirmation soil sampling and groundwater sampling to evaluate the thoroughness of decontamination and analyzed for VPH and EPH. The sample(s) will be collected by pouring distilled water over reusable equipment (e.g., sample trowel or submersible pump).
- A blind field duplicate groundwater sample will be collected for VPH and EPH constituents for every 20 samples or per batch, whichever is fewer.

3.11 Decontamination Procedures and Handling of Investigation-Derived Waste

Prior to arriving on-site and between the advancement of borings, all down-hole drilling and sampling equipment will be decontaminated by steam cleaning or washing with a detergent solution and rinse water. All equipment used to collect soil confirmation and groundwater samples will also be decontaminated prior to sampling on site and between collected of samples. Decontamination procedures will be conducted at a designated area on the site, and wash fluids that do not have a sheen or free-phase petroleum will be allowed to infiltrate or evaporate. Drill cuttings will be dispose of with the contaminated soil hauled to the landfill.

4.0 DATA REVIEW AND REPORTING

4.1 DATA VALIDATION

All site data will be validated consistent with the NewFields Standard Operating Procedures (SOPs) on file with the DEQ. Data validation summaries will be providing using the DEQ's Data Validation Summary Forms. Conclusions will be made concerning the precision, accuracy, representativeness, completeness, and comparability of the analytical data and the data validation requirements for the project. Data will be qualified, as necessary, in accordance with NewFields' and DEQ data validation guidance.

4.2 CLEANUP REPORT

Following the scope of work described above, a Standardized Abbreviated Generic Applications Report (AR-04) describing the results of the remedial work will be prepared and submitted to DEQ within 30 days of receipt of the final laboratory and surveying data. Site data will be compared to applicable soil and groundwater DEQ screening levels and standards. The following information will be included in the report:

- A summary of site cleanup methods, confirmation soil sample results, volumes of soil and groundwater removed, and a recommendation of for placement of the site into a groundwater monitoring status per DEQ guidance.
- A Release Closure Plan (RCP) appended to the AR-04 Report.
- Vicinity maps identifying locations of former tank systems, utilities, and on-site structures, location/volume of un-remediated petroleum source material, excavation area, and replacement monitoring wells. The map showing the completed excavation will depict excavation extent and boundaries PID measurements, confirmation sample locations, and associated depths.
- Tabulated field observations and PID measurements with associated sample depths and location identification numbers. Data tables presenting confirmation soil samples compared to Montana Risk-Based Screening Levels (RBSLs).
- Appended laboratory report, field notes/forms/ soil boring/well completion logs, and photographs.

5.0 PROJECT SCHEDULE AND ESTIMATED COSTS

The proposed project schedule is provided in **Appendix B**. As shown in the schedule, the cleanup work described in this plan would begin in late May and completed by end of September 2020.

Costs to complete the cleanup as proposed in this plan are $255,480. A detailed cost estimate is included in **Appendix D**.

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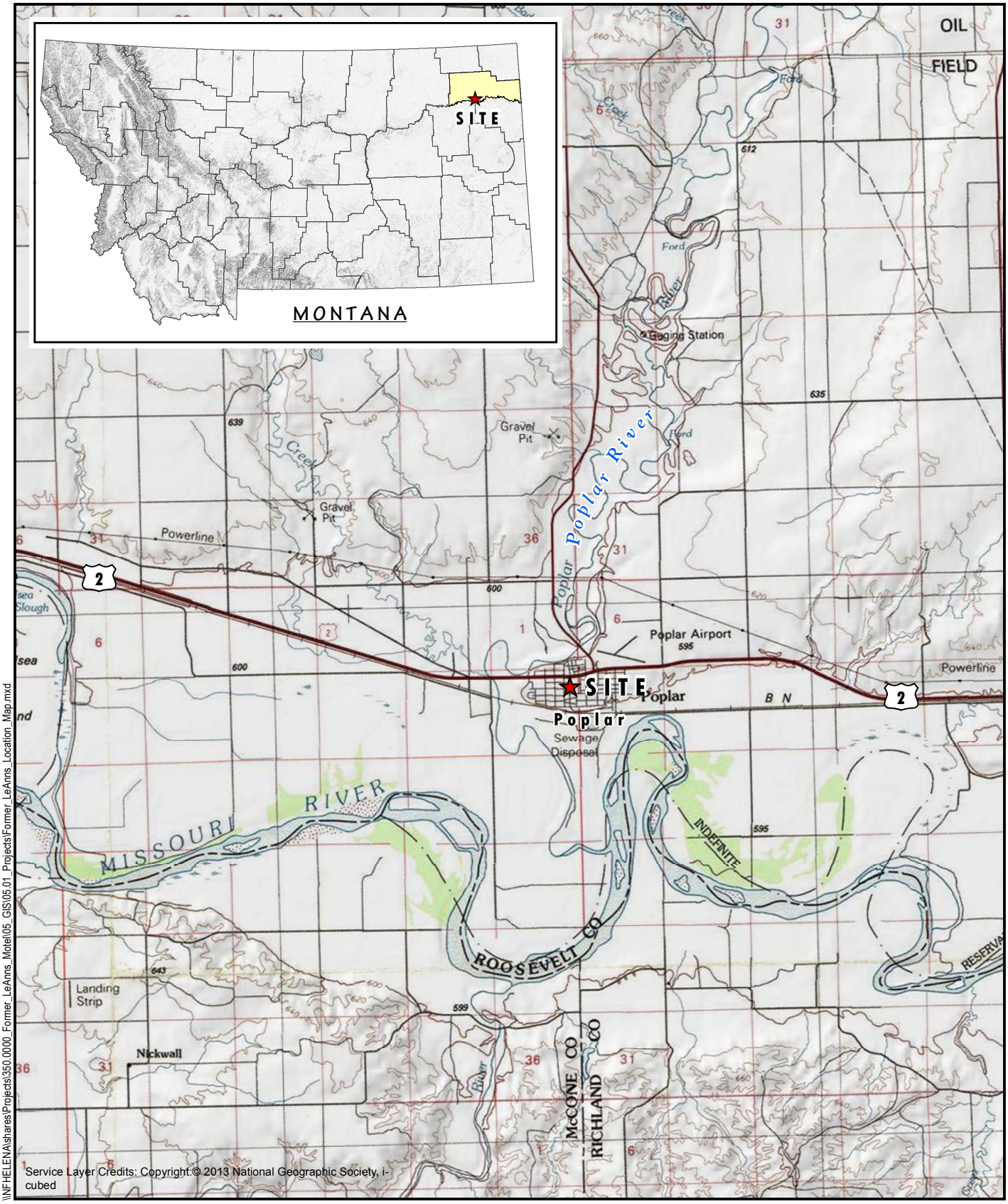
FIGURES



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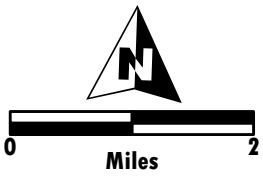

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Location Map
Former LeeAnns's Motel
Poplar, Montana
FIGURE 1

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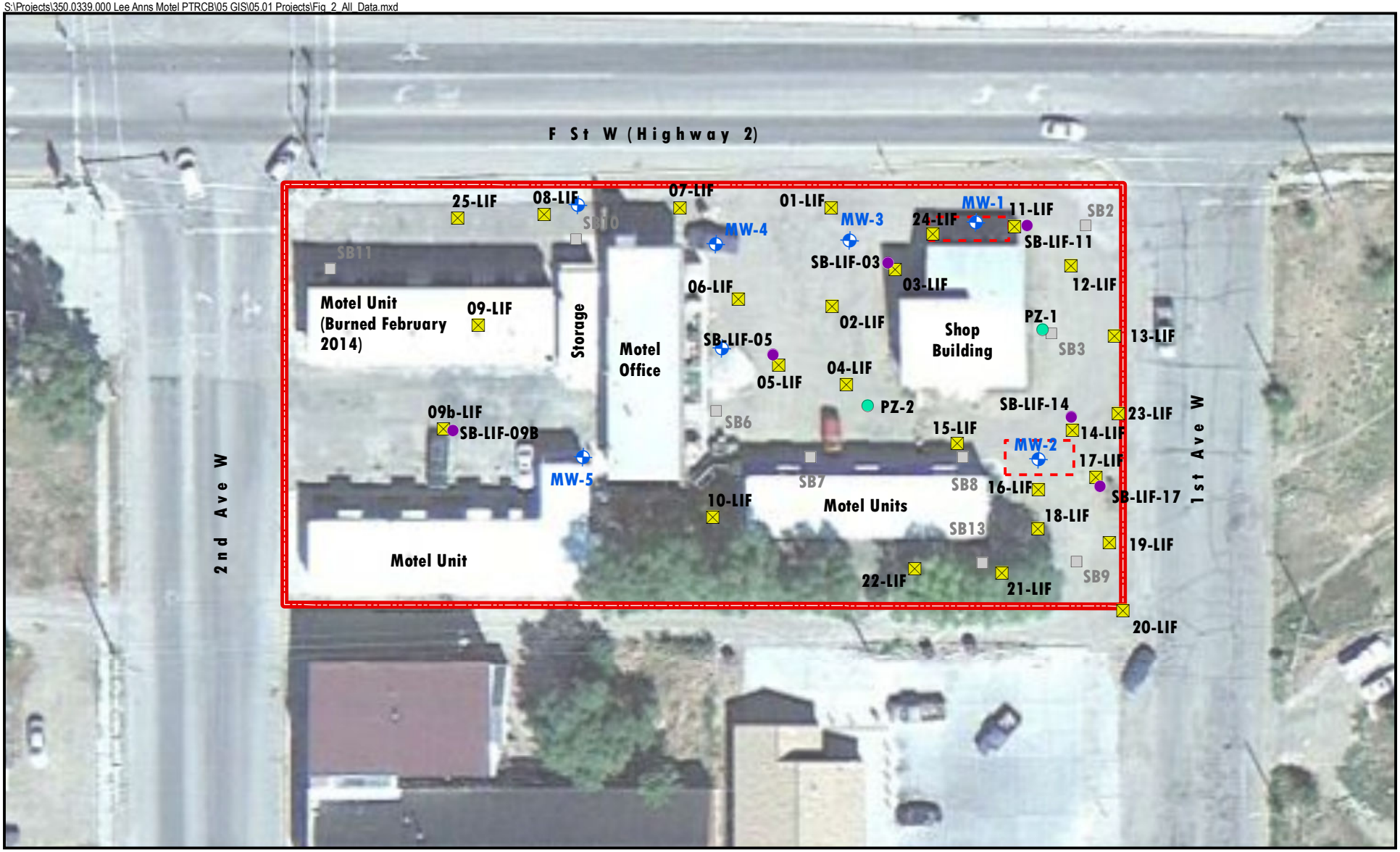


Source: Google Earth Imagery, 2013

N

0 Feet 50

NewFields

NewFields Sample Locations (2018)

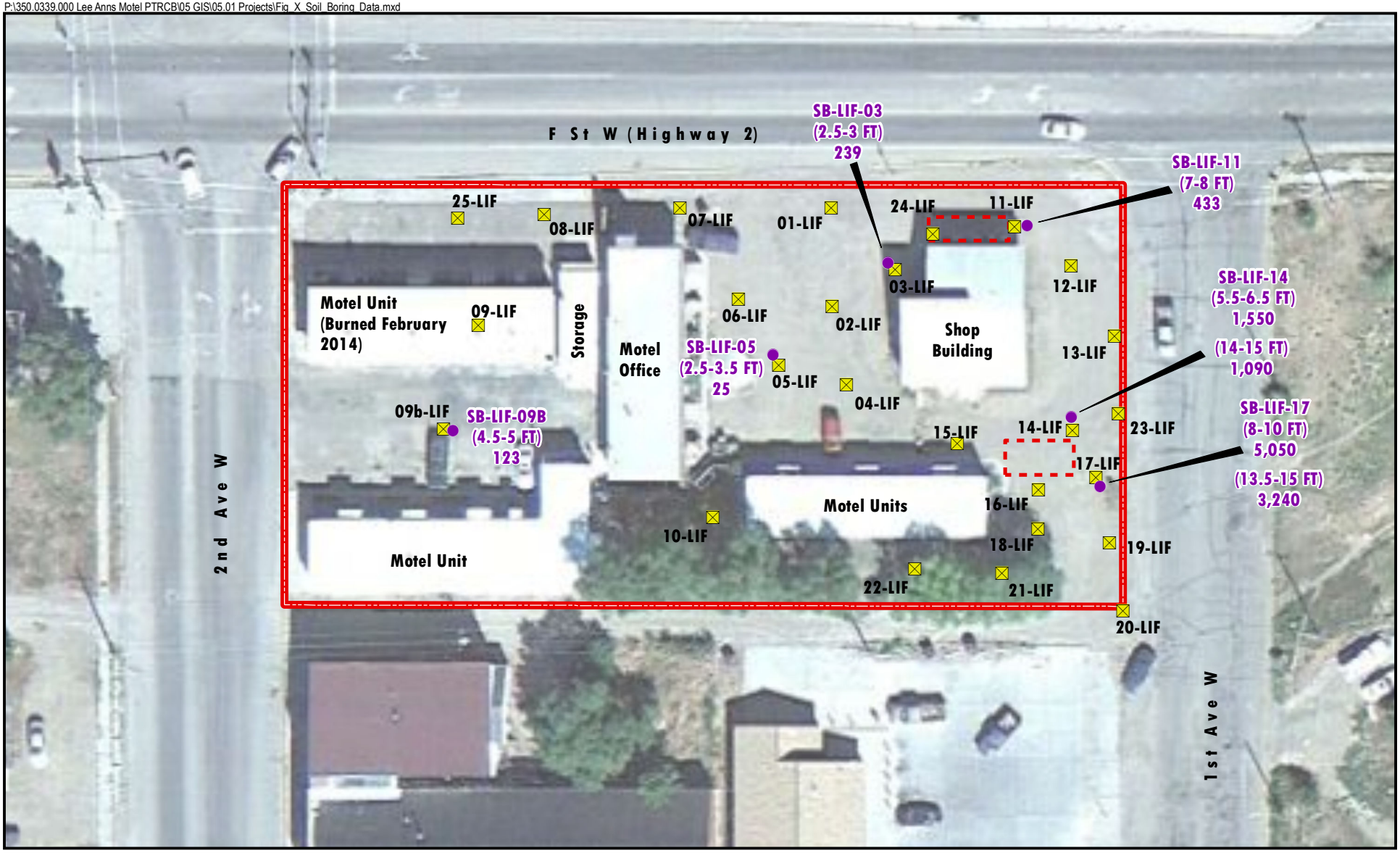
- 2018 Confirmation Soil Borings
- 2018 LIF Borings
- Approximate Property Boundary
- Former UST Basin

JBR Sample Locations (2013)

- Soil Borings
- Monitoring Well
- Piezometer

Site Plan
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 2

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\Fig_X_Soil_Boring_Data.mxd



Source: Google Earth Imagery, 2013

0 Feet 50

NewFields

NewFields Sample Locations (2018)

- 2018 Confirmation Soil Borings
- 2018 LIF Borings
- (13.5-15 FT) 3,240 — Confirmation soil sample depth and EPH concentration (milligrams/kilogram)
- Former UST Basins (Approximate)
- Approximate Property Boundary

Confirmation Soil Boring Results
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 3

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\Fig_9_TPH_EPH_GW_DATA.mxd

Source: Google Earth Imagery, 2013

N

0 Feet 50

NewFields

Approximate Groundwater Flow Direction

Former UST Basin (Approximate)

Approximate Property Boundary

Piezometer

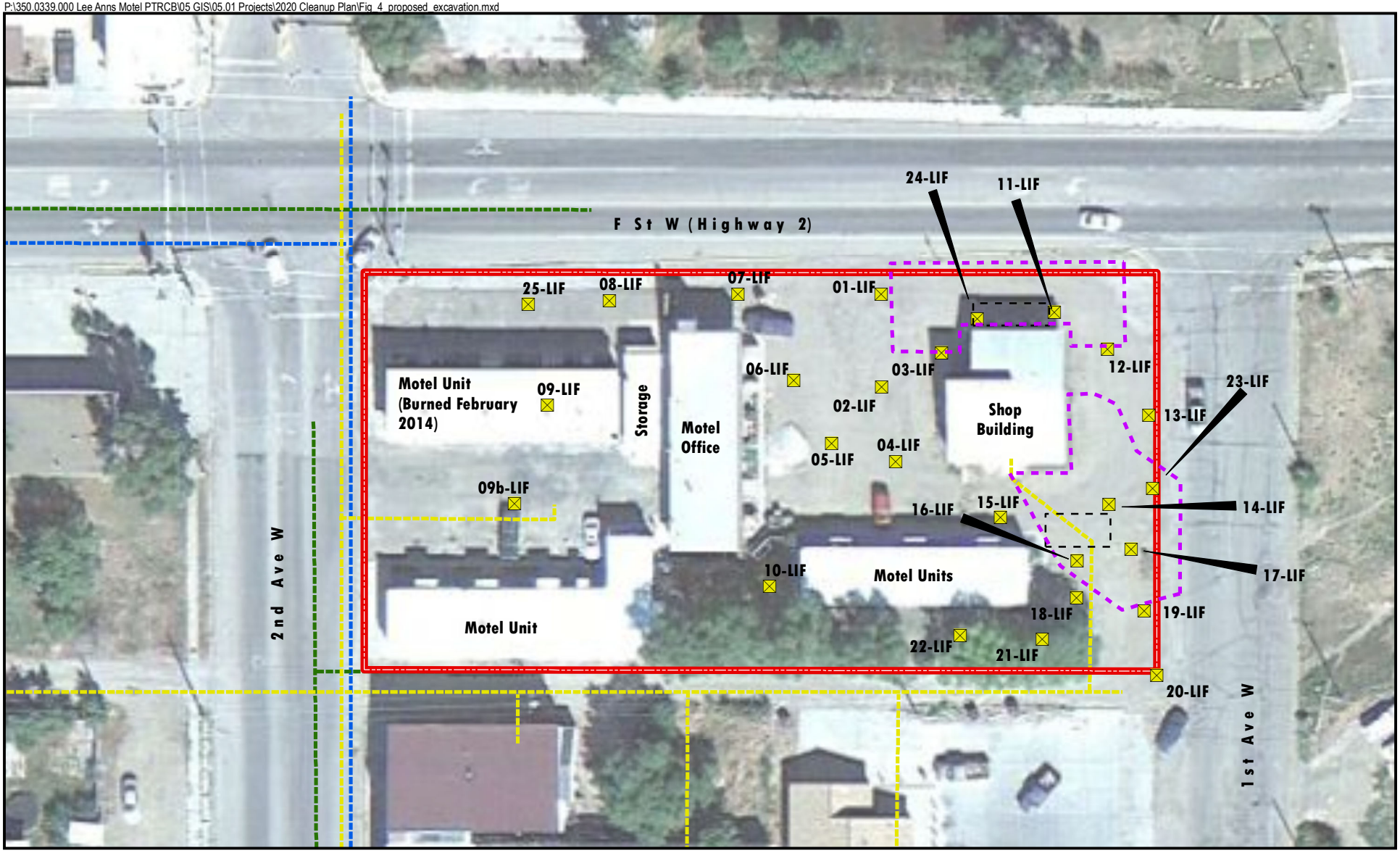
Monitoring Well

14,700 Total Purgeable Hydrocarbons (TPH, ug/L)

1,250 Total Extractable Hydrocarbons (TEH, ug/L)

2018 TPH and TEH Groundwater Results
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 4

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\2020 Cleanup Plan\Fig_4_proposed_excavation.mxd



Source: Google Earth Imagery, 2013

0 Feet 50

NewFields

Approximate Property Boundary

2018 LIF Borings

Former UST Basins (Approximate)

Proposed Excavation

Underground Utilities (Approximate)

Gas Service Line

Sanitary Sewer Service Line

Water Service Line

Proposed Excavation Map
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 5

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\2020 Cleanup Plan\Fig_4_proposed_excavation.mxd

Source: Google Earth Imagery, 2013

0 Feet 50

NewFields

Approximate Property Boundary

Former UST Basins (Approximate)

Proposed Excavation

New/Replacement Monitoring Well

Existing Monitoring Well

Underground Utilities (Approximate)

Gas Service Line

Sanitary Sewer Service Line

Water Service Line

Existing & Proposed Monitoring Wells
Former LeeAnn's
Motel 150 F Street
Poplar, Montana
FIGURE 6

APPENDIX A
Results of Previous Investigations

September 28, 2018

Latysha Pankratz
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

RE: Additional Remedial Investigation Report (RIR-02) – September 2018
Former LeeAnn's Motel, 150 F Street, Poplar, Roosevelt County, Montana
Facility ID #43-01701, Release #1537, WP ID 10609

Dear Ms. Pankratz,

Enclosed is the Additional Remedial Investigation Report (RIR-02) documenting work performed at the Former LeeAnn's Motel Site in Poplar, Montana. The work was performed in accordance with the Corrective Action Plan prepared by NewFields and approved by the Montana Department of Environmental Quality (DEQ) in a letter dated September 21, 2017.

If you have any questions regarding this RIR-02, please feel free to call me at (406) 549-8270.

Sincerely,

Levi McKay
Project Manager

Enclosure

cc: Keith Red Elk
Janice Pearson, USEPA
Michael Rinaldi, Roosevelt County Sanitarian
JoAnn Adydan, PTRCB

Additional Remedial Investigation Report (RIR-02)

Former LeeAnn's Motel
150 F Street
Poplar, Montana

Prepared for:
Keith Red Elk
150 F Street
Poplar, Montana 59255

Prepared by:
NewFields Companies, LLC
700 SW Higgins, Suite 15
Missoula, Montana 59801

NewFields

September 2018
Project No. 350.0339.000

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EXECUTIVE SUMMARY

NewFields Companies, LLC (NewFields) prepared this Additional Remedial Investigation Report (RIR-02) to document the remedial investigation performed at the Former Lee Ann's Motel property located at 150 F Street in Poplar, Montana. The RIR-02 has been prepared on behalf of Keith Red Elk (site owner) in accordance with Corrective Action Plan prepared by NewFields and approved by the Montana Department of Environmental Quality (DEQ) in a letter dated September 21, 2017.

To assess the extent of petroleum-impacted soil at the Site, a Laser-Induced Fluorescence (LIF) assessment was performed that included direct-push advancement of 26 LIF borings (01-LIF through 26-LIF) and six confirmation soil borings (SB-LIF-03, SB-LIF-05, SB-LIF-09B, SB-LIF-11, SB-LIF-14, and SB-LIF-17). The LIF investigation suggested possible LNAPL between 4 and 10 feet below ground surface (bgs) in most LIF borings. A deeper, secondary zone of signal response was identified from approximately 12 to 20 feet bgs in borings 14-LIF, 17-LIF, 18-LIF, 19-LIF, and 25-LIF. Contaminant concentrations in laboratory soil samples from confirmation borings did slightly correlate with LIF response observed with the Ultra Violet Optical Screening Tool (UVOST®).

Soil samples collected from four confirmation borings (SB-LIF-03, SB-LIF-11, SB-LIF-14, and SB-LIF-17) contained concentrations above Montana Tier 1 Risk Based Screening Levels (RBSLs) for volatile petroleum hydrocarbons (VPH) and/or extractable petroleum hydrocarbons (EPH) constituents. Results from groundwater samples collected from four existing monitoring wells (MW-1 through MW-4) showed groundwater at the Site is impacted with petroleum compounds at concentrations above Montana Tier 1 RBSLs.

NewFields performed a utility survey for the Site, which identified the potential for preferential migration of contaminants in groundwater and soil vapor along buried utility corridors. The presence of potentially-impacted groundwater is a concern for both water quality of the shallow unconfined aquifer in Poplar and for the potential degradation of the water supply lines in contact with impacted groundwater.

DEQ requested an abbreviated Remedial Alternatives Analysis (RAA) in this report. The preferred remedial alternative (RA) selected for the Site would use a combination of soil excavation in the most highly-impacted areas of the Site, and treatment of both soil and groundwater with *in situ* chemical oxidation (ISCO) to enhance the degradation of remaining petroleum and lower risks of long-term impacts to soil and groundwater.

Based on the soil and groundwater investigation, receptor survey and public utility survey, and an abbreviated matrix evaluation of remedial alternatives; NewFields recommends the following corrective actions at this time at the facility:

- Excavation of source material in vadose zone soils in the vicinity of the former northern and southern UST basins. The LIF investigation confirmed that these soils in the area of the former USTs are the primary source of contamination to groundwater, and as long as they remain, groundwater concentrations will not reduce to levels below DEQ RBSLs in a reasonable time frame. Consideration should be given to applying ISCO product to the excavation floor during backfilling to enhance the degradation of remaining petroleum in underlying groundwater.
- Two additional monitoring wells should be installed approximately 25 feet north and south of MW-4 to determine the extent of groundwater impacts.
- Following soil removal in these areas, additional groundwater data should be collected to evaluate contaminant trends. If concentrations remain above RBSLs, consideration should be given to a mixing zone closure for the petroleum release at the site, but only if it can be shown that the groundwater plume has not extended off site.

1.0 INTRODUCTION

NewFields Companies, LLC (NewFields) prepared this Additional Remedial Investigation Report (RIR-02) to document the remedial investigation performed at the Former Lee Ann's Motel property located at 150 F Street in Poplar, Montana (**Figure 1** and **Figure 2**). The RIR-02 has been prepared on behalf of Keith Red Elk (site owner) in accordance with Corrective Action Plan prepared by NewFields and approved by the Montana Department of Environmental Quality (DEQ) in a letter dated September 21, 2017.

2.0 SUMMARY OF SITE CONDITIONS

2.1 SITE SETTING

The Site is located in Poplar, Montana (**Figure 1**). As shown in **Figure 2**, the Site consists of five structures: a former laundry building, three motel buildings, and a shop/abandoned gas station building. The northern-most motel building burned in February 2014. The Site is bordered to the west by 2nd Avenue West, to the east by 1st Avenue West, and to the north by F Street West (concurrent with U.S. Highway 2). Another abandoned gas station is located west of the Site across 2nd Avenue West. The US Postal Service and an unoccupied office building are located across the alley to the south of the Site.

2.2 GEOLOGY, HYDROGEOLOGY, AND SOILS

The geology surrounding Poplar ranges from Cretaceous to Quaternary in age. Based on the Source Water Delineation and Assessment Report for Poplar prepared by DEQ (2002), the city is built on Wisconsin-age glacial till ranging from 56 to 100 feet in thickness. To the south of Poplar, Quaternary alluvium is present across the Missouri River valley ranging from 30 to 100 feet in thickness. North of Poplar, Quaternary alluvium blankets the Poplar river valley ranging from 22 to 56 feet in thickness. Underlying the alluvium and glacial deposits is up to 1000 feet of Upper Cretaceous Bearpaw shale (DEQ, 2002).

Three hydrostratigraphic units underlie the City of Poplar: perched saturated zones, the alluvium and glacial deposits aquifer, and the bedrock aquifer (Bearpaw shale) (Tetra Tech, 1990). The perched saturated zones exist in more permeable lenses of sandy clay or sandy silt within the clayey till. The extent of perched saturated zones is unknown but they likely exist throughout Poplar (Tetra Tech, 1990). Beneath the fine-grained glacial till is a semi-confined, unconsolidated sand and gravel aquifer made up of alluvium and glacial deposits. The three wells that supply the City of Poplar are situated near the Poplar River, and are completed at depths of approximately 80 to 90 feet below ground surface (bgs). All three wells are finished in the unconsolidated, semi-confined aquifer within Pleistocene to Holocene Missouri River alluvium and glacial deposits. Static water levels measured at the time the City water supply wells were drilled (1946, 1975 and 1979) ranged from 17.5 to 45 feet bgs. The Bearpaw shale aquifer, beneath the sand and gravel aquifer, at an approximate depth ranging from 70-150 feet bgs, has limited use and generally wells are located in the glacially eroded and weathered upper portions of the formation.

Shallow groundwater flow beneath Poplar is complicated by a leaky municipal water system, and has multiple apparent flow directions based on measurement of water elevations in monitoring wells (DEQ,

2002). Based on the U.S. Geological Survey (USGS) Poplar topographic quadrangle (1:24,000-scale), the flow direction of shallow groundwater in most of Poplar is likely to the south toward the Missouri River, with possible west to southwest flow near the Poplar River (**Figure 1**). Information provided by DEQ (DEQ, 2002) indicates that groundwater in Poplar flows either to the northeast or southwest, depending on the location. The Montana Bureau of Mines and Geology (MBMG) Ground-Water Information Center (GWIC) database (MBMG, 2018) contains records for 48 wells in Section 12. Well depths ranged from 16 to 117 feet bgs. The average static water level is listed as 20 feet bgs.

According to the U. S. Department of Agriculture (USDA, 2017) database, soils in this area are classified as the Williams loam unit. This unit consists of soils formed in loamy glacial till. A typical Williams loam soil profile consists of loam from 0 to 7 inches bgs, then clay loam from 7 to 60 inches bgs.

The City of Poplar has a public water system to serve its nearly 3,000 residents (DEQ Public Water System ID #00310). The public water system was in operation until 2012, when the supply wells were shut down due to the migration of brine contamination from historic oil and natural gas drilling located north of Poplar (USGS, 2014). The non-operational water supply wells are located more than 1,300 feet cross-gradient from the Site. Each of the wells is screened at depths greater than or equal to 57 feet below ground surface (ft bgs), completed in quaternary gravels located below the thick (approximately 50 feet) sequence of glacial till that is located immediately below the ground surface throughout Poplar (DEQ 2002). In 2012, the City of Poplar was connected to the newly formed Assiniboine & Sioux Rural Water Supply System (ASRWSS). The ASRWSS sources raw water directly from the Missouri River near Wolf Point, approximately 16 miles downgradient of the Site (Watson, 2002). The raw intake water is treated at a water treatment plant near Wolf Point and transmitted via pipeline to Poplar.

2.3 Contaminants of Potential Concern

Contaminants of concern include the following:

- Gasoline – VPH;
- Diesel Fuel – EPH; and
- Volatile organic compounds (VOCs; ethylene dibromide [EDB] and 1,2 dichloroethane [1,2-DCA])

3.0 BACKGROUND

The following information provides details on the discovery of contamination, type of products stored at the Site, type of contamination at the Site, when the release was reported, and a summary of actions at the Site since the contamination was discovered.

- An automotive fueling station was operated on the northeast corner of the Site which operated for an unknown period. The underground storage tanks (USTs) tanks were reportedly installed in 1963 and last used in 1965.
- The petroleum release (#1537) was discovered at Lee Ann's Motel in March 1990 during removal of two 3,000-gallon gasoline USTs and one 4,000-gallon diesel UST (**Figure 3**). Holes were

discovered in two of the USTs and soil samples indicated that impacted soil remained adjacent and beneath the USTs. When removed in 1990, the soil sample collected from west end of the diesel tank contained 14,620 milligrams per kilogram (mg/kg) total petroleum hydrocarbons (TPH) and the soil sample collected from the east end of the diesel tank had a concentration of 8,190 mg/kg TPH.

- During the UST removal, approximately 60 cubic yards (cy) of impacted soil were hauled to the local landfill and disposed.
- In May 2006, two monitoring wells (MW-1 and MW-2; **Figure 2**) were installed, one located in the former gasoline UST basin and the other in the former diesel UST basin. The initial round of groundwater samples was deemed potentially invalid due to possible tampering of the wells. An unknown amount of what appeared to be dish detergent was introduced into the monitoring wells by an unknown party. Both wells were resampled in May 2006. Concentrations of Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH) were above DEQ Tier 1 Risk-Based Screening Levels (RBSLs) in both samples in May 2006.
- In May 2012, groundwater samples collected from both MW-1 and MW-2 showed elevated concentrations of gasoline constituents, with EPH fractions elevated in MW-2.
- In October 2013, thirteen soil borings (**Figure 2**) were completed and three additional monitoring wells (MW-3, MW-4, and MW-5) were installed by JBR Environmental Consultants, Inc. (JBR, 2013). Soil samples from eight of the soil borings exceeded RBSLs for either VPH or EPH constituents. Two of the newly-installed wells (MW-3 and MW-4) contained sufficient water to collect a sample, but MW-5 did not. Groundwater samples from each of the four monitoring wells exceeded RBSLs for VPH or EPH constituents.
- In October 2014, NewFields installed a soil vapor probe as part of a U.S. Environmental Protection Agency (EPA) Brownfields Phase II Environmental Site Investigation (NewFields, 2015). This probe was located near the corner of the storage building north of the portion of motel that burned. The soil vapor sample from this probe exceeded the C9-C12 Aliphatic industrial RBSL.

Potential threats to human health and the environment associated with the petroleum release at the facility include potential direct contact exposure to impacted subsurface soils by construction workers; potential petroleum vapor intrusion and inhalation, exposure to groundwater below the site, if used, and offsite migration of petroleum constituents in groundwater.

4.0 PURPOSE AND OBJECTIVES

The work proposed in this CAP is intended to comply with the requirements defined in the DEQ letter dated September 21, 2017. The specific goal of the investigation is to obtain site information to determine extent and magnitude of soil and groundwater contamination in order to develop a comprehensive remediation plan for the Site. Specific tasks to achieve these goals included:

- Performing a Laser Induced Fluorescence (LIF) investigation to identify both vertically and horizontally petroleum-impacted soil zones in the subsurface throughout the Site, and at adjacent underground utility corridors.
- If feasible, collecting groundwater monitoring samples from five existing groundwater monitoring wells to refine groundwater impacts at the Site.
- Identifying nearby underground utilities to evaluate if they may act as preferential pathways for migration of contaminants.

5.0 INVESTIGATION METHODS AND RESULTS

NewFields performed investigative activities on January 15 through January 20, 2018. Methods and observations from the investigation are presented in the sections below.

5.1 Laser Induced Fluorescence (LIF) and Direct-Push Soil Boring Investigation

To evaluate the extent of soil and groundwater petroleum impacts, a total of 26 LIF borings (01-LIF through 26-LIF) were advanced by Dakota Technologies Company, LLC (Dakota) using a direct push drilling rig equipped with an Ultra Violet Optical Screening Tool (UVOST®) LIF probe. The Dakota High Resolution Site Characterization Report (Dakota, 2018) documenting the LIF study is included in **Appendix A**. All LIF borings were advanced within the property boundary with the exception of 20-LIF, which was advanced near 1st Ave W near the southeast property boundary (**Figure 3**). The LIF borings ranged in depth from approximately 7.2 to 27 feet below ground surface (bgs), with one boring terminated at a refusal depth of 4.2 feet bgs (09-LIF). A subsequent boring, 09b-LIF, was advanced to 20 feet bgs between the two western motel units (**Figure 3**).

As shown on **Figure 3**, a total of six follow-up borings (SB-LIF-03, SB-LIF-05, SB-LIF-09B, SB-LIF-11, SB-LIF-14, and SB-LIF-17) were advanced at locations immediately adjacent to LIF borings to collect confirmation soil samples for analytical testing. Soil sample results were correlated to the UVOST® instrument response data. In accordance with the CAP, the soil samples were collected from LIF borings with high, medium, and low UVOST® response. Soil sampling was completed by advancing direct-push soil borings to the soil depth interval indicated in the draft LIF log and ranged from 2.5 to 15 feet bgs. The samples were submitted to Energy Labs in Billings, Montana for laboratory analysis of Extractable Petroleum Hydrocarbons (EPH), Volatile Petroleum Hydrocarbons (VPH), and lead scavengers (Environmental Protection Agency [EPA] Method 8260B and Method 8011) in accordance with the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases. The laboratory analytical report for confirmation soil samples are included in **Appendix B**.

5.2 Comparison of Soil Boring Data and UVOST® Response

Results of the confirmation soil samples are shown in **Tables 1** and **Table 2**. As shown in **Table 1**, at least one VPH analyte exceeded a DEQ Tier 1 RBSLs (subsurface soil, groundwater <10 feet) in five samples from three soil borings (SB-LIF-11, SB-LIG-14, and SB-LIF-17). The sample collected from 7-8 feet in SB-LIF-11 (north of the tank basin and downgradient of former dispensers) showed the highest concentrations of

VPH constituents. The sample from B-11 had RBSL exceedances for benzene, ethylbenzene, aliphatics (C5-C8), and aromatics (C9-C10 and C9-C12). As shown in **Table 1**, additional VPH exceedances were observed for C9-C10 aromatics in samples from SB-LIF-14 (5.5-6.5 and 14-15 feet bgs) and SB-LIF-17 (8-10 and 13.5-15 feet bgs). Total extractable hydrocarbons (TEH) were exceeded in samples from borings SB-LIF-03, SB-LIF-11, SB-LIF-14, and SB-LIF-17 (**Table 2**). The most elevated concentrations of EPH constituents were observed in the sample from 8-10 feet bgs in SB-LIF-17 (**Table 2**).

According to the LIF Report prepared by Dakota (2018), light, non-aqueous phase liquid (LNAPL) was identified in most LIF borings, with the exception of borings 09-LIF, which was terminated after refusal at 4.2 feet, and borings 16-LIF and 20-LIF (**Figure 3**). Excluding the "pre-probe" depths, maximum signal response was generally observed between 4 and 10 feet bgs in most LIF borings. A deeper, secondary zone of signal response was identified from approximately 12 to 20 feet bgs in borings 14-LIF, 17-LIF, 18-LIF, and 19-LIF. The signal response in these borings were the most elevated of all borings (**Figure 4**).

In general, the analytical data correlated moderately well with the UVOST signal response data. Where intermediate to low UVOST® signal response was observed in 05-LIF, 09b-LIF, and 03-LIF (**Figure 4**), concentrations of petroleum constituents were relatively low (**Table 2**). Where LIF signal response was higher in 14-LIF and (55 %RE) and 17-LIF (24 %RE) near the former tank basin (**Figure 3**), TPH concentrations were higher. There were some outliers to this general finding. In boring 11-LIF, TPH concentrations were 545 mg/kg, yet the UVOST® signal response did not exceed 2% RE. Similarly, at 11.5-13.5 feet in boring 17-LIF, the UVOST signal was 12% RE, yet TEH and TPH concentrations were the second highest detected of all soil samples (**Table 1** and **Table 2**).

5.3 Maps and Technical Information

To help understand the vertical and horizontal petroleum impacts at the site, Dakota prepared a 2-D and 3-D model using the LIF signal response data. Prior to data processing, LIF data from "Pre-Probe" depths where Dakota advanced borehole into the subsurface without the UVOST® probe (generally 0 to 3.5 feet bgs) were discarded. Maximum LIF readings (% Reference Emitter [RE]) in each boring are presented on **Figure 4**. Dakota developed a three dimensional (3D) plume using a krieging analysis of all LIF boring data greater than 2% RE. Results of the krieging analysis, including cross sections, are depicted in **Figures 4** through **8**. All LIF boring logs are included in the Dakota Report (**Attachment A**).

5.4 Groundwater Sample Collection

Groundwater samples were collected from monitoring wells MW-1, MW-2, MW-3, and MW-4 on January 20, 2018. The groundwater analytical report is included in **Appendix B**. Monitoring well MW-5 was purged dry on January 19, 2018 and allowed to recover; however, there was insufficient water to collect a sample on January 20, 2018 from this well.

Static water levels (SWLs) were measured with a decontaminated groundwater probe prior to well purging. Groundwater sampling was completed using low-flow methodology using a bladder pump in 2-inch monitoring wells (MW-1 and MW-2) and with a peristaltic pump in 1-inch monitoring wells (MW-3 and MW-4). Samples were collected when stabilization of standard field parameters was achieved.

Groundwater samples were submitted to Energy Lab in Billings, Montana for analysis of VPH, EPH screen and lead scavengers (EPA Method 8260B and EPA Method 8011) as required by the Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases. All groundwater samples were analyzed for EPH fractions including C11-C22 Aromatics, C9-C18 Aliphatics, C19-C36 Aliphatics, and TEH. Groundwater sampling field forms are included as **Appendix C**.

Groundwater results are presented in **Table 3** and **Table 4**. Groundwater TPH and THE results are shown in **Figure 9**, and the analytical reports are included in **Appendix B**. Results of the groundwater samples collected from MW-1, MW-3, and MW-4 showed DEQ Tier 1 RBSL exceedances for benzene, C5-C8 aliphatics, and total purgeable hydrocarbons (TPH). Additional exceedances were observed for C9-C10 aliphatics and C9-C12 aromatics in the groundwater sample from MW-1 (**Table 3**). All samples exceeded the EPH screening value of 1,000 μg/l and were subsequently fractionated. Results from the fractionation showed RBSL exceedances for C11-C22 aromatics and C9-C18 aliphatics in the groundwater sample from MW-2, and total extractable hydrocarbons (TEH) in samples from MW-1 and MW-2 (**Table 4**). Additonal exceedances were observed for 1,2-dichloroethane (DCA) in samples from wells MW-1, MW-3, and MW-4 (**Table 4**).

Groundwater elevations determined from SWL measurements in January 2018 suggest a groundwater flow direction to the southwest, as shown on **Figure 10**. Depth-to-groundwater measurements are presented on **Table 5** and ranged from approximately 7.92 feet below top of casing (btc) in MW-3 to 9.03 feet btc in MW-2 (**Table 5**, **Appendix C**). The static water level measured in MW-5 (6.57 ft. btc) may not represent an accurate groundwater elevation due to the rapid drawdown and minimal recovery of this well (**Appendix C**).

5.5 Utility Investigation

NewFields completed a field and desktop evaluation of the location, depth, and construction material of the adjacent private and public utility corridors. All waterlines, sewer lines, and other private and public utilities were mapped using onsite locates for public and private utilities, and using City of Poplar Sewer District as-builts. Gas and electric drawings were obtained from Montana Dakota Utilities (MDU). Public utilities are shown in **Figure 10** and results of the utility investigation are described below in **Section 6.4**.

6.0 DISCUSSION AND INTERPRETATION

6.1 LIF INVESTIGATION

Results from the LIF investigation noted possible LNAPL observed between 4 and 10 feet bgs in most LIF borings (01-LIF, 02-LIF, 03-LIF, 04-LIF, 05-LIF, 06-LIF, 07-LIF, 08-LIF, 09b-LIF, 11-LIF, 12-LIF, 13-LIF, 15-LIF, 21LIF, 22-LIF, 23-LIF, and 24-LIF) [see **Figure 4** through **8**]. A deeper, secondary zone of signal response was identified from approximately 12 to 20 feet bgs in borings 14-LIF, 17-LIF, 18-LIF, 19-LIF, and 25-LIF. The signal response in 14-LIF, 17-LIF, and 19-LIF borings were the most elevated of all borings (**Figure 6** and **Figure 8**).

To correlate UVOST® response against subsurface soil screening levels, soil samples were collected from six follow-up borings (SB-LIF-03, SB-LIF-05, SB-LIF-09B, SB-LIF-11, SB-LIF-14, and SB-LIF-17) adjacent to each respective LIF boring. In general, a comparison of the analytical results to LIF measurements showed moderately good correlation between UVOST® response and analytical data; however, there were a few outliers. For example, the sample from boring 11-LIF exhibited TPH concentrations of 545 mg/kg, yet the UVOST® signal response did not exceed 2% RE. Similarly, at 11.5-13.5 feet in boring 17-LIF the UVOST signal was 12% RE, yet TEH and TPH concentrations were the second highest detected of all soil samples (**Table 1** and **Table 2**).

6.2 SUBSURFACE SOIL PETROLEUM IMPACTS

Results of the subsurface soil sampling showed that multiple VPH constituents were detected at concentrations exceeding RBSLs in SB-LIF-11 near the former gasoline UST basin. The RBSL for C9-C10 aromatics was also exceeded in SB-LIF-14 and SB-LIF-17 adjacent the former diesel UST basin. The samples collected from SB-LIF-14 and SB-LIF-17 showed the highest concentrations of EPH constituents. Soil samples collected in 2013 (JBR) identified petroleum impacts along the Highway 2 right-of-way near the motel office in borings SB-10 and SB-5, and east of the Motel office in SB-6 and SB-4 (**Figure 2**). The subsurface soil in the vicinity of these borings did not register elevated UVOST® response in 2018 LIF borings. Potential petroleum impacts may be highly degraded in this area and not responsive to the UVOST® probe as observed in SB-LIF-11.

The lateral extent of the possible LNAPL identified by UVOST® response is displayed on **Figures 4** through **8**. Laboratory results and LIF data indicate that soil impacts are concentrated in the area of the former UST tanks near the northeast property boundary and extend south and east towards 1st Ave W (**Figure 3**). The LIF investigation results indicate that subsurface soils are primarily impacted from approximately 4 and 10 feet bgs and from approximately 12 to 20 feet bgs in the vicinity of the former diesel UST basin (**Figure 3**).

6.3 GROUNDWATER RESULTS

Monitoring wells MW-1, MW-2, MW-3, and MW-4 were sampled for VPH, EPH, and lead scavengers to assess groundwater quality. Results of the groundwater samples showed DEQ Tier 1 RBSL exceedances for benzene, C5-C8 aliphatics, C9-C10 aliphatics, C9-C12 aromatics, and TPH (**Table 3**). Results from the

EPH fractionation showed RBSL exceedances for C11-C22 aromatics and C9-C18 aliphatics, TEH, and DCA (**Table 4**). The most elevated VPH constituents were observed in MW-1 located in the former northern UST basin, decreasing from west to east as shown in monitoring wells MW-3 and MW-4. The groundwater sample from MW-2 in the southeast UST basin was below RBSLs for all VPH constituents (**Figure 3**). Conversely, EPH fraction concentrations were detected in only monitoring well MW-2. These results are consistent with the previously reported gasoline north of the Shop Building and diesel UST southeast of the Shop Building (JBR, 2013).

The dissolved-phase plume is estimated to encompass much of the site; extending from the former northern gasoline UST to the west and from the former southern UST basin southeast to 1st Ave W (**Figure 9**).

Groundwater elevations determined from SWL measurements in January 2018 suggest a groundwater flow direction to the southwest, as shown on **Figure 10**. Depth-to-groundwater measurements ranged from approximately 7.9 feet btc to 9.0 feet btc. The static water level measured in MW-5 may not represent an accurate groundwater elevation due to the rapid drawdown and minimal recovery of this well (**Appendix C**). The groundwater elevation from MW-5 was not considered for the contours generated in **Figure 10**.

6.4 Public Utility Investigation

Figure 11 shows the approximate locations of public utilities adjacent the Site. Buried utilities include water lines along 2nd Ave W; sanitary sewer lines underlying Highway 2, 2nd Ave W, and the alley south of the property boundary; and a gas service lines under 2nd Ave W and the alley south of the property boundary running towards the Shop Building and between Motel Units (**Figure 11**). Depths of burial for water lines range between approximately 8 to 10 ft bgs, and sewer line burial depths range between approximately 11.5 to 14 ft bgs. An MDU representative confirmed that the depth of burial for gas lines is typically between 3 to 6 ft bgs in the Poplar area.

As described in **Section 5.4**, depth to groundwater measurements in Site monitoring wells range from 7.9 to 9.0 ft bgs. Groundwater elevation at the Site are above the elevation of water and sewer lines, and, as such, public utilities could potentially create a preferential migration pathway for petroleum contaminates in vapor and groundwater.

7.0 ABBREVIATED REMEDIAL ALTERNATIVES ANALYSIS

At the request of DEQ, NewFields used data collected from the January 2018 LIF investigation to prepare an abbreviated Remedial Alternatives Analysis (RAA). A previous RAA prepared by JBR (2014) identified five remedial alternatives including no action, monitored natural attenuation (MNA), *in situ* bioventing, soil removal and land treatment, and gravity-fed liquid injection. The preferred alternative identified in the RAA is *in situ* bioventing. According to JBR (2014), this remedy would take up to 30 years to implement.

7.1 Preliminary Remedial Alternative Screening Evaluation

The following five remedial alternatives (RAs) were evaluated: monitored natural attenuation with groundwater monitoring (no action), excavation and disposal of contaminated soil, limited excavation of contaminated soil, limited excavation of contaminated soil and *in situ* chemical oxidation (ISCO), and *in situ* chemical oxidation. The matrix RA is presented below in **Table 6**.

7.2 Preliminary Selection of a Preferred Alternative

Based on comparison of the five remedial alternatives described above to the six criterion recommended by the DEQ (cost, performance, reliability, implementability, safety, and protection of public health and the environment), Alternative 4 is the preferred remedial alternative. This alternative would involve using a combination of soil excavation of accessible petroleum-impacted soils in the source area on the Site, and treatment of both soil and groundwater during soil backfill with ISCO to limit future migration of contaminants in groundwater to the south/southeast. Alternative 4 was selected over the other alternatives evaluated because it is expected to achieve substantial and long-term risk reduction through excavation and *in situ* treatment, and would allow the property to be re-used for commercial/industrial purposes. The preferred alternative would also achieve substantial human health risk reduction through treatment impacted groundwater. The preferred alternative reduces the risk within a reasonable timeframe and is cost-effective because it attains a high level of risk reduction compared to cost of the other alternatives. The preferred alternative protects public health, safety, and welfare of the environment, would comply with environmental requirement, criterion, and limitations (ERCLs), would mitigate risk, would be effective in the short- and long-term, and is practicable, implementable, and cost-effective compared to other alternatives having similar risk reduction.

Table 6 - Remedial Alternatives (RA) Matrix Evaluation

Alternative	Evaluation Criteria						
	Cost	Performance	Reliability	Implementable	Safety	Public Health & Environment	Recommendation
1. Natural Attenuation	$150,000[1]	Groundwater cleanup levels would not be met for many years	Reliable	Readily Implementable	Safe to implement	Potential for continued soil leaching, direct contact risks, and plume migration	Reject due to failure to meet cleanup requirements
2. Soil Excavation, Disposal	$500,000[2]	RA would remove leaching to groundwater direct contact soil risks	Reliable	Readily Implementable, would cause disruption of business/ neighborhood	Safe to implement with HASP protocols	Dust and vapors released to atmosphere	Retain, although cost may be prohibitive
3. Limited Soil Excavation, Disposal	$330,000[3]	RA would partially remove leaching to groundwater direct contact soil risks	Partially Reliable	Readily Implementable, would cause disruption of business/ neighborhood	Safe to implement with HASP protocols	Dust and vapors released to atmosphere	Reject, would not remove impacted soil beneath existing improvements adjacent to the Site or beneath buildings
4. Limited Excavation, Treatment using ISCO	$390,000[4]	RA would remove most leaching to groundwater and most direct contact risks if pilot test indicates technology is appropriate	Partially Reliable	Readily Implementable, would cause disruption of business/ neighborhood	Partially Safe with HASP. Strong oxidant stored onsite	Dust and vapors released to atmosphere, oxidant storage and off-gassing	Retain, would remove areas of the most highly-impacted soil and treat both soil and groundwater areas beneath existing improvements adjacent to the Site
5. Soil Treatment using ISCO	$200,000[5]	If pilot test indicates the technology is appropriate, then the alternative meets performance requirements	Marginally Reliable	Readily Implementable, would cause disruption of business/ neighborhood	Partially Safe with HASP. Strong oxidant stored onsite	Oxidant storage and off-gassing	Reject, disproportionately high cost compared to performance and reliability.

Notes:

[1] Assumes semi-annual groundwater monitoring for 15 years at a cost of $10,000/year.

[2] Assumes semi-annual groundwater monitoring for 5 years, and excavation of all impacted soil, both onsite and off-site.

[3] Assumes semi-annual groundwater monitoring for 8 years, and excavation of all soil onsite.

[4] Assumes semi-annual groundwater monitoring for 5 years, excavation of onsite soil, ISCO pilot test and subsequent treatments of ISCO.

[5] Assumes semi-annual groundwater monitoring for 4 years, ISCO pilot test and subsequent treatments of ISCO.

8.0 RECOMMENDATIONS

NewFields recommends the following actions to address the petroleum impacts at the site at this time:

- Excavation of source material in vadose zone soils in the vicinity of the former northern and southern former UST basins. The LIF investigation confirmed that these soils in the area of the former USTs are the primary source of contamination to groundwater, and as long as they remain, groundwater concentrations will not reduce to levels below DEQ RBSLs in a reasonable time frame. Consideration should be given to applying *in situ* chemical oxidation (ISCO) product to the excavation floor during backfilling to enhance the degradation of remaining petroleum in underlying groundwater.
- Two additional monitoring wells should be installed approximately 25 feet north and south of MW-4 to determine the extent of groundwater impacts.
- Following soil removal in these areas, additional groundwater data should be collected to evaluate contaminant trends. If concentrations remain above RBSLs, consideration should be given to a mixing zone closure for the petroleum release at the site, but only if it can be shown that the groundwater plume has not extended off site.

9.0 REFERENCES

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TABLES

Table 1 - Soil Boring Volatile Petroleum Hydrocarbon Results

Former Lee Ann's Hotel

Poplar, Montana

Sample ID	MTBE	Benzene	Toluene	Ethyl-benzene	m+p-Xylenes	o-Xylenes	Total Xylenes	Naphthalene	C5-C8 Aliphatics	C9-C10 Aromatics	C9-C12 Aliphatics	Total Purgeable Hydrocarbons
Tier 1 RBSLs [1]	**0.078**	**0.07**	**21**	**26**	**320**	**320**	**320**	**12**	**220**	**130**	**640**	n/a
SB-LIF-03 2.5-3 Feet	<0.12	**0.049**	**0.084**	**0.11**	**0.22**	**0.064**	**0.29**	**0.2**	<2.4	**2.3**	**3.8**	**6.7**
SB-LIF-05 2.5-3.5 Feet	<0.12	<0.059	<0.059	**0.17**	<0.059	<0.059	<0.059	**0.37**	<2.4	**4.8**	**8.2**	**12**
SB-LIF-09B 4.5-5 Feet	<0.11	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<0.11	<2.1	<2.1	<2.1	<2.1
SB-LIF-11 7-8 Feet	<1.2	**3.4**	**3.3**	**28**	**15**	<2.6	**15**	**8.1**	**617**	**462**	**766**	**1,480**
SB-LIF-14 5.5-6.5 Feet	<0.59	<0.29	<0.29	<0.6	<0.29	<0.29	<0.29	<0.59	<12	**173**	**224**	**455**
SB-LIF-14 14-15 Feet	<0.59	<0.3	<0.3	<1.2	<0.3	<0.3	<0.3	<0.59	**12**	**209**	**275**	**555**
SB-LIF-17 8-10 Feet	<0.59	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.59	**10**	**206**	**270**	**571**
SB-LIF-17 13.5-15 Feet	<0.59	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	**6.1**	**21**	**220**	**331**	**625**

Notes: [1]Tier 1 Risk-Based Screening Levels (RBSLs) shown are from Table 2, Tier 1 Subsurface soil (< 10 ft. to groundwater), May 2018.

n/a indicates that no Tier 1 RBSL is published for Total Purgeable Hydrocarbons.

ND indicates that the parameter was not detected above the laboratory reporting limit.

MTBE – Methyl-Tertiary Butyl Ether

TPH – Total Petroleum Hydrocarbons

Bolded result indicates a detected parameter below Tier 1 RBSLs.

Bolded/Shaded result indicates the concentration exceeded the RBSL.

Table 2 - Soil Boring Extractable Petroleum Hydrocarbon & Lead Scavenger Results

Former Lee Ann's Hotel

Poplar, Montana

Sample ID	EPH Screen	C11-C22 Aromatics	C9-C18 Aliphatics	C19-C36 Aliphatics	Total Extractable Hydrocarbons (TEH)	1,2-Dichloroethane	1,2-Dibromoethane
DEQ Tier 1 RBSLs[1]	200 [2]	**370**	**900**	**200,000**	**200**	**0.019**	**0.000086**
SB-LIF-03 2.5-3 Feet	**239**	**22**	**28**	**110**	**220**	<0.006	<0.00024
SB-LIF-05 2.5-3.5 Feet	**25**	--	--	--	--	<0.0059	<0.00024
SB-LIF-09B 4.5-5 Feet	**123**	--	--	--	--	<0.0053	<0.00021
SB-LIF-11 7-8 Feet	**433**	**53**	**228**	<12	**545**	<0.075	<0.00023
SB-LIF-14 5.5-6.5 Feet	**1,550**	**624**	**736**	**141**	**1,480**	<0.0058	<0.00024
SB-LIF-14 14-15 Feet	**1,090**	**429**	**528**	**111**	**1,020**	<0.0057	<0.00024
SB-LIF-17 8-10 Feet	**5,050**	**2,150**	**2,560**	**613**	**5,450**	<0.0058	<0.00023
SB-LIF-17 13.5-15 Feet	**3,240**	**1,320**	**1,510**	**372**	**3,090**	<0.0058	<0.00024

Notes:

[1]Tier 1 Risk-Based Screening Levels (RBSLs) shown are from Table 2, Tier 1 Subsurface soil (< 10 ft to groundwater), May 2018.

[2]Concentration shown is the RBCA EPH screening level.

ND indicates that the parameter was not detected above the laboratory reporting limit.

Bolded result indicates a detected parameter below Tier 1 RBSLs.

Bolded/Shaded result indicates the concentration exceeded the RBSL.

-- indicated parameter was not analyzed.

Table 3 - Groundwater Volatile Petroleum Hydrocarbon Results

Former LeeAnn's Hotel

Poplar, Montana

Well ID	Sample Date	MTBE	Benzene	Toluene	Ethyl-benzene	m+p-Xylenes	o-Xylenes	Total Xylenes	Naphthalene	C5-C8 Aliphatics	C9-C10 Aromatics	C9-C12 Aliphatics	Total Purgeable Hydrocarbons
Tier 1 RBSLs[1]		**30**	**5**	**1,000**	**700**	**10,000**	**10,000**	**10,000**	**100**	**650**	**1,100**	**1,400**	**1,000**
MW-1	5/19/2006	<50	**3,900**	**240**	**1,600**	--	--	**1,400**	**490**	**5,600**	**4,000**	**2,600**	**22,000**
MW-1	5/16/2012	<200	**2,400**	**54**	**55**	--	--	**264**	**74**	**5,560**	**1,280**	<4,000	**7,270**
MW-1	10/22/2013	<20	**2,670**	**64**	**144**	--	--	**291**	**71**	**6,310**	**1,150**	**1,220**	**9,520**
MW-1	1/20/2018	<50	**3,610**	**106**	**610**	**298**	<25	**298**	**100**	**8,580**	**1,420**	**2,200**	**14,700**
MW-2	5/19/2006	<2	<1	<10	<10	--	--	<15	<2	**170**	**390**	**580**	**1,900**
MW-2	6/13/2006	<2	**3**	**6**	**5**	--	--	**26**	**19**	<100	**390**	<100	**630**
MW-2	5/16/2012	<5.0	**60**	**1.9**	**2.1**	--	--	**9**	**1**	**112**	**231**	**83**	**454**
MW-2	10/22/2013	<1.0	<0.50	<0.50	<0.50	--	--	<4.0	**1.6**	<20	**135**	**103**	**270**
MW-2	1/20/2018	<1	<0.5	<0.5	<0.5	<0.5	<3	<3	<1	<20	**133**	**142**	**360**
MW-3	10/24/2013	<20	**2,300**	**136**	**779**	--	--	**476**	**102**	**7,340**	**2,490**	**3,100**	**12,800**
MW-3	1/20/2018	<20	**2,240**	**70**	**64**	**174**	**17**	**190**	**32**	**5,650**	**694**	**920**	**8,530**
MW-4	10/24/2013	<1.0	**15**	**3.2**	**11**	--	--	**21**	**2.7**	**844**	**199**	**214**	**1,020**
MW-4	1/20/2018	<2	**119**	<3	**29**	<15	<3	<15	**7.5**	**783**	**174**	**253**	**1,140**

Not [1]Tier 1 Risk-Based Screening Levels (RBSLs) shown are from Table 3, Tier 1 Groundwater, May 2018.

ND indicates that the parameter was not detected above the laboratory reporting limit

MTBE – Methyl-Tert-Butyl-Ether

TPH – Total Petroleum Hydrocarbons

Bolded result indicates parameter detected below Tier 1 RBSLs.

Bolded/Shaded result indicates parameter detected above Tier 1 RBSL.

-- Not analyzed or not reported

Table 4 - Groundwater Extractable Petroleum Hydrocarbon Results

Former LeeAnn's Hotel

Poplar, Montana

Well ID	Sample Date	EPH Screen	C11-C22 Aromatics	C9-C18 Aliphatics	C19-C36 Aliphatics	Total Extractable Hydrocarbons (TEH)	1,2-Dichloroethane	1,2-Dibromoethane
Tier 1 RBSLs[1]		**1,000 [2]**	**1,100**	**1,400**	**1,000**	**1,000**	**4**	**0.017**
MW-1	5/19/2006	**20,000**	--	--	--	--	--	--
MW-1	5/16/2012	**9,610**	<312	<312	<312	**1,250**	--	--
MW-1	10/22/2013	**18,900**	<300	<300	<300	**802**	--	--
MW-1	1/20/2018	**16,200**	<300	<300	<300	**1,250**	**346**	<0.01
MW-2	6/13/2006	**7,800**	--	**440**	**2,200**	**1,000**	--	--
MW-2	5/19/2006	**3,600**	--	--	--	--	--	--
MW-2	5/16/2012	**21,200**	**4,620**	**6,810**	**1,490**	**13,400**	--	--
MW-2	10/22/2013	**7,130**	<300	<300	<300	<300	--	--
MW-2	1/20/2018	**9,010**	**1,900**	**2,220**	**568**	**5,130**	<0.5	<0.01
MW-3	10/24/2013	**30,100**	<400	<400	<400	1550	--	--
MW-3	1/20/2018	**9,500**	<309	<309	<309	**589**	**389**	<0.01
MW-4	10/24/2013	**5,840**	<316	<316	<316	<316	--	--
MW-4	1/20/2018	**5,530**	<303	<303	<303	<303	**375**	<0.01

Notes:

[1]Tier 1 Risk-Based Screening Levels (RBSLs) shown are from Table 3, Tier 1 Groundwater, May 2018

[2]Concentration shown is the RBCA EPH screening level used to determine whether EPH fractions analysis is required.

n/a indicates that no Tier 1 RBSL is published for Total Extractable Hydrocarbons.

ND indicates that the parameter was not detected above the laboratory reporting limit.

Bolded result indicates a detected parameter below Tier 1 RBSLs.

-- Not analyzed or not reported

Table 5 - Groundwater Elevation Data

Former LeeAnn's Hotel

Poplar, Montana

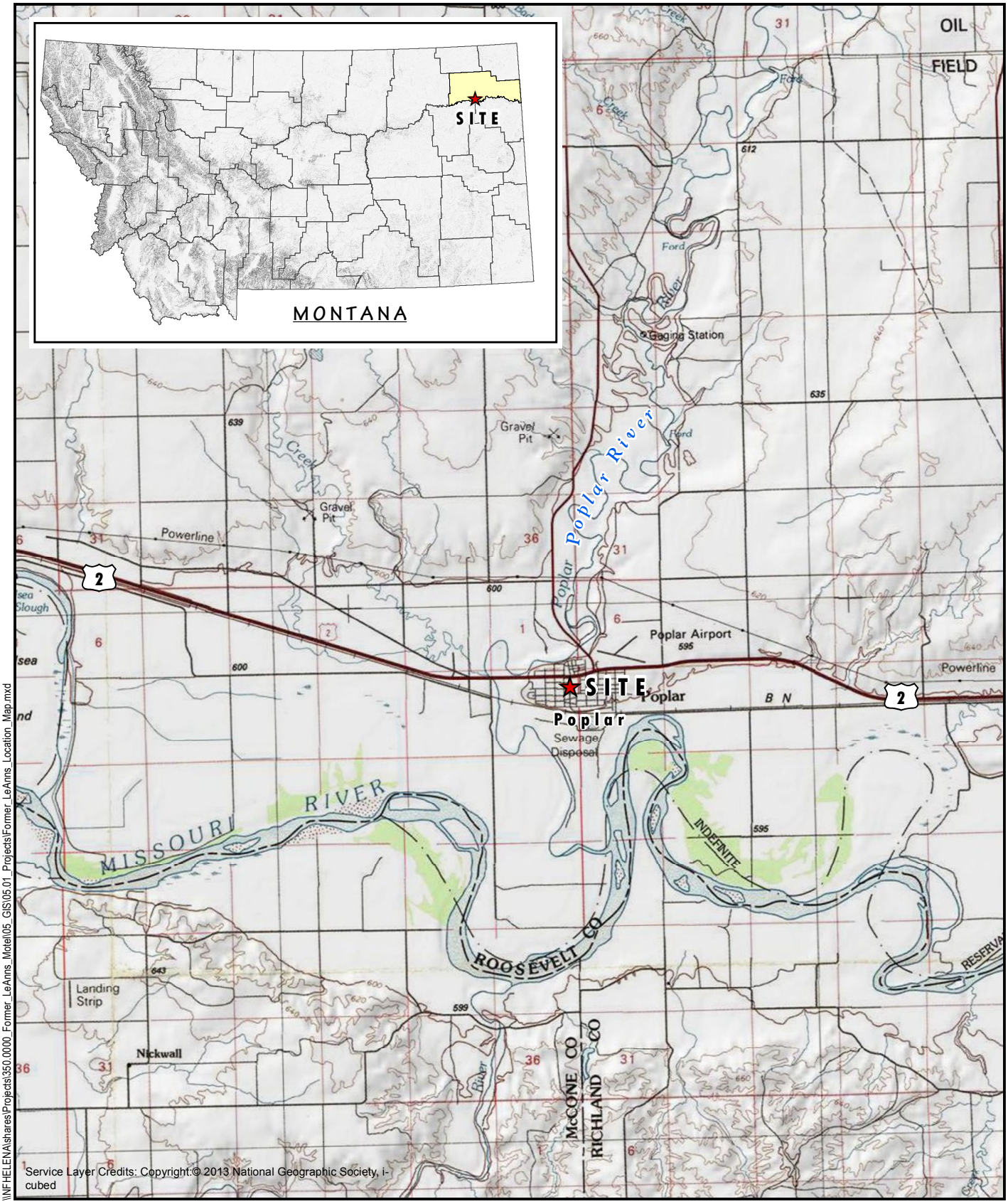
Well ID	Date	Easting (feet)	Northing (feet)	Top of PVC Casing Elevation (feet AMSL)	Depth to Water (feet below measuring point)	Groundwater Elevation (feet AMSL)	Comment
MW-1	5/16/2012	-105°11'44.99841"	48°06'46.16847"	1994.94	--	1981.58	JBR
MW-1	10/24/2013	-105°11'44.99841"	48°06'46.16847"	1994.94	--	1988.41	JBR
MW-1	1/20/2018	-105°11'44.99841"	48°06'46.16847"	1994.94	8.01	1986.93	NewFields
MW-2	5/16/2012	-105°11'44.66916"	48°06'45.32582"	1994.90	--	1982.23	JBR
MW-2	10/24/2013	-105°11'44.66916"	48°06'45.32582"	1994.90	--	1983.89	JBR
MW-2	1/20/2018	-105°11'44.66916"	48°06'45.32582"	1994.90	9.03	1985.87	NewFields
MW-3	10/24/2013	-105°11'45.66493"	48°06'46.10577"	1994.35	--	1968.84	JBR
MW-3	1/19/2018	-105°11'45.66493"	48°06'46.10577"	1994.35	7.92	1986.43	NewFields
MW-4	10/24/2013	-105°11'46.37491"	48°06'46.09415"	1994.33	--	1988.04	JBR
MW-4	1/20/2018	-105°11'46.37491"	48°06'46.09415"	1994.33	8.88	1985.45	NewFields
MW-5	10/24/2013	-105°11'47.08211"	48°06'45.33778"	1994.06	--	1978.71	JBR
MW-5	1/19/2018	-105°11'47.08211"	48°06'45.33778"	1994.06	6.57	1987.49	NewFields
PZ-1	10/24/2013	-105°11'44.64348"	48°06'45.78609"	1994.83	--	1944.09	JBR
PZ-2	10/24/2013	-105°11'45.57091"	48°06'45.51733"	1994.61	--	1944.76	JBR

Notes: AMSL - Above Mean Sea Level

Survey data from Soil Boring and Groundwater Monitoring Well Installation Report (JBR 2013)

-- indicates the measurement was not collected by NewFields

FIGURES



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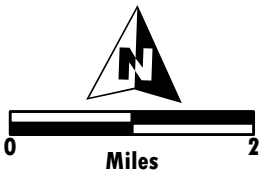
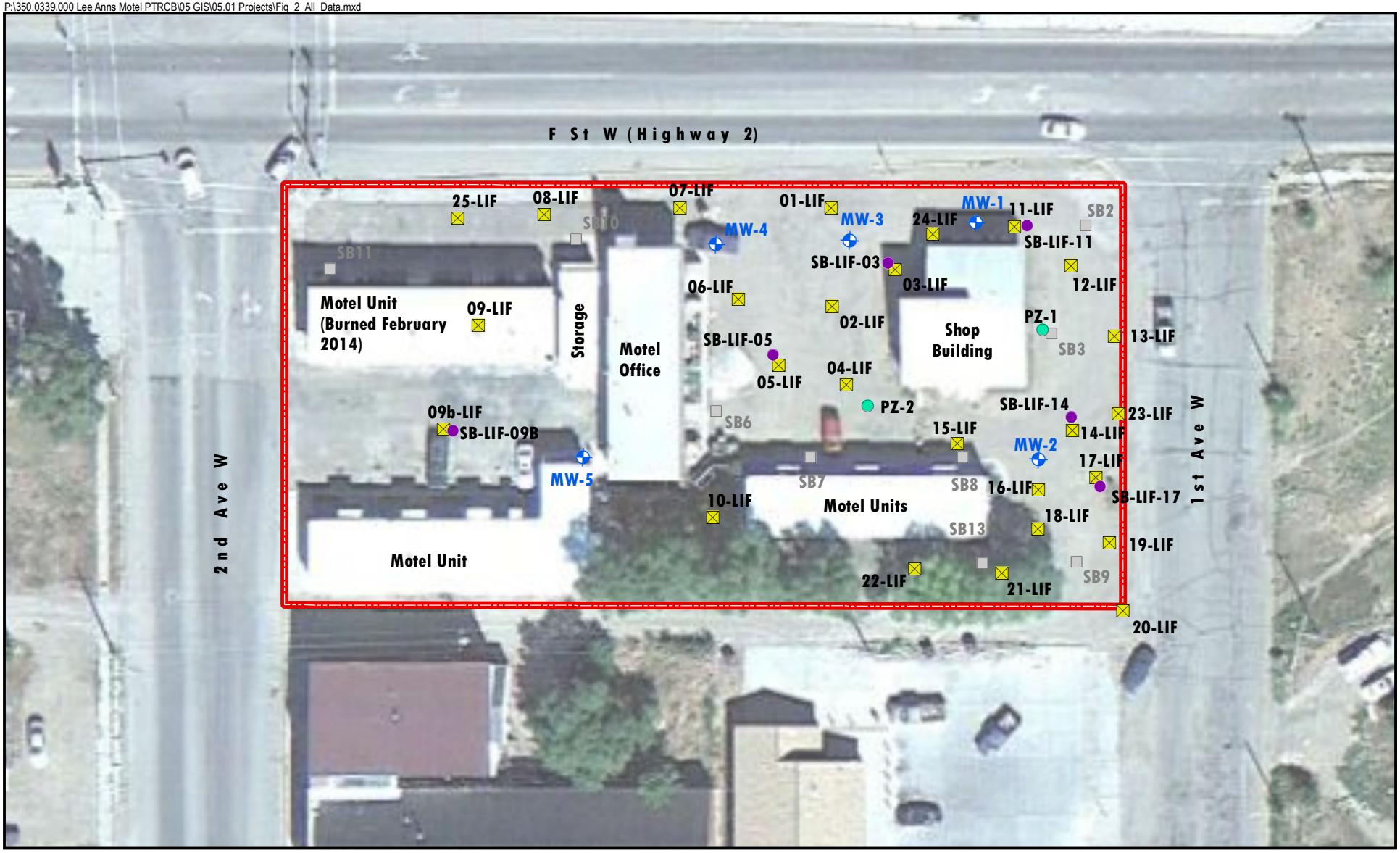


NewFields

Location Map
Former LeeAnns's Motel
Poplar, Montana
FIGURE 1

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\Fig_2_All_Data.mxd



Source: Google Earth Imagery, 2013

0 Feet 50

NewFields

NewFields Sample Locations (2018)

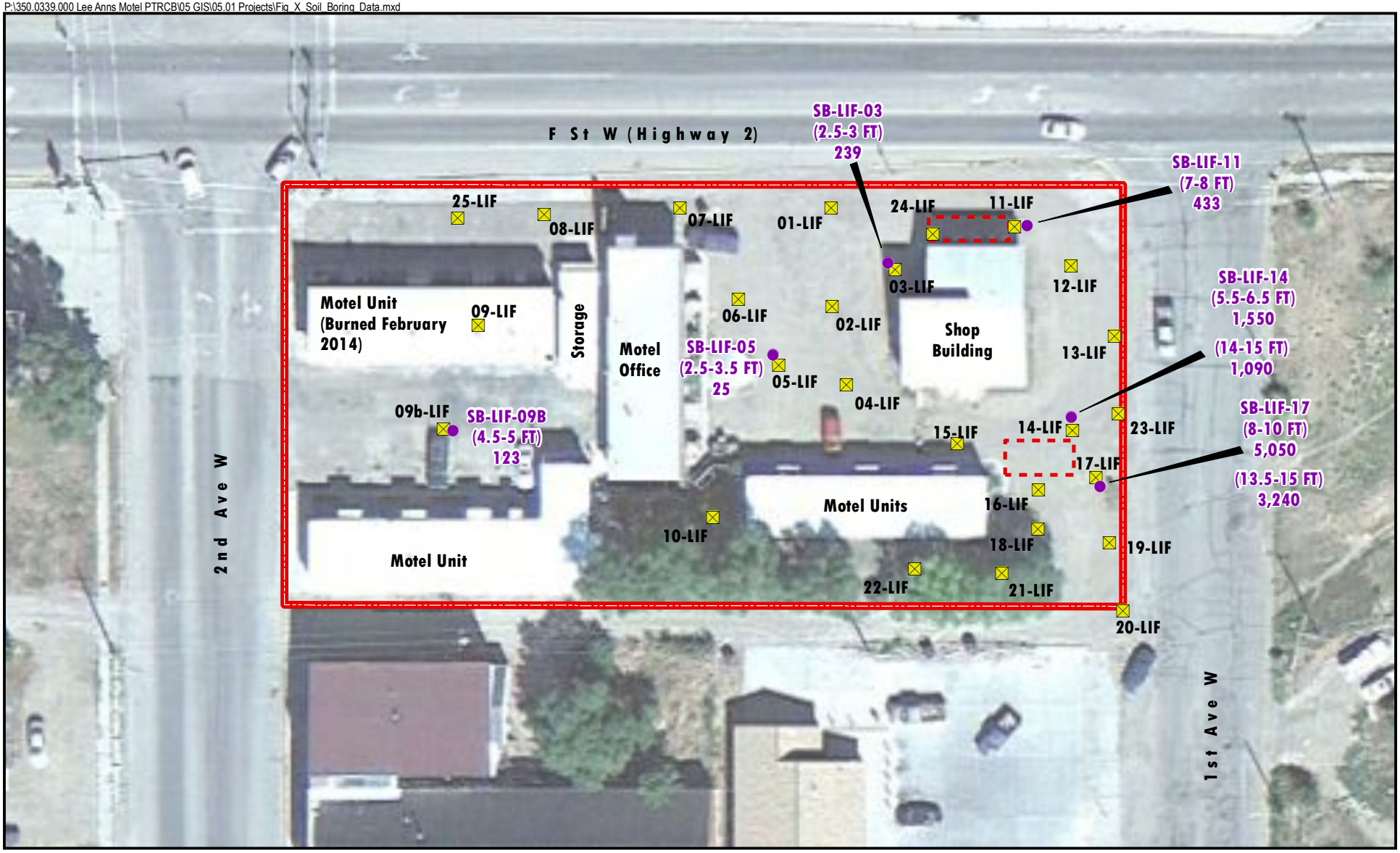
- 2018 Confirmation Soil Borings
- 2018 LIF Borings
- Approximate Property Boundary

JBR Sample Locations (2013)

- Soil Borings
- Monitoring Well
- Piezometer

Site Map with 2018 LIF Soil Borings
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 2

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\Fig_X_Soil_Boring_Data.mxd



Source: Google Earth Imagery, 2013

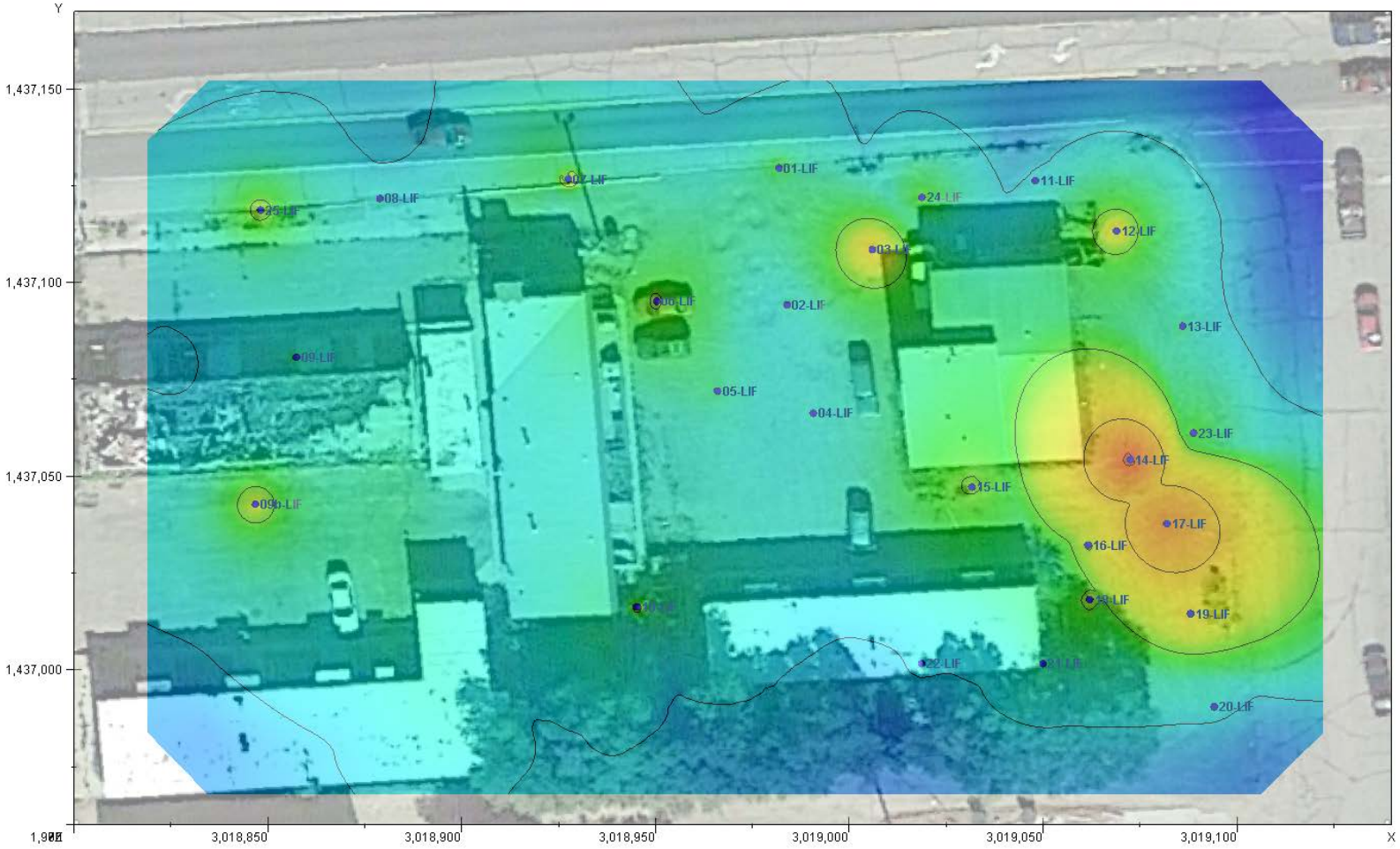
0 Feet 50

NewFields

NewFields Sample Locations (2018)

- 2018 Confirmation Soil Borings
- 2018 LIF Borings
- (13.5-15 FT) 3,240 — Confirmation soil sample depth and EPH concentration (milligrams/kilogram)
- Former UST Basins (Approximate)
- Approximate Property Boundary

Confirmation Soil Boring Results
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 3



Source: Dakota Technologies, 2018

NewFields

2D Contour Map of Maximum % RE
Former LeeAnn's Motel
Poplar, Montana
FIGURE 4

Source: Dakota Technologies, 2018

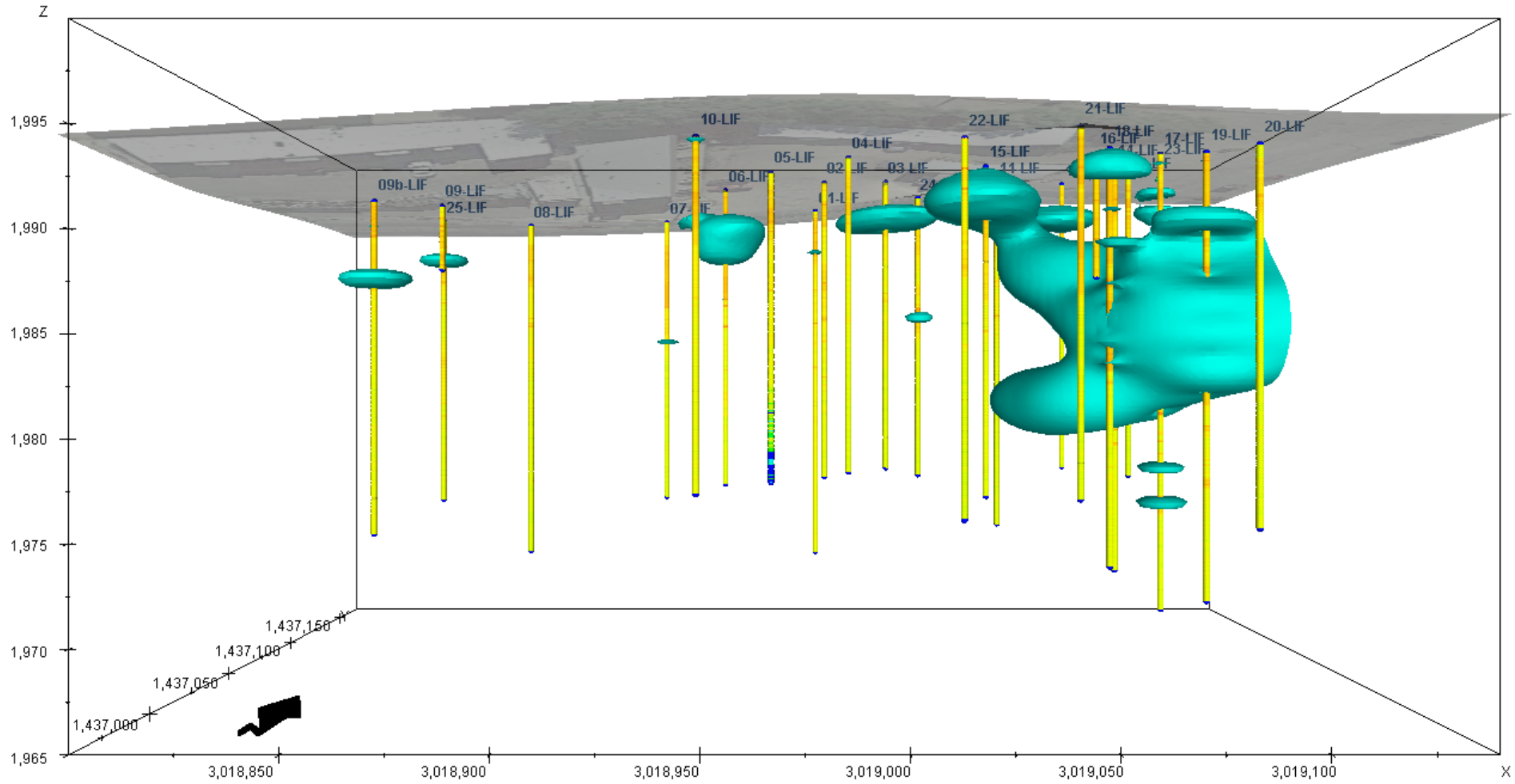
Top View of Plume at >2.0 % RE
Former LeeAnn's Motel
Poplar, Montana
FIGURE 5

NewFields

Source: Dakota Technologies, 2018

NewFields

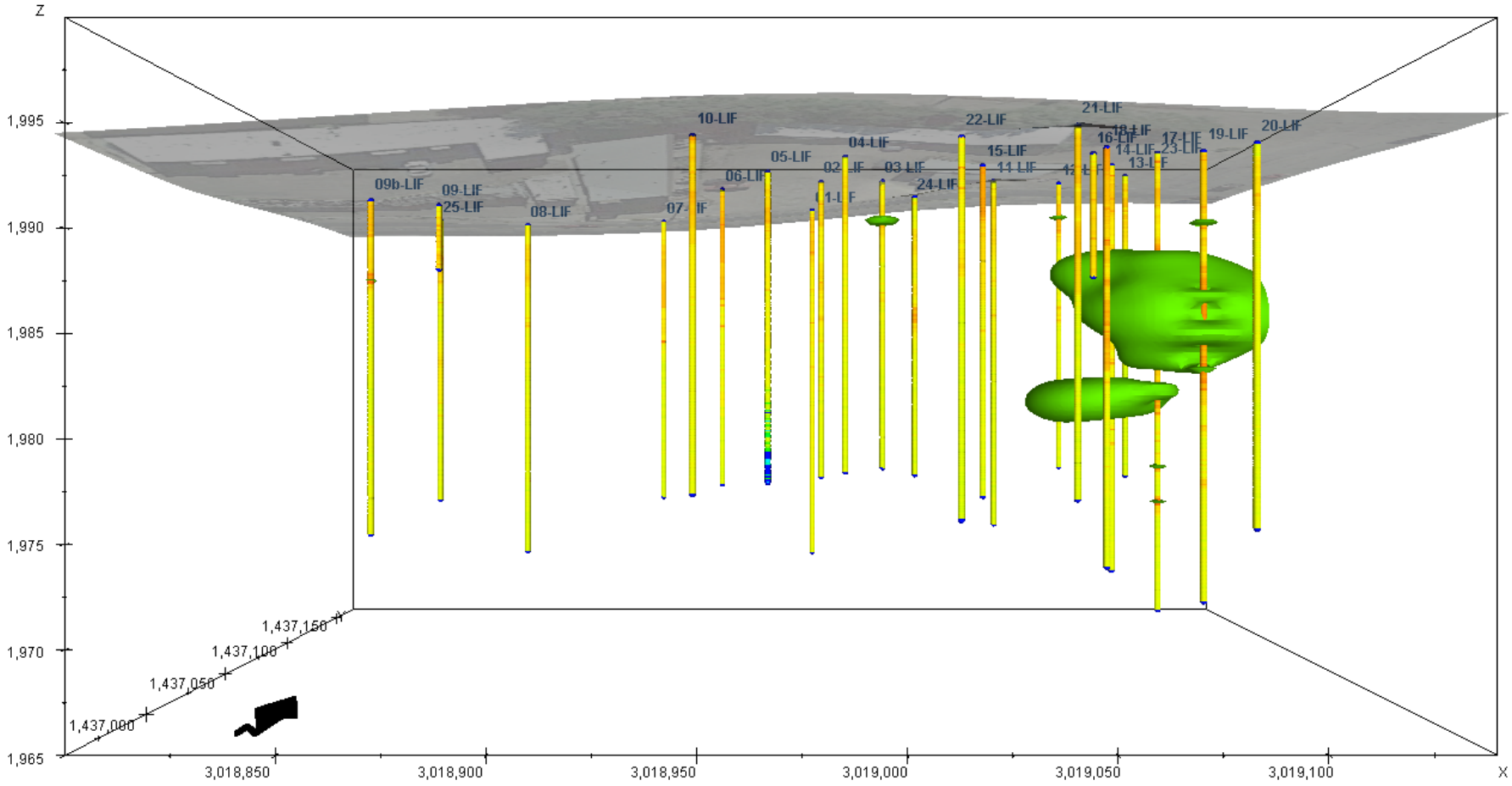
Top View of Plume at >4.0 % RE
Former LeeAnn's Motel
Poplar, Montana
FIGURE 6



Source: Dakota Technologies, 2018

Cross Section of Plume >2.0% RE Looking North
Former LeeAnn's Motel
Poplar, Montana
FIGURE 7

NewFields



Source: Dakota Technologies, 2018

Cross Section of Plume >4.0% RE Looking North
Former LeeAnn's Motel
Poplar, Montana
FIGURE 8

NewFields

P:\BROWNFIELDS\350.0036 EMBC (GNDC) - Assessment\03 GIS & GRAPHICS\Poplar_Sludge\Fig_9_TPH_EPH_GW_DATA.mxd

Source: Google Earth Imagery, 2013

N

0 Feet 50

NewFields

Approximate Groundwater Flow Direction

Former UST Basin (Approximate)

Approximate Property Boundary

Piezometer

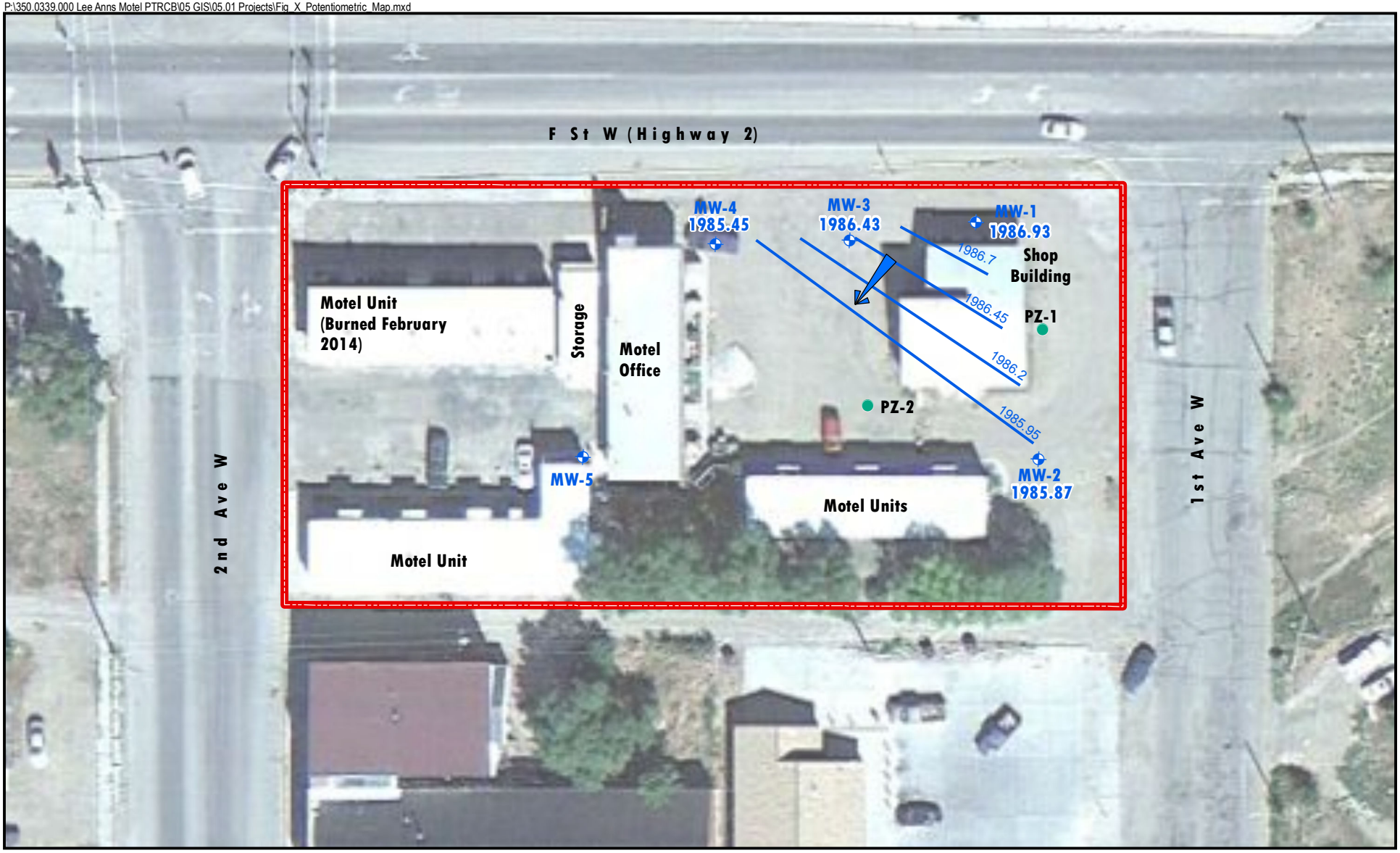
Monitoring Well

14,700 Total Purgeable Hydrocarbons (TPH, ug/L)

1,250 Total Extractable Hydrocarbons (TEH, ug/L)

2018 TPH and TEH Groundwater Results
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 9

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\Fig_X_Potentiometric_Map.mxd



Source: Google Earth Imagery, 2013

N

0 Feet 50

NewFields

Approximate Groundwater Flow Direction

1986.93 Groundwater Elevation (ft Above Mean Sea Level)

Approximate Property Boundary

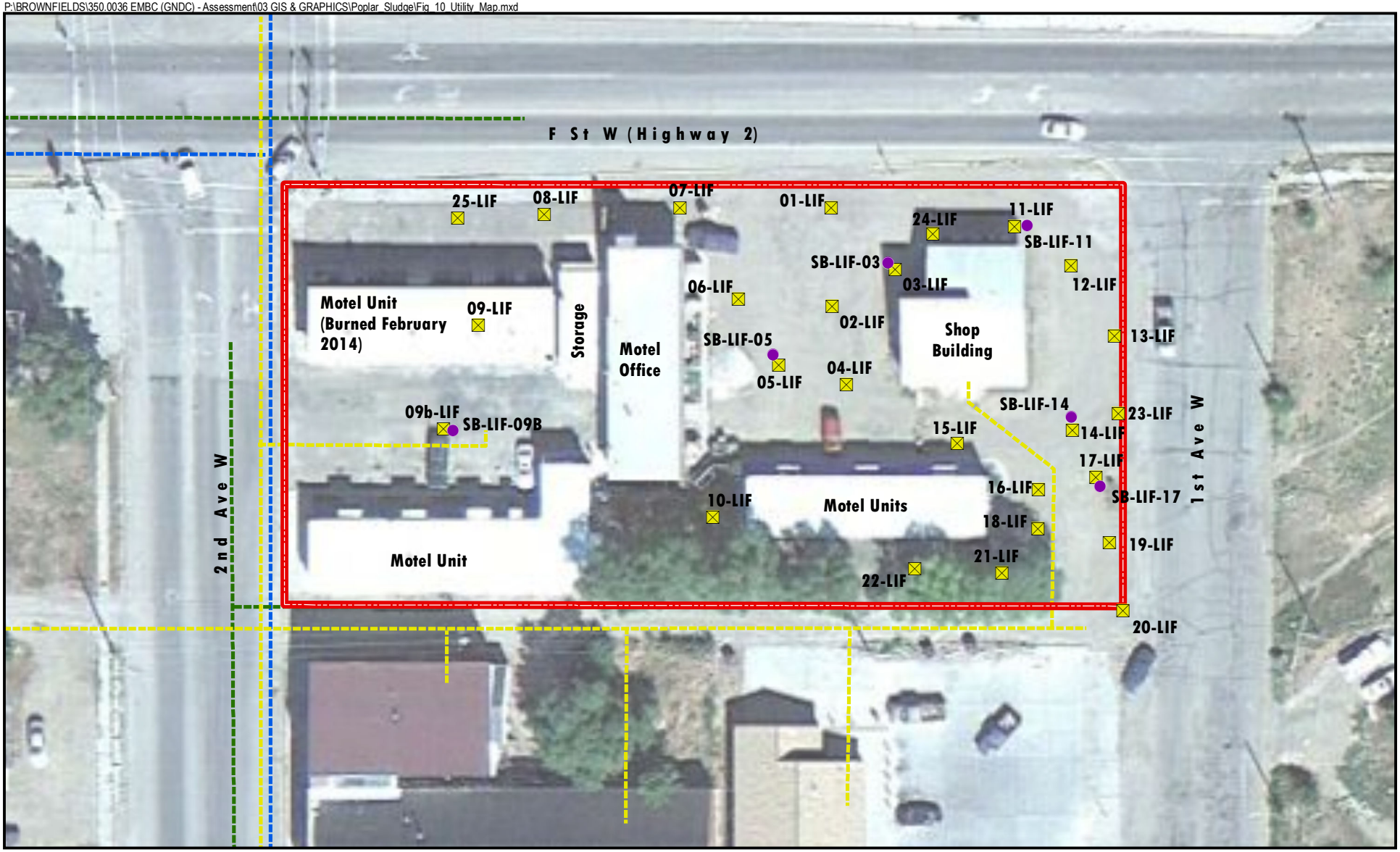
JBR Sample Locations (2013)

Piezometer

Monitoring Well

Potentiometric Map
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 10

P:\BROWNFIELDS\350.0036 EMBC (GNDC) - Assessment\03 GIS & GRAPHICS\Poplar_Sludge\Fig_10_Utility_Map.mxd



Source: Google Earth Imagery, 2013

0 Feet 50

NewFields

NewFields Sample Locations (2018)

- 2018 Confirmation Soil Borings
- 2018 LIF Borings
- Approximate Property Boundary

Underground Utilities (Approximate)

- Gas Service Line
- Sanitary Sewer Service Line
- Water Service Line

Underground Utility Map with 2018 LIF Soil Borings
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 11

Appendix A

Dakota Technologies LIF Report

High Resolution Site Characterization Report – UVOST®-EC Investigation

Client: Newfields

Project Name: Former LeeAnn's Motel

Location: Poplar, MT

Prepared by:

Dakota Technologies Company, LLC

5001 Boone Avenue North

New Hope, MN 55428

763-424-4803

January 26th, 2018

Project Number: 0023.18

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2.0 ELECTRICAL CONDUCTIVITY (EC) DESCRIPTION 2

3.0 DISCUSSION AND COMMENTS 3

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Appendix B UVOST® Logs at 10% RE
Appendix C UVOST® Logs at 100% RE
Appendix D UVOST® Reference Log

1.0 UVOST® SYSTEM DESCRIPTION & CALIBRATION

The Ultra-Violet Screening Tool (UVOST®) is a laser induced screening tool specifically designed to detect light-non-aqueous phase liquid (LNAPL) in the subsurface. It is primarily used for mapping petroleum, oils and lubricants (POLs) at fueling areas, railroad sites, pipelines, refineries etc. UVOST® had been in commercial use since 1994. Fluorescence is the emission of photons (light) of a longer wavelength relative to the source emission. The release of these photons can be used to detect small amounts of substance (i.e., polycyclic aromatic hydrocarbons (PAHs)) in a larger matrix (soil). This method of detection has been used in laboratories for decades. With the commercial availability of lasers and optical fibers, this technology can also be applied in-situ in the field to identify the presence of light non-aqueous phase liquids (LNAPL).

The UVOST® system sends laser light (308 nanometer wavelength) through a fiber optic cable strung within probe rods on a direct push drill rig. The light, reflected by a parabolic mirror, then exits through a sapphire window in the side of the probe. As the probe is advanced, the immediately adjacent soil is exposed to the UV laser light. If PAHs (compounds in petroleum oils and lubricants that fluoresce) are present, longer wavelength light is emitted by the PAH compounds. This "signal" light is transmitted through a return fiber, back to the surface to be analyzed. Responses are indicated in real-time on a graph of signal vs. depth. The UVOST® log displays "color mixed" signal logs consisting of contributions from four wavelength channels, and waveforms ("fingerprint" of multi-wavelength) to aid in identification and relative quantity of the compound present.

Prior to every log, the UVOST® system is checked for optical quality by observing the background signal for sources of signal in the fiber, filter, mirror and sapphire window. Also, the reference emitter (a standard, proprietary LNAPL mixture called the "RE") is placed on the window to determine the qualitative and semi-quantitative properties of the laser system. This is to assure that the RE response has the correct shape and intensity and that the UVOST® system is calibrated to log. Typically, the RE will fall between 10,000 and 11,000 picovolt-seconds (pVs), which is a measure of waveform area. The background can vary from 0.1% to 1%, which is typically an area of approximately 0 to 100 pVs. The relationship between the instrument responses from NAPL in the subsurface and the RE depends on the properties of the NAPL. The calibration of the system is not to a concentration, but to a known fluorescence signature.

2.0 ELECTRICAL CONDUCTIVITY (EC) DESCRIPTION

Electrical Conductivity (EC) data were collected simultaneously with the UVOST® data. EC is a measure of the soil's ability to conduct an electrical current between two dipoles on the UVOST/EC probe. Conductivity is the reciprocal of electrical resistivity and has the units (in our application) of millisiemens per meter (mS/m). Since soil is in the pathway of the charge flow, the grain size can be determined by comparing the EC log to lithology observed in a soil boring. Conductivity readings in the 100s indicate smaller grain (size such as clay). Larger grain size (sand and gravels) are typically in the 10s of mS/m range. Prior to every log, the EC point of the UVOST® probe is checked for proper operation by performing a voltage test with a voltage meter and a conductivity test with a test block.

3.0 DISCUSSION AND COMMENTS

Dakota Technologies Company, LLC (Dakota) completed 25 UVOST® borings on the property with one re-drill (refusal), along with 7 soil borings to various depths. 2 borings, 09-LIF and 16-LIF, hit refusal at 4.2 and 7.2 feet respectively.

LNAPL was observed on most logs between approximately 2 and 18 feet. Although, the LNAPL signal response ranging from 0 to 3.5 feet may not be representative of actual conditions due to pre-probing (see Field Summary Log).

The first soil boring, SB1, went to 15 feet, SB2 went to 15 feet, SB2b went to 15 feet (a step out from SB2 due to low recovery in the liner at the 10-15 foot interval), SB3 went to 5 feet, SB4 went to 10 feet, SB5 went to 5 feet and SB6 went to 5 feet.

Pre-probing was done and ranged from 2 to 3.5 feet on every UVOST boring because all the LIF borings were done in concrete or asphalt/gravel-like conditions.

All QA/QC passed specifications for all UVOST® logs.

Because of the very cold weather in Poplar, MT the week of January 15th, 2018, the laser had trouble firing up on Tuesday, January 16th. The weather in Poplar, MT got down to -22 degrees on Tuesday. Dakota took the laser inside the hotel room Tuesday night to thaw out. The laser seemed to work better and fire up on Wednesday (1/17/2018) and into Thursday (1/18/2018).

On several logs, especially on 04-LIF and 05-LIF, there is a color split within a single channel of the waveform that should all be one uniform color within that channel. When this occurs on a log, the signal plot color is incorrect, but the amplitude of the waveform is still correct. For example, on log 05-LIF, the entire log should have a yellow to yellow/orange color. But because the colors in the channel of the waveform are split, the log is shifted to a blue, blue/green color and not a yellow, yellow/orange color. This happened because the laser scope was out of alignment.

4.0 LIMITATIONS

The analysis and opinions expressed in this report are based upon data obtained from the specific test locations and from other information discussed in this report. Exceptions, if any, are discussed in the accompanying comments section of this report. This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. Reported results shall not be reproduced, except in full, without written approval of Dakota. No warranties, expressed or implied are intended or made.

Appendix A

UVOST® Field Summary Log

UVOST® Field Summary Log

Former LeeAnn's Motel

Poplar, MT

File Log ID	Date / Time	Pre-Probe *(ft)*	Final Depth *(ft)*	Max Signal *(%RE)*	Max Signal Depth *(ft)*	Initial RE Area *(pVs)*	Background Area *(pVs)*	Fluorescence[(1)] Top - Bottom *(ft)*
01-LIF	1/17/2018 10:54	3	25.0	4	3	11034	60	3.0, 8.3, 11.5
02-LIF	1/17/2018 11:37	2.5	20.0	3	1	11679	49	5.5-9.5, 10.8, 13.3
03-LIF	1/17/2018 12:05	2.5	20.1	12	3	11540	40	2.5-3.0, 7.8-8.5
04-LIF	1/17/2018 12:35	2.5	20.1	2	4	11937	45	2.5-4.5
05-LIF	1/17/2018 14:06	2.5	20.0	2	3	11595	51	2.5-7.8
06-LIF	1/17/2018 14:47	2	20.0	6	2	11832	57	2.0-9.7, 12.2-15.5
07-LIF	1/17/2018 15:20	3	20.0	7	9	11552	37	3.0-9.4
08-LIF	1/17/2018 16:00	3	23.5	4	19	11163	32	3.0-7.8, 18.3-18.6
09-LIF	1/17/2018 16:34	3	4.2	7	2	11239	36	3.0-4.2 (refusal)
09b-LIF	1/17/2018 16:58	3	20.0	9	5	11916	31	3.0-6.0
10-LIF	1/17/2018 17:30	2.5	20.0	9	0	11731	42	3.0-7.9
11-LIF	1/18/2018 9:55	3	25.0	2	2	11320	39	3.0-11.3
12-LIF	1/18/2018 10:24	3	20.1	13	2	11357	34	3.0-9.9
13-LIF	1/18/2018 10:48	3	20.0	3	7	11711	43	3.0-4.5, 7.2-7.5
14-LIF	1/18/2018 11:09	3	25.0	55	14	11224	45	3.0-12.3, 13.0-17.3
15-LIF	1/18/2018 11:38	3	20.0	4	0	11764	44	3.0-8.2, 9.8-10.3
16-LIF	1/18/2018 12:06	3	7.2	3	3	11625	41	N/A very low response
17-LIF	1/18/2018 12:25	3	27.0	24	10	11217	39	3.0-15.5, 17.7-21.4
18-LIF	1/18/2018 14:02	3	23.6	8	5	11656	37	3.0-13.3, 17.9, 21.7
19-LIF	1/18/2018 14:56	3	25.1	17	4	11185	46	3.0-14.3, 15.2-15.9, 18.1-18.7
20-LIF	1/18/2018 15:36	3.5	20.0	2	3	11095	35	N/A very low response
21-LIF	1/18/2018 16:01	3	20.1	2	2	11723	36	3.0-9.0
22-LIF	1/18/2018 16:26	2.5	20.6	3	2	11708	34	2.5-8.0, 11.1-11.5
23-LIF	1/18/2018 17:06	3	20.6	4	4	11733	26	3.0-5.0, 8.5, 9.1
24-LIF	1/18/2018 17:31	3	20.0	4	9	11631	25	3.0-10.2, 11.1, 17.2
25-LIF	1/18/2018 18:03	3	20.0	6	3	11571	34	3.0-5.9, 8.7-13.1, 14.0-14.3
		Total footage:	527.2					

(1) Signal response from 0 to 3.5 feet may not be representative of actual conditions due to pre-probing.

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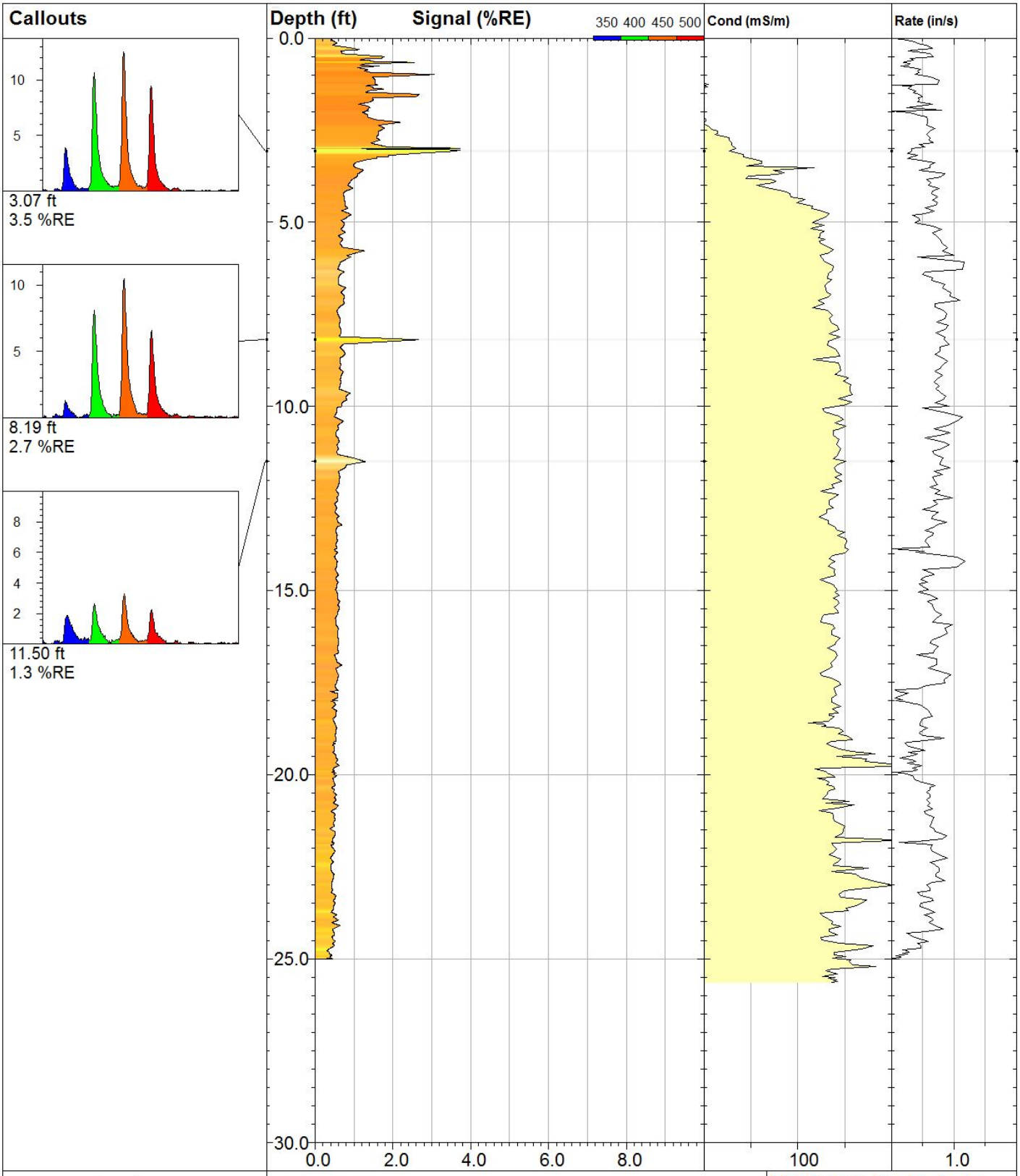
Appendix B

UVOST® Logs at 10% RE



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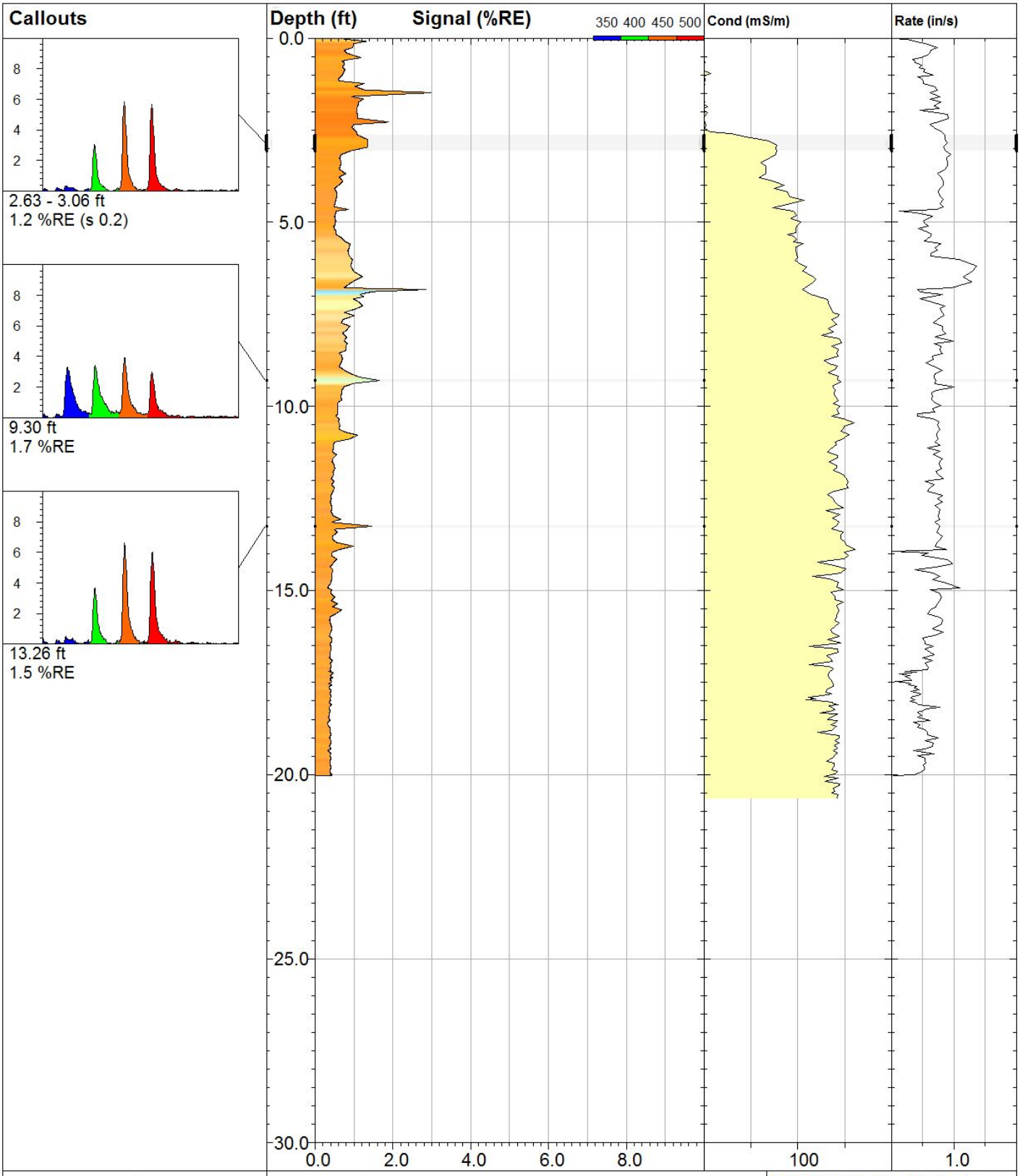
01-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.01 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.8 %RE @ 2.99 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 10:54 CST**



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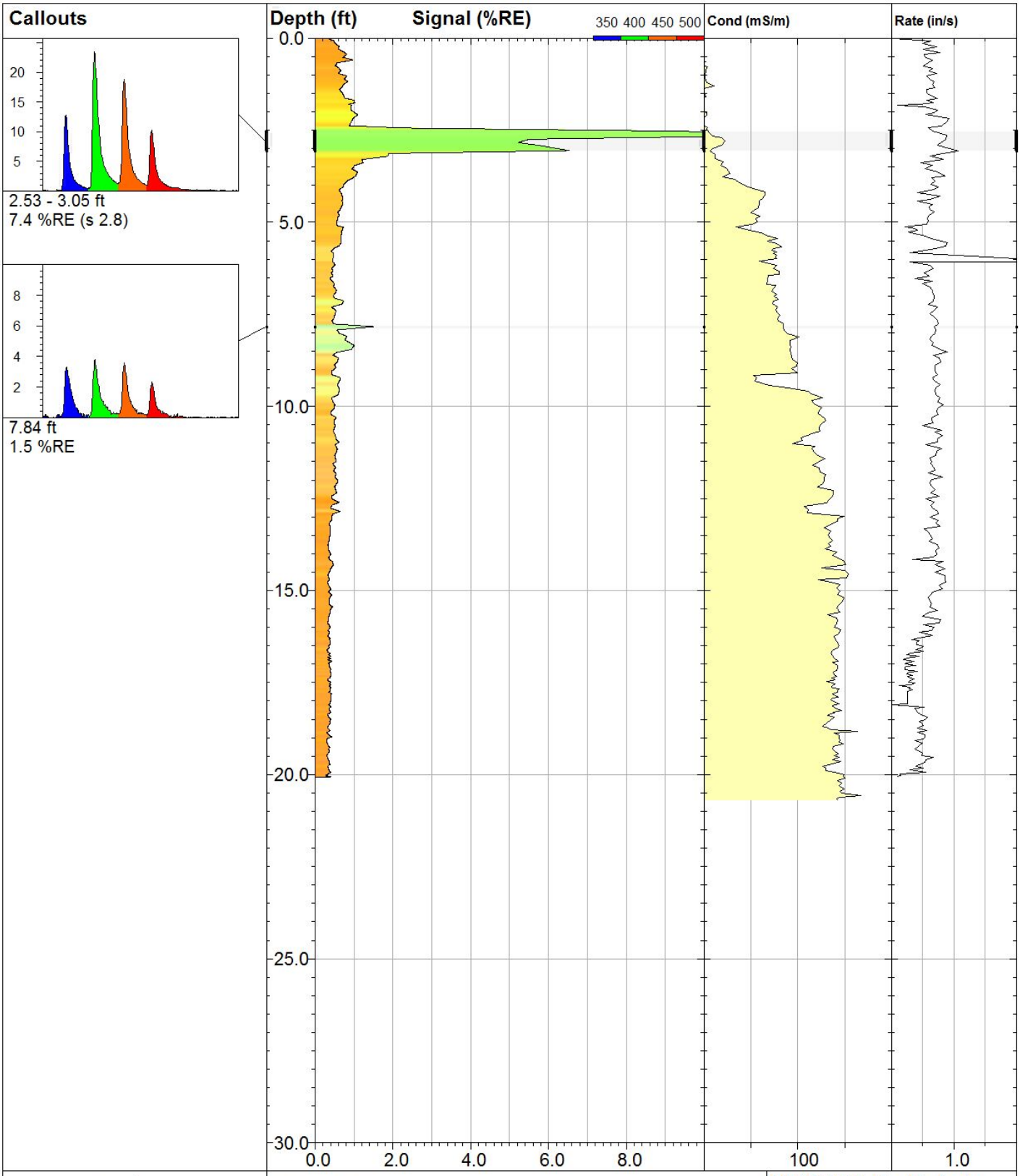
02-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.0 %RE @ 1.48 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 11:37 CST**



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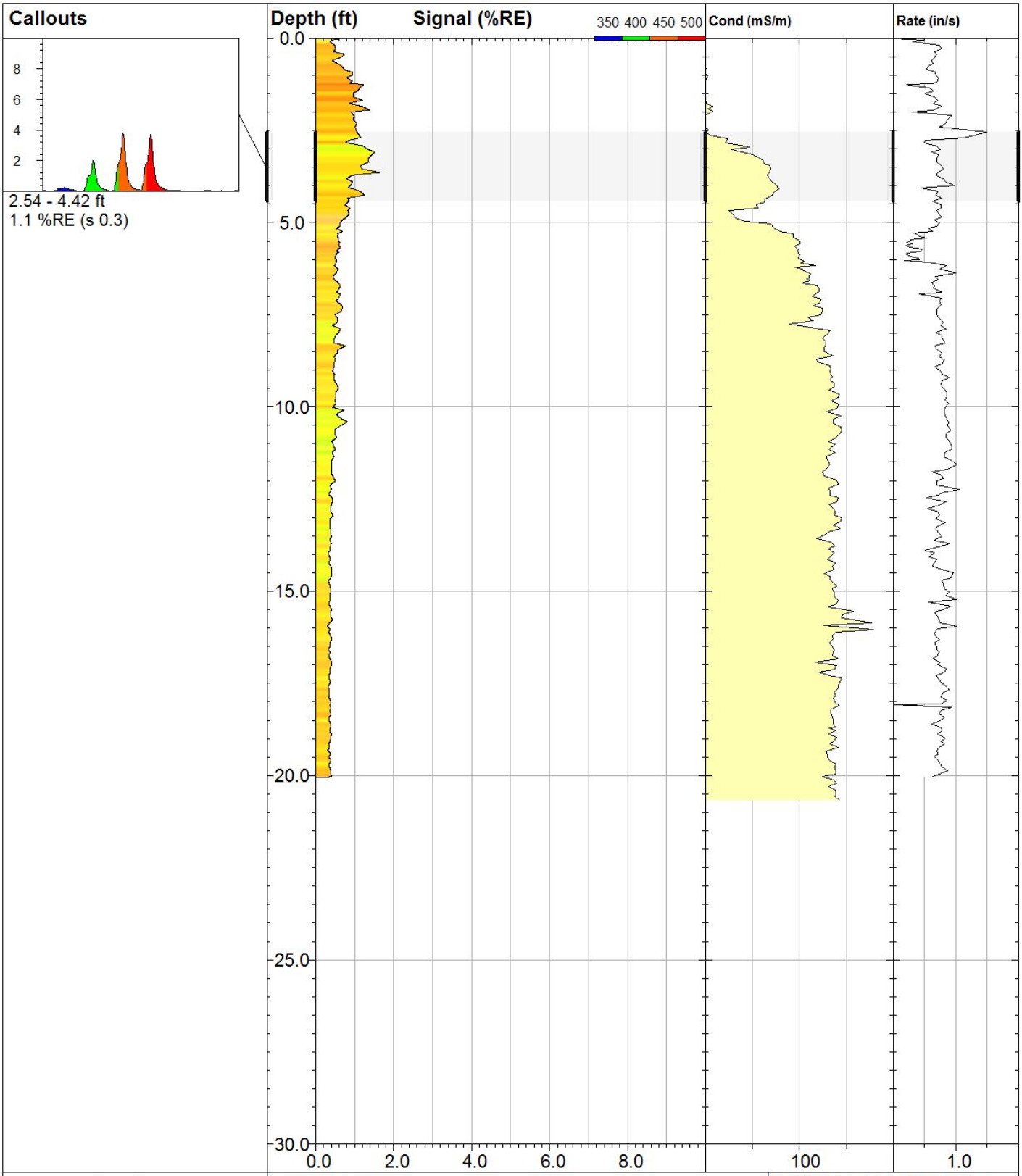
03-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.08 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **12.2 %RE @ 2.64 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 12:05 CST**



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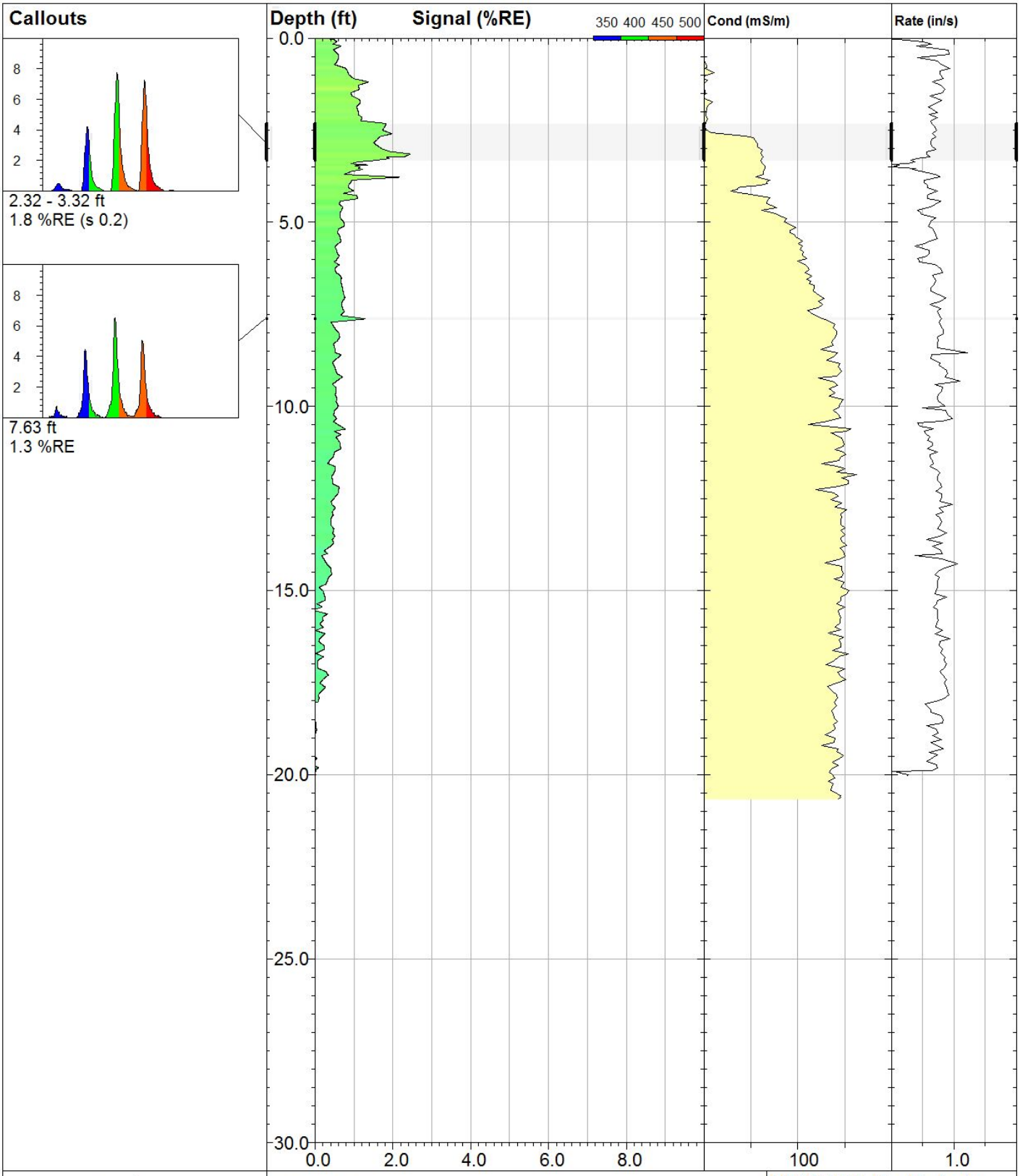
04-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.05 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1.7 %RE @ 3.64 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 12:35 CST**



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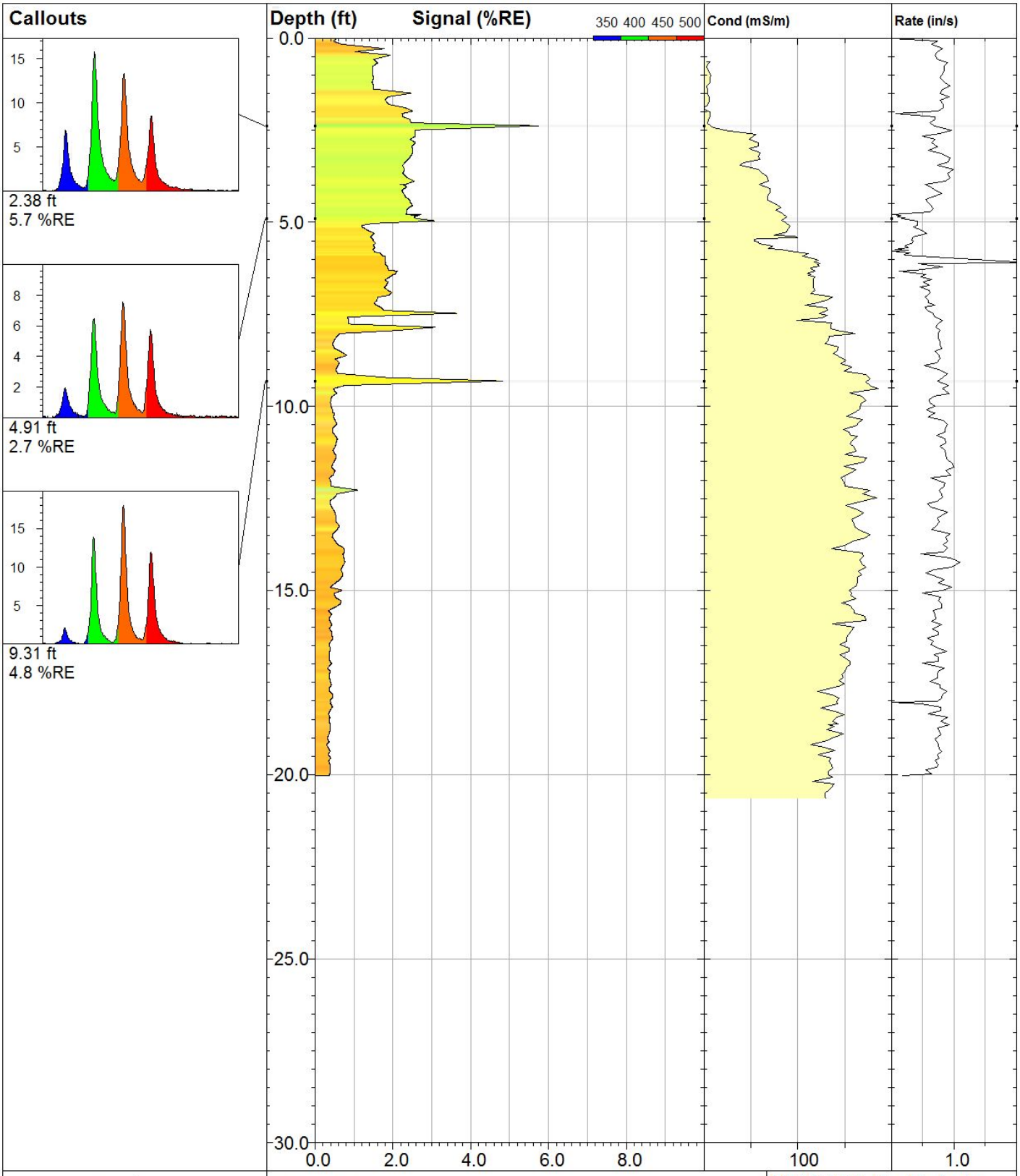
05-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.4 %RE @ 3.15 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 14:06 CST**



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06-LIF

UVOST® By Dakota
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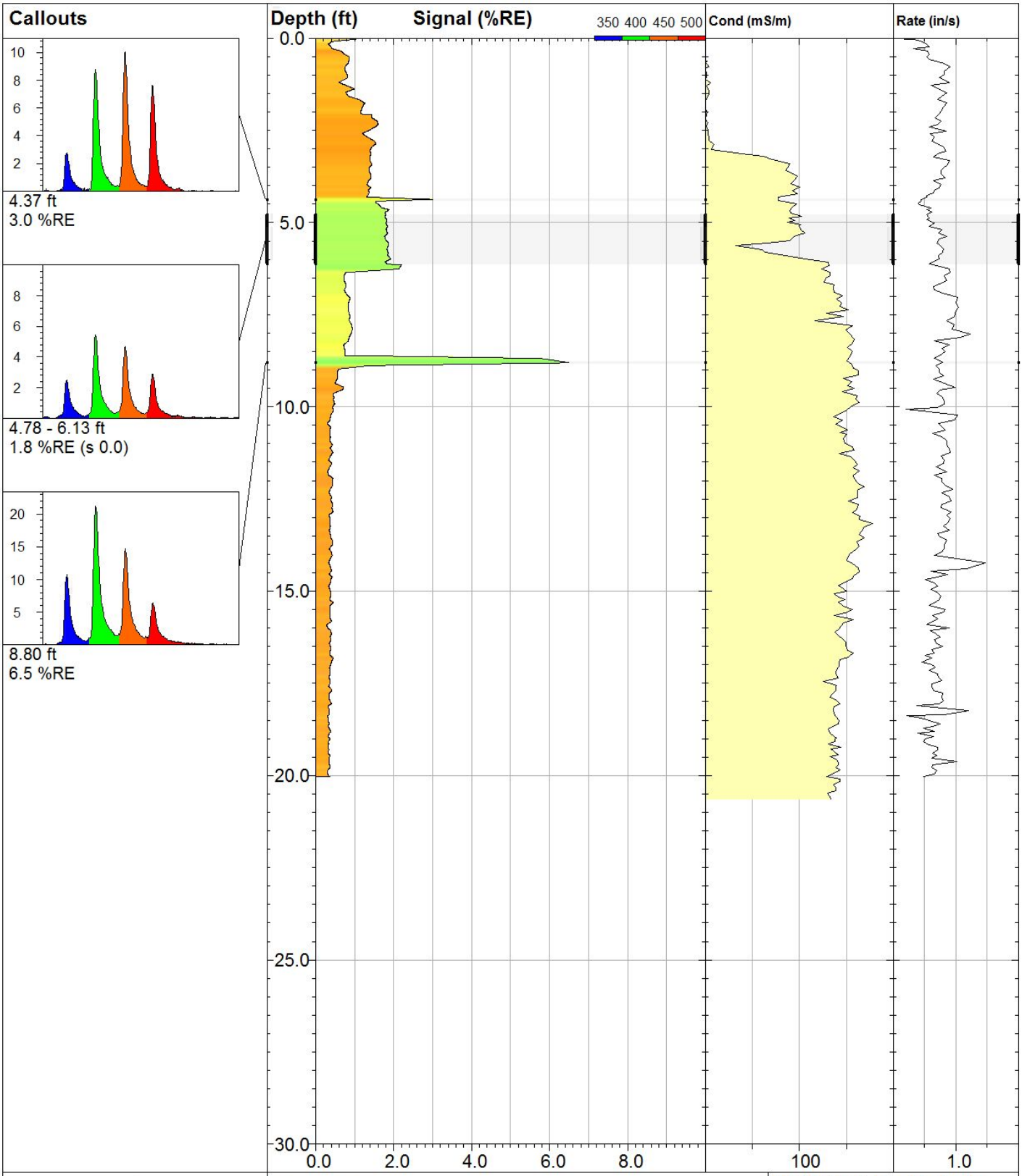
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.04 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **5.7 %RE @ 2.38 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 14:47 CST**



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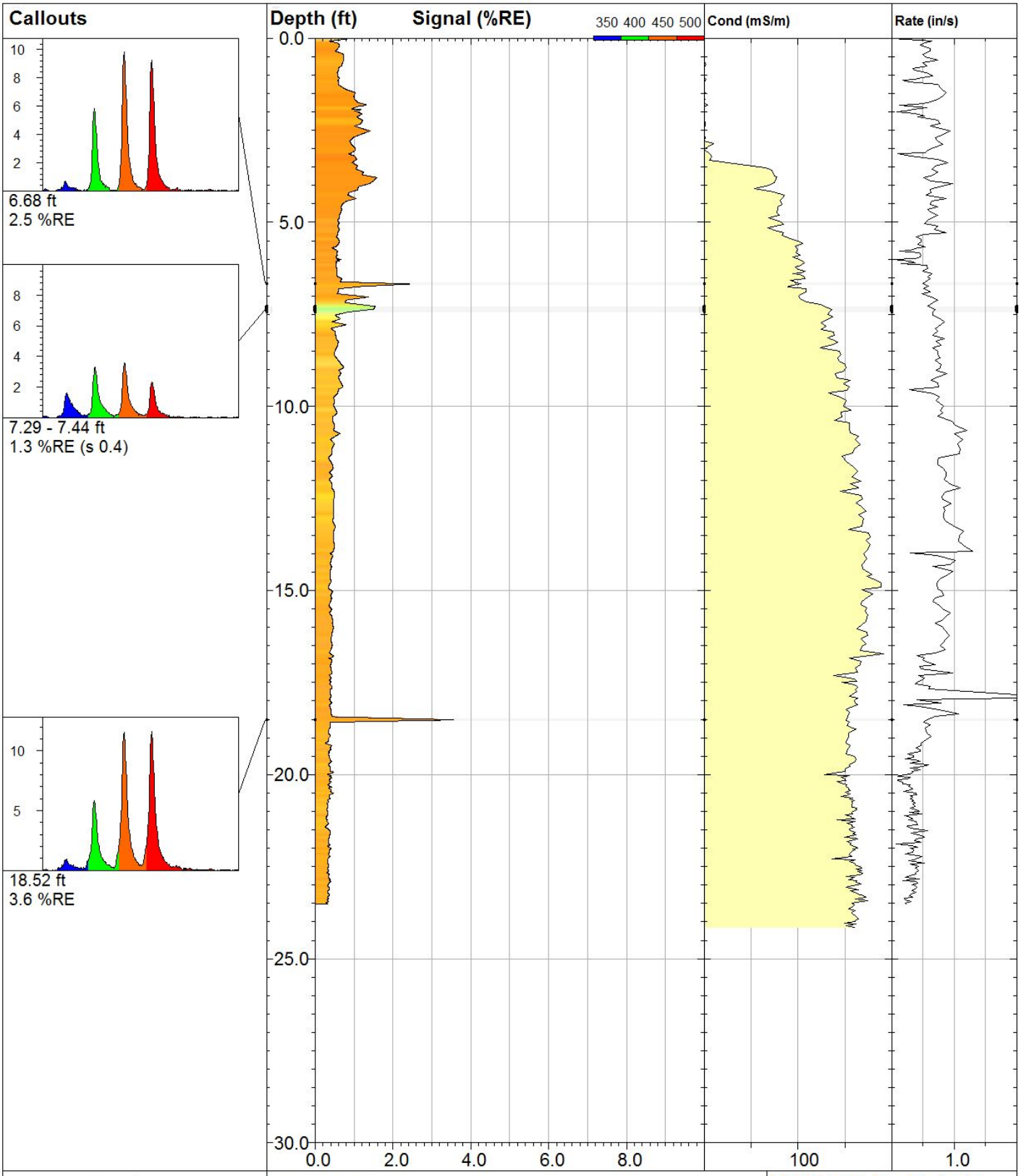
07-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **6.5 %RE @ 8.80 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 15:20 CST**



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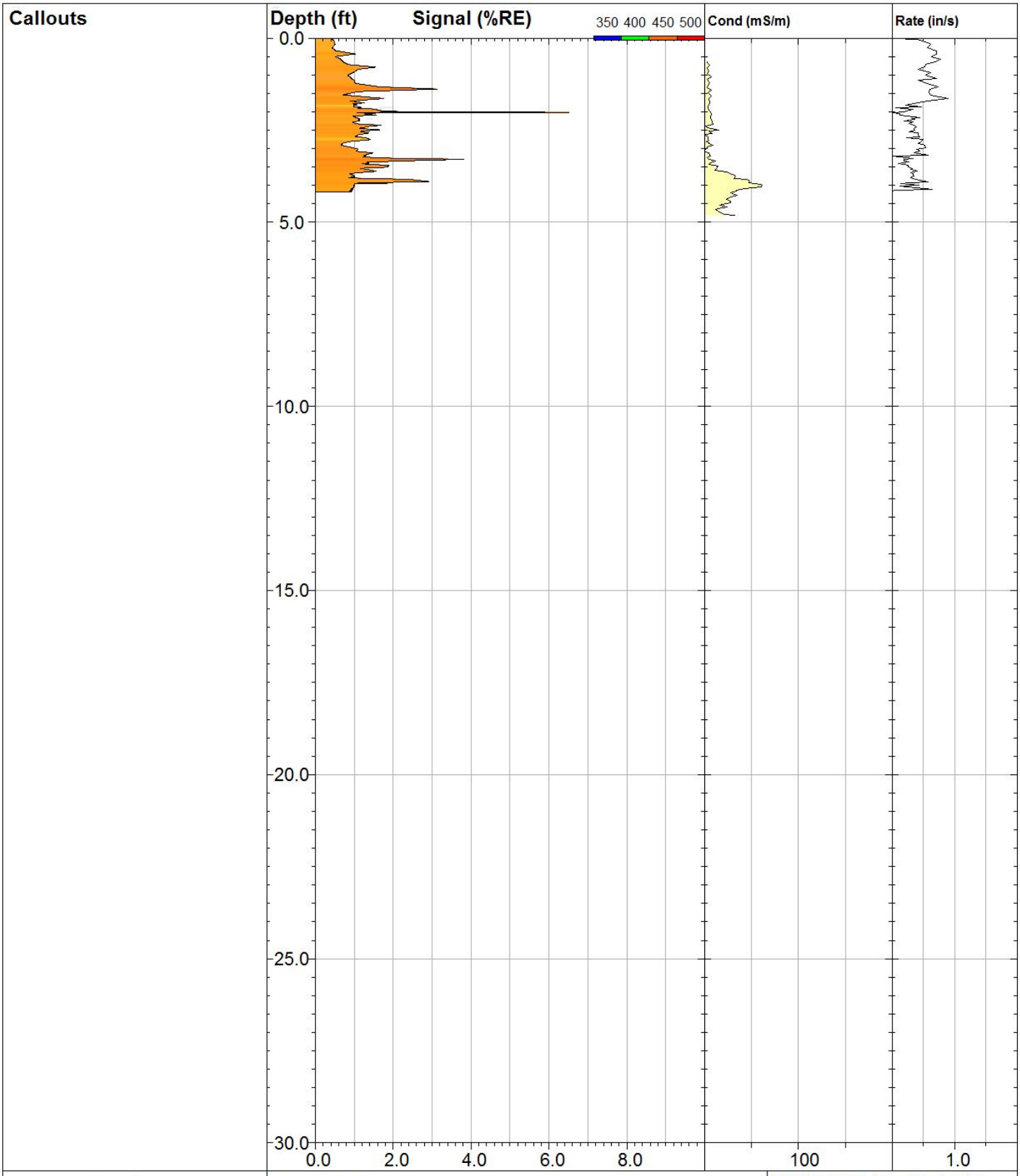
08-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **23.52 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.6 %RE @ 18.52 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 16:00 CST**



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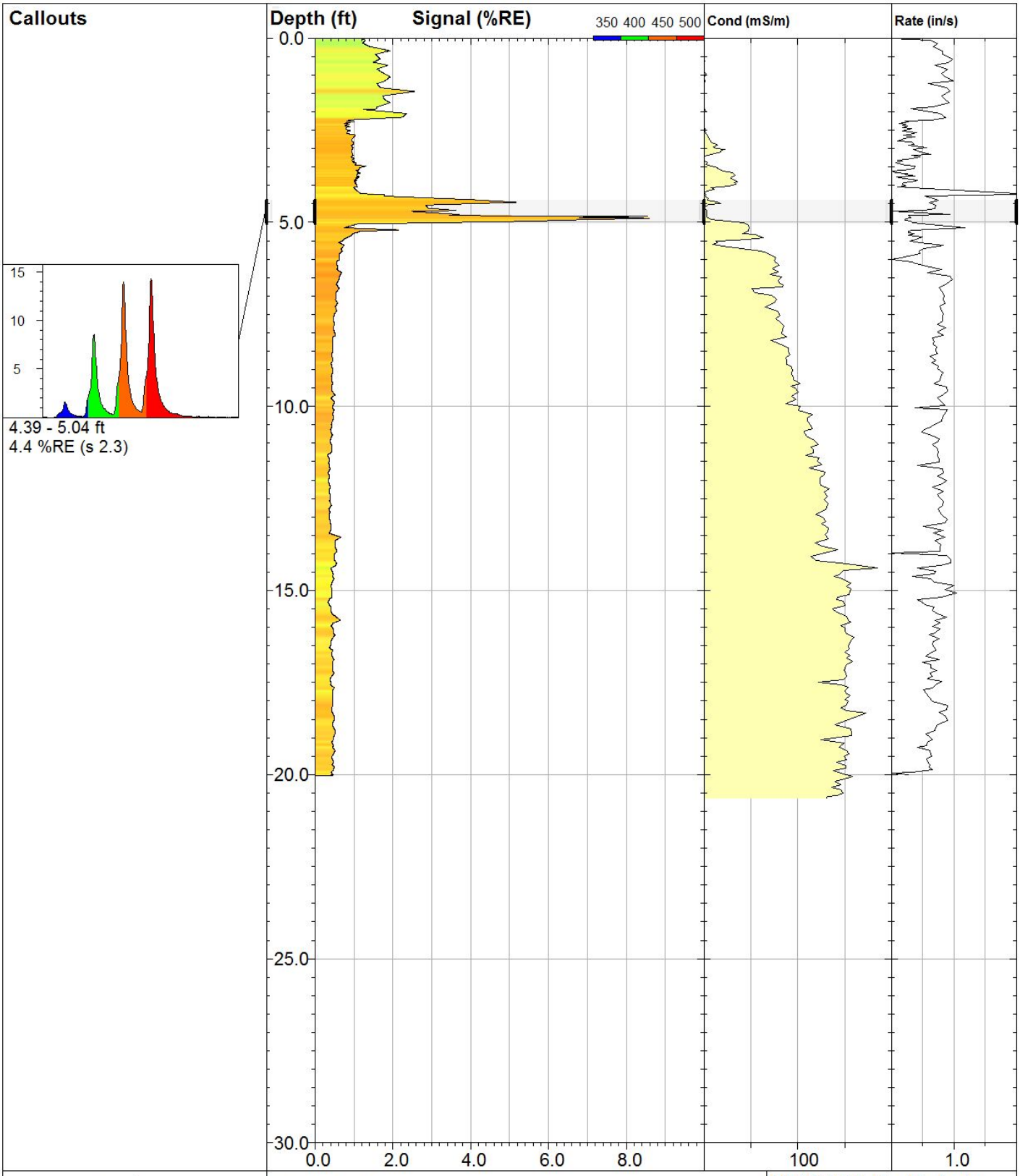
09-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **4.18 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **7.1 %RE @ 2.02 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 16:34 CST**



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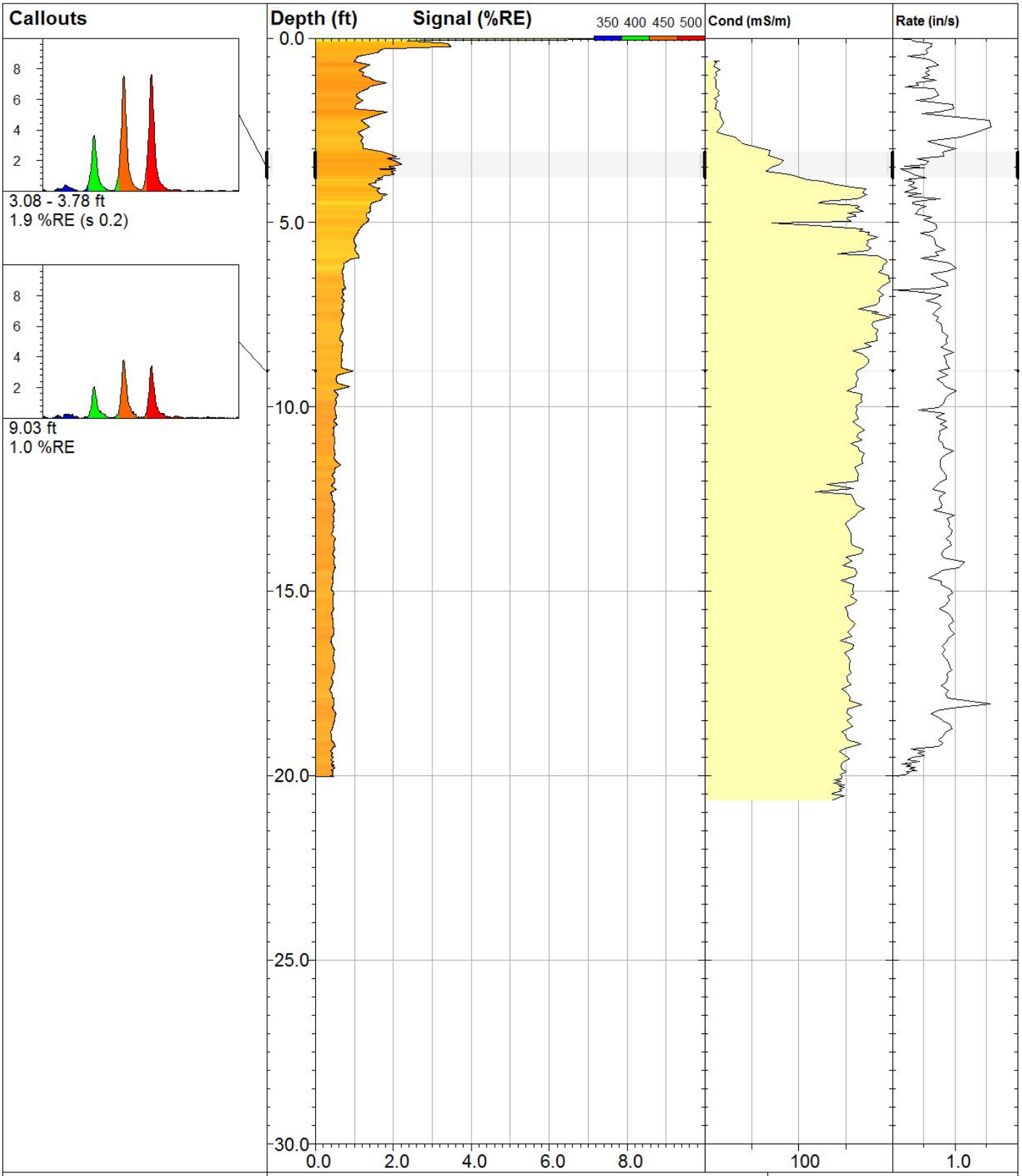
09b-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **8.7 %RE @ 4.83 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 16:58 CST**



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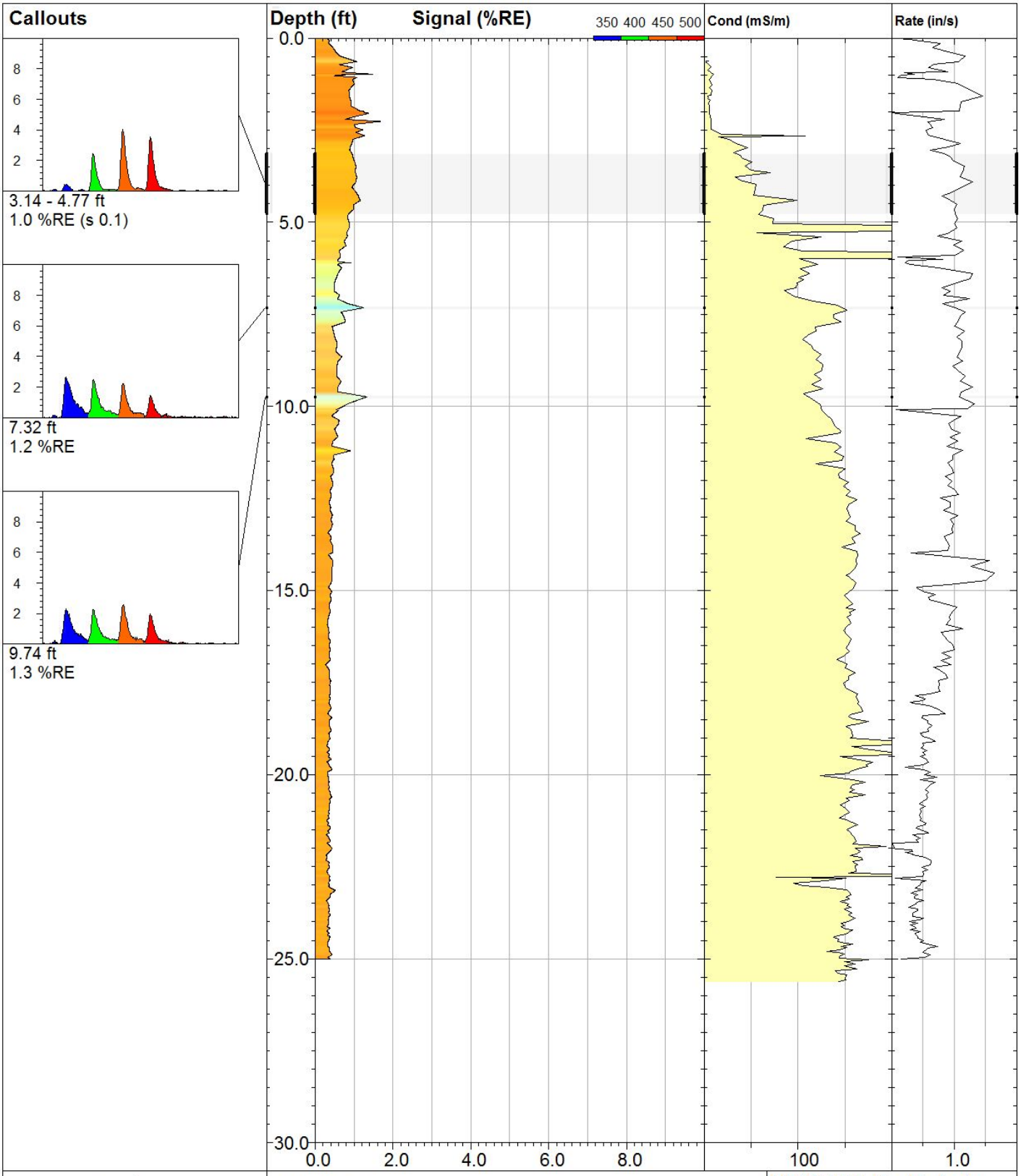
10-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **8.9 %RE @ 0.03 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 17:30 CST**



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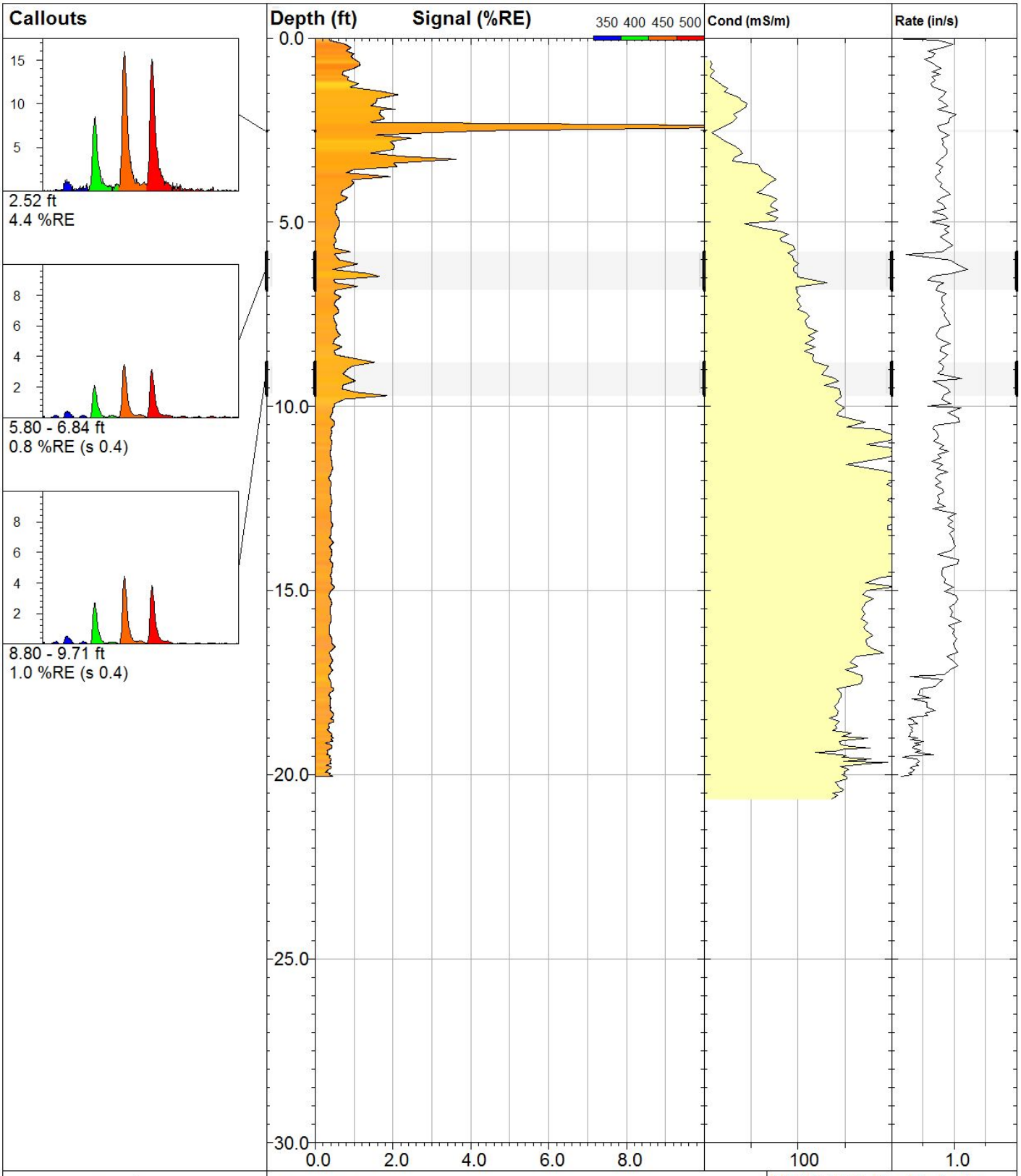
11-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.00 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1.7 %RE @ 2.26 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 09:55 CST**



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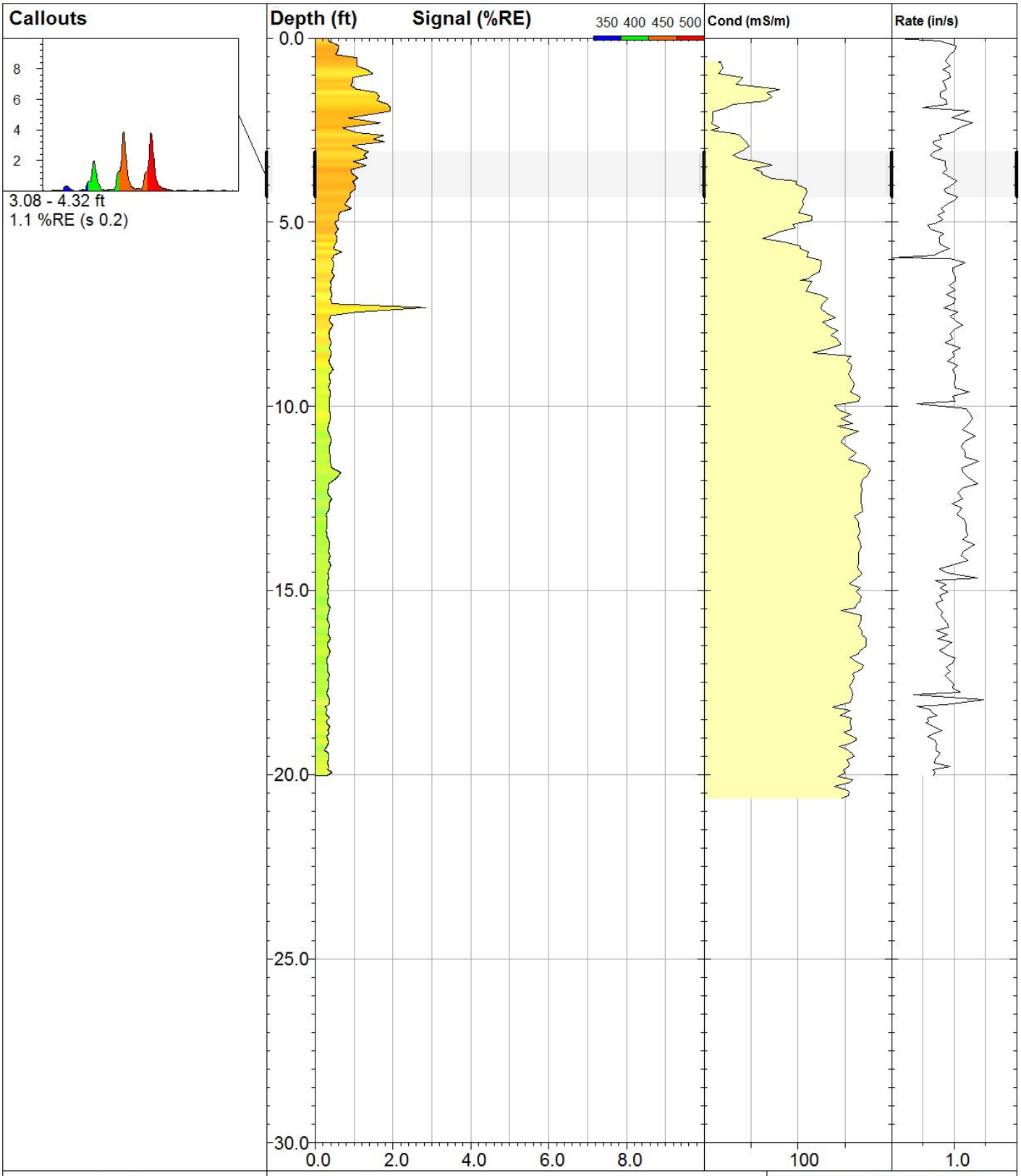
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.05 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **13.3 %RE @ 2.39 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 10:24 CST**



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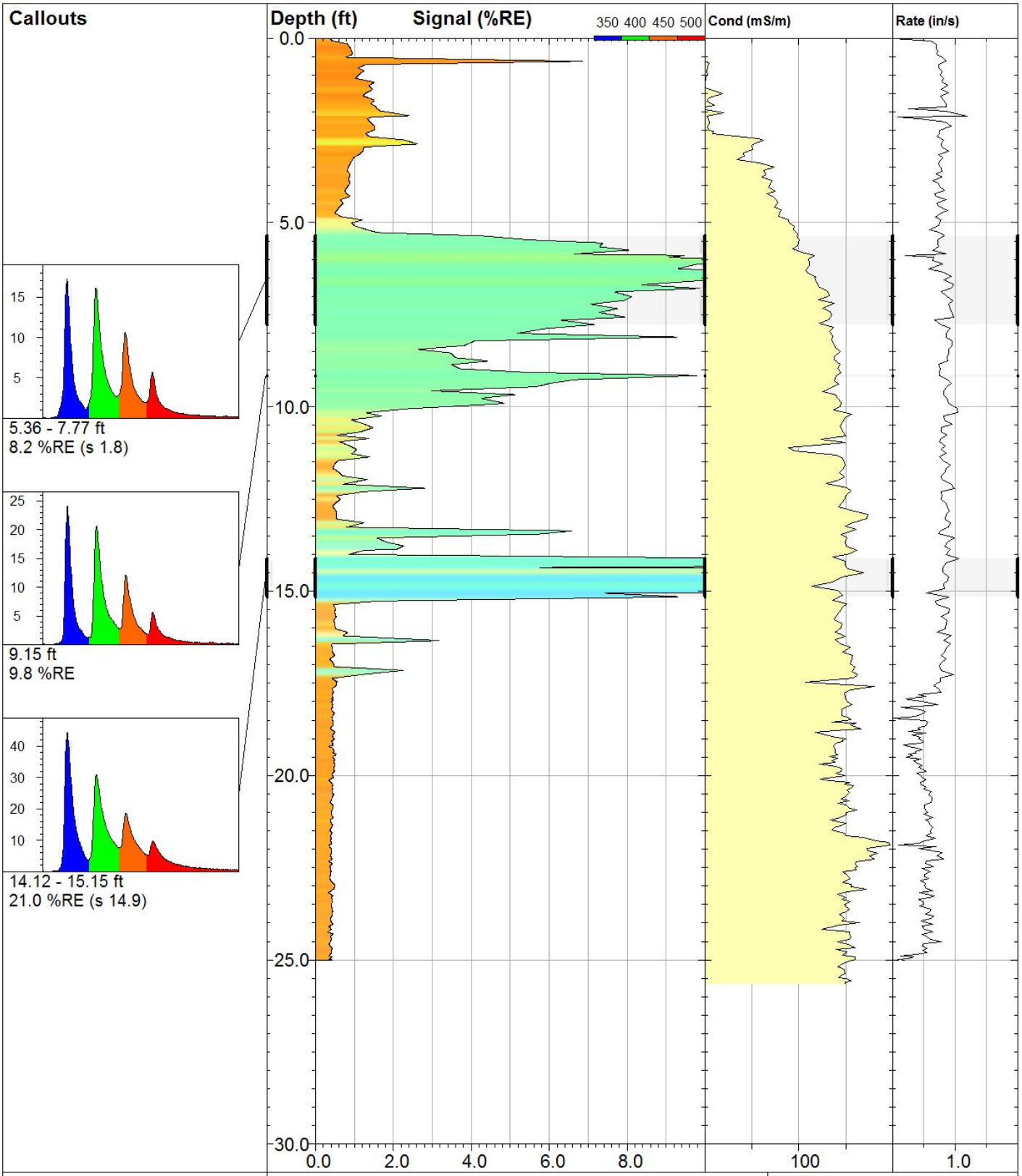
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.8 %RE @ 7.32 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 10:48 CST**



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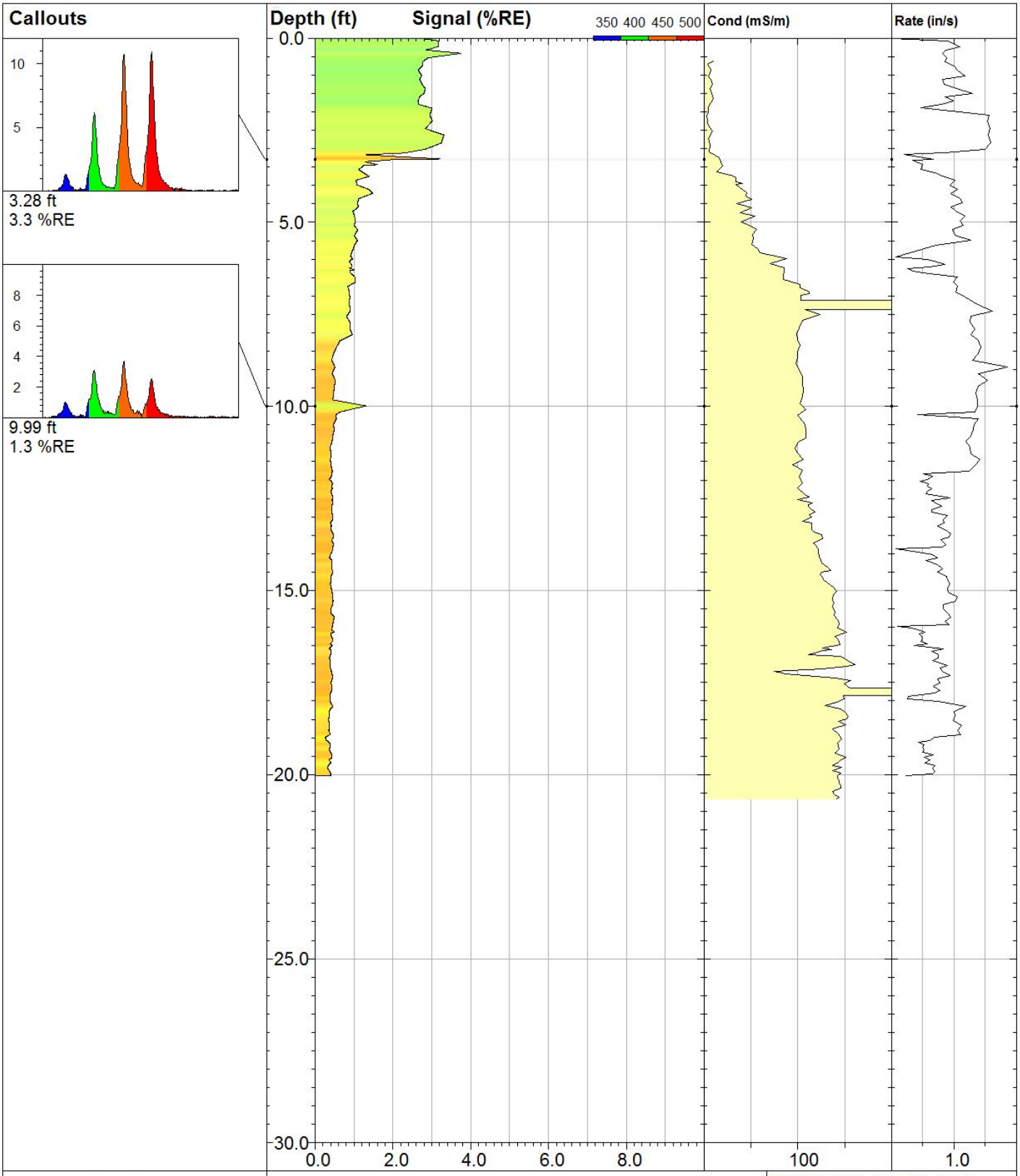
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **55.1 %RE @ 14.48 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 11:09 CST**



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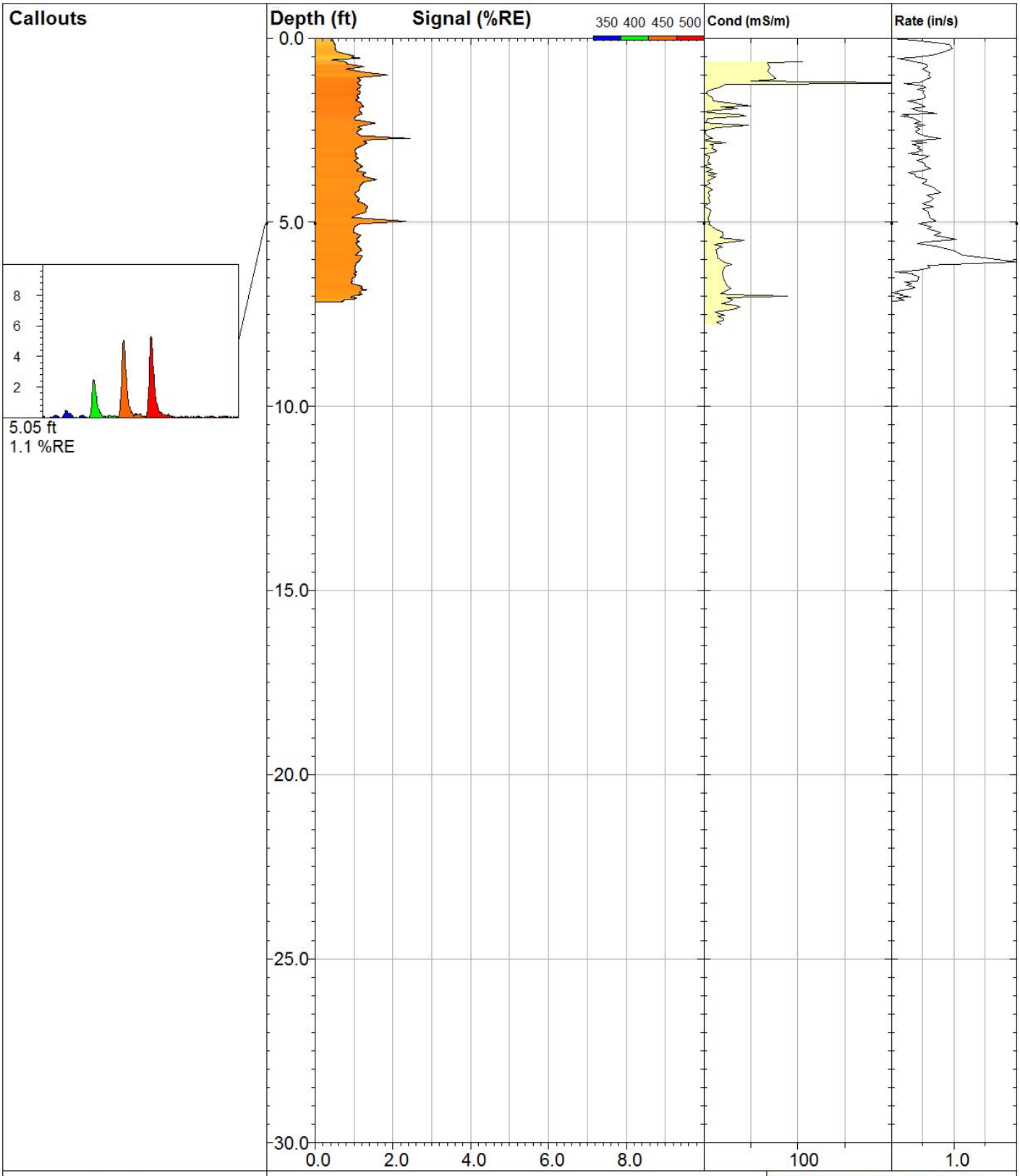
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.04 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.8 %RE @ 0.41 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 11:38 CST**



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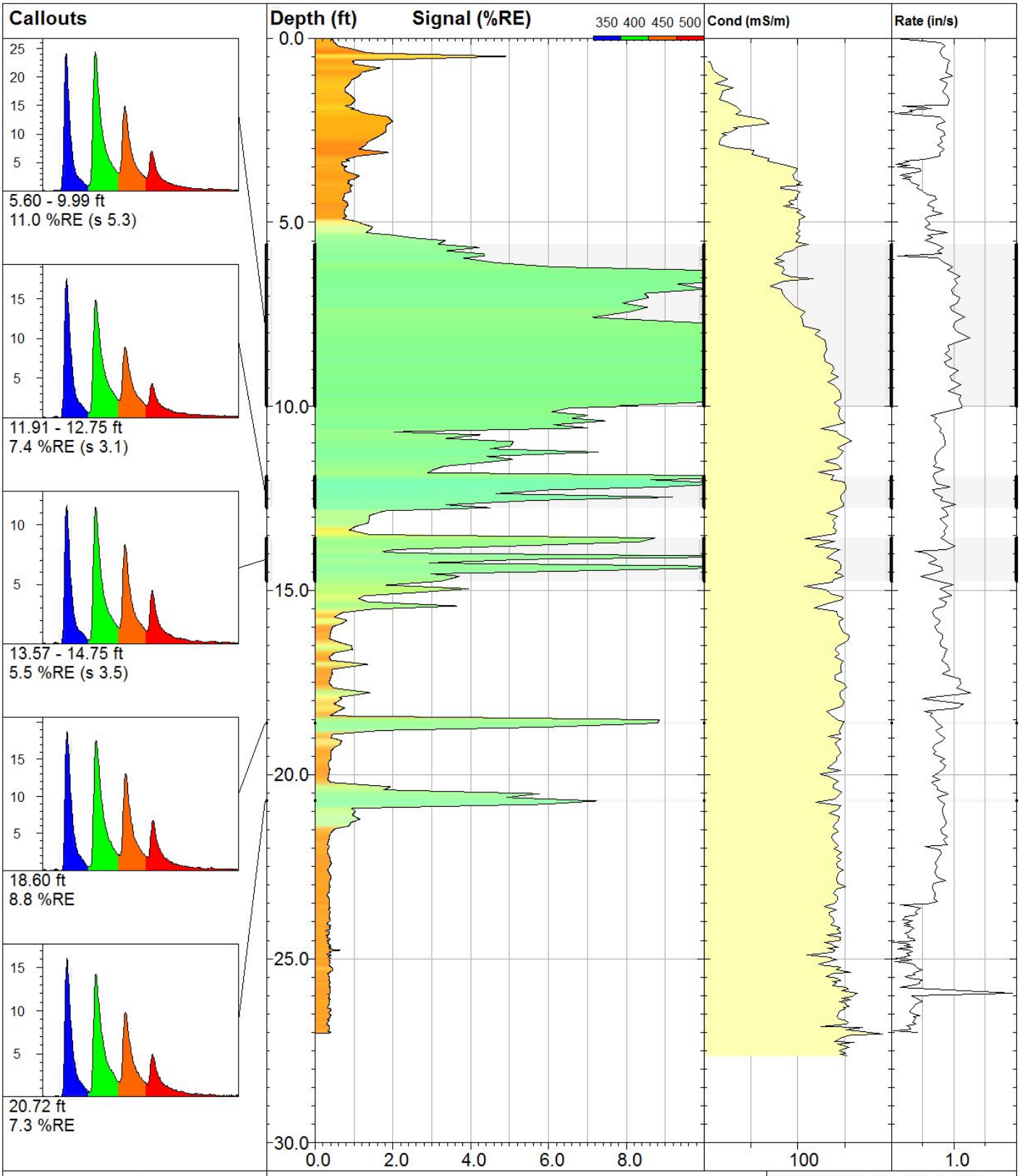
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **7.16 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.5 %RE @ 2.73 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 12:06 CST**



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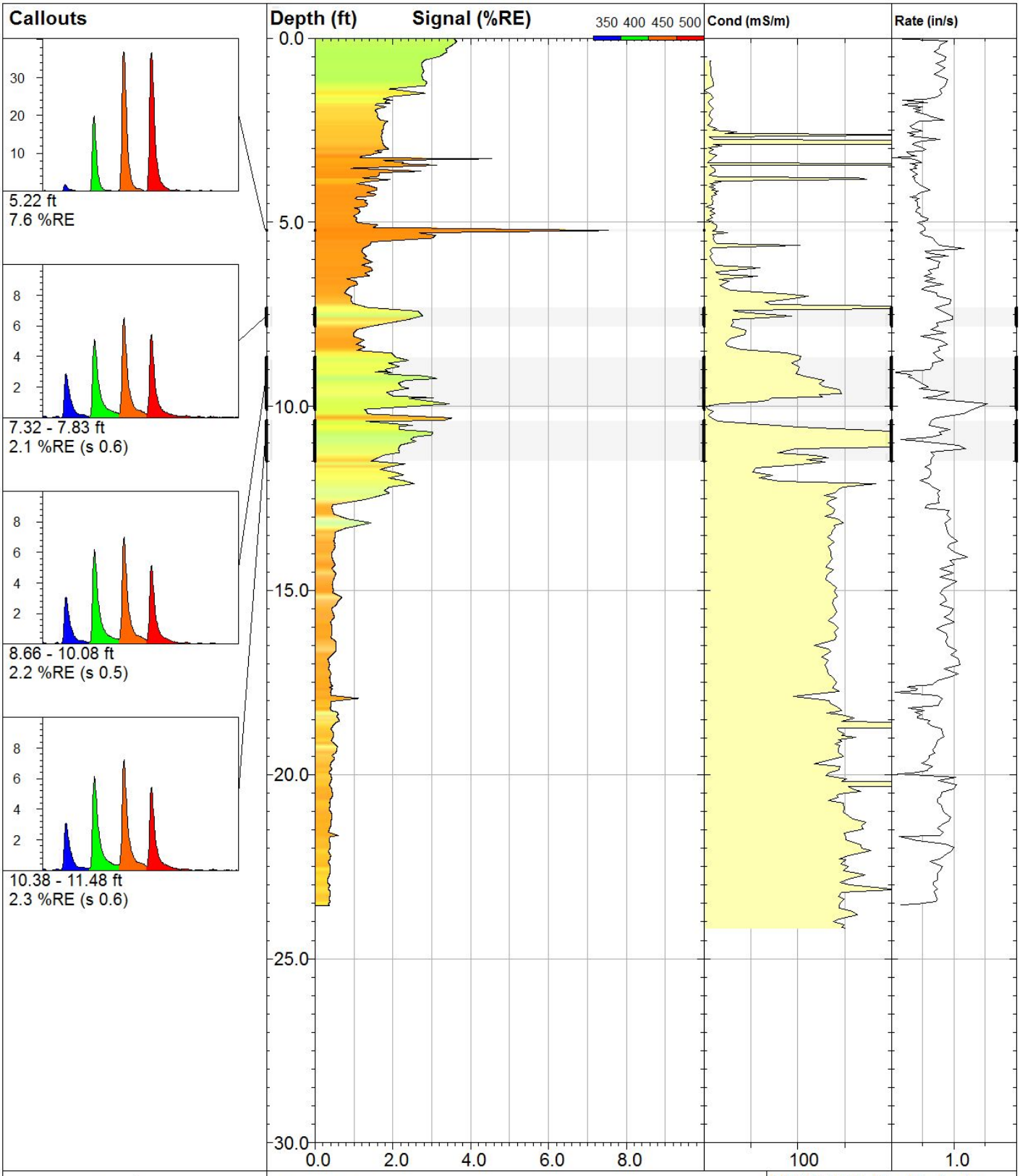
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **27.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **24.2 %RE @ 9.58 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 12:25 CST**



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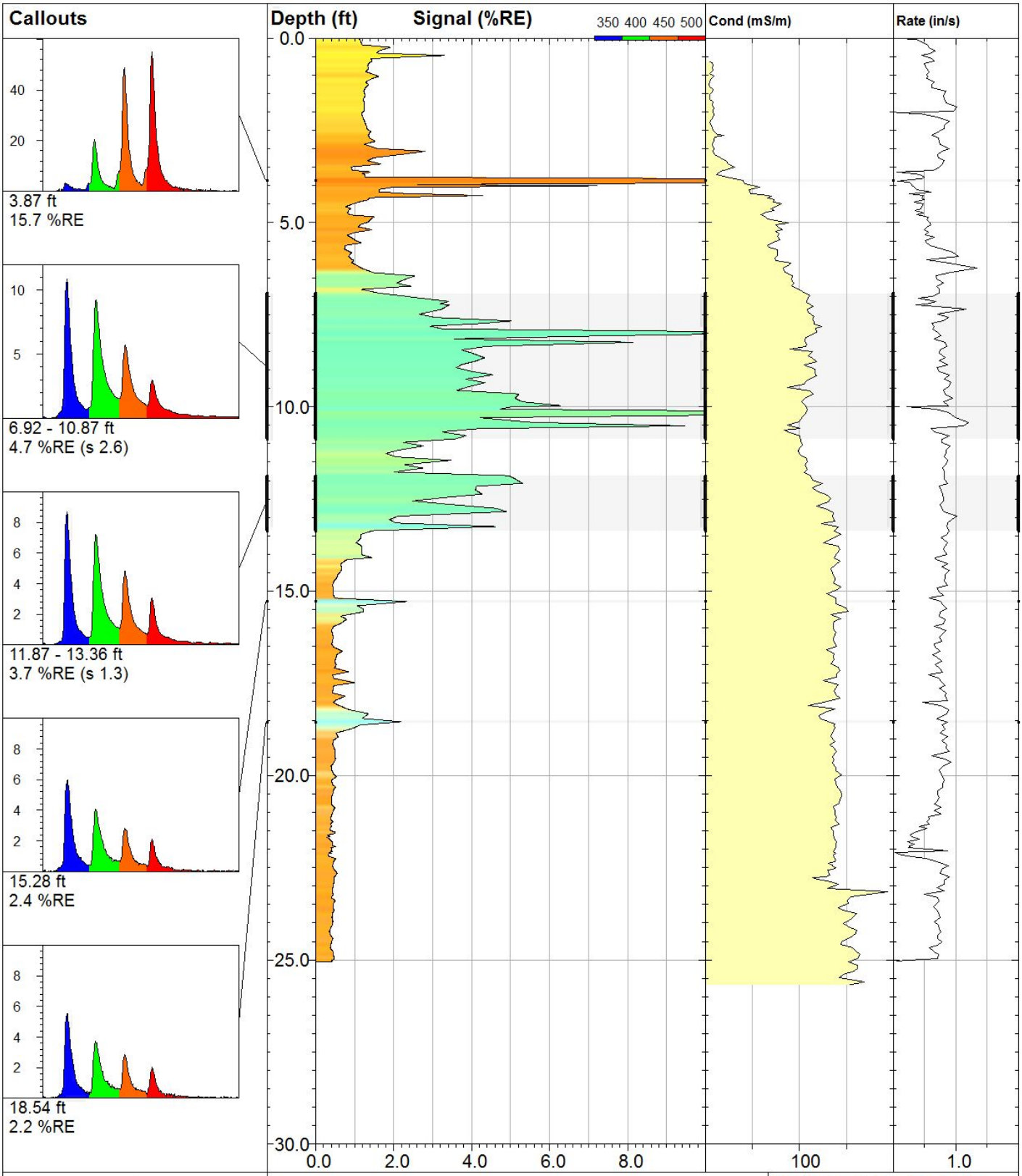
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **23.56 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **7.6 %RE @ 5.22 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 14:02 CST**



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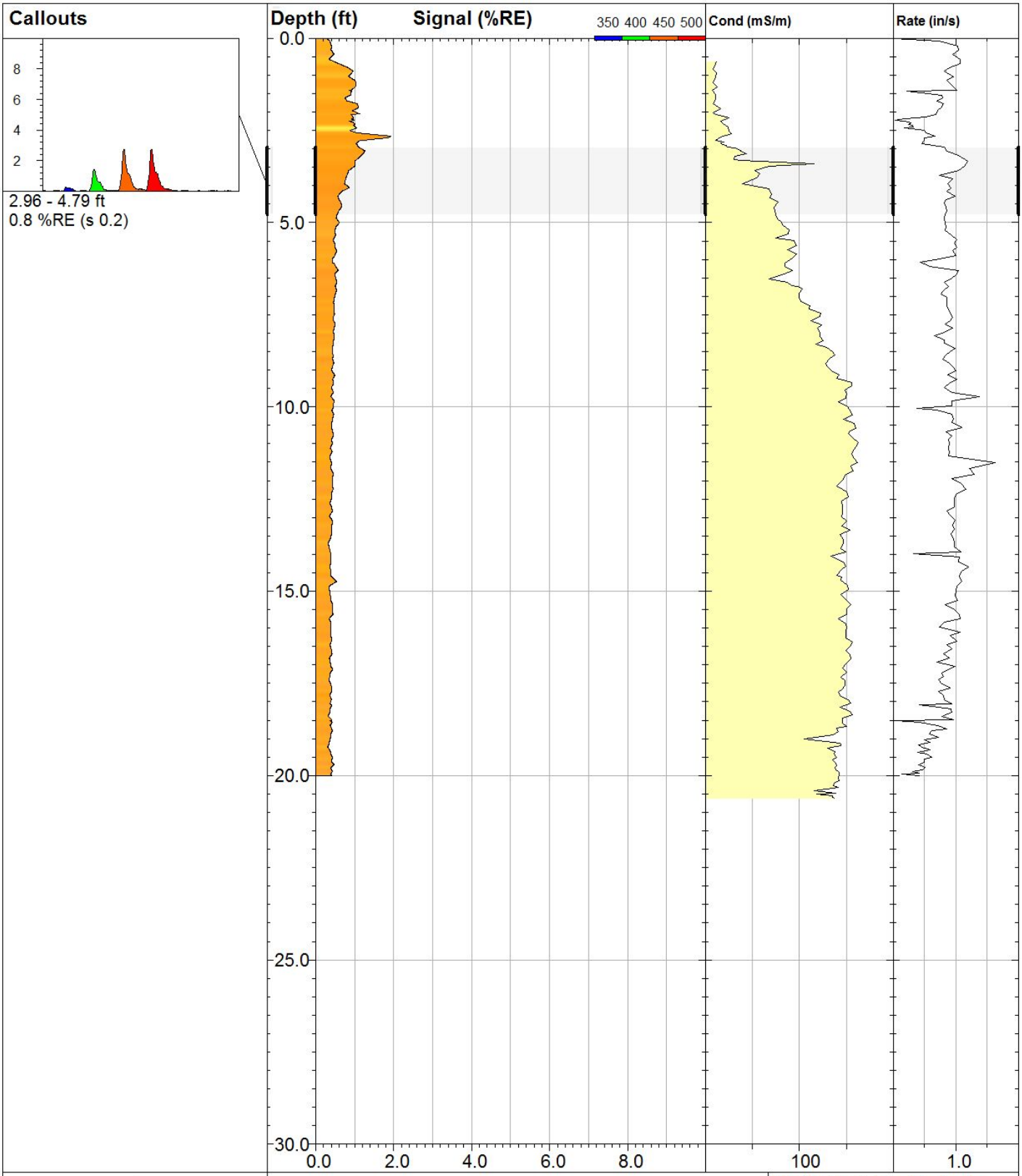
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.05 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **17.0 %RE @ 3.85 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 14:56 CST**



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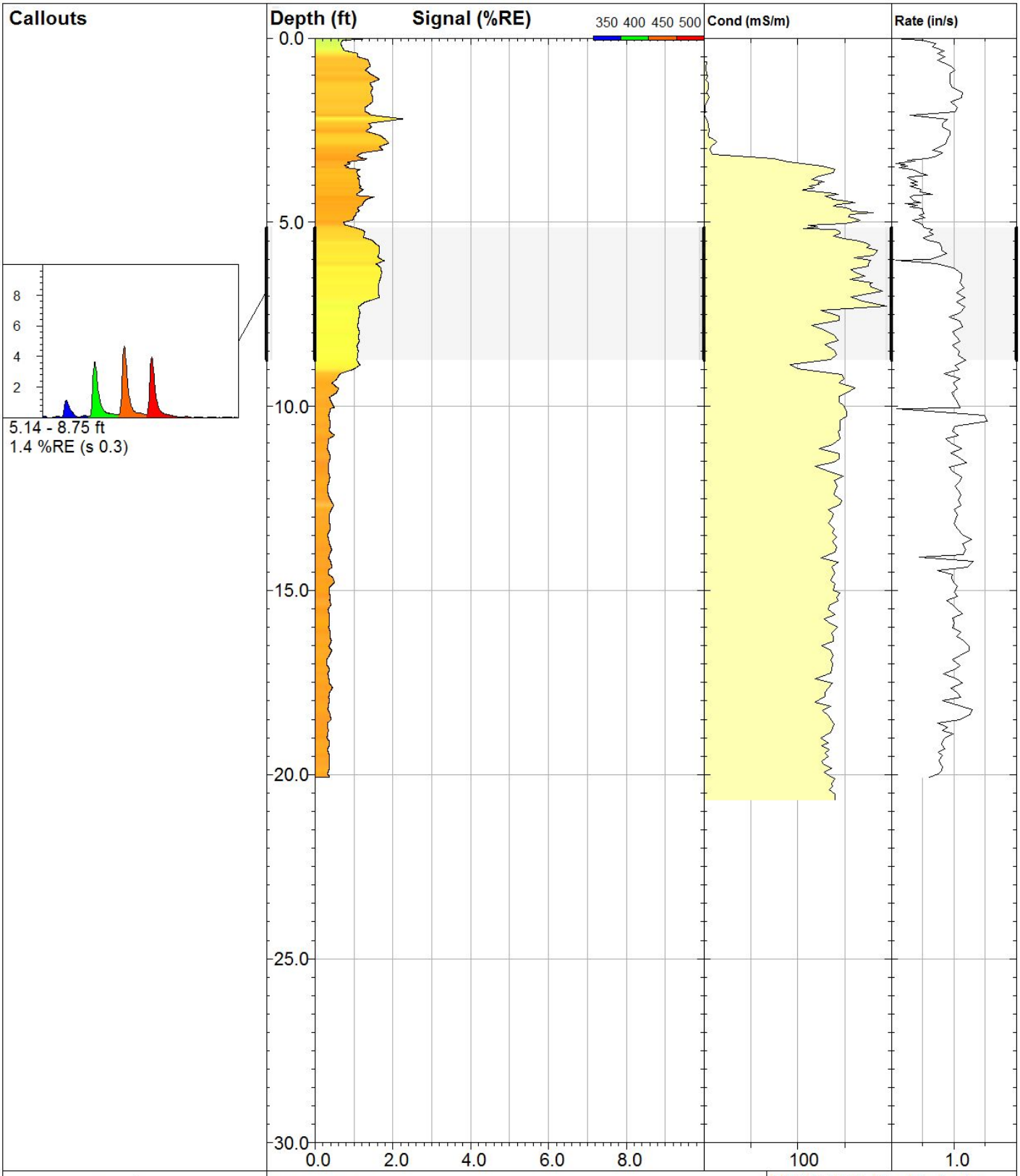
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.01 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1.9 %RE @ 2.66 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 15:36 CST**



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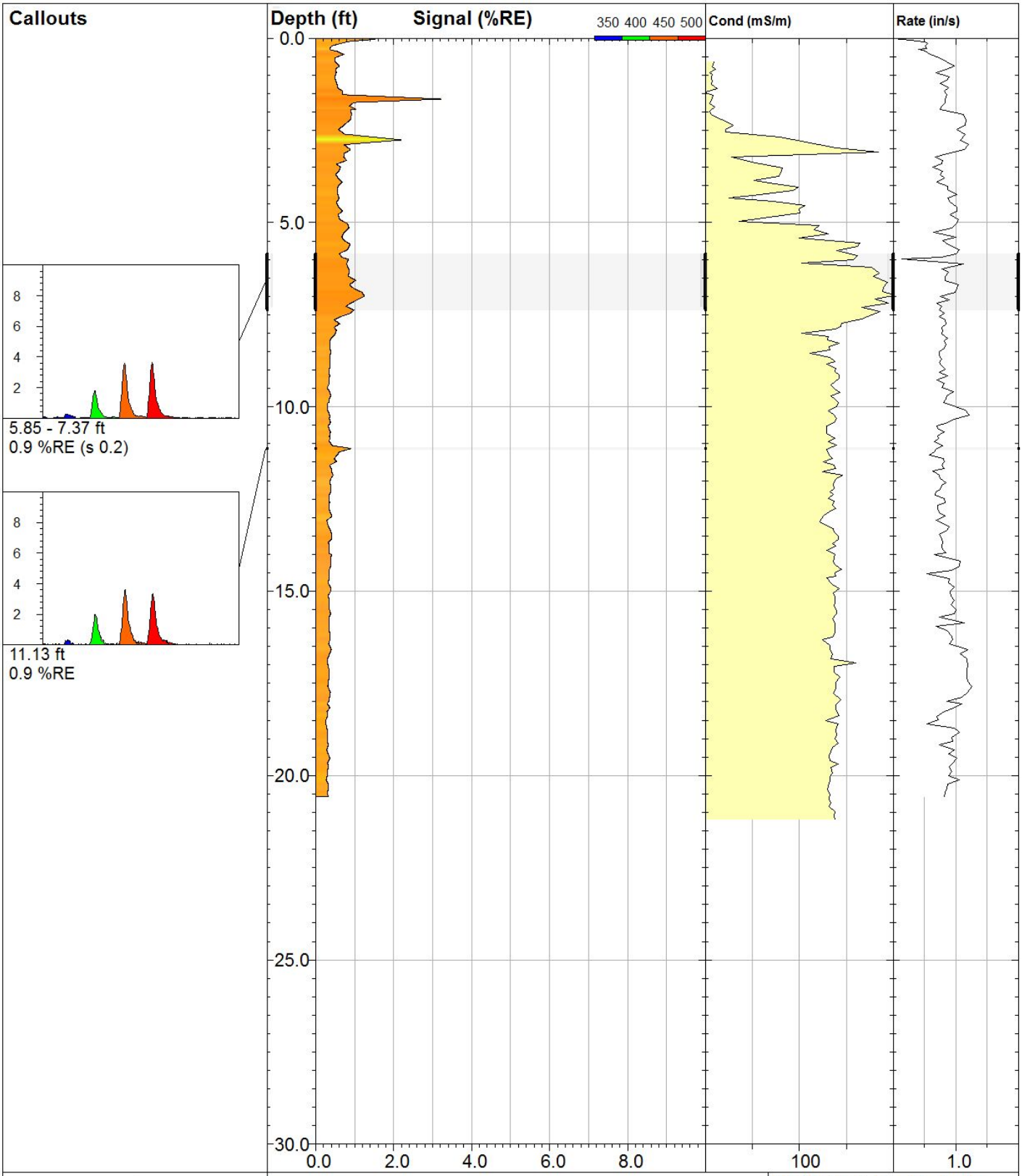
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.07 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.3 %RE @ 2.19 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 16:01 CST**



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22-LIF

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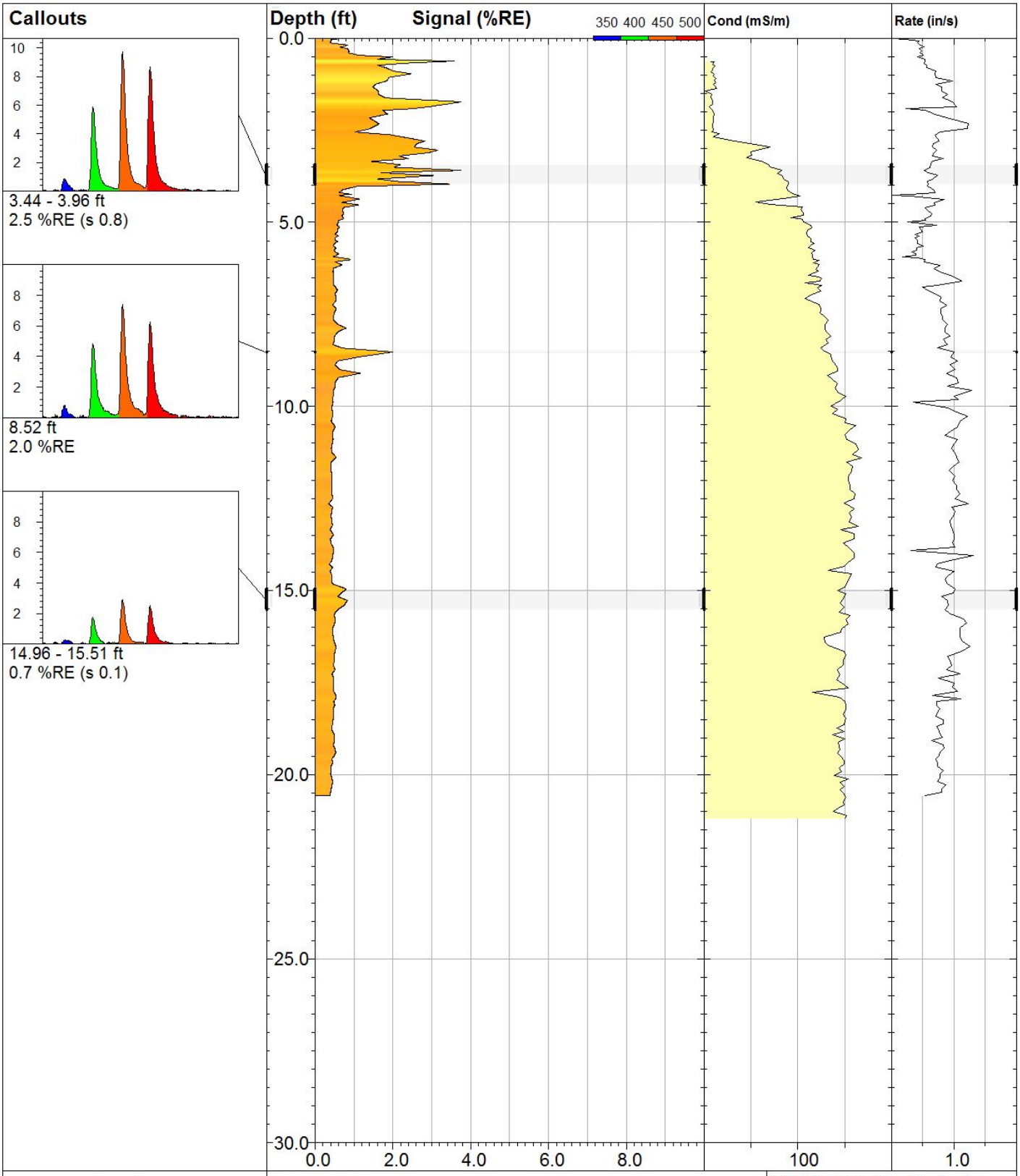
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.57 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.2 %RE @ 1.65 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 16:26 CST**



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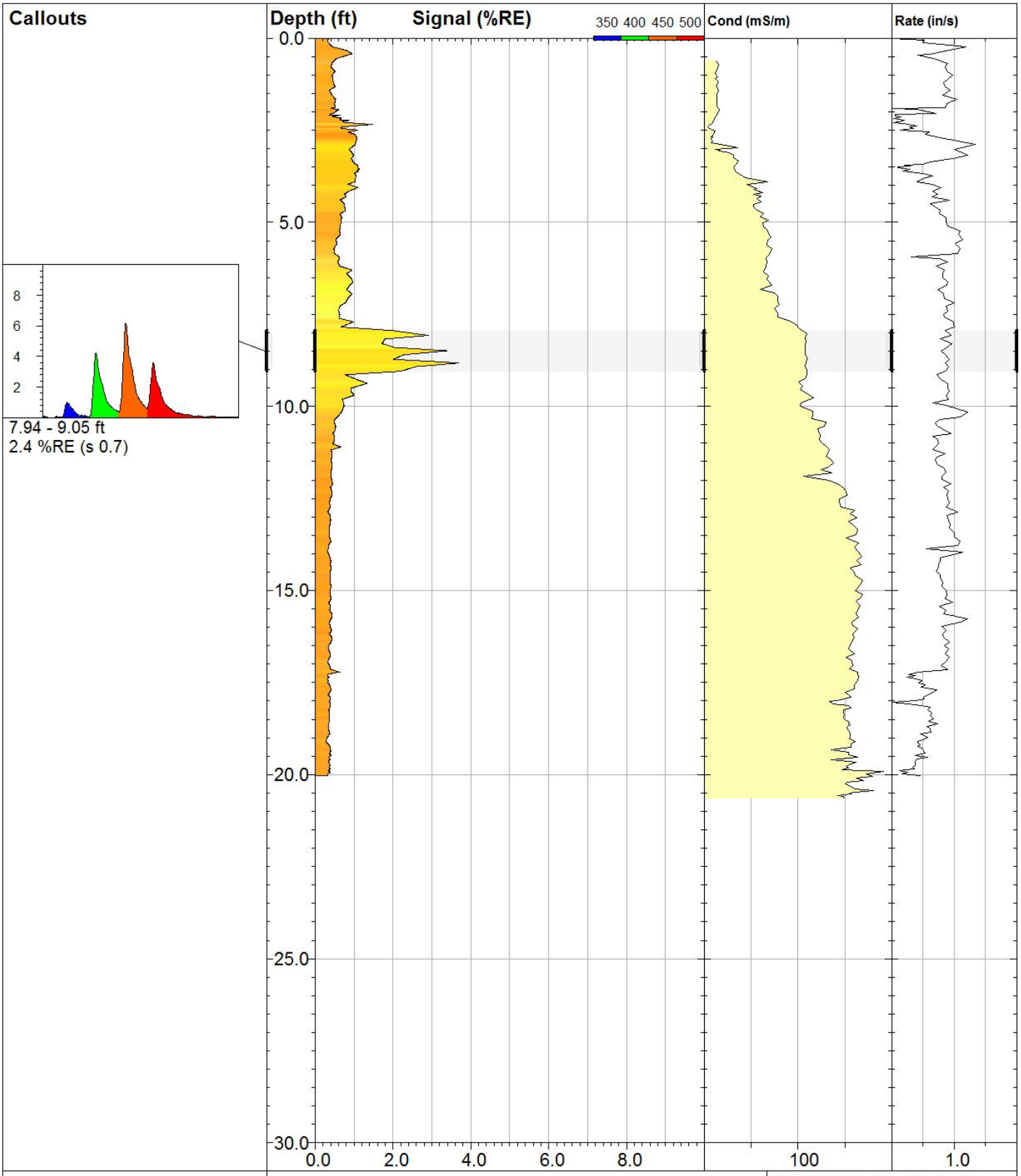
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.57 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.8 %RE @ 3.59 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 17:06 CST**



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24-LIF

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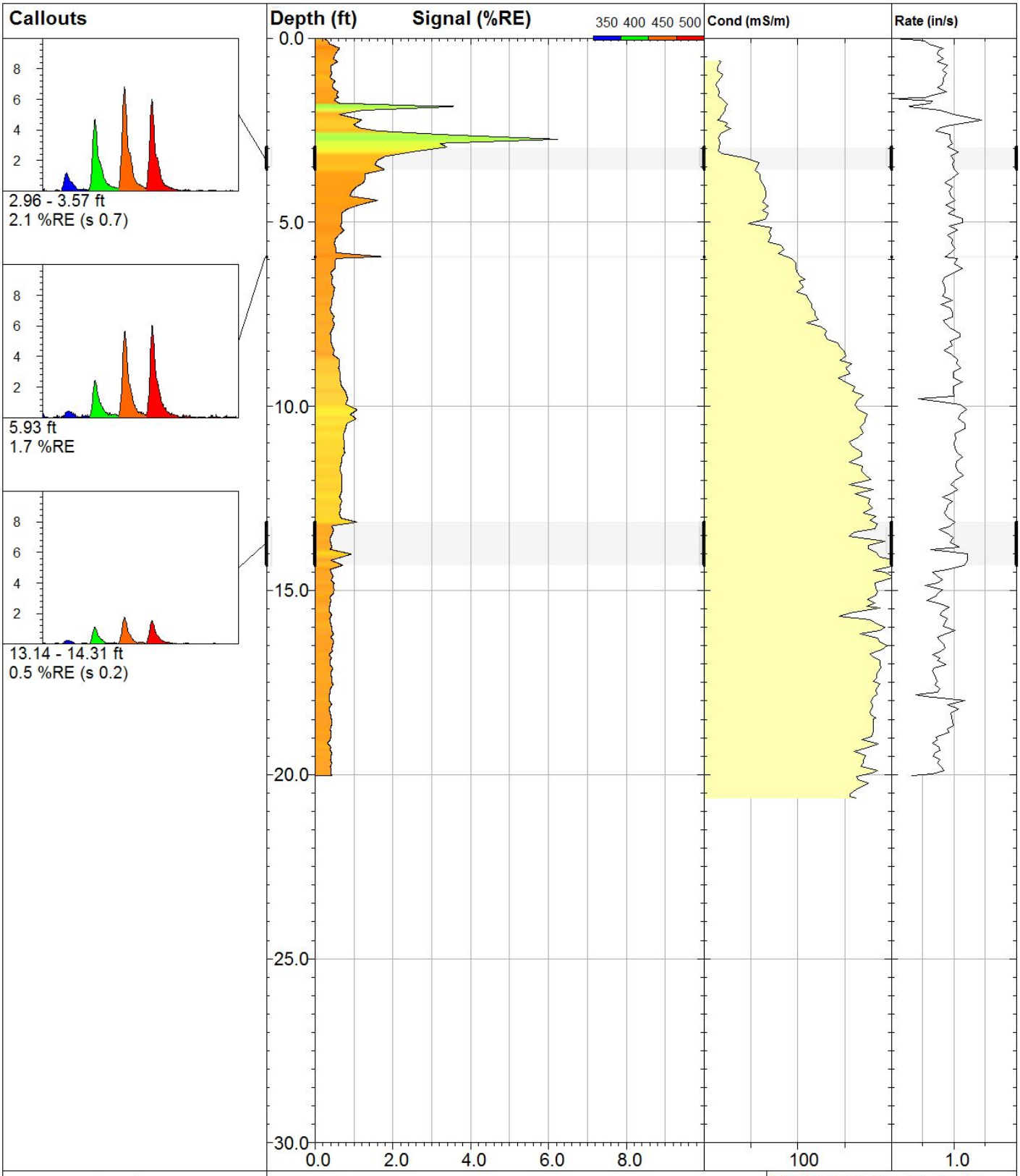
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.7 %RE @ 8.82 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 17:31 CST**



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25-LIF

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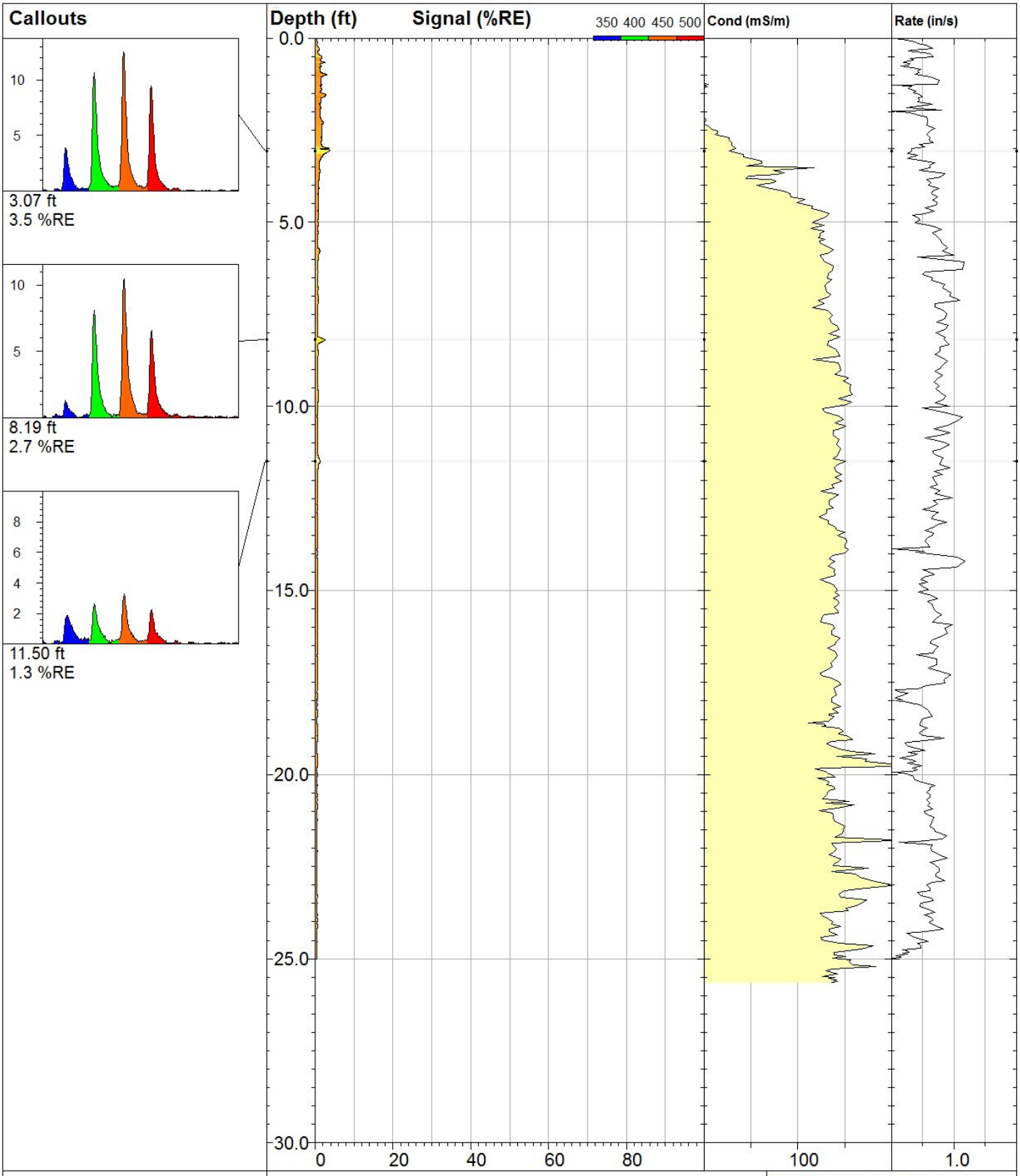
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **6.2 %RE @ 2.75 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 18:03 CST**

Appendix C

UVOST® Logs at 100% RE



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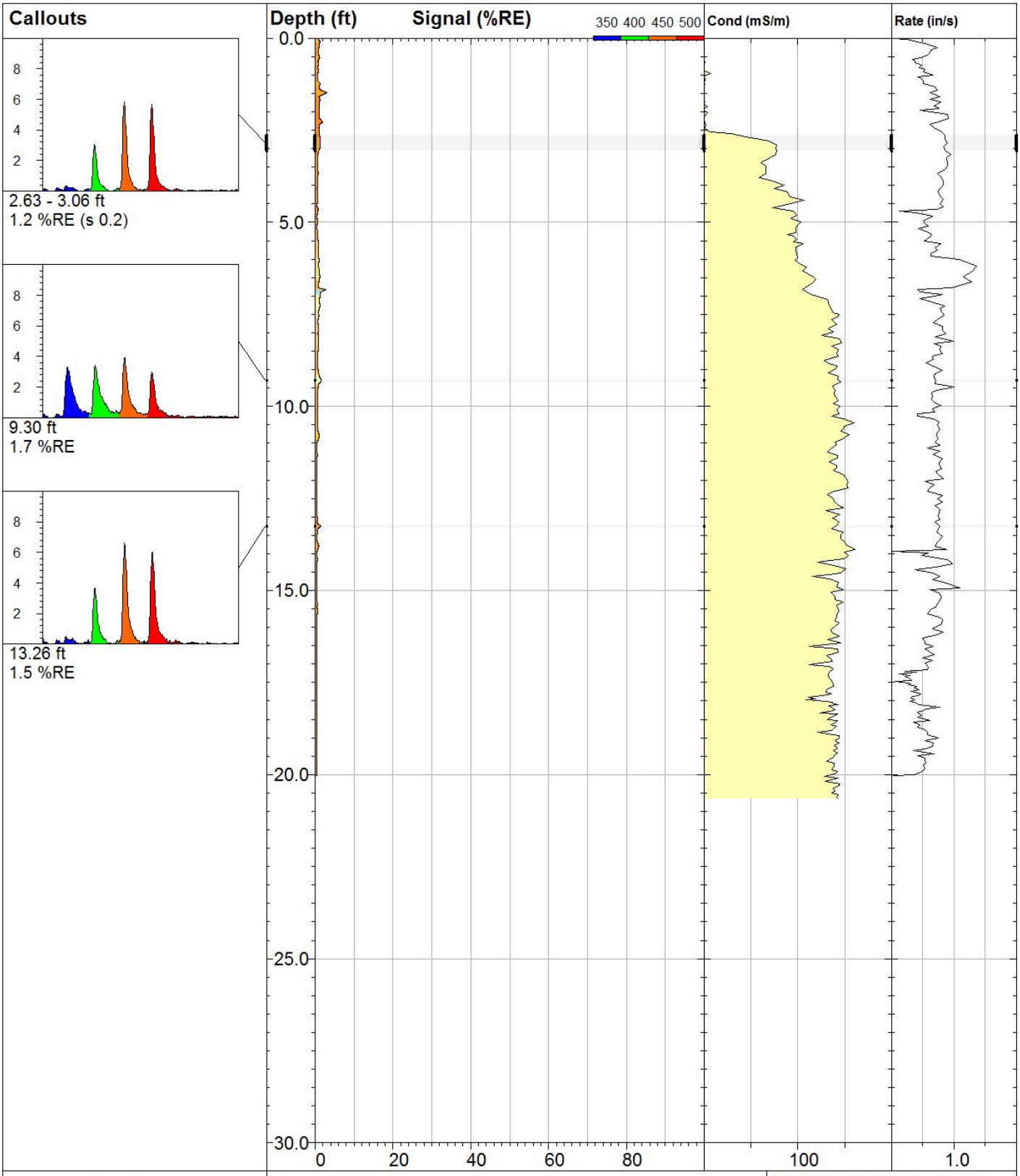
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.01 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.8 %RE @ 2.99 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 10:54 CST**



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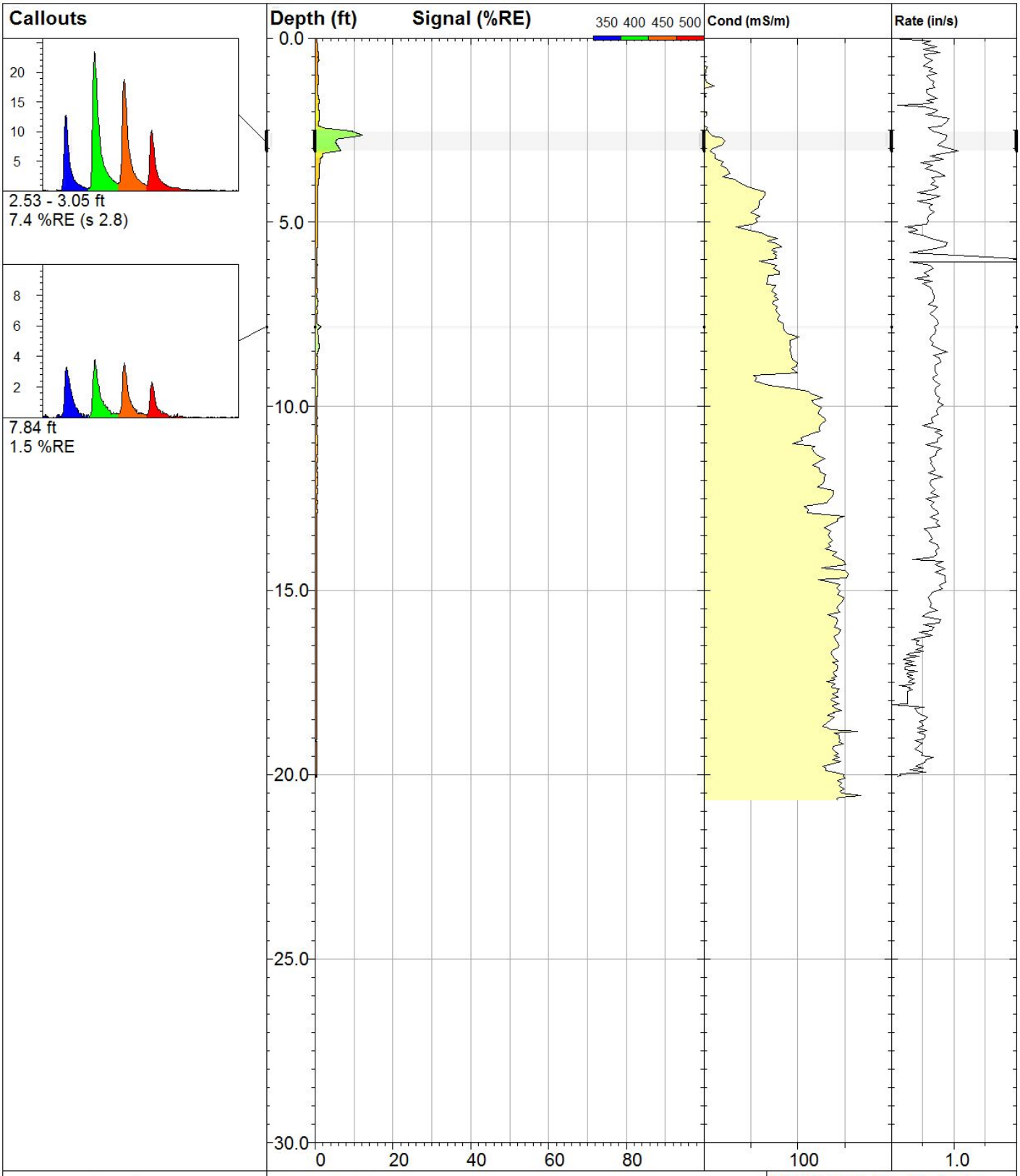
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.0 %RE @ 1.48 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 11:37 CST**



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03-LIF

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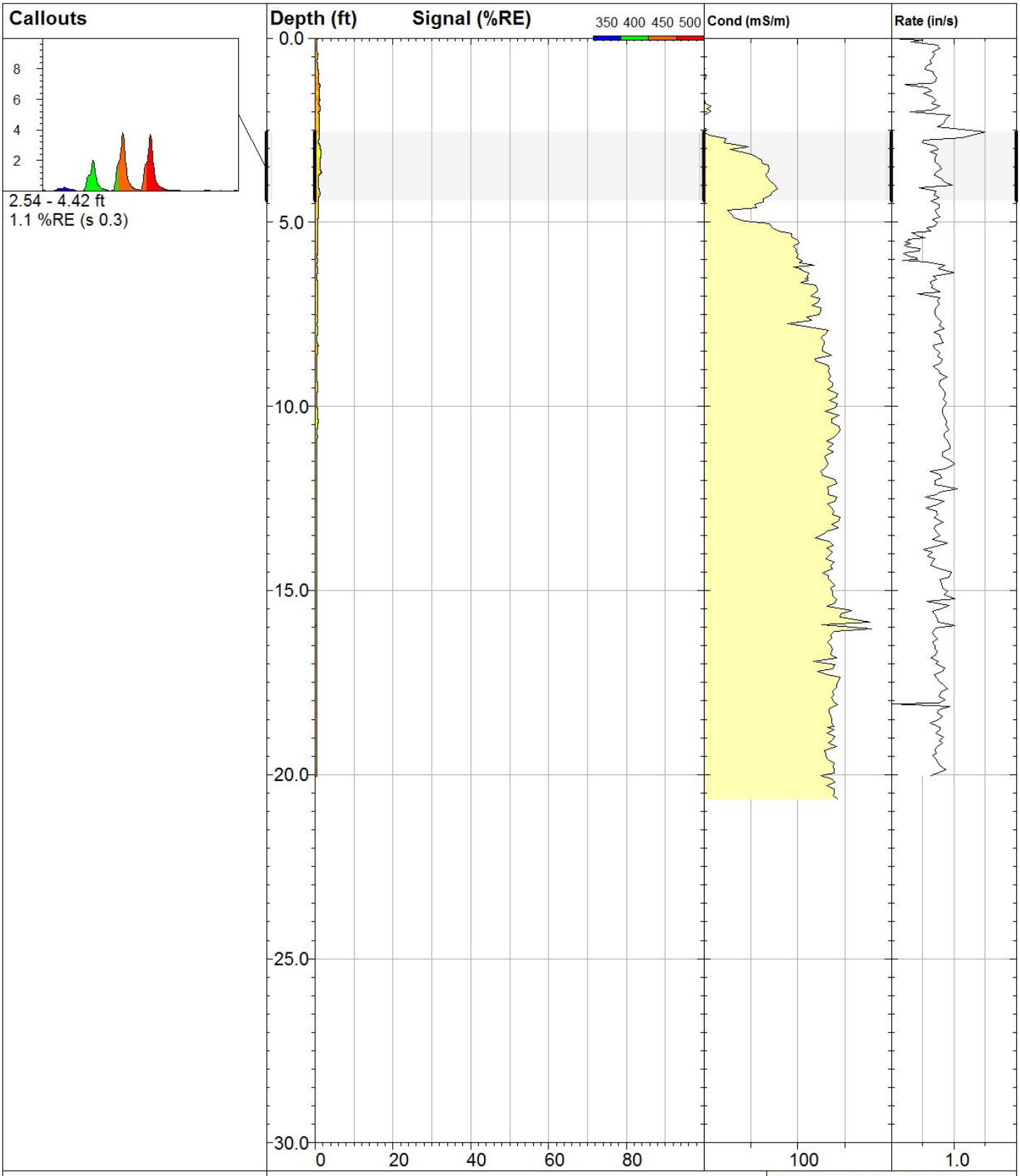
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.08 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **12.2 %RE @ 2.64 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 12:05 CST**



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04-LIF

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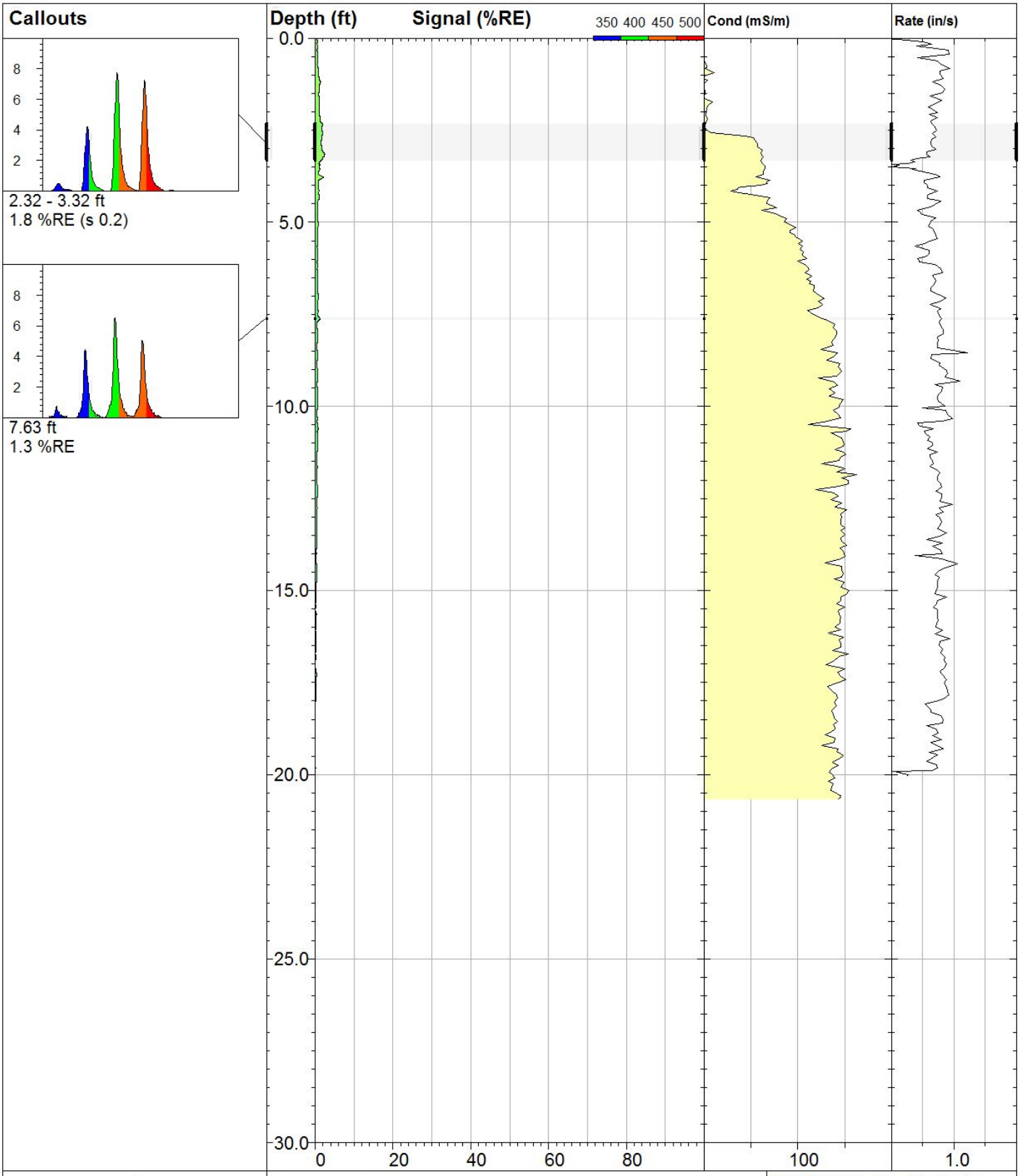
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.05 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1.7 %RE @ 3.64 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 12:35 CST**



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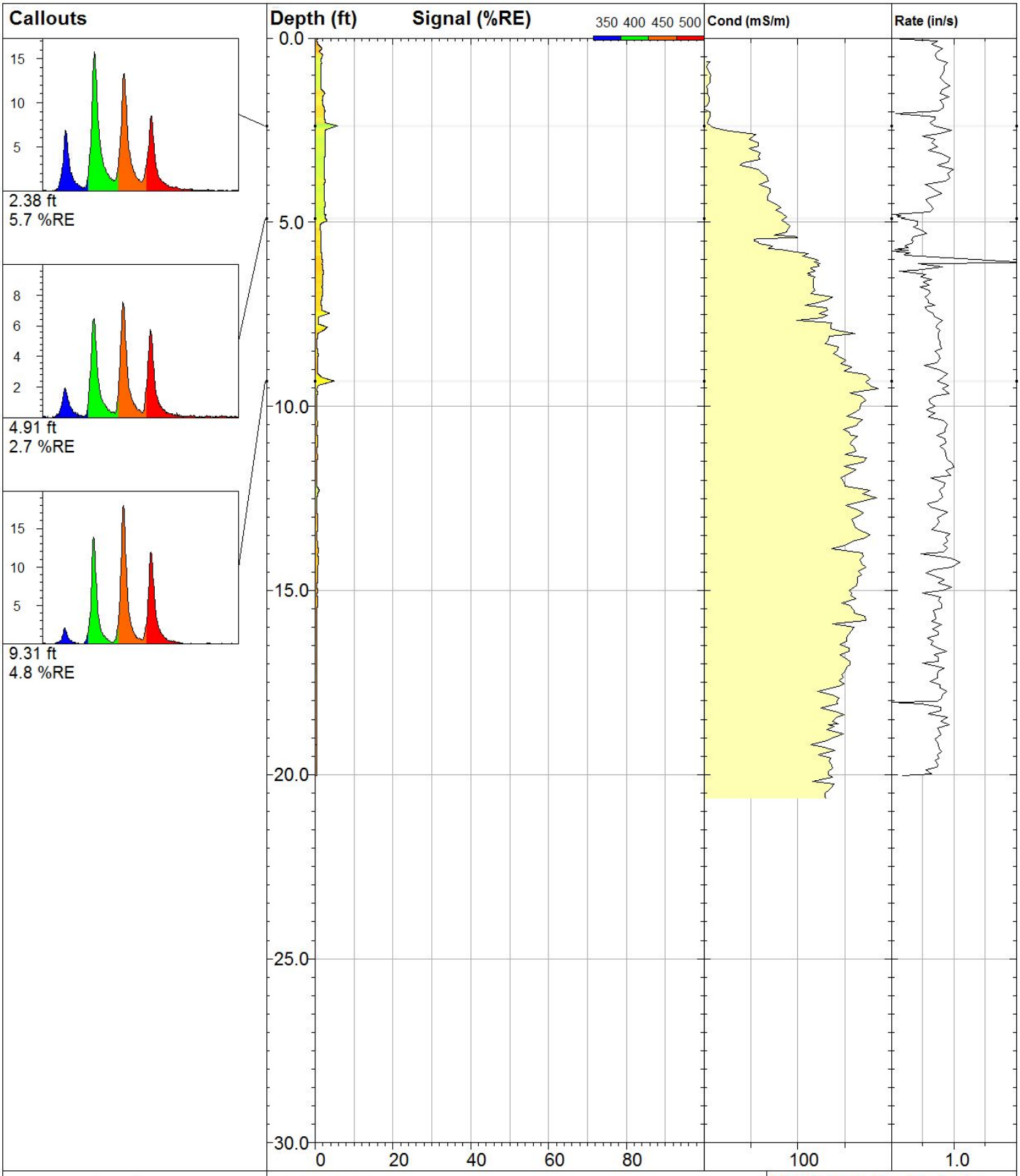
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.4 %RE @ 3.15 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 14:06 CST**



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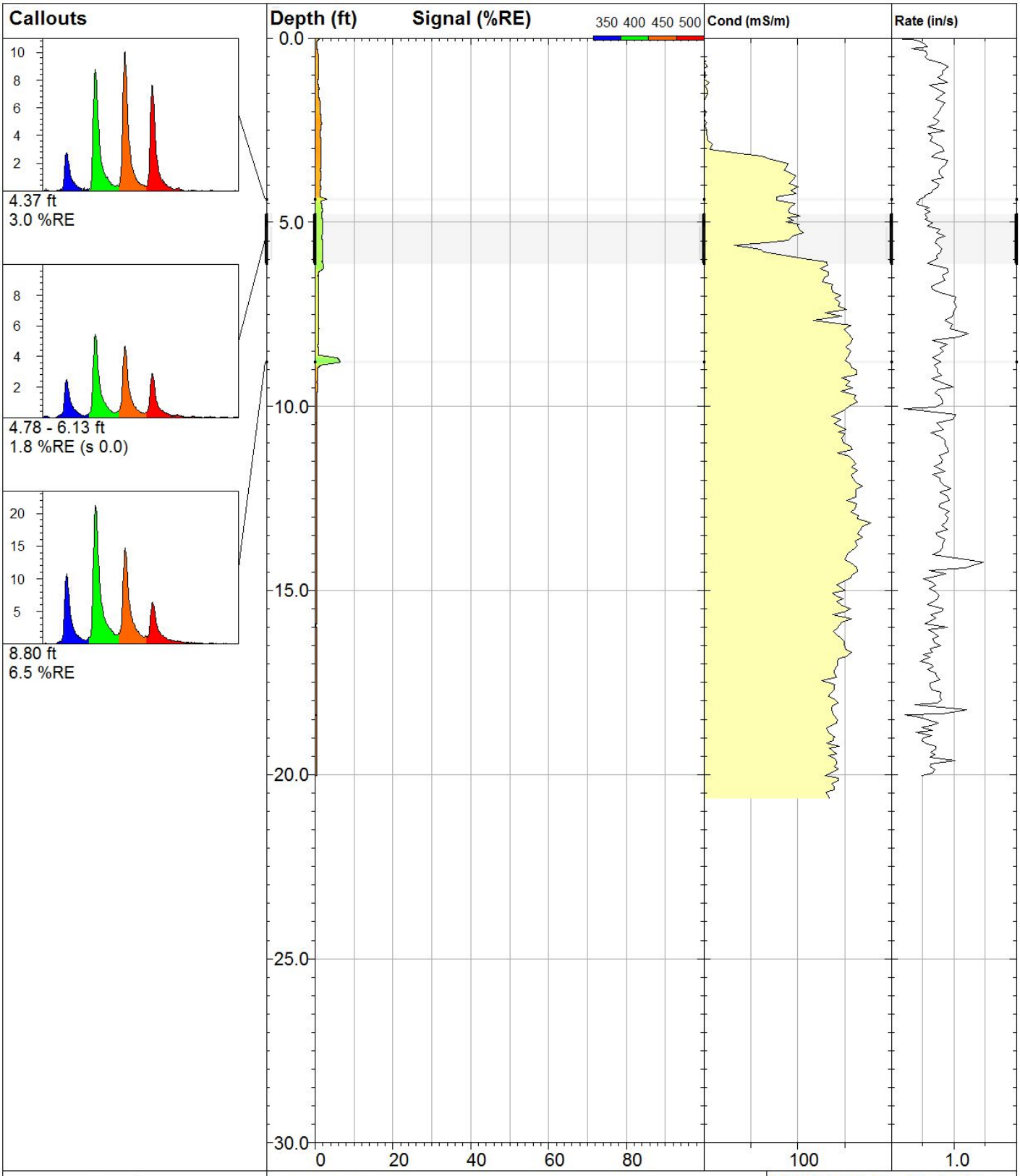
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.04 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **5.7 %RE @ 2.38 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 14:47 CST**



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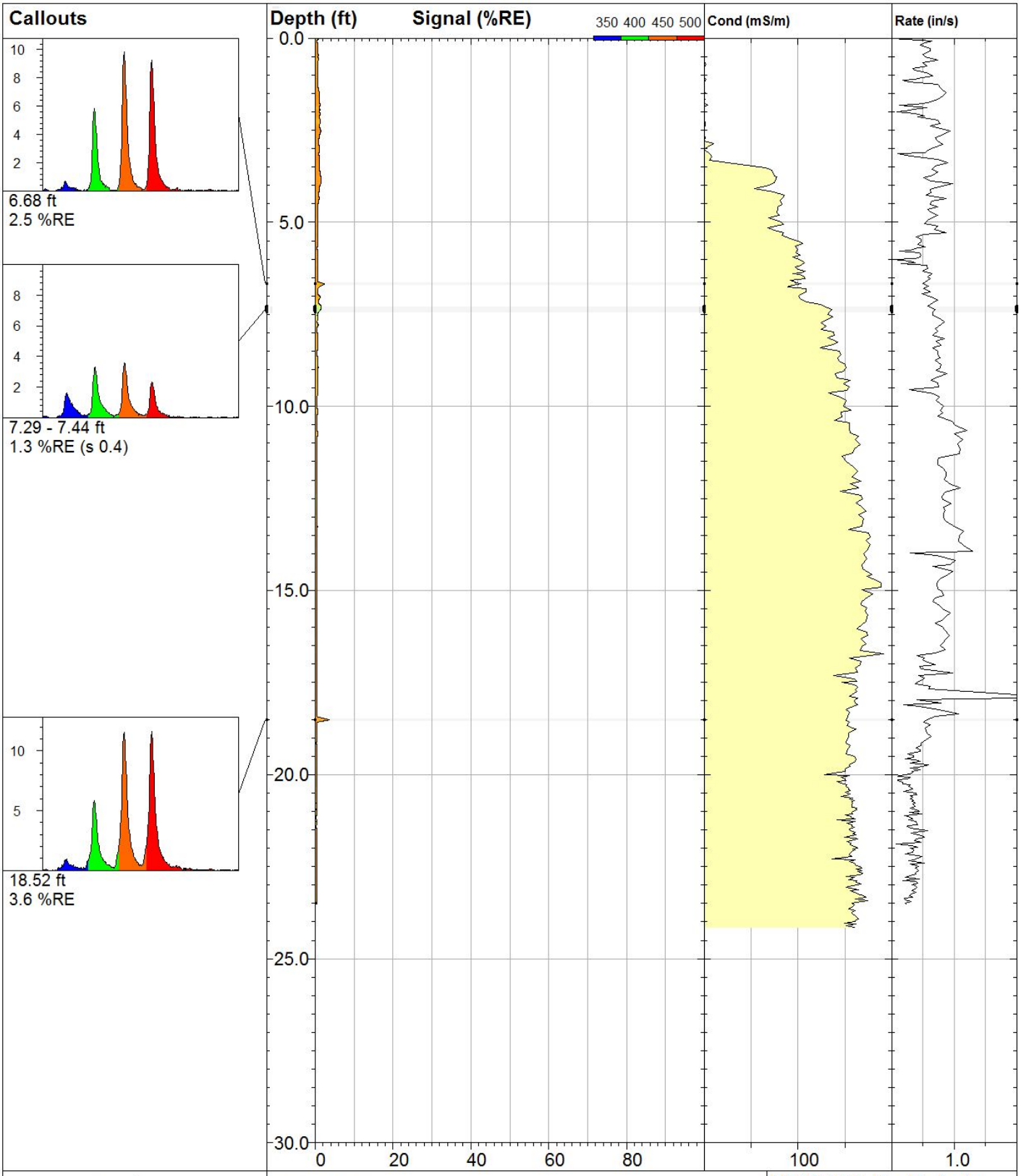
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **6.5 %RE @ 8.80 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 15:20 CST**



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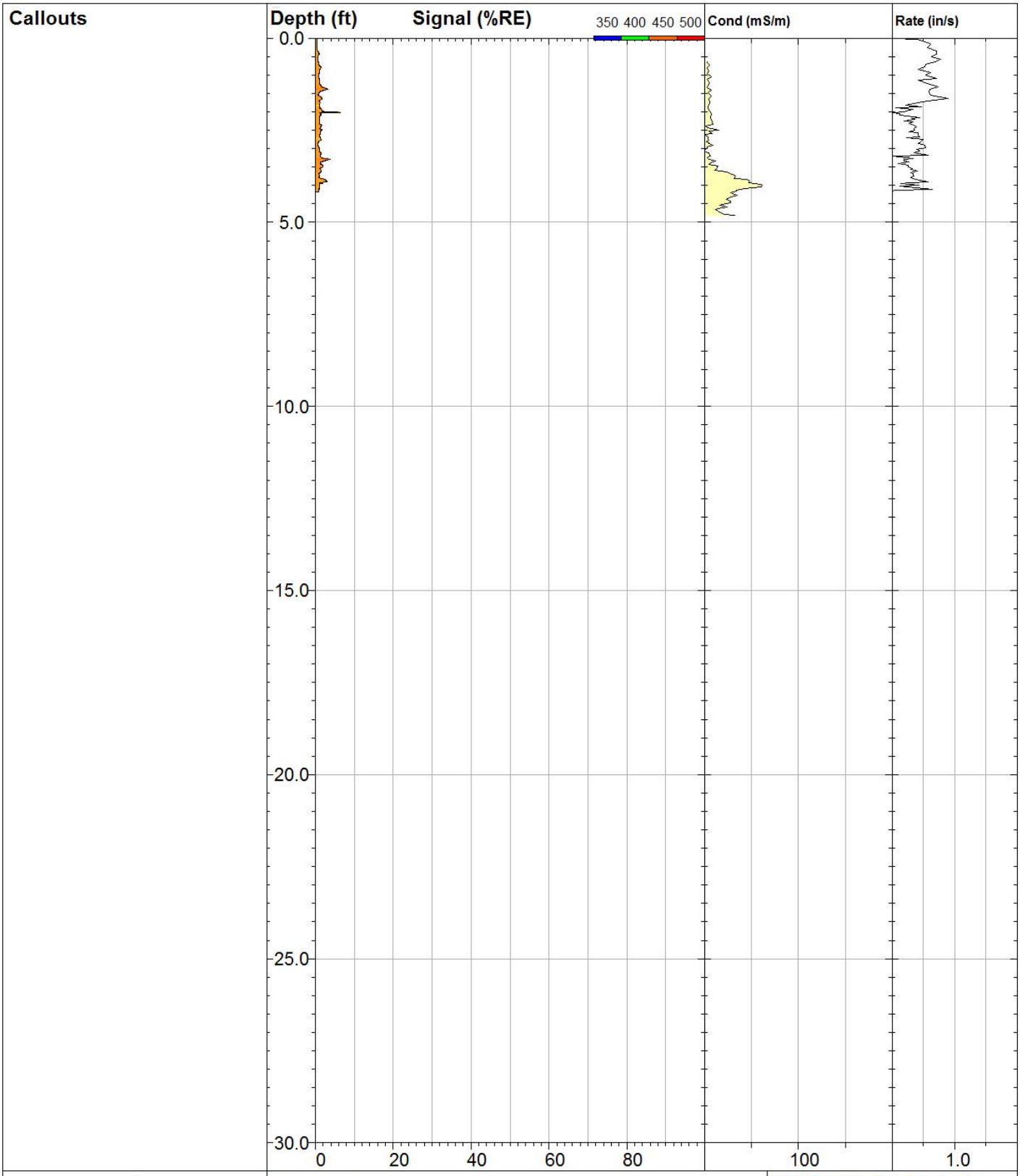
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **23.52 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.6 %RE @ 18.52 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 16:00 CST**



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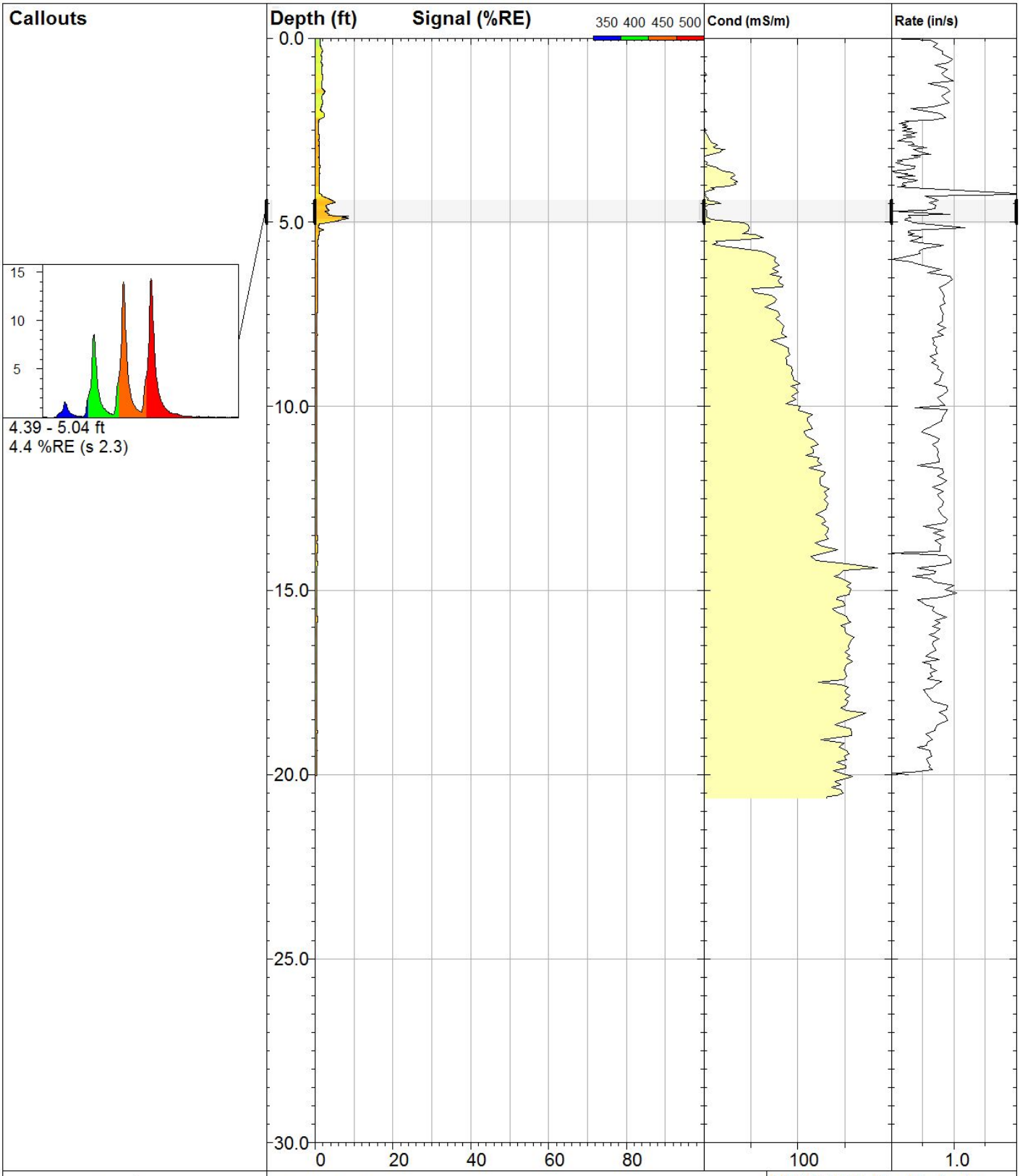
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **4.18 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **7.1 %RE @ 2.02 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 16:34 CST**



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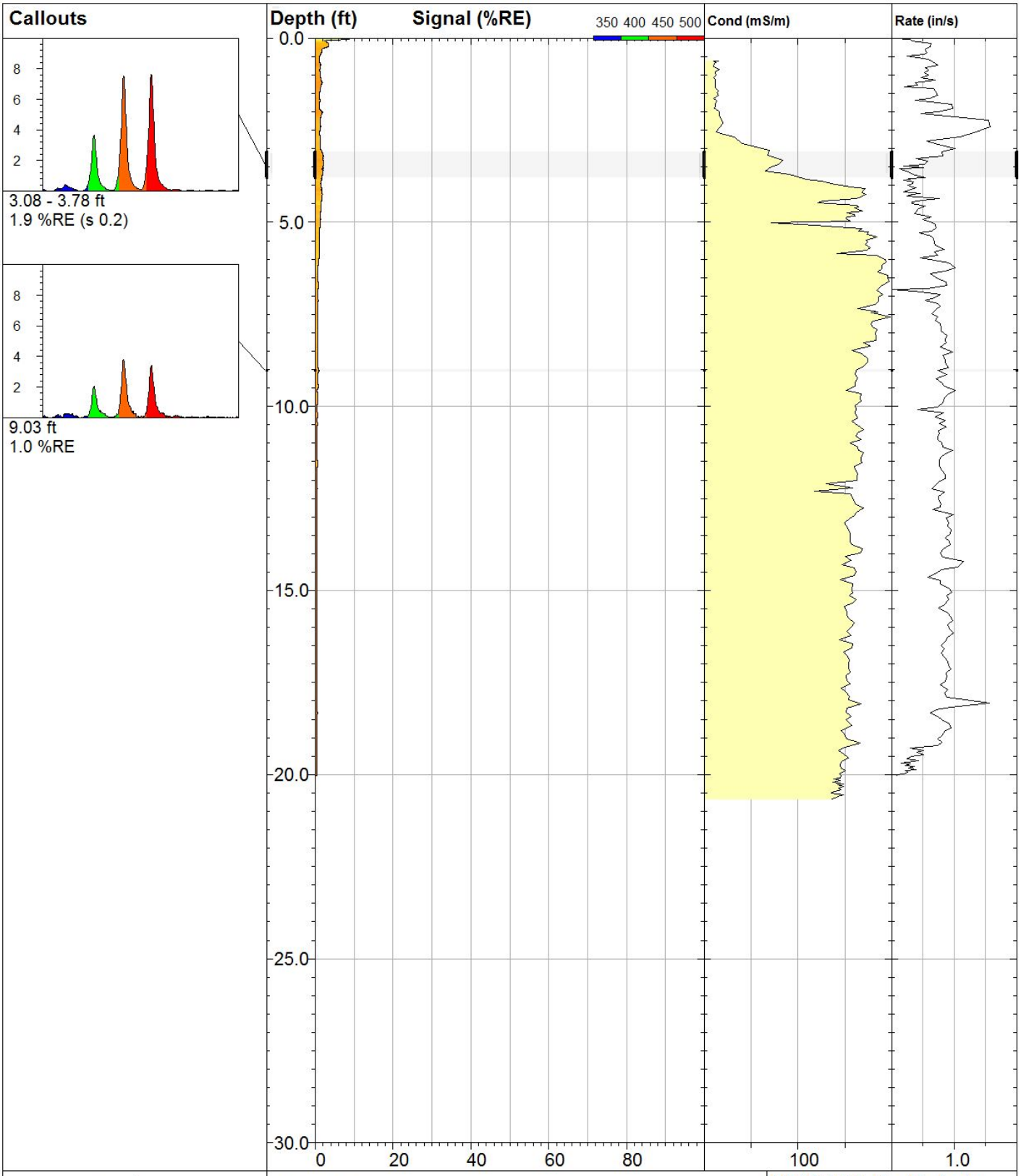
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **8.7 %RE @ 4.83 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 16:58 CST**



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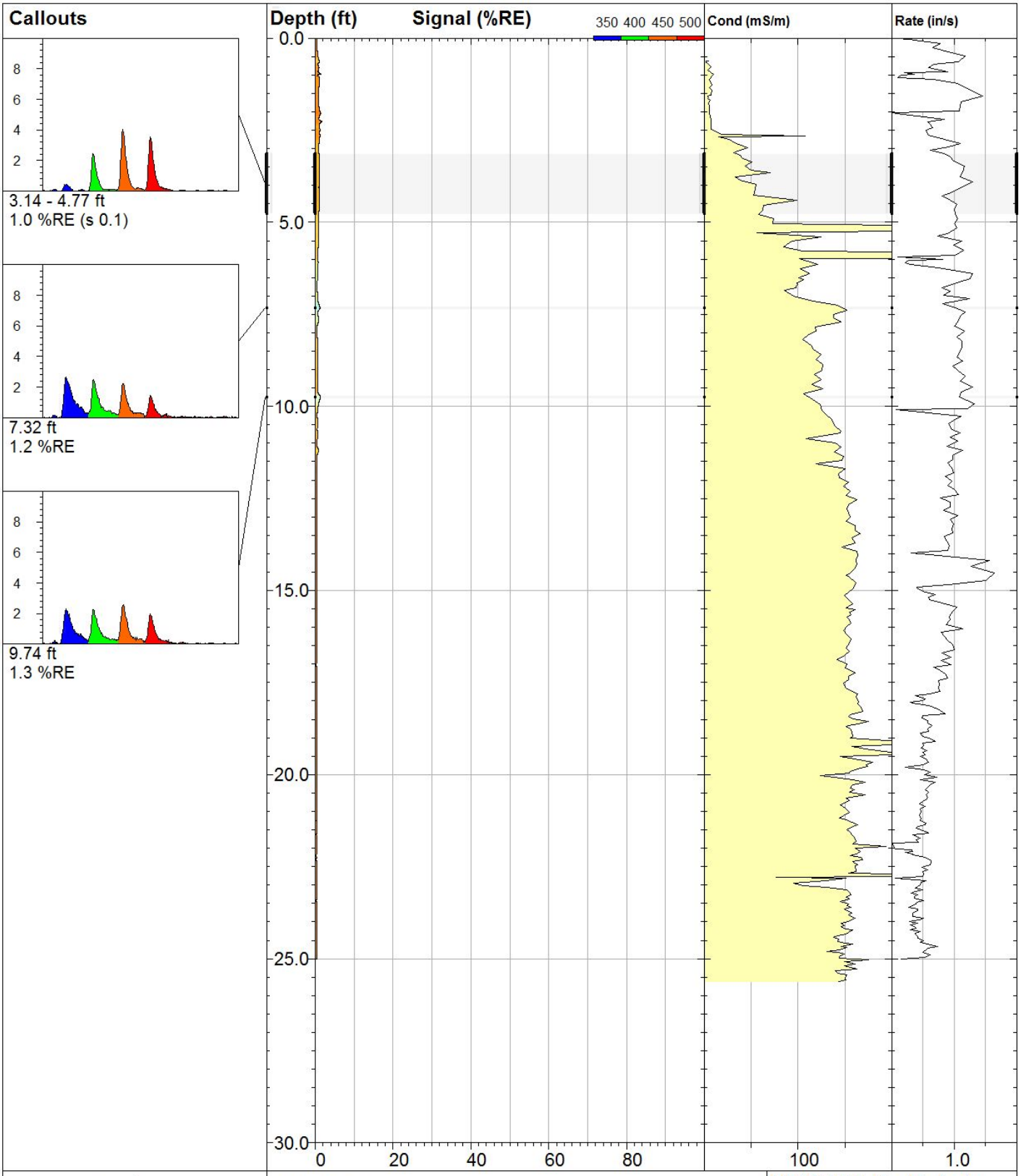
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **8.9 %RE @ 0.03 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-17 17:30 CST**



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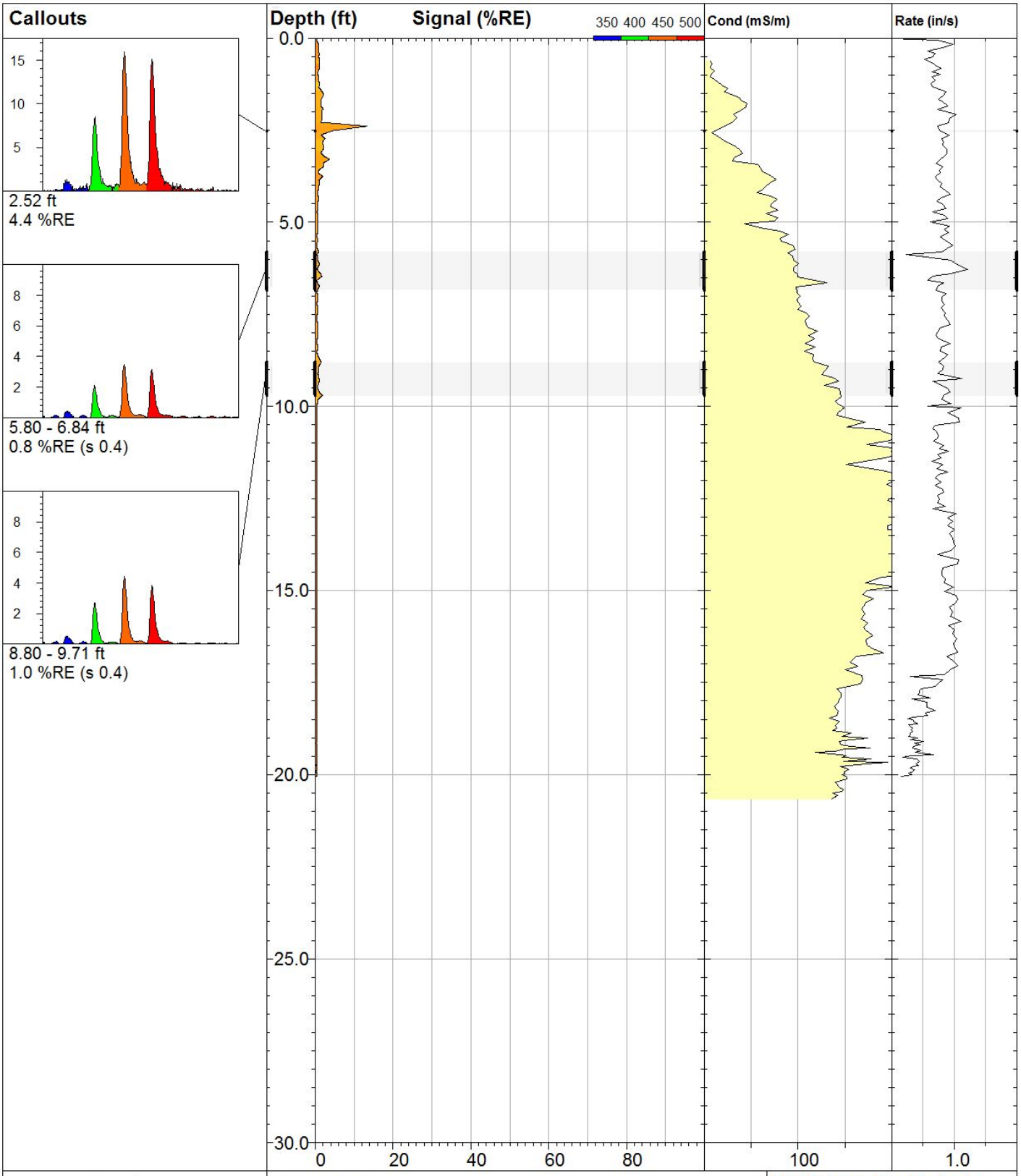
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.00 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1.7 %RE @ 2.26 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 09:55 CST**



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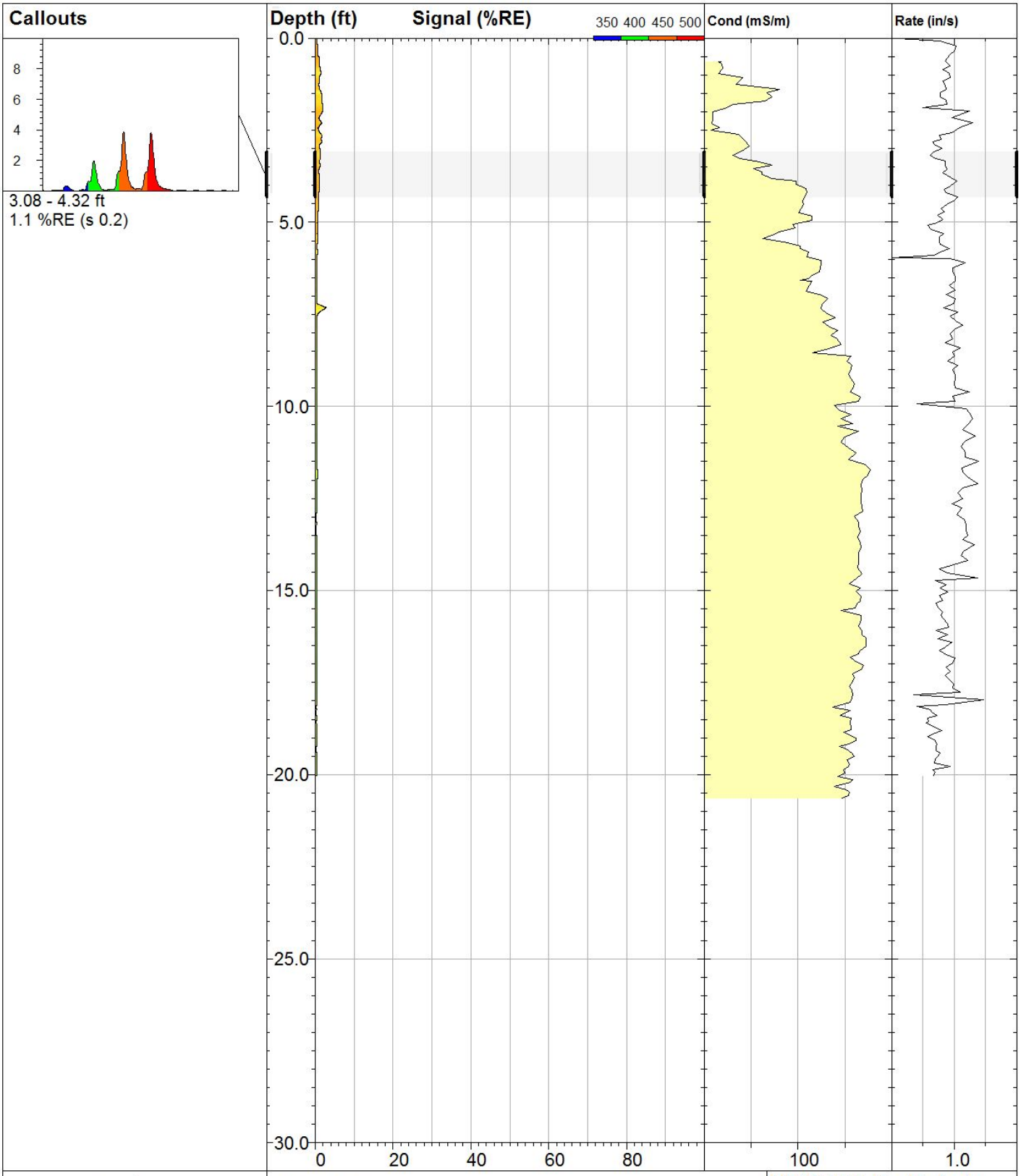
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.05 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **13.3 %RE @ 2.39 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 10:24 CST**



DAKOTA TECHNOLOGIES

www.DakotaTechnologies.com

13-LIF

UVOST® By Dakota
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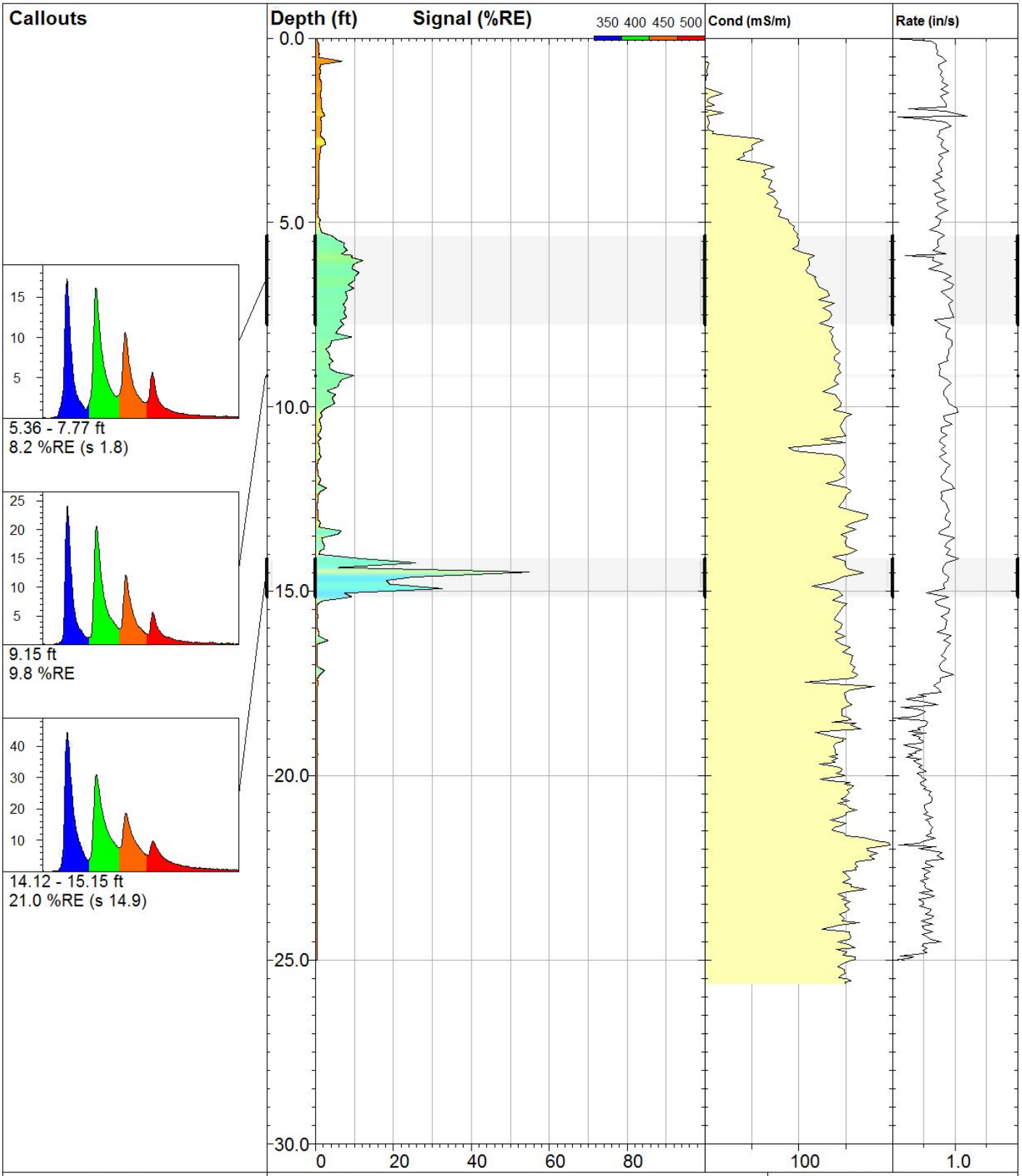
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.8 %RE @ 7.32 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 10:48 CST**



DAKOTA TECHNOLOGIES

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14-LIF

UVOST® By Dakota
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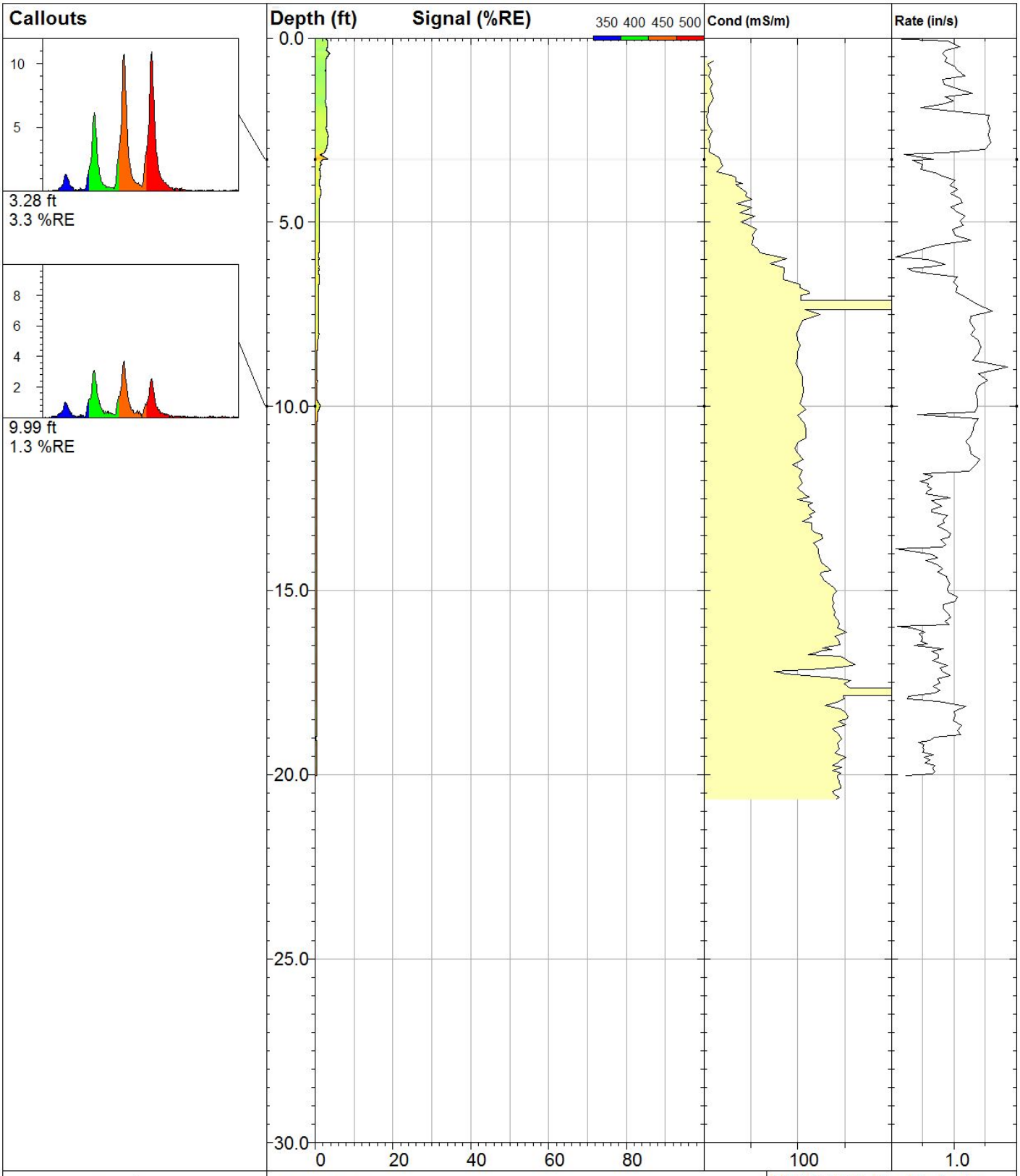
Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **55.1 %RE @ 14.48 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 11:09 CST**



DAKOTA TECHNOLOGIES

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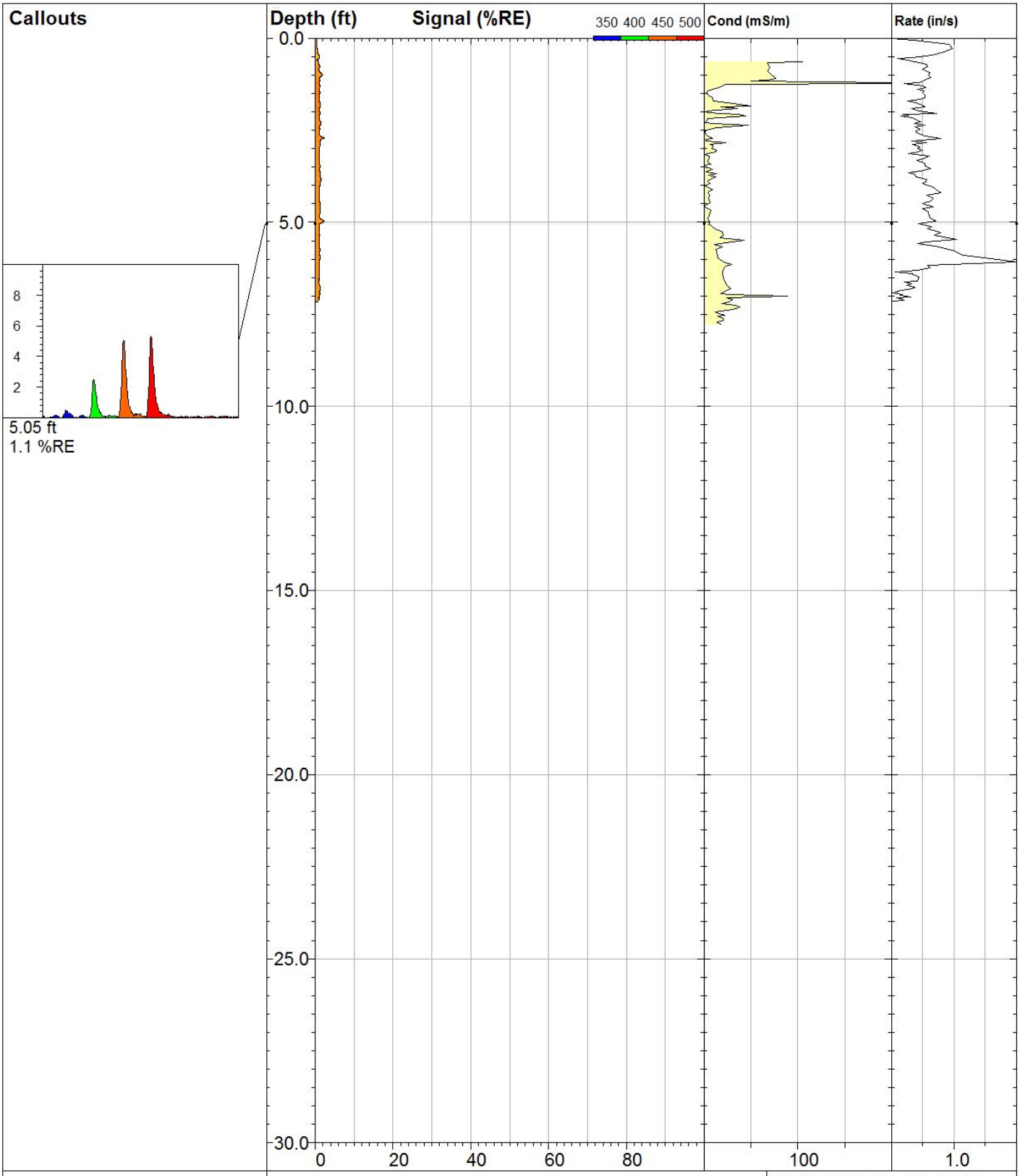
15-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.04 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.8 %RE @ 0.41 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 11:38 CST**



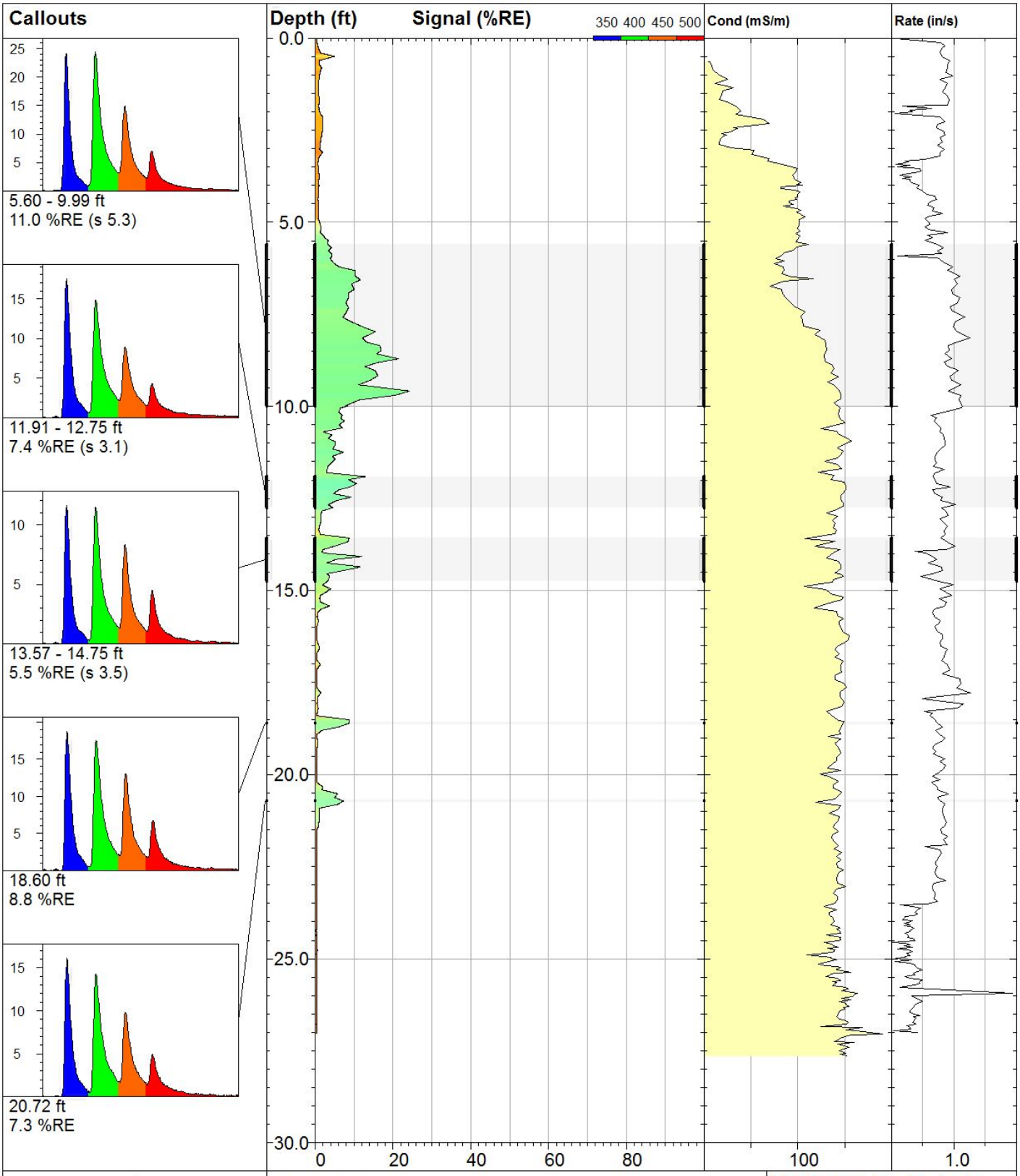
DAKOTA TECHNOLOGIES

www.DakotaTechnologies.com

16-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **7.16 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.5 %RE @ 2.73 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 12:06 CST**



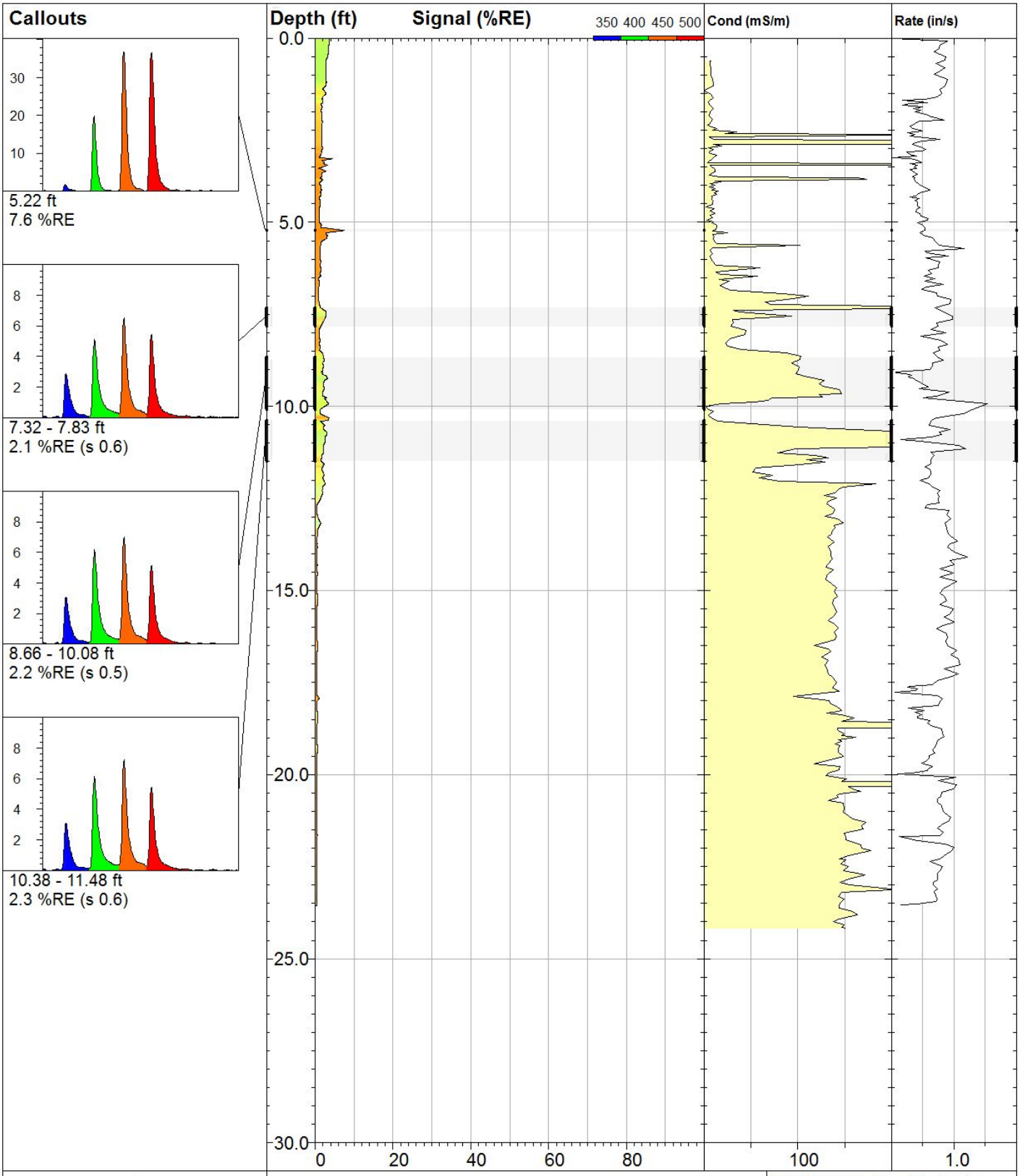
DAKOTA TECHNOLOGIES

www.DakotaTechnologies.com

17-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **27.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **24.2 %RE @ 9.58 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 12:25 CST**



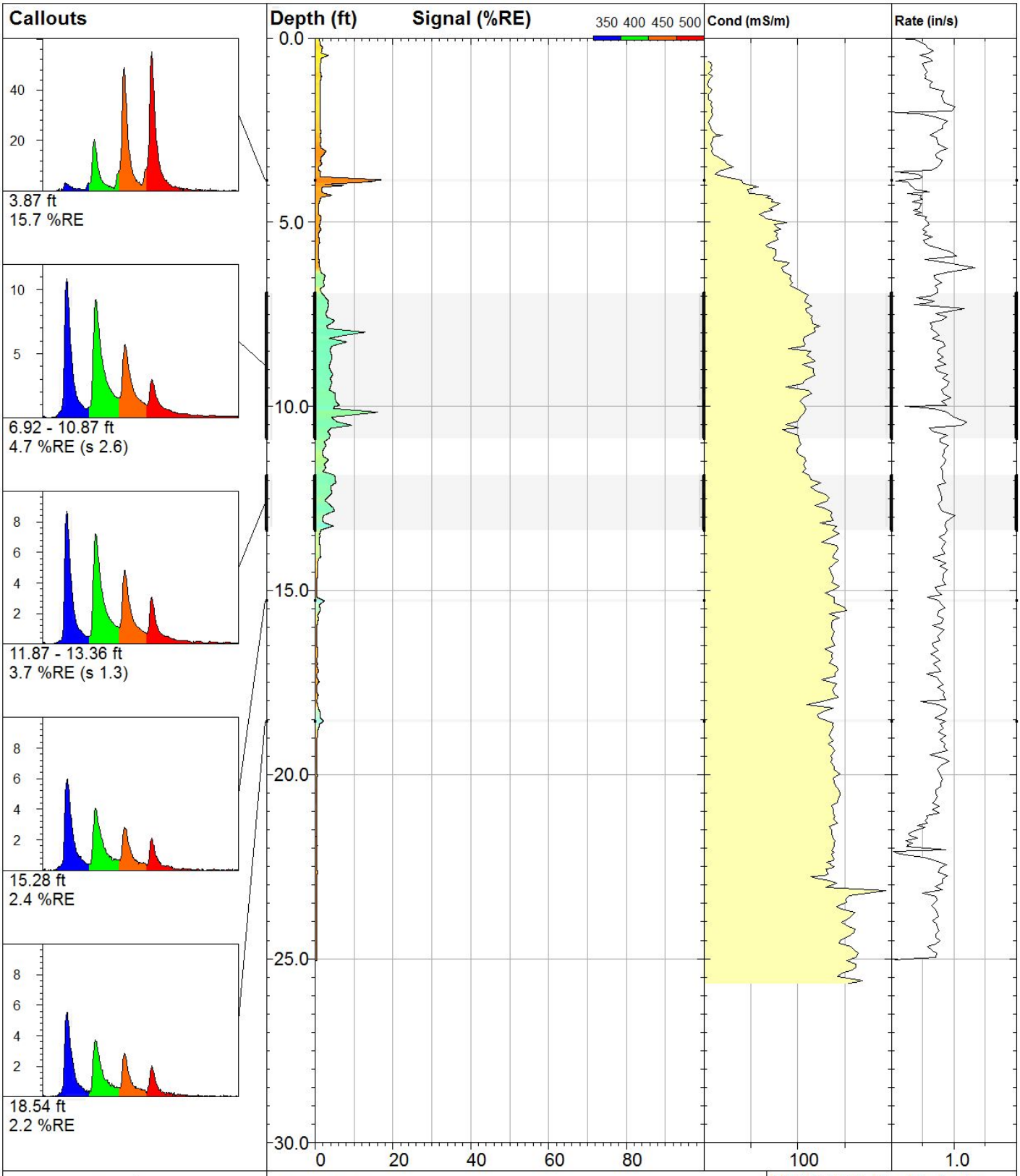
DAKOTA TECHNOLOGIES

www.DakotaTechnologies.com

18-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **23.56 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **7.6 %RE @ 5.22 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 14:02 CST**



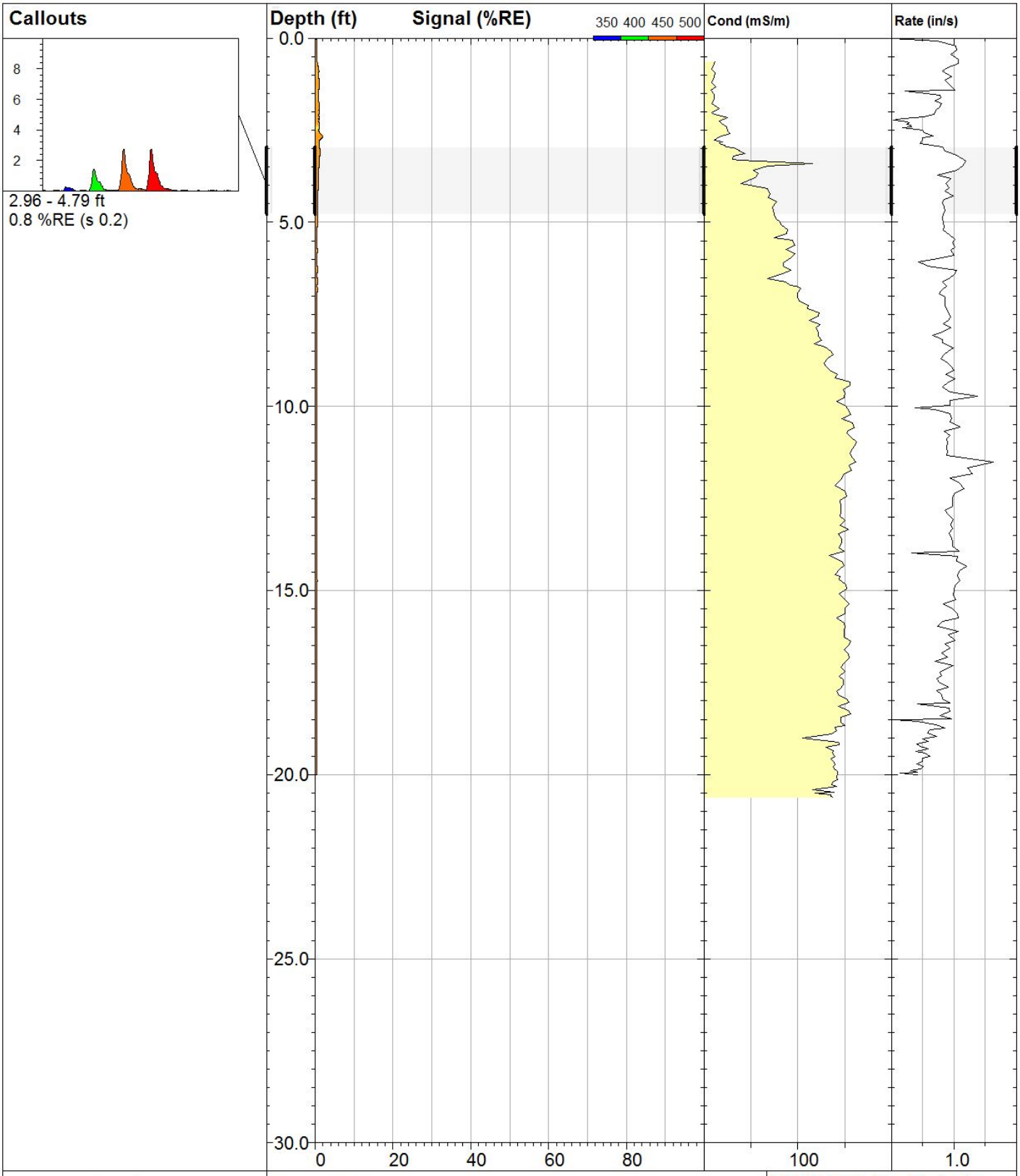
DAKOTA TECHNOLOGIES

www.DakotaTechnologies.com

19-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **25.05 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **17.0 %RE @ 3.85 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 14:56 CST**



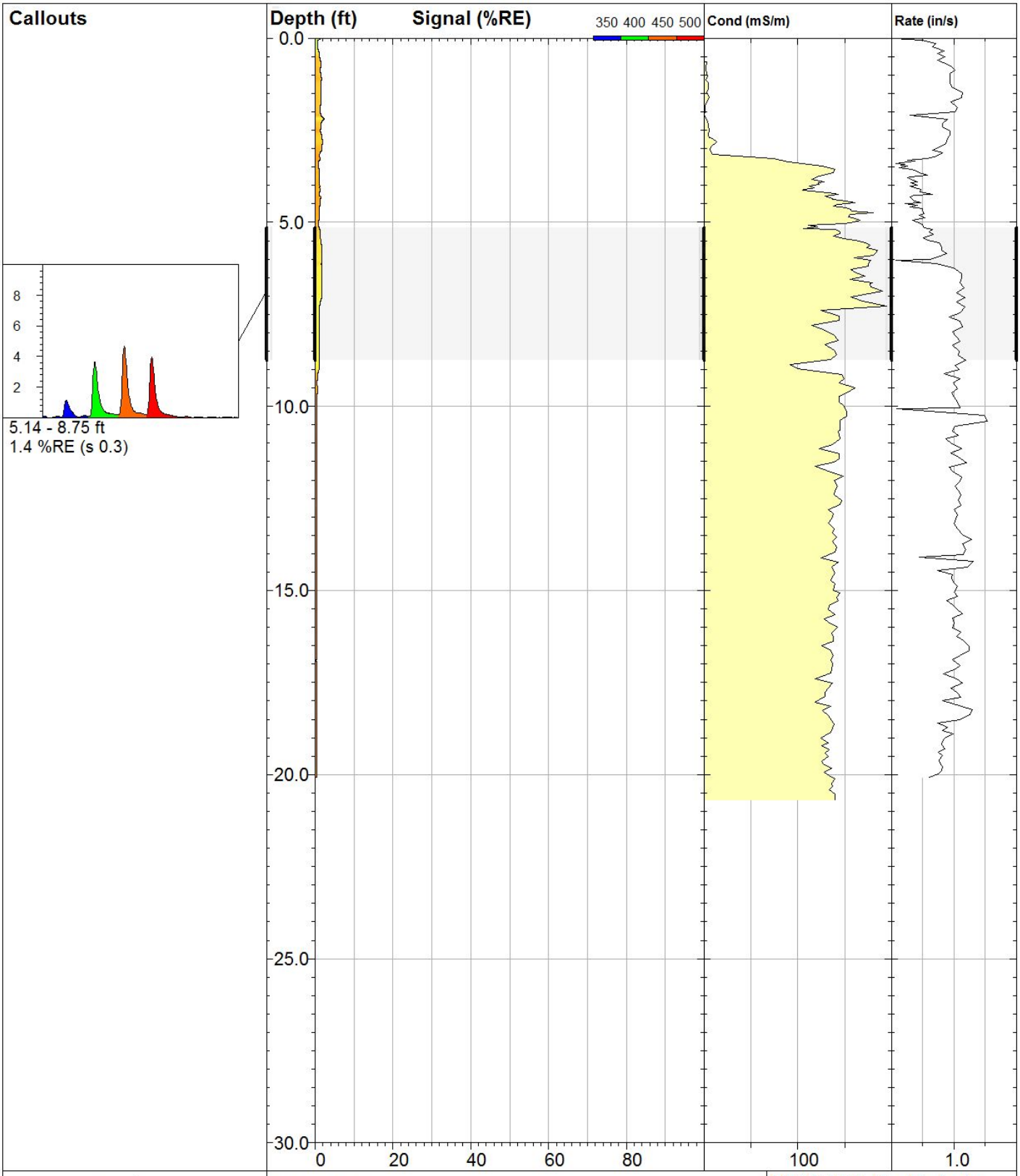
DAKOTA TECHNOLOGIES

www.DakotaTechnologies.com

20-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.01 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1.9 %RE @ 2.66 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 15:36 CST**



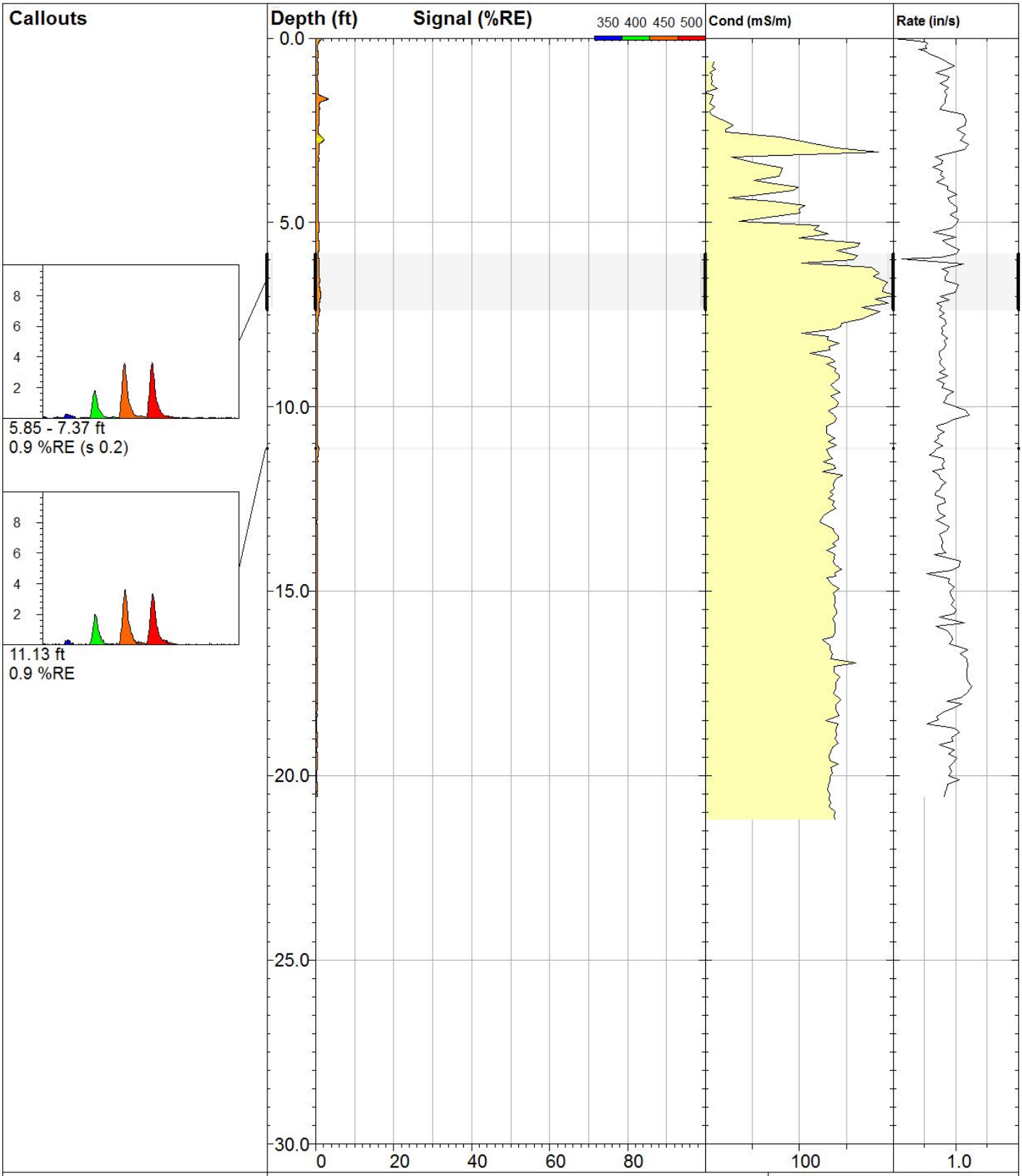
DAKOTA TECHNOLOGIES

www.DakotaTechnologies.com

21-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.07 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **2.3 %RE @ 2.19 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 16:01 CST**



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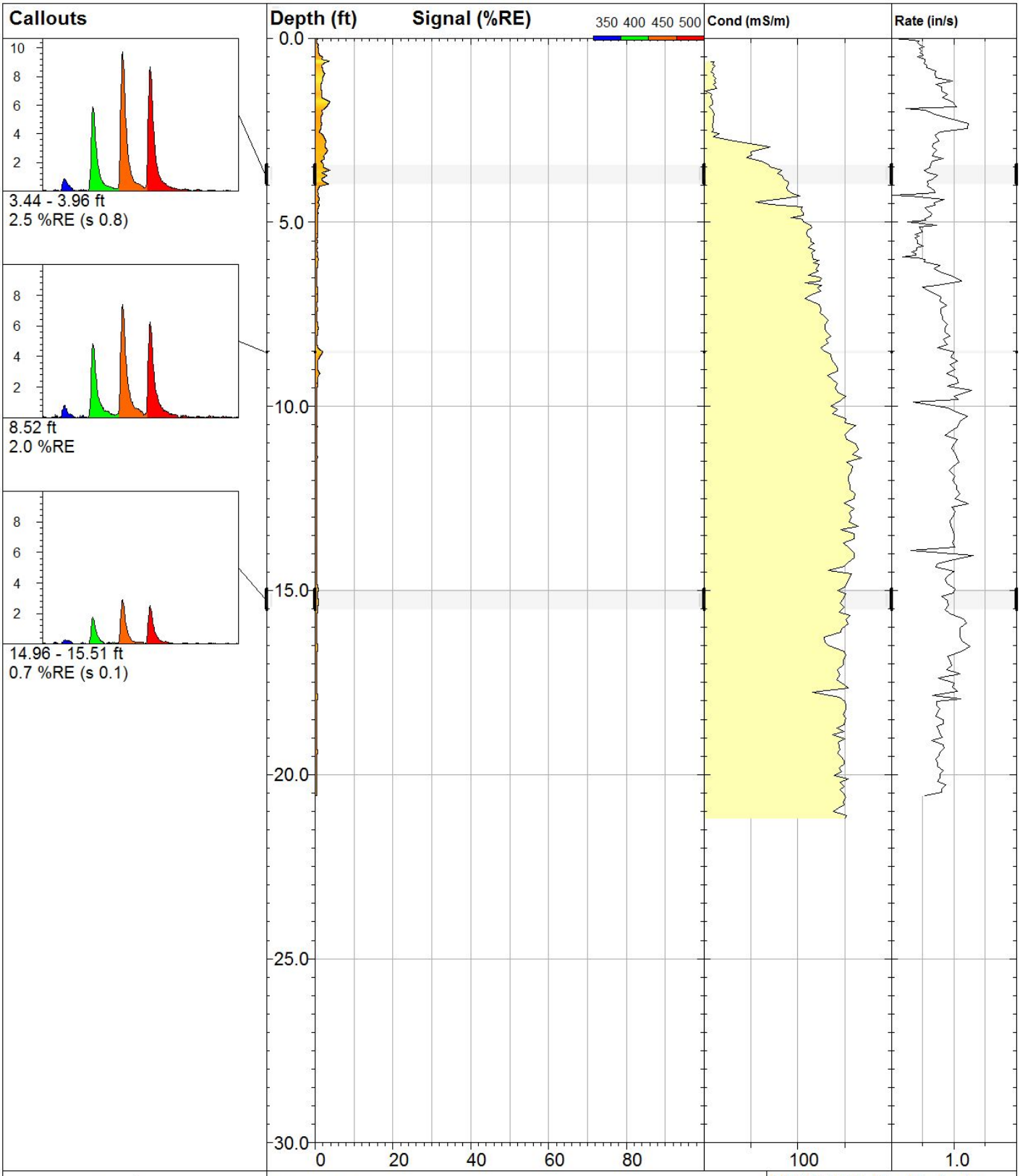
www.DakotaTechnologies.com

22-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.57 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.2 %RE @ 1.65 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 16:26 CST**



DAKOTA TECHNOLOGIES

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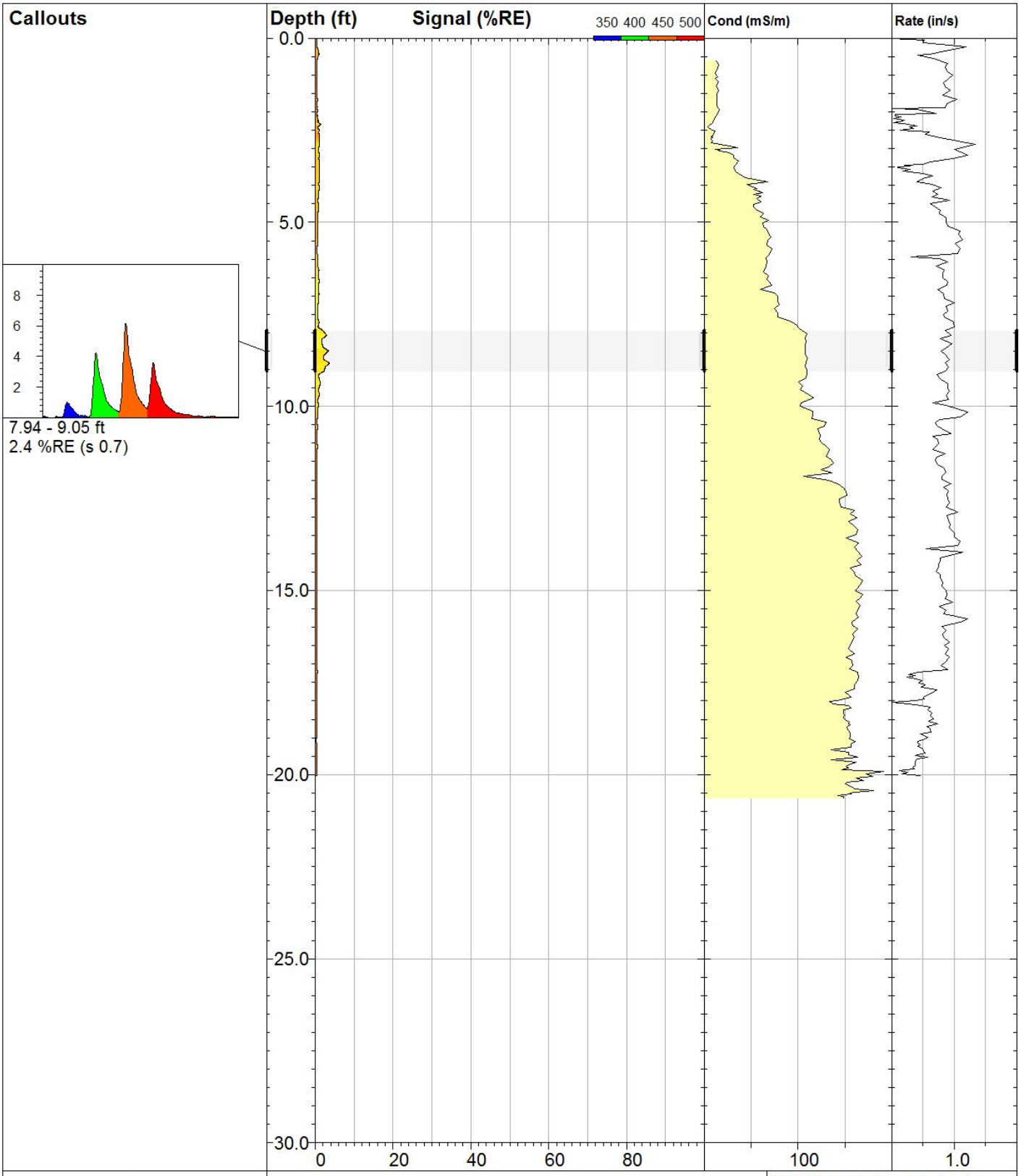
23-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.57 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.8 %RE @ 3.59 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 17:06 CST**



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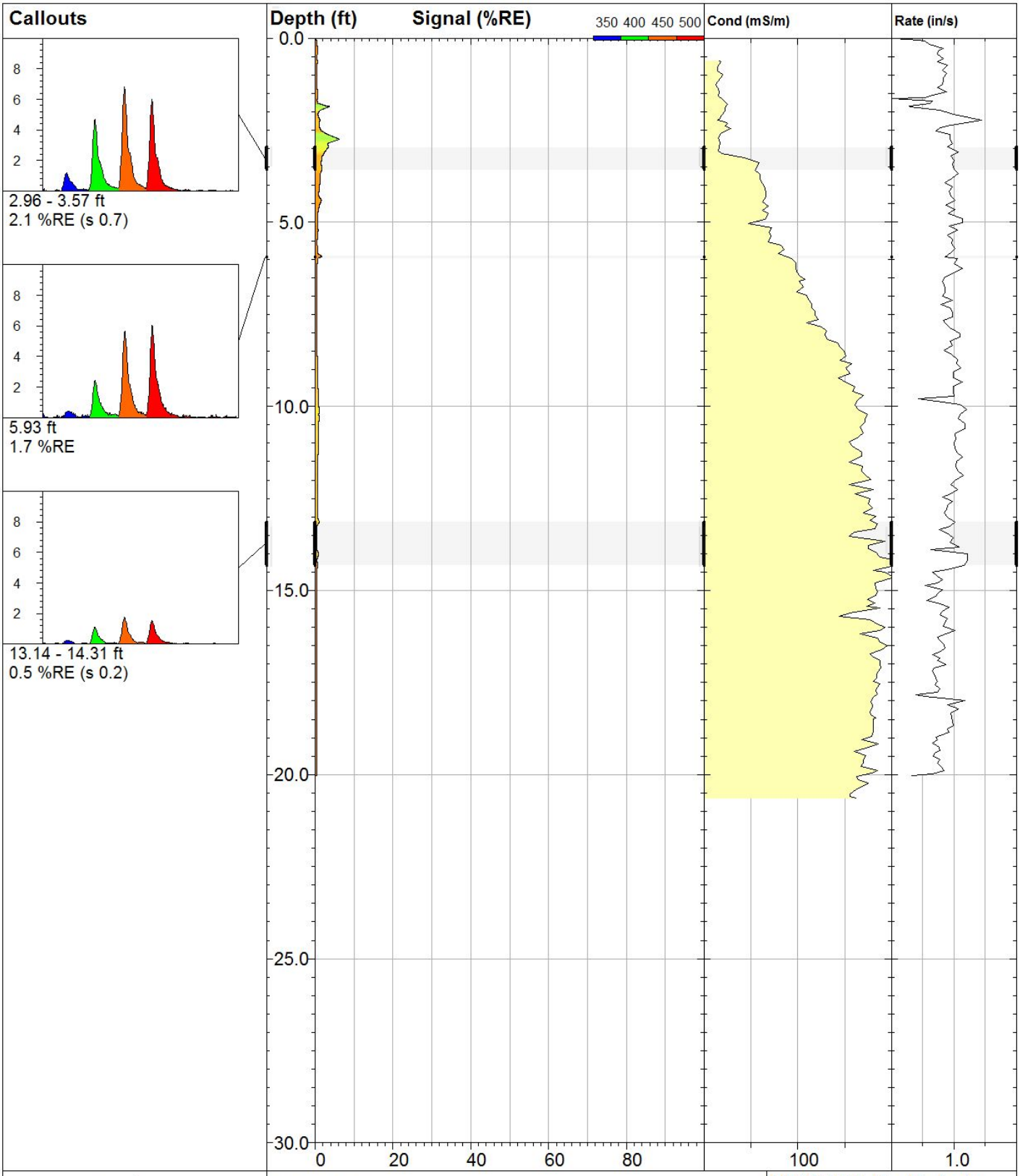
24-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.02 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.7 %RE @ 8.82 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 17:31 CST**



DAKOTA TECHNOLOGIES

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25-LIF

UVOST® By Dakota
www.DakotaTechnologies.com

Site: **Former LeeAnn's Motel**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Newfields / 0023.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **6.2 %RE @ 2.75 ft**
Operator / Unit: **Michael C. / UVOST1613**	*Elevation:* **Unavailable**	*Date & Time:* **2018-01-18 18:03 CST**

Appendix D

UVOST® Reference Log

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UVOST® Reference Log

Main Plot:
Signal (total fluorescence) versus depth where signal is relative to the Reference Emitter (RE). The total area of the waveform is divided by the total area of the Reference Emitter yielding the %RE. This %RE scales with the NAPL fluorescence. The fill color is based on relative contribution of each channel's area to the total waveform area (see callout waveform). The channel-to-color relationship and corresponding wavelengths are given in the upper right corner of the main plot.

Callouts:
Waveforms from selected depths or depth ranges showing the multi-wavelength waveform for that depth. The four peaks are due to fluorescence at four wavelengths and referred to as "channels". Each channel is assigned a color.

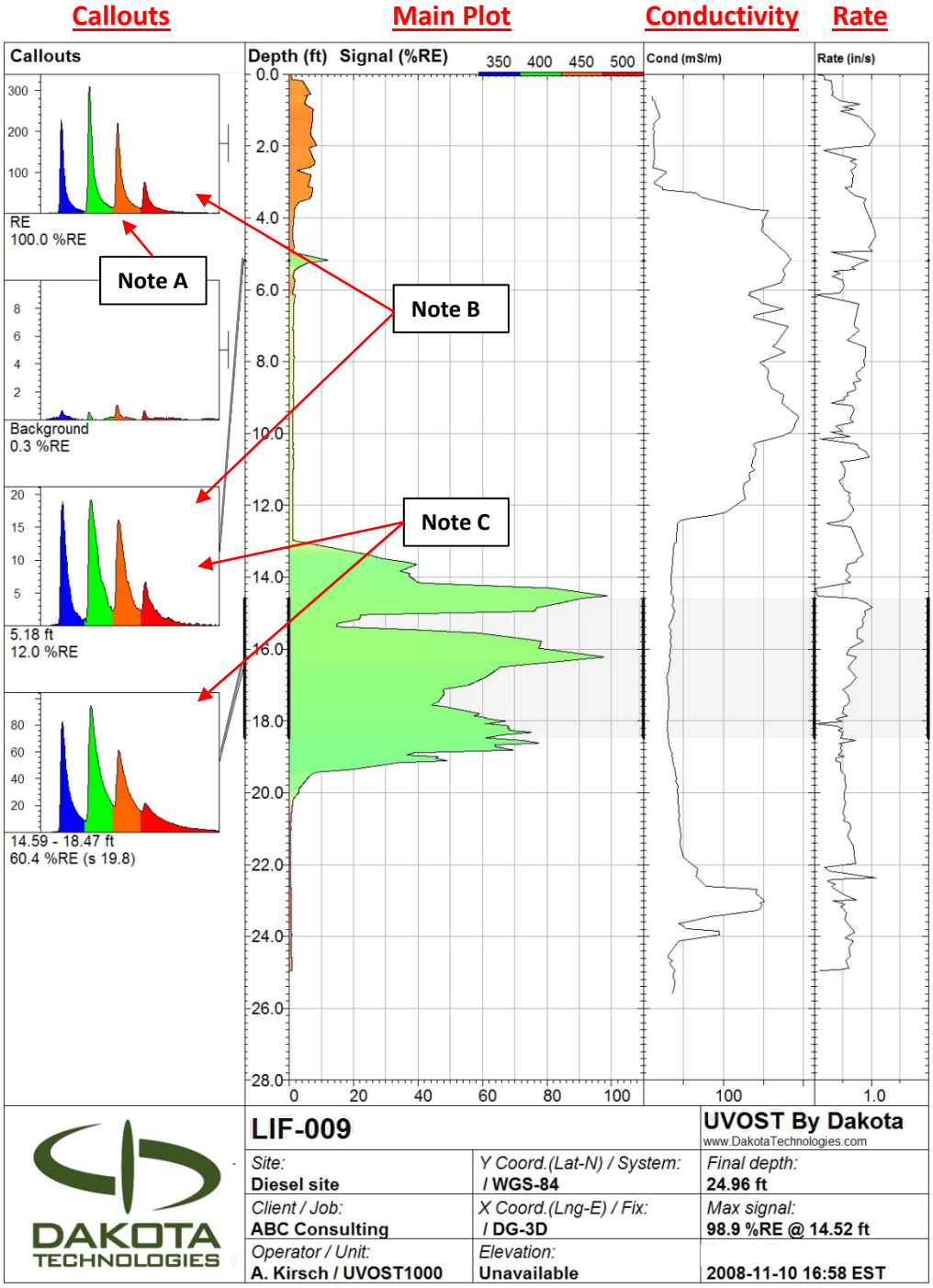
Various NAPLs will have a unique waveform "fingerprint" due to the relative amplitude of the four channels and/or broadening of one or more channels. Basic waveform statistics and any operator notes are given below the callout.

Conductivity Plot:
The Electrical Conductivity (EC) of the soil can be logged simultaneously with the UVOST data. EC often provides insight into the stratigraphy. Note the drop in EC from 10 to 13 feet, indicating a shift from finer (clay) to larger grain size (sand) stratigraphy. This correlates with the observed NAPL distribution.

Rate:
The rate of probe advancement. Approx. 0.8 inches (2cm) per second is preferred. A noticeable decrease in the rate of advancement may be indicative of difficult probing conditions (gravel, angular sands, etc.) such as that seen here at approx. 5 ft.

Note that this log was terminated arbitrarily, not due to "refusal," which would have been indicated by a sudden rate drop at final depth.

Information Box:
Contains pertinent log information, including name and location.



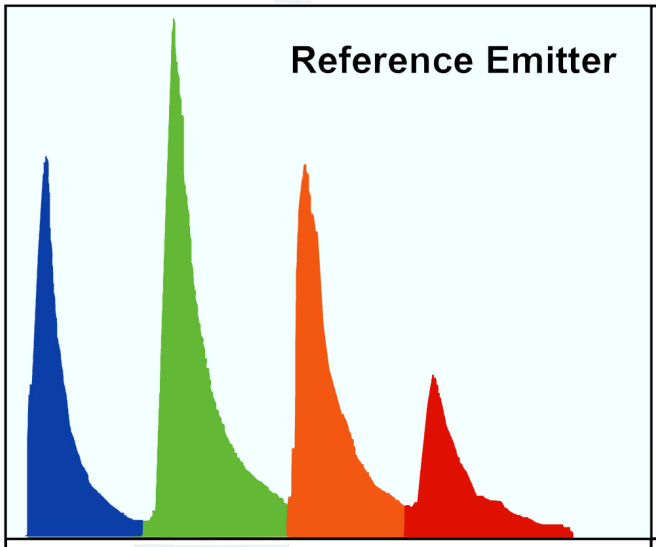
Note A:
Time is along the x axis. No scale is given on callouts, but it is a consistent 320ns wide. The y axis is in mV and directly corresponds to the amount of light striking the photodetector.

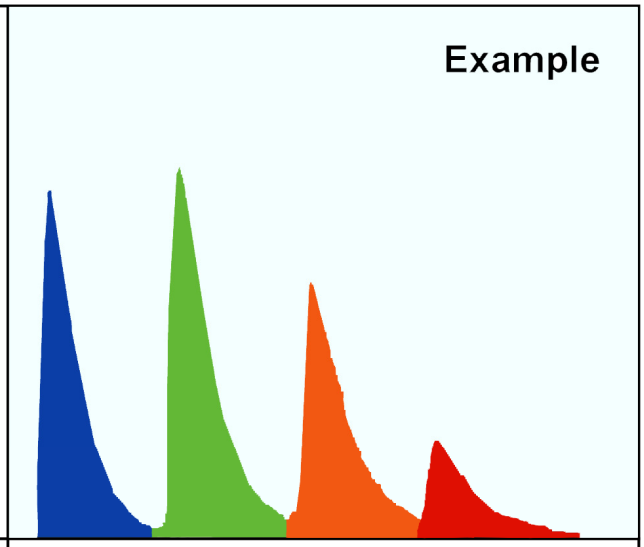
Note B:
These two waveforms are clearly different. The top box is the Reference Emitter (a blend of NAPLs) always taken before each log for calibration, and the lower box is weathered diesel from the log itself.

Note C:
Callouts can be a single depth (see 3rd callout) or a range (see 4th callout). The range is noted on the depth axis by a bold line. When the callout is a range, the average and standard deviation in %RE is given below the callout.

Dakota Technologies
UVOST® Reference Log

Waveform Signal Calculation



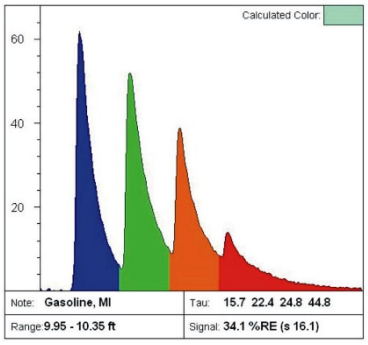


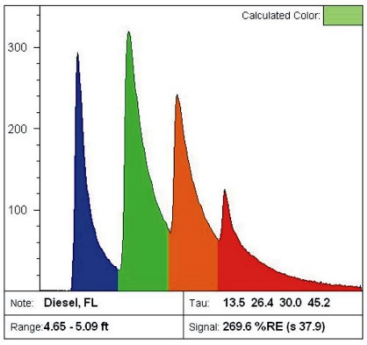
CH1		CH2		CH3		CH4		Total		CH1		CH2		CH3		CH4		Total
4820	+	8108	+	6249	+	2984	=	**22161**	***Channel Area (pVs)***	4923	+	5743	+	4166	+	1735	=	**16587**
21.7		36.6		28.2		13.5		**100%**	***Percent RE***	22.3		25.9		18.8		7.8		**75%**

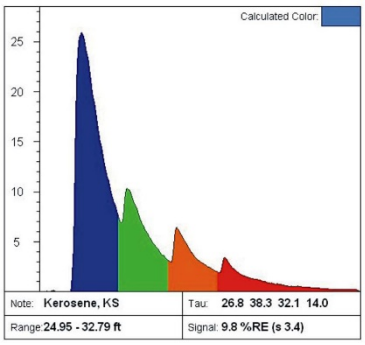
Data Files

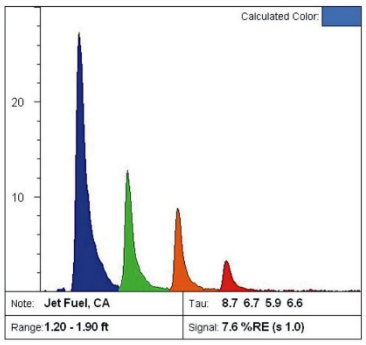
***.lif.raw.bin**	Raw data file. Header is ASCII format and contains information stored when the file was initially written (e.g. date, total depth, max signal, GPS, etc., and any information entered by the operator). All Raw waveforms are appended to the bottom of the file in a binary format.
***.lif.plt**	Stores the plot scheme history (e.g. callout depths) for associated Raw file. Transfer along with the Raw file in order to recall previous plots.
***.lif.jpg**	A .jpg image of the OST log including the main signal vs. depth plot, callouts, information, etc.
***.lif.dat.txt**	Data export of a single Raw file. Tab delimited format. No string header is provided for the columns to make importing into some programs easier. Each row is a unique depth reading. The columns are: 1-Depth; 2-Total Signal (%RE); 3-CH1%; 4-Ch2%; 5-CH3%; 6-Ch4%; 7-Rate; 8-EC Depth; 9-EC Signal; 10-Hammer Rate Depth; 11-Hammer Rate; 12-Color (RRGGBB). Summing channels 1 to 4 yields the Total Signal.
***.lif.sum.txt**	A summary file for a number of Raw files. ASCII tab delimited format. The file contains a string header. The summary includes one row for each Raw file and contains information for each filed including: the file name, GPS coordinates, max depth, max signal, and depth at which the max signal occurred.
***.lif.log.txt**	An activity log generated automatically is located in the OST application directory in the 'log' subfolder. Each OST unit the computer operates will generate a separate log file per month. A log file contains much of the header information contained within each separate Raw file, including: data rate, total depth, max signal, etc.

Common Waveforms (highly dependent on soil, weathering, etc.)









Appendix B

Analytical Laboratory Reports for Soil and Groundwater

ANALYTICAL SUMMARY REPORT

February 06, 2018

NewFields
700 SW Higgins Ave Ste 15
Missoula, MT 59803-1489

Work Order: B18011726

Project Name: 350.0339.000: PH 11 Former Lee Anns Motel

Energy Laboratories Inc Billings MT received the following 8 samples for NewFields on 1/24/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18011726-001	SB-LIF-14 5.5-6.5 Feet	01/19/18 9:45	01/24/18	Solid	EPH-Ultrasonic Extraction Methanol Extraction for Volatiles EPH Fractionation Hydrocarbons, Aliphatic Extractable Petroleum Hydrocarbons, Aromatic Extractable Petroleum Hydrocarbons, Extractable Petroleum-Scrn Volatile Petroleum Hydrocarbons Moisture Moisture Prep Percent Moisture EDB & EDC in soil by ECD Prep for EDB & EDC by ECD Volatile Organics, Methanol Extraction 8260-VOCs, Low Level - Short List
B18011726-002	SB-LIF-14 14-15 Feet	01/19/18 8:30	01/24/18	Solid	Same As Above
B18011726-003	SB-LIF-17 8-10 Feet	01/19/18 10:25	01/24/18	Solid	Same As Above
B18011726-004	SB-LIF-03 2.5-3 Feet	01/19/18 11:15	01/24/18	Solid	Same As Above
B18011726-005	SB-LIF-09B 4.5-5 Feet	01/19/18 13:20	01/24/18	Solid	EPH-Ultrasonic Extraction Methanol Extraction for Volatiles Hydrocarbons, Extractable Petroleum-Scrn Volatile Petroleum Hydrocarbons Moisture Moisture Prep Percent Moisture EDB & EDC in soil by ECD Prep for EDB & EDC by ECD Volatile Organics, Methanol Extraction 8260-VOCs, Low Level - Short List

ANALYTICAL SUMMARY REPORT

B18011726-006	SB-LIF-17 13.5-15 Feet	01/19/18 10:45	01/24/18	Solid	EPH-Ultrasonic Extraction Methanol Extraction for Volatiles EPH Fractionation Hydrocarbons, Aliphatic Extractable Petroleum Hydrocarbons, Aromatic Extractable Petroleum Hydrocarbons, Extractable Petroleum-Scrn Volatile Petroleum Hydrocarbons Moisture Moisture Prep Percent Moisture EDB & EDC in soil by ECD Prep for EDB & EDC by ECD Volatile Organics, Methanol Extraction 8260-VOCs, Low Level - Short List
B18011726-007	SB-LIF-05 2.5-3.5 Feet	01/19/18 13:00	01/24/18	Solid	EPH-Ultrasonic Extraction Methanol Extraction for Volatiles Hydrocarbons, Extractable Petroleum-Scrn Volatile Petroleum Hydrocarbons Moisture Moisture Prep Percent Moisture EDB & EDC in soil by ECD Prep for EDB & EDC by ECD Volatile Organics, Methanol Extraction 8260-VOCs, Low Level - Short List
B18011726-008	SB-LIF-11 7-8 Feet	01/19/18 12:00	01/24/18	Solid	EPH-Ultrasonic Extraction Methanol Extraction for Volatiles EPH Fractionation Hydrocarbons, Aliphatic Extractable Petroleum Hydrocarbons, Aromatic Extractable Petroleum Hydrocarbons, Extractable Petroleum-Scrn Volatile Petroleum Hydrocarbons Moisture Moisture Prep Percent Moisture EDB & EDC in soil by ECD Prep for EDB & EDC by ECD Volatile Organics, Methanol Extraction 8260-VOCs, Low Level - Short List

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Work Order: B18011726

Report Date: 02/06/18

CASE NARRATIVE

Fractionation without PAHs was added to the following sample(s) per email from Levi McKay on 1/29/18:

B18011726-001 SB-LIF-14 5.5-6.5 Feet

B18011726-002 SB-LIF-14 14-15 Feet

B18011726-003 SB-LIF-17 8-10 Feet

B18011726-004 SB-LIF-03 2.5-3 Feet

B18011726-006 SB-LIF-17 13.5-15 Feet

B18011726-008 SB-LIF-11 7-8 Feet

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-001
Client Sample ID: SB-LIF-14 5.5-6.5 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 09:45
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	15	wt%		0.2		SW3550C	01/25/18 13:05 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry		0.0058	0.019	SW8260B	01/30/18 21:12 / jrj
Surr: p-Bromofluorobenzene	95.0	%REC		81-144		SW8260B	01/30/18 21:12 / jrj
Surr: Dibromofluoromethane	79.0	%REC		67-138		SW8260B	01/30/18 21:12 / jrj
Surr: 1,2-Dichloroethane-d4	83.0	%REC		68-138		SW8260B	01/30/18 21:12 / jrj
Surr: Toluene-d8	89.0	%REC		76-145		SW8260B	01/30/18 21:12 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00024	2E-05	SW8011	01/30/18 17:40 / mim
Surr: 1,1,1,2-Tetrachloroethane	78.0	%REC		50-150		SW8011	01/30/18 17:40 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry	D	0.59	0.078	MA-VPH	01/30/18 17:31 / jp
Benzene	ND	mg/kg-dry	D	0.29	0.07	MA-VPH	01/30/18 17:31 / jp
Toluene	ND	mg/kg-dry	D	0.29	21	MA-VPH	01/30/18 17:31 / jp
Ethylbenzene	ND	mg/kg-dry	D	0.60	6.4	MA-VPH	01/30/18 17:31 / jp
m+p-Xylenes	ND	mg/kg-dry	D	0.29		MA-VPH	01/30/18 17:31 / jp
o-Xylene	ND	mg/kg-dry	D	0.29		MA-VPH	01/30/18 17:31 / jp
Xylenes, Total	ND	mg/kg-dry	D	0.29	72	MA-VPH	01/30/18 17:31 / jp
Naphthalene	ND	mg/kg-dry	D	0.59	4.3	MA-VPH	01/30/18 17:31 / jp
C9 to C10 Aromatics	173	mg/kg-dry	*	12	130	MA-VPH	01/30/18 17:31 / jp
C5 to C8 Aliphatics	ND	mg/kg-dry	D	12	52	MA-VPH	01/30/18 17:31 / jp
C9 to C12 Aliphatics	224	mg/kg-dry	*	12	77	MA-VPH	01/30/18 17:31 / jp
Total Purgeable Hydrocarbons	455	mg/kg-dry		12		MA-VPH	01/30/18 17:31 / jp
Surr: VPH Aromatics Surrogate	97.0	%REC		70-130		MA-VPH	01/30/18 17:31 / jp
Surr: VPH Aliphatics Surrogate	101	%REC		70-130		MA-VPH	01/30/18 17:31 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	1480	mg/kg-dry	*	12	200	SW8015M	01/26/18 21:22 / amn
Surr: o-Terphenyl	123	%REC		40-140		SW8015M	01/26/18 21:22 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	736	mg/kg-dry	*	24	110	MA-EPH	02/02/18 16:59 / tmc
C19 to C36 Aliphatics	141	mg/kg-dry		24	24000	MA-EPH	02/02/18 16:59 / tmc
Surr: 1-Chloro-octadecane	76.0	%REC		40-140		MA-EPH	02/02/18 16:59 / tmc
C11 to C22 Aromatics	624	mg/kg-dry	*	24	370	MA-EPH	02/02/18 17:45 / tmc
Total Extractable Hydrocarbons	1550	mg/kg-dry		24		MA-EPH	02/02/18 17:45 / tmc
Surr: 2-Bromonaphthalene	97.0	%REC		40-140		MA-EPH	02/02/18 17:45 / tmc

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-001
Client Sample ID: SB-LIF-14 5.5-6.5 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 09:45
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
Surr: 2-Fluorobiphenyl	95.0	%REC		40-140		MA-EPH	02/02/18 17:45 / tmc
Surr: o-Terphenyl	84.0	%REC		40-140		MA-EPH	02/02/18 17:45 / tmc

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-002
Client Sample ID: SB-LIF-14 14-15 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 08:30
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	16	wt%		0.2		SW3550C	01/25/18 13:26 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry		0.0057	0.019	SW8260B	01/30/18 21:41 / jrj
Surr: p-Bromofluorobenzene	95.0	%REC		81-144		SW8260B	01/30/18 21:41 / jrj
Surr: Dibromofluoromethane	78.0	%REC		67-138		SW8260B	01/30/18 21:41 / jrj
Surr: 1,2-Dichloroethane-d4	84.0	%REC		68-138		SW8260B	01/30/18 21:41 / jrj
Surr: Toluene-d8	109	%REC		76-145		SW8260B	01/30/18 21:41 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00024	2E-05	SW8011	01/30/18 14:36 / mim
Surr: 1,1,1,2-Tetrachloroethane	78.0	%REC		50-150		SW8011	01/30/18 14:36 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry	D	0.59	0.078	MA-VPH	01/30/18 19:16 / jp
Benzene	ND	mg/kg-dry	D	0.30	0.07	MA-VPH	01/30/18 19:16 / jp
Toluene	ND	mg/kg-dry	D	0.30	21	MA-VPH	01/30/18 19:16 / jp
Ethylbenzene	ND	mg/kg-dry	D	1.2	6.4	MA-VPH	01/30/18 19:16 / jp
m+p-Xylenes	ND	mg/kg-dry	D	0.30		MA-VPH	01/30/18 19:16 / jp
o-Xylene	ND	mg/kg-dry	D	0.30		MA-VPH	01/30/18 19:16 / jp
Xylenes, Total	ND	mg/kg-dry	D	0.30	72	MA-VPH	01/30/18 19:16 / jp
Naphthalene	ND	mg/kg-dry	D	0.59	4.3	MA-VPH	01/30/18 19:16 / jp
C9 to C10 Aromatics	209	mg/kg-dry	*	12	130	MA-VPH	01/30/18 19:16 / jp
C5 to C8 Aliphatics	12	mg/kg-dry		12	52	MA-VPH	01/30/18 19:16 / jp
C9 to C12 Aliphatics	275	mg/kg-dry	*	12	77	MA-VPH	01/30/18 19:16 / jp
Total Purgeable Hydrocarbons	555	mg/kg-dry		12		MA-VPH	01/30/18 19:16 / jp
Surr: VPH Aromatics Surrogate	93.0	%REC		70-130		MA-VPH	01/30/18 19:16 / jp
Surr: VPH Aliphatics Surrogate	95.0	%REC		70-130		MA-VPH	01/30/18 19:16 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	1020	mg/kg-dry	*	12	200	SW8015M	01/27/18 00:13 / amn
Surr: o-Terphenyl	110	%REC		40-140		SW8015M	01/27/18 00:13 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	528	mg/kg-dry	*	12	110	MA-EPH	02/03/18 01:24 / tmc
C19 to C36 Aliphatics	111	mg/kg-dry		12	24000	MA-EPH	02/03/18 01:24 / tmc
Surr: 1-Chloro-octadecane	85.0	%REC		40-140		MA-EPH	02/03/18 01:24 / tmc
C11 to C22 Aromatics	429	mg/kg-dry	*	12	370	MA-EPH	02/03/18 02:10 / tmc
Total Extractable Hydrocarbons	1090	mg/kg-dry		12		MA-EPH	02/03/18 02:10 / tmc
Surr: 2-Bromonaphthalene	97.0	%REC		40-140		MA-EPH	02/03/18 02:10 / tmc

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-002
Client Sample ID: SB-LIF-14 14-15 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 08:30
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
Surr: 2-Fluorobiphenyl	94.0	%REC		40-140		MA-EPH	02/03/18 02:10 / tmc
Surr: o-Terphenyl	91.0	%REC		40-140		MA-EPH	02/03/18 02:10 / tmc

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-003
Client Sample ID: SB-LIF-17 8-10 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 10:25
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	15	wt%		0.2		SW3550C	01/25/18 13:41 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry		0.0058	0.019	SW8260B	01/30/18 22:11 / jrj
Surr: p-Bromofluorobenzene	110	%REC		81-144		SW8260B	01/30/18 22:11 / jrj
Surr: Dibromofluoromethane	88.0	%REC		67-138		SW8260B	01/30/18 22:11 / jrj
Surr: 1,2-Dichloroethane-d4	93.0	%REC		68-138		SW8260B	01/30/18 22:11 / jrj
Surr: Toluene-d8	92.0	%REC		76-145		SW8260B	01/30/18 22:11 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00023	2E-05	SW8011	01/30/18 15:02 / mim
Surr: 1,1,1,2-Tetrachloroethane	81.0	%REC		50-150		SW8011	01/30/18 15:02 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry	D	0.59	0.078	MA-VPH	01/30/18 21:01 / jp
Benzene	ND	mg/kg-dry	D	0.30	0.07	MA-VPH	01/30/18 21:01 / jp
Toluene	ND	mg/kg-dry	D	0.30	21	MA-VPH	01/30/18 21:01 / jp
Ethylbenzene	ND	mg/kg-dry	D	0.30	6.4	MA-VPH	01/30/18 21:01 / jp
m+p-Xylenes	ND	mg/kg-dry	D	0.30		MA-VPH	01/30/18 21:01 / jp
o-Xylene	ND	mg/kg-dry	D	0.30		MA-VPH	01/30/18 21:01 / jp
Xylenes, Total	ND	mg/kg-dry	D	0.30	72	MA-VPH	01/30/18 21:01 / jp
Naphthalene	ND	mg/kg-dry	D	0.59	4.3	MA-VPH	01/30/18 21:01 / jp
C9 to C10 Aromatics	206	mg/kg-dry	*	12	130	MA-VPH	01/30/18 21:01 / jp
C5 to C8 Aliphatics	10	mg/kg-dry	J	12	52	MA-VPH	01/30/18 21:01 / jp
C9 to C12 Aliphatics	270	mg/kg-dry	*	12	77	MA-VPH	01/30/18 21:01 / jp
Total Purgeable Hydrocarbons	571	mg/kg-dry		12		MA-VPH	01/30/18 21:01 / jp
Surr: VPH Aromatics Surrogate	92.0	%REC		70-130		MA-VPH	01/30/18 21:01 / jp
Surr: VPH Aliphatics Surrogate	93.0	%REC		70-130		MA-VPH	01/30/18 21:01 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	5050	mg/kg-dry	*	118	200	SW8015M	01/27/18 08:01 / amn
Surr: o-Terphenyl	233	%REC	S	40-140		SW8015M	01/27/18 08:01 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- S=Surrogate recovery outside QC advisory limits due to positive sample matrix interference.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	2560	mg/kg-dry	*	35	110	MA-EPH	02/03/18 05:13 / tmc
C19 to C36 Aliphatics	613	mg/kg-dry		35	24000	MA-EPH	02/03/18 05:13 / tmc
Surr: 1-Chloro-octadecane	92.0	%REC		40-140		MA-EPH	02/03/18 05:13 / tmc
C11 to C22 Aromatics	2150	mg/kg-dry	*	35	370	MA-EPH	02/03/18 05:59 / tmc
Total Extractable Hydrocarbons	5450	mg/kg-dry		35		MA-EPH	02/03/18 05:59 / tmc

Report Definitions:

RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
J - Estimated value. The analyte was present but less than the reporting limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.
S - Spike recovery outside of advisory limits.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-003
Client Sample ID: SB-LIF-17 8-10 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 10:25
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
Surr: 2-Bromonaphthalene	93.0	%REC		40-140		MA-EPH	02/03/18 05:59 / tmc
Surr: 2-Fluorobiphenyl	96.0	%REC		40-140		MA-EPH	02/03/18 05:59 / tmc
Surr: o-Terphenyl	83.0	%REC		40-140		MA-EPH	02/03/18 05:59 / tmc

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-004
Client Sample ID: SB-LIF-03 2.5-3 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 11:15
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	17	wt%		0.2		SW3550C	01/25/18 13:50 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry		0.0060	0.019	SW8260B	01/30/18 22:40 / jrj
Surr: p-Bromofluorobenzene	93.0	%REC		81-144		SW8260B	01/30/18 22:40 / jrj
Surr: Dibromofluoromethane	80.0	%REC		67-138		SW8260B	01/30/18 22:40 / jrj
Surr: 1,2-Dichloroethane-d4	82.0	%REC		68-138		SW8260B	01/30/18 22:40 / jrj
Surr: Toluene-d8	87.0	%REC		76-145		SW8260B	01/30/18 22:40 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00024	2E-05	SW8011	01/30/18 15:29 / mim
Surr: 1,1,1,2-Tetrachloroethane	73.0	%REC		50-150		SW8011	01/30/18 15:29 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.12	0.078	MA-VPH	01/30/18 16:22 / jp
Benzene	0.049	mg/kg-dry	J	0.061	0.07	MA-VPH	01/30/18 16:22 / jp
Toluene	0.084	mg/kg-dry		0.061	21	MA-VPH	01/30/18 16:22 / jp
Ethylbenzene	0.11	mg/kg-dry		0.061	6.4	MA-VPH	01/30/18 16:22 / jp
m+p-Xylenes	0.22	mg/kg-dry		0.061		MA-VPH	01/30/18 16:22 / jp
o-Xylene	0.064	mg/kg-dry		0.061		MA-VPH	01/30/18 16:22 / jp
Xylenes, Total	0.29	mg/kg-dry		0.061	72	MA-VPH	01/30/18 16:22 / jp
Naphthalene	0.20	mg/kg-dry		0.12	4.3	MA-VPH	01/30/18 16:22 / jp
C9 to C10 Aromatics	2.3	mg/kg-dry	J	2.4	130	MA-VPH	01/30/18 16:22 / jp
C5 to C8 Aliphatics	ND	mg/kg-dry		2.4	52	MA-VPH	01/30/18 16:22 / jp
C9 to C12 Aliphatics	3.8	mg/kg-dry		2.4	77	MA-VPH	01/30/18 16:22 / jp
Total Purgeable Hydrocarbons	6.7	mg/kg-dry		2.4		MA-VPH	01/30/18 16:22 / jp
Surr: VPH Aromatics Surrogate	91.0	%REC		70-130		MA-VPH	01/30/18 16:22 / jp
Surr: VPH Aliphatics Surrogate	94.0	%REC		70-130		MA-VPH	01/30/18 16:22 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	239	mg/kg-dry	*	12	200	SW8015M	01/27/18 03:04 / amn
Surr: o-Terphenyl	77.0	%REC		40-140		SW8015M	01/27/18 03:04 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	28	mg/kg-dry		12	110	MA-EPH	02/03/18 07:31 / tmc
C19 to C36 Aliphatics	110	mg/kg-dry		12	24000	MA-EPH	02/03/18 07:31 / tmc
Surr: 1-Chloro-octadecane	85.0	%REC		40-140		MA-EPH	02/03/18 07:31 / tmc
C11 to C22 Aromatics	22	mg/kg-dry		12	370	MA-EPH	02/03/18 08:17 / tmc
Total Extractable Hydrocarbons	220	mg/kg-dry		12		MA-EPH	02/03/18 08:17 / tmc
Surr: 2-Bromonaphthalene	99.0	%REC		40-140		MA-EPH	02/03/18 08:17 / tmc
Surr: 2-Fluorobiphenyl	85.0	%REC		40-140		MA-EPH	02/03/18 08:17 / tmc
Surr: o-Terphenyl	85.0	%REC		40-140		MA-EPH	02/03/18 08:17 / tmc

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less than the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-005
Client Sample ID: SB-LIF-09B 4.5-5 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 13:20
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	5.1	wt%		0.2		SW3550C	01/25/18 14:02 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry		0.0053	0.019	SW8260B	01/30/18 19:44 / jrj
Surr: p-Bromofluorobenzene	91.0	%REC		81-144		SW8260B	01/30/18 19:44 / jrj
Surr: Dibromofluoromethane	81.0	%REC		67-138		SW8260B	01/30/18 19:44 / jrj
Surr: 1,2-Dichloroethane-d4	82.0	%REC		68-138		SW8260B	01/30/18 19:44 / jrj
Surr: Toluene-d8	91.0	%REC		76-145		SW8260B	01/30/18 19:44 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00021	2E-05	SW8011	01/30/18 15:55 / mim
Surr: 1,1,1,2-Tetrachloroethane	65.0	%REC		50-150		SW8011	01/30/18 15:55 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.11	0.078	MA-VPH	01/30/18 15:47 / jp
Benzene	ND	mg/kg-dry		0.053	0.07	MA-VPH	01/30/18 15:47 / jp
Toluene	ND	mg/kg-dry		0.053	21	MA-VPH	01/30/18 15:47 / jp
Ethylbenzene	ND	mg/kg-dry		0.053	6.4	MA-VPH	01/30/18 15:47 / jp
m+p-Xylenes	ND	mg/kg-dry		0.053		MA-VPH	01/30/18 15:47 / jp
o-Xylene	ND	mg/kg-dry		0.053		MA-VPH	01/30/18 15:47 / jp
Xylenes, Total	ND	mg/kg-dry		0.053	72	MA-VPH	01/30/18 15:47 / jp
Naphthalene	ND	mg/kg-dry		0.11	4.3	MA-VPH	01/30/18 15:47 / jp
C9 to C10 Aromatics	ND	mg/kg-dry		2.1	130	MA-VPH	01/30/18 15:47 / jp
C5 to C8 Aliphatics	ND	mg/kg-dry		2.1	52	MA-VPH	01/30/18 15:47 / jp
C9 to C12 Aliphatics	ND	mg/kg-dry		2.1	77	MA-VPH	01/30/18 15:47 / jp
Total Purgeable Hydrocarbons	ND	mg/kg-dry		2.1		MA-VPH	01/30/18 15:47 / jp
Surr: VPH Aromatics Surrogate	89.0	%REC		70-130		MA-VPH	01/30/18 15:47 / jp
Surr: VPH Aliphatics Surrogate	93.0	%REC		70-130		MA-VPH	01/30/18 15:47 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	123	mg/kg-dry		11	200	SW8015M	01/27/18 04:29 / amn
Surr: o-Terphenyl	40.0	%REC		40-140		SW8015M	01/27/18 04:29 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-006
Client Sample ID: SB-LIF-17 13.5-15 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 10:45
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	16	wt%		0.2		SW3550C	01/25/18 14:12 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry		0.0058	0.019	SW8260B	01/30/18 23:09 / jrj
Surr: p-Bromofluorobenzene	99.0	%REC		81-144		SW8260B	01/30/18 23:09 / jrj
Surr: Dibromofluoromethane	77.0	%REC		67-138		SW8260B	01/30/18 23:09 / jrj
Surr: 1,2-Dichloroethane-d4	80.0	%REC		68-138		SW8260B	01/30/18 23:09 / jrj
Surr: Toluene-d8	112	%REC		76-145		SW8260B	01/30/18 23:09 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00024	2E-05	SW8011	01/30/18 16:21 / mim
Surr: 1,1,1,2-Tetrachloroethane	81.0	%REC		50-150		SW8011	01/30/18 16:21 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry	D	0.59	0.078	MA-VPH	01/30/18 23:21 / jp
Benzene	ND	mg/kg-dry	D	0.30	0.07	MA-VPH	01/30/18 23:21 / jp
Toluene	ND	mg/kg-dry	D	0.30	21	MA-VPH	01/30/18 23:21 / jp
Ethylbenzene	ND	mg/kg-dry	D	0.30	6.4	MA-VPH	01/30/18 23:21 / jp
m+p-Xylenes	ND	mg/kg-dry	D	0.30		MA-VPH	01/30/18 23:21 / jp
o-Xylene	ND	mg/kg-dry	D	0.30		MA-VPH	01/30/18 23:21 / jp
Xylenes, Total	ND	mg/kg-dry	D	0.30	72	MA-VPH	01/30/18 23:21 / jp
Naphthalene	6.1	mg/kg-dry	*	0.59	4.3	MA-VPH	01/30/18 23:21 / jp
C9 to C10 Aromatics	220	mg/kg-dry	*	12	130	MA-VPH	01/30/18 23:21 / jp
C5 to C8 Aliphatics	21	mg/kg-dry		12	52	MA-VPH	01/30/18 23:21 / jp
C9 to C12 Aliphatics	331	mg/kg-dry	*	12	77	MA-VPH	01/30/18 23:21 / jp
Total Purgeable Hydrocarbons	625	mg/kg-dry		12		MA-VPH	01/30/18 23:21 / jp
Surr: VPH Aromatics Surrogate	111	%REC		70-130		MA-VPH	01/30/18 23:21 / jp
Surr: VPH Aliphatics Surrogate	137	%REC	S	70-130		MA-VPH	01/30/18 23:21 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.
- S=The Surrogate recovery was outside QC advisory limits due to positive sample matrix interference.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	3090	mg/kg-dry	*	60	200	SW8015M	01/27/18 06:36 / amn
Surr: o-Terphenyl	172	%REC	S	40-140		SW8015M	01/27/18 06:36 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- S=Surrogate recovery outside QC advisory limits due to positive sample matrix interference.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	1510	mg/kg-dry	*	24	110	MA-EPH	02/03/18 03:41 / tmc
C19 to C36 Aliphatics	372	mg/kg-dry		24	24000	MA-EPH	02/03/18 03:41 / tmc
Surr: 1-Chloro-octadecane	78.0	%REC		40-140		MA-EPH	02/03/18 03:41 / tmc
C11 to C22 Aromatics	1320	mg/kg-dry	*	24	370	MA-EPH	02/03/18 04:27 / tmc
Total Extractable Hydrocarbons	3240	mg/kg-dry		24		MA-EPH	02/03/18 04:27 / tmc

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
S - Spike recovery outside of advisory limits.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-006
Client Sample ID: SB-LIF-17 13.5-15 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 10:45
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
Surr: 2-Bromonaphthalene	94.0	%REC		40-140		MA-EPH	02/03/18 04:27 / tmc
Surr: 2-Fluorobiphenyl	99.0	%REC		40-140		MA-EPH	02/03/18 04:27 / tmc
Surr: o-Terphenyl	89.0	%REC		40-140		MA-EPH	02/03/18 04:27 / tmc

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-007
Client Sample ID: SB-LIF-05 2.5-3.5 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 13:00
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	15	wt%		0.2		SW3550C	01/25/18 14:23 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry		0.0059	0.019	SW8260B	01/31/18 01:07 / jrj
Surr: p-Bromofluorobenzene	90.0	%REC		81-144		SW8260B	01/31/18 01:07 / jrj
Surr: Dibromofluoromethane	76.0	%REC		67-138		SW8260B	01/31/18 01:07 / jrj
Surr: 1,2-Dichloroethane-d4	78.0	%REC		68-138		SW8260B	01/31/18 01:07 / jrj
Surr: Toluene-d8	88.0	%REC		76-145		SW8260B	01/31/18 01:07 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00024	2E-05	SW8011	01/30/18 16:48 / mim
Surr: 1,1,1,2-Tetrachloroethane	74.0	%REC		50-150		SW8011	01/30/18 16:48 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.12	0.078	MA-VPH	01/30/18 12:44 / jp
Benzene	ND	mg/kg-dry		0.059	0.07	MA-VPH	01/30/18 12:44 / jp
Toluene	ND	mg/kg-dry		0.059	21	MA-VPH	01/30/18 12:44 / jp
Ethylbenzene	0.17	mg/kg-dry		0.059	6.4	MA-VPH	01/30/18 12:44 / jp
m+p-Xylenes	ND	mg/kg-dry		0.059		MA-VPH	01/30/18 12:44 / jp
o-Xylene	ND	mg/kg-dry		0.059		MA-VPH	01/30/18 12:44 / jp
Xylenes, Total	ND	mg/kg-dry		0.059	72	MA-VPH	01/30/18 12:44 / jp
Naphthalene	0.37	mg/kg-dry		0.12	4.3	MA-VPH	01/30/18 12:44 / jp
C9 to C10 Aromatics	4.8	mg/kg-dry		2.4	130	MA-VPH	01/30/18 12:44 / jp
C5 to C8 Aliphatics	ND	mg/kg-dry		2.4	52	MA-VPH	01/30/18 12:44 / jp
C9 to C12 Aliphatics	8.2	mg/kg-dry		2.4	77	MA-VPH	01/30/18 12:44 / jp
Total Purgeable Hydrocarbons	12	mg/kg-dry		2.4		MA-VPH	01/30/18 12:44 / jp
Surr: VPH Aromatics Surrogate	91.0	%REC		70-130		MA-VPH	01/30/18 12:44 / jp
Surr: VPH Aliphatics Surrogate	95.0	%REC		70-130		MA-VPH	01/30/18 12:44 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	25	mg/kg-dry		12	200	SW8015M	01/27/18 00:56 / amn
Surr: o-Terphenyl	74.0	%REC		40-140		SW8015M	01/27/18 00:56 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-008
Client Sample ID: SB-LIF-11 7-8 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 12:00
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	14	wt%		0.2		SW3550C	01/25/18 14:30 / amn
VOLATILE ORGANIC COMPOUNDS-LOW CONCENTRATION							
1,2-Dichloroethane	ND	mg/kg-dry	D	0.075	0.019	SW8260B	01/31/18 01:36 / jrj
Surr: p-Bromofluorobenzene	105	%REC		81-144		SW8260B	01/31/18 01:36 / jrj
Surr: Dibromofluoromethane	77.0	%REC		67-138		SW8260B	01/31/18 01:36 / jrj
Surr: 1,2-Dichloroethane-d4	88.0	%REC		68-138		SW8260B	01/31/18 01:36 / jrj
Surr: Toluene-d8	116	%REC		76-145		SW8260B	01/31/18 01:36 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	mg/kg-dry		0.00023	2E-05	SW8011	01/30/18 17:14 / mim
Surr: 1,1,1,2-Tetrachloroethane	78.0	%REC		50-150		SW8011	01/30/18 17:14 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry	D	1.2	0.078	MA-VPH	01/31/18 01:41 / jp
Benzene	3.4	mg/kg-dry	*	0.59	0.07	MA-VPH	01/31/18 01:41 / jp
Toluene	3.3	mg/kg-dry		0.59	21	MA-VPH	01/31/18 01:41 / jp
Ethylbenzene	28	mg/kg-dry	*	0.59	6.4	MA-VPH	01/31/18 01:41 / jp
m+p-Xylenes	15	mg/kg-dry		0.59		MA-VPH	01/31/18 01:41 / jp
o-Xylene	ND	mg/kg-dry	D	2.6		MA-VPH	01/31/18 01:41 / jp
Xylenes, Total	15	mg/kg-dry		0.59	72	MA-VPH	01/31/18 01:41 / jp
Naphthalene	8.1	mg/kg-dry	*	1.2	4.3	MA-VPH	01/31/18 01:41 / jp
C9 to C10 Aromatics	462	mg/kg-dry	*	23	130	MA-VPH	01/31/18 01:41 / jp
C5 to C8 Aliphatics	617	mg/kg-dry	*	23	52	MA-VPH	01/31/18 01:41 / jp
C9 to C12 Aliphatics	766	mg/kg-dry	*	23	77	MA-VPH	01/31/18 01:41 / jp
Total Purgeable Hydrocarbons	1480	mg/kg-dry		23		MA-VPH	01/31/18 01:41 / jp
Surr: VPH Aromatics Surrogate	182	%REC	S	70-130		MA-VPH	01/31/18 01:41 / jp
Surr: VPH Aliphatics Surrogate	251	%REC	S	70-130		MA-VPH	01/31/18 01:41 / jp

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.
- S=The Surrogate recovery was outside QC advisory limits due to positive sample matrix interference.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	545	mg/kg-dry	*	12	200	SW8015M	01/27/18 01:39 / amn
Surr: o-Terphenyl	78.0	%REC		40-140		SW8015M	01/27/18 01:39 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	228	mg/kg-dry	*	12	110	MA-EPH	02/02/18 23:52 / tmc
C19 to C36 Aliphatics	ND	mg/kg-dry		12	24000	MA-EPH	02/02/18 23:52 / tmc
Surr: 1-Chloro-octadecane	82.0	%REC		40-140		MA-EPH	02/02/18 23:52 / tmc
C11 to C22 Aromatics	53	mg/kg-dry		12	370	MA-EPH	02/03/18 00:38 / tmc
Total Extractable Hydrocarbons	433	mg/kg-dry		12		MA-EPH	02/03/18 00:38 / tmc

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
S - Spike recovery outside of advisory limits.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel
Lab ID: B18011726-008
Client Sample ID: SB-LIF-11 7-8 Feet

Report Date: 02/06/18
Collection Date: 01/19/18 12:00
DateReceived: 01/24/18
Matrix: Solid

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
Surr: 2-Bromonaphthalene	94.0	%REC		40-140		MA-EPH	02/03/18 00:38 / tmc
Surr: 2-Fluorobiphenyl	79.0	%REC		40-140		MA-EPH	02/03/18 00:38 / tmc
Surr: o-Terphenyl	90.0	%REC		40-140		MA-EPH	02/03/18 00:38 / tmc

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- *=The reported value exceeds the Maximum Contaminant Limit (MCL). The MCLs listed for target analyte and hydrocarbon range values are the most conservative Montana DEQ RBSLs. These limits may not apply to your samples.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8011								Analytical Run: 117979	
Lab ID: CK3-117979	Continuing Calibration Verification Standard							01/30/18 11:05	
1,2-Dibromoethane	0.0109	mg/kg	0.00020	109	70	130			
Surr: 1,1,1,2-Tetrachloroethane			0.0010	94	70	130			
Lab ID: CK5-117979	Continuing Calibration Verification Standard							01/30/18 19:25	
1,2-Dibromoethane	0.0355	mg/kg	0.00020	89	70	130			
Surr: 1,1,1,2-Tetrachloroethane			0.0010	90	70	130			
Method: SW8011								Batch: 117979	
Lab ID: LCS-117979	Laboratory Control Sample				Run: AECD.I_180129F			01/30/18 11:31	
1,2-Dibromoethane	0.0235	mg/kg	0.00020	118	50	150			
Surr: 1,1,1,2-Tetrachloroethane			0.0010	95	50	150			
Lab ID: LCS1-117979	Laboratory Control Sample				Run: AECD.I_180129F			01/30/18 11:57	
1,2-Dibromoethane	0.0121	mg/kg	0.00020	122	50	150			
Surr: 1,1,1,2-Tetrachloroethane			0.0010	97	50	150			
Lab ID: MB-117979	Method Blank				Run: AECD.I_180129F			01/30/18 12:24	
1,2-Dibromoethane	ND	mg/kg	0.00020						
Surr: 1,1,1,2-Tetrachloroethane			0.0010	96	50	150			
Lab ID: B18011726-001AMS	Sample Matrix Spike				Run: AECD.I_180129F			01/30/18 18:06	
1,2-Dibromoethane	0.0230	mg/kg-dry	0.00023	98	50	150			
Surr: 1,1,1,2-Tetrachloroethane			0.0012	80	50	150			
Lab ID: B18011726-001AMSD	Sample Matrix Spike Duplicate				Run: AECD.I_180129F			01/30/18 18:33	
1,2-Dibromoethane	0.0234	mg/kg-dry	0.00023	100	50	150	1.5	40	
Surr: 1,1,1,2-Tetrachloroethane			0.0012	82	50	150			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Batch: 117897
Lab ID: lcs-117897	Laboratory Control Sample				Run: 5971A.I_180130B				01/30/18 18:45
1,2-Dichloroethane	0.179	mg/kg	0.0050	74	51	140			
Surr: p-Bromofluorobenzene				101	81	144			
Surr: Dibromofluoromethane				88	67	138			
Surr: 1,2-Dichloroethane-d4				91	68	138			
Surr: Toluene-d8				99	76	145			
Lab ID: mb-117897	Method Blank				Run: 5971A.I_180130B				01/30/18 19:14
1,2-Dichloroethane	ND	mg/kg	0.0050						
Surr: p-Bromofluorobenzene				107	81	141			
Surr: Dibromofluoromethane				93	76	138			
Surr: 1,2-Dichloroethane-d4				95	68	138			
Surr: Toluene-d8				100	76	145			
Lab ID: b18011726-005ams	Sample Matrix Spike				Run: 5971A.I_180130B				01/30/18 20:13
1,2-Dichloroethane	0.214	mg/kg-dry	0.0052	82	51	140			
Surr: p-Bromofluorobenzene				90	81	144			
Surr: Dibromofluoromethane				85	67	138			
Surr: 1,2-Dichloroethane-d4				86	68	138			
Surr: Toluene-d8				93	76	145			
Lab ID: b18011726-005amsd	Sample Matrix Spike Duplicate				Run: 5971A.I_180130B				01/30/18 20:42
1,2-Dichloroethane	0.205	mg/kg-dry	0.0053	78	51	140	4.3	20	
Surr: p-Bromofluorobenzene				93	81	144			
Surr: Dibromofluoromethane				81	67	138			
Surr: 1,2-Dichloroethane-d4				82	68	138			
Surr: Toluene-d8				91	76	145			
Method: SW8260B									Analytical Run: R293960
Lab ID: CCV013018	Continuing Calibration Verification Standard								01/30/18 11:59
1,2-Dichloroethane	0.240	mg/kg	0.0050	96	70	130			
Surr: p-Bromofluorobenzene				95	70	130			
Surr: Dibromofluoromethane				88	70	130			
Surr: 1,2-Dichloroethane-d4				90	70	130			
Surr: Toluene-d8				98	70	130			
Lab ID: ccvA013018	Continuing Calibration Verification Standard								01/31/18 00:08
1,2-Dichloroethane	0.255	mg/kg	0.0050	102	70	130			
Surr: p-Bromofluorobenzene				101	70	130			
Surr: Dibromofluoromethane				91	70	130			
Surr: 1,2-Dichloroethane-d4				95	70	130			
Surr: Toluene-d8				95	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B									Analytical Run: R293970
Lab ID: ccv013118	Continuing Calibration Verification Standard								01/31/18 11:33
1,2-Dichloroethane	0.281	mg/kg	0.0050	112	70	130			
Surr: p-Bromofluorobenzene				94	70	130			
Surr: Dibromofluoromethane				97	70	130			
Surr: 1,2-Dichloroethane-d4				104	70	130			
Surr: Toluene-d8				94	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-VPH									Batch: 117899
Lab ID: LCS-117899	Laboratory Control Sample				Run: PE 1_180130A				01/30/18 10:24
1,2,4-Trimethylbenzene	2.46	mg/kg	0.10	99	70	130			
2,2,4-Trimethylpentane	2.57	mg/kg	0.10	103	70	130			
2-Methylpentane	2.43	mg/kg	0.10	97	70	130			
n-Butylcyclohexane	2.51	mg/kg	0.10	100	70	130			
n-Decane	1.95	mg/kg	0.10	78	70	130			
n-Pentane	2.03	mg/kg	0.10	81	70	130			
Methyl tert-butyl ether (MTBE)	2.34	mg/kg	0.10	94	70	130			
Benzene	2.33	mg/kg	0.050	93	70	130			
Toluene	2.36	mg/kg	0.050	94	70	130			
Ethylbenzene	2.42	mg/kg	0.050	97	70	130			
m+p-Xylenes	4.85	mg/kg	0.050	97	70	130			
o-Xylene	2.44	mg/kg	0.050	98	70	130			
Naphthalene	2.27	mg/kg	0.10	91	70	130			
Total Purgeable Hydrocarbons	35.7	mg/kg	2.0	95	70	130			
Surr: VPH Aromatics Surrogate			0.10	102	70	130			
Surr: VPH Aliphatics Surrogate			0.10	104	70	130			
Lab ID: MB-117899	Method Blank				Run: PE 1_180130A				01/30/18 12:09
Methyl tert-butyl ether (MTBE)	ND	mg/kg	0.10						
Benzene	ND	mg/kg	0.050						
Toluene	ND	mg/kg	0.050						
Ethylbenzene	ND	mg/kg	0.050						
m+p-Xylenes	ND	mg/kg	0.050						
o-Xylene	ND	mg/kg	0.050						
Xylenes, Total	ND	mg/kg	0.050						
Naphthalene	ND	mg/kg	0.10						
C9 to C10 Aromatics	ND	mg/kg	2.0						
C5 to C8 Aliphatics	ND	mg/kg	2.0						
C9 to C12 Aliphatics	ND	mg/kg	2.0						
Total Purgeable Hydrocarbons	ND	mg/kg	2.0						
Surr: VPH Aromatics Surrogate			0.10	100	70	130			
Surr: VPH Aliphatics Surrogate			0.10	100	70	130			
Lab ID: B18011726-007AMS	Sample Matrix Spike				Run: PE 1_180130A				01/30/18 13:19
Methyl tert-butyl ether (MTBE)	2.48	mg/kg-dry	0.12	84	70	130			
Benzene	2.46	mg/kg-dry	0.059	83	70	130			
Toluene	2.52	mg/kg-dry	0.059	85	70	130			
Ethylbenzene	2.75	mg/kg-dry	0.059	87	70	130			
m+p-Xylenes	5.25	mg/kg-dry	0.059	89	70	130			
o-Xylene	2.66	mg/kg-dry	0.059	90	70	130			
Naphthalene	2.62	mg/kg-dry	0.12	76	70	130			
Total Purgeable Hydrocarbons	49.9	mg/kg-dry	2.4	86	70	130			
Surr: VPH Aromatics Surrogate			0.12	91	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-VPH									Batch: 117899
Lab ID: B18011726-007AMS	Sample Matrix Spike				Run: PE 1_180130A				01/30/18 13:19
Surr: VPH Aliphatics Surrogate			0.12	96	70	130			
Lab ID: B18011726-007AMSD	Sample Matrix Spike Duplicate				Run: PE 1_180130A				01/30/18 13:54
Methyl tert-butyl ether (MTBE)	2.49	mg/kg-dry	0.12	84	70	130	0.3	20	
Benzene	2.47	mg/kg-dry	0.059	84	70	130	0.3	20	
Toluene	2.52	mg/kg-dry	0.059	85	70	130	0.2	20	
Ethylbenzene	2.73	mg/kg-dry	0.059	87	70	130	0.8	20	
m+p-Xylenes	5.21	mg/kg-dry	0.059	88	70	130	0.8	20	
o-Xylene	2.64	mg/kg-dry	0.059	89	70	130	0.8	20	
Naphthalene	2.61	mg/kg-dry	0.12	76	70	130	0.5	20	
Total Purgeable Hydrocarbons	47.9	mg/kg-dry	2.4	82	70	130	4.1	20	
Surr: VPH Aromatics Surrogate			0.12	93	70	130			
Surr: VPH Aliphatics Surrogate			0.12	95	70	130			
Method: MA-VPH									Analytical Run: R294095
Lab ID: CCV_0130PE104r-S	Continuing Calibration Verification Standard								01/30/18 09:44
1,2,4-Trimethylbenzene	2.42	mg/kg	0.10	97	75	125			
2,2,4-Trimethylpentane	2.53	mg/kg	0.10	101	75	125			
2-Methylpentane	2.53	mg/kg	0.10	101	75	125			
n-Butylcyclohexane	2.30	mg/kg	0.10	92	75	125			
n-Decane	1.92	mg/kg	0.10	77	75	125			
n-Pentane	2.52	mg/kg	0.10	101	75	125			
Methyl tert-butyl ether (MTBE)	2.46	mg/kg	0.10	98	75	125			
Benzene	2.35	mg/kg	0.050	94	75	125			
Toluene	2.38	mg/kg	0.050	95	75	125			
Ethylbenzene	2.43	mg/kg	0.050	97	75	125			
m+p-Xylenes	4.82	mg/kg	0.050	96	75	125			
o-Xylene	2.43	mg/kg	0.050	97	75	125			
Naphthalene	2.43	mg/kg	0.10	97	75	125			
Surr: VPH Aromatics Surrogate			0.10	97	75	125			
Surr: VPH Aliphatics Surrogate			0.10	101	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

SB-LIF-14 5.5-6.5 Feet Batch ID: 117899

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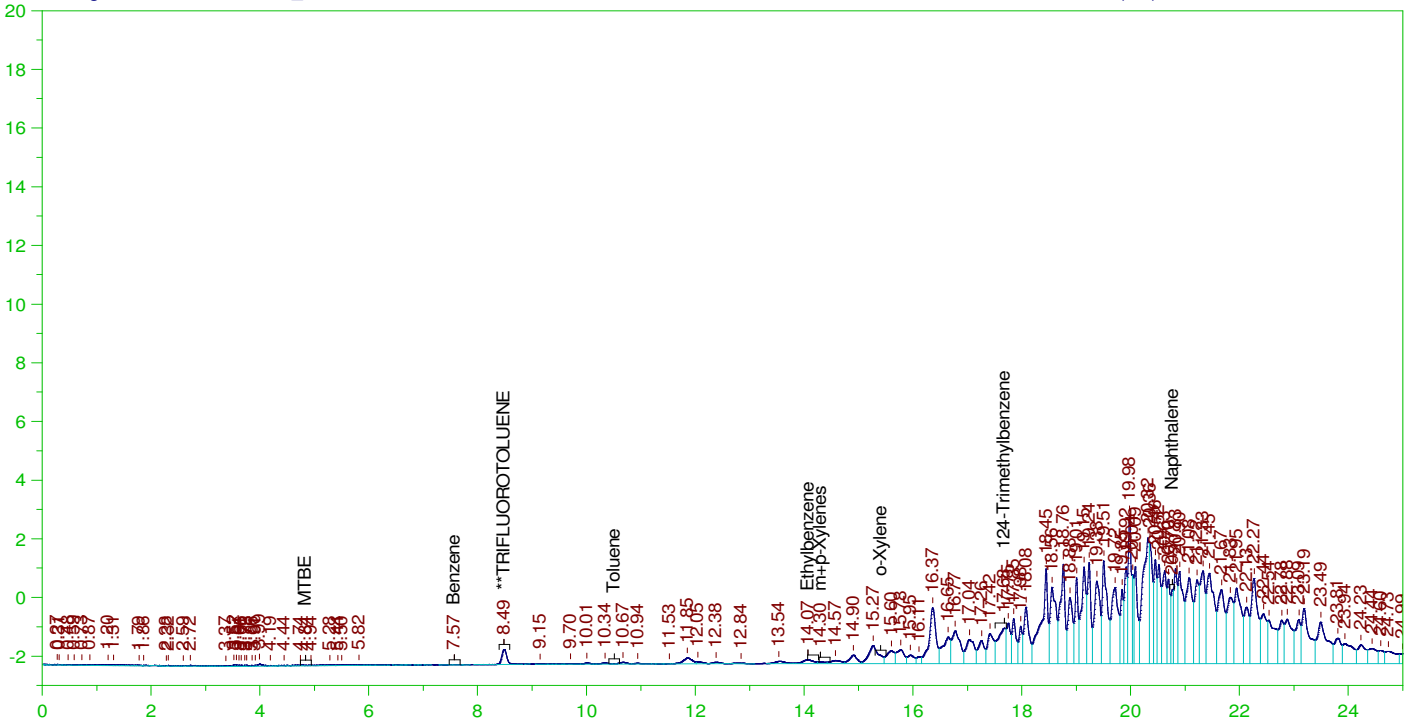

VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-001A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0017.RAW
Date & Time Acquired: 1/30/2018 5:31:56 PM
Method File: G:\Org\PE1\Methods\180118V1726-1%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:486705.1 C9-C10 Aromatics Amount: 146.7385

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	4.842	4.842	4.842	77	.5	U
Benzene	7.57	7.57	7.57	51	.25	U
Toluene	.	.	.		.25	U
Ethylbenzene	14.068	-5.667	-5.58	1643	~~.477~~	< 0.60 jmp 2/2/18
m+p-Xylenes	14.298	14.298	14.298	479	.25	U
o-Xylene	.	.	.		.25	U
124-Trimethylbenzene	17.679	-9.119	-9.191	11817	3.618	
Naphthalene	20.768	-12.269	-12.28	6874	~~2.177~~	No jmp 2/2/18

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.488	2.5	2.426	97.05	70-130

SB-LIF-14 5.5-6.5 Feet Batch ID: 117899

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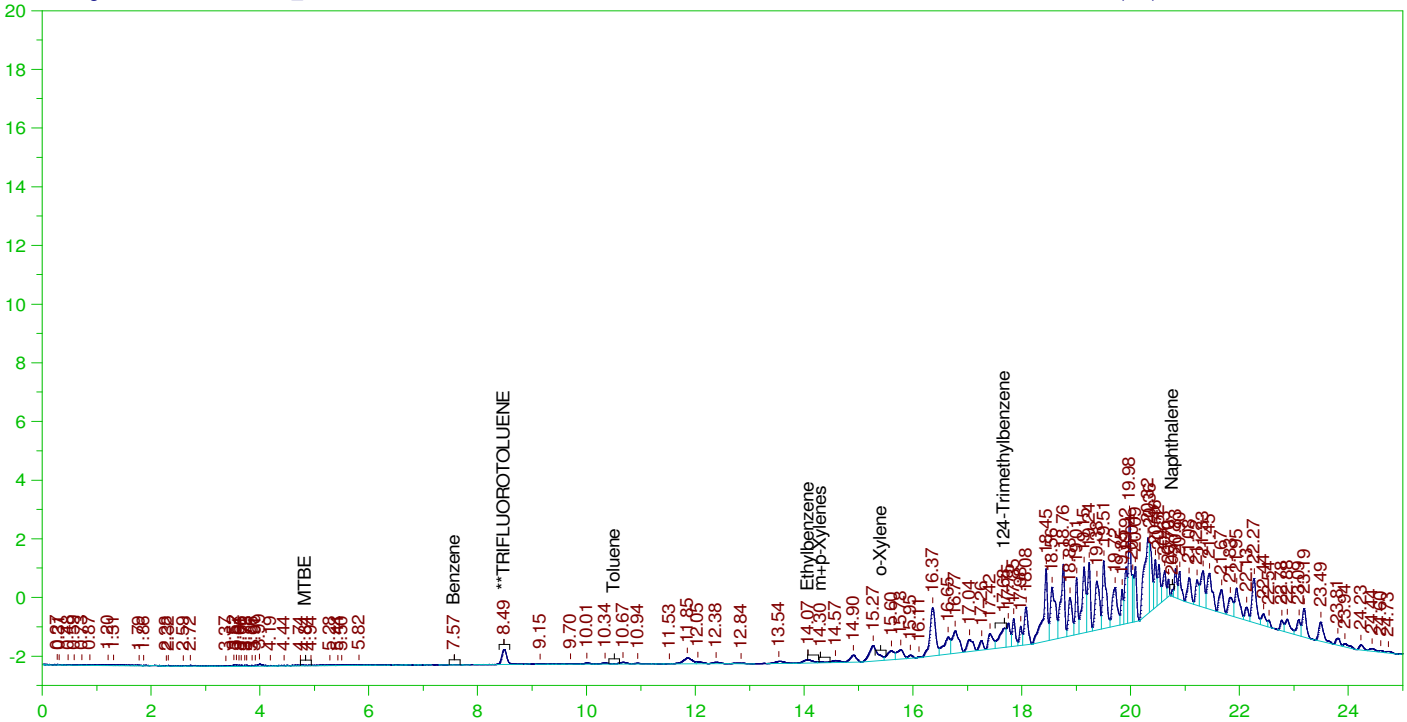

VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-001A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0017.RAW
Date & Time Acquired: 1/30/2018 5:31:56 PM
Method File: G:\Org\PE1\Methods\180118V1726-1N%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:234902.5 C9-C10 Aromatics Amount: 70.82163

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
~~MTBE~~	~~4.842~~	~~4.842~~	~~4.842~~	~~77~~	~~.5~~	~~U~~
~~Benzene~~	~~7.57~~	~~7.57~~	~~7.57~~	~~51~~	~~.25~~	~~U~~
~~Toluene~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~Ethylbenzene~~	~~14.068~~	~~5.667~~	~~5.58~~	~~1363~~	~~.396~~	
~~m+p Xylenes~~	~~14.298~~	~~14.298~~	~~14.298~~	~~243~~	~~.25~~	~~U~~
~~o Xylene~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~124-Trimethylbenzene~~	~~17.679~~	~~-9.119~~	~~-9.191~~	~~5489~~	~~1.68~~	
Naphthalene	20.768	20.768	20.768	454	.5	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.488	2.5	2.426	97.05	70-130

SB-LIF-14 5.5-6.5 Feet Batch ID: 117899

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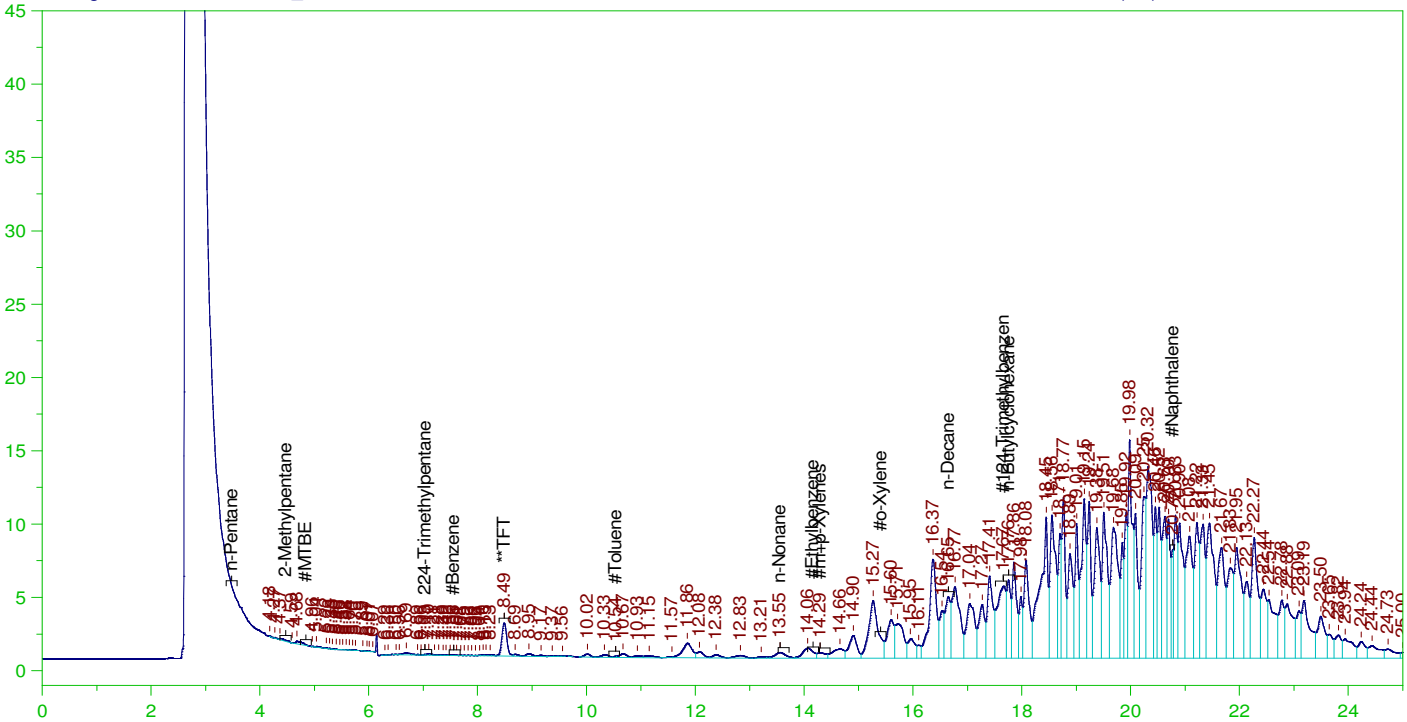

VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-001A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
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Date & Time Acquired: 1/30/2018 5:31:56 PM
Method File: G:\Org\PE1\Methods\180118V1726-1B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

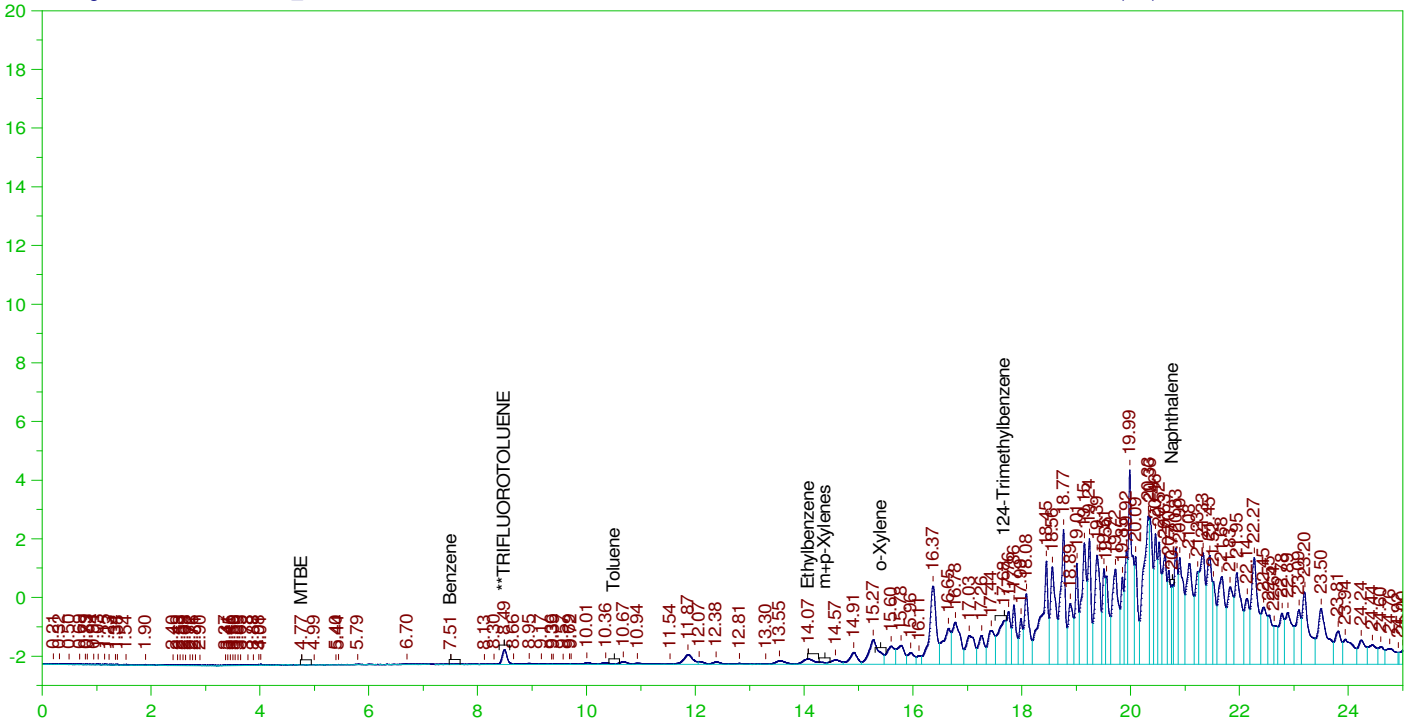
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
**TFT	8.489	2.5	2.513	100.54	-

GRO Area:304426.8 GRO Amount: 42.00795
TPH Area:2794157 TPH Amount: 385.5667

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:41027.48 C5-C8 Amount: 6.945038
C9-C12 Area:1786146 C9-C12 Amount: 336.4122

SB-LIF-14 14-15 Feet Batch ID: 117899

— G:\Org\PE1\DAT\PE1013018_b\0130PE1.0020.RAW B18011726-002A ;0130PE1 , $HC-VPH-MA-S,,(1,5)



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-002A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0020.RAW
Date & Time Acquired: 1/30/2018 7:16:45 PM
Method File: G:\Org\PE1\Methods\180118V1726-2%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:586802.4 C9-C10 Aromatics Amount: 176.9173

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	4.769	4.769	4.769	51	.5	U
Benzene	7.508	7.508	7.508	91	.25	U
Toluene	.	.	.		.25	U
Ethylbenzene	14.073	-5.667	-5.579	3277	~~.952~~	< 1.2 jmp 2/2/18
m+p-Xylenes	.	.	.		.25	U
o-Xylene	.	.	.		.25	U
124-Trimethylbenzene	17.68	-9.119	-9.186	14456	4.426	
Naphthalene	20.767	-12.269	-12.273	6722	~~2.129~~	No jmp 2/2/18

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.494	2.5	2.344	93.75	70-130

SB-LIF-14 14-15 Feet Batch ID: 117899

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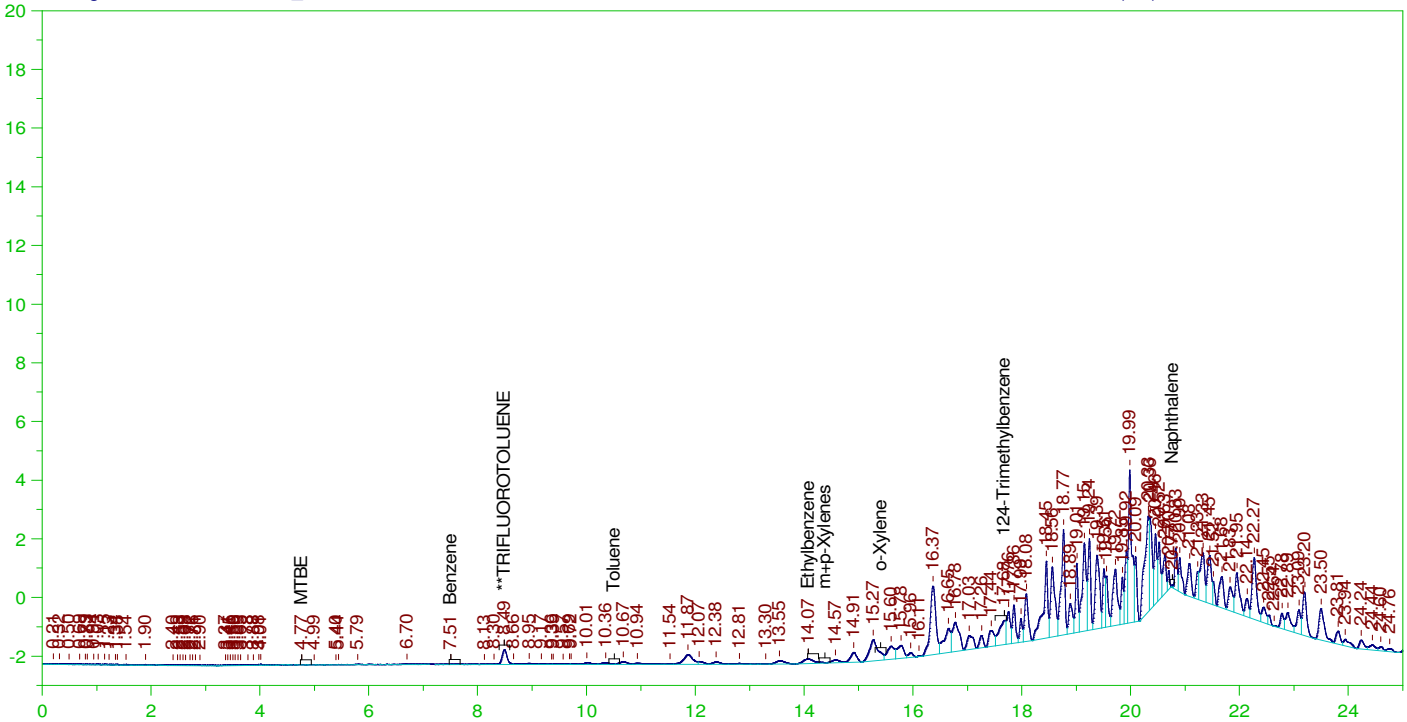

VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-002A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0020.RAW
Date & Time Acquired: 1/30/2018 7:16:45 PM
Method File: G:\Org\PE1\Methods\180118V1726-2N%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:305780.8 C9-C10 Aromatics Amount: 92.19099

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
~~MTBE~~	~~4.769~~	~~4.769~~	~~4.769~~	~~51~~	~~.5~~	~~U~~
~~Benzene~~	~~7.508~~	~~7.508~~	~~7.508~~	~~91~~	~~.25~~	~~U~~
~~Toluene~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~Ethylbenzene~~	~~14.073~~	~~5.667~~	~~5.579~~	~~2255~~	~~.655~~	
~~m+p Xylenes~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~o-Xylene~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~124-Trimethylbenzene~~	~~17.68~~	~~9.119~~	~~9.186~~	~~7015~~	~~2.148~~	
Naphthalene	20.767	20.767	20.767	207	.5	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.494	2.5	2.344	93.75	70-130

SB-LIF-14 14-15 Feet Batch ID: 117899

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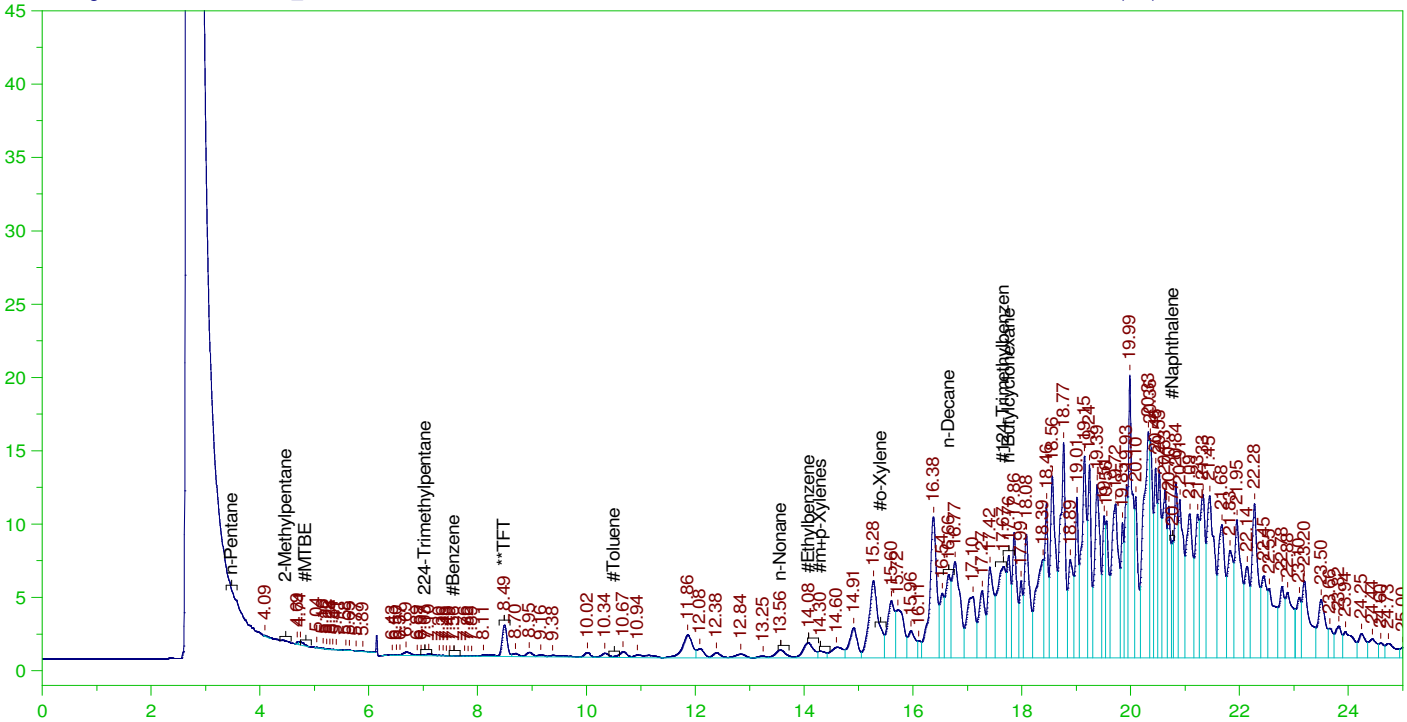


VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-002A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0020.RAW
Date & Time Acquired: 1/30/2018 7:16:45 PM
Method File: G:\Org\PE1\Methods\180118V1726-2B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

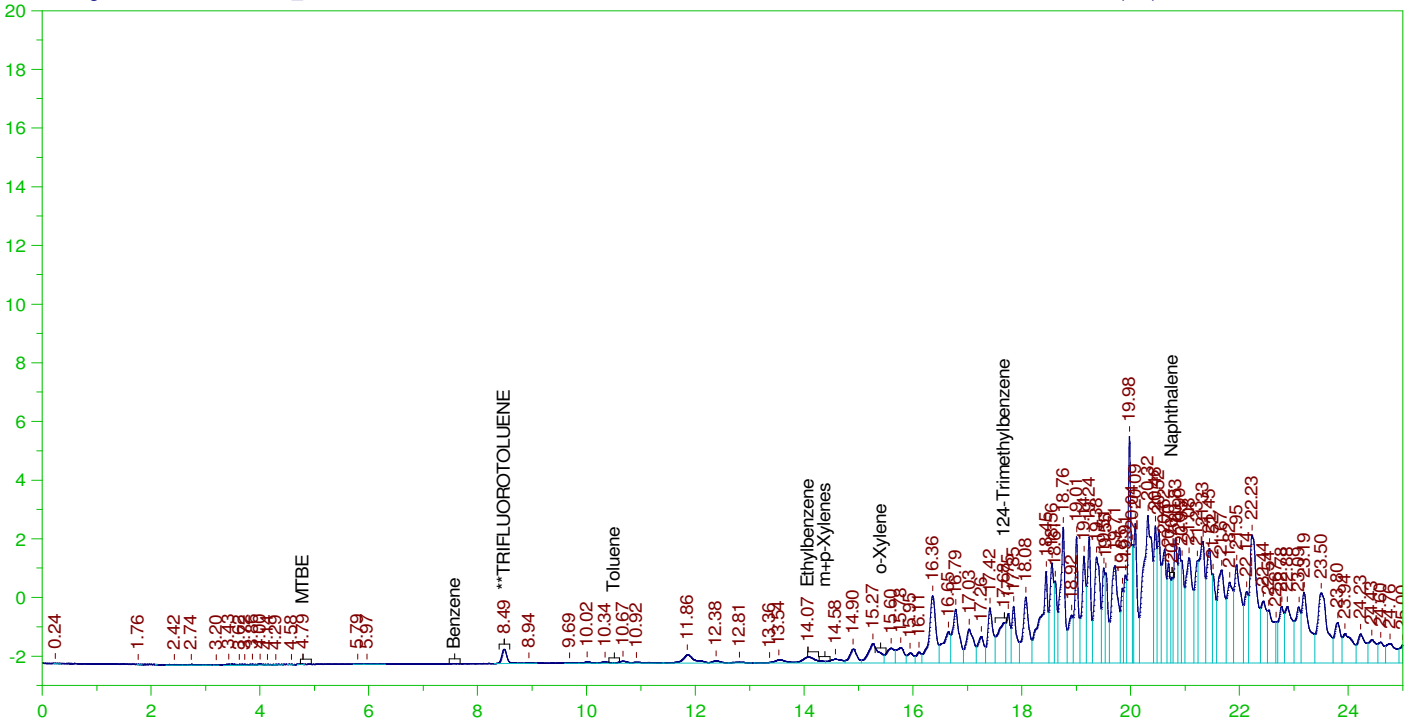
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC
**TFT	8.495	2.5	2.38	95.21 -

GRO Area:425718.2 GRO Amount: 58.74499
TPH Area:3399509 TPH Amount: 469.0993

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:62057.59 C5-C8 Amount: 10.50497
C9-C12 Area:2172504 C9-C12 Amount: 409.1809

SB-LIF-17 8-10 Feet Batch ID: 117899

— G:\Org\PE1\DAT\PE1013018_b\0130PE1.0023.RAW B18011726-003A ;0130PE1 , $HC-VPH-MA-S,,(1,5)



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-003A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0023.RAW
Date & Time Acquired: 1/30/2018 9:01:39 PM
Method File: G:\Org\PE1\Methods\180118V1726-3%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:580469.6 C9-C10 Aromatics Amount: 175.008

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	4.788	4.788	4.788	57	.5	U
Benzene	.	.	.		.25	U
Toluene	.	.	.		.25	U
Ethylbenzene	14.071	-5.667	-5.582	3548	~~1.03~~	< 1.3 jmp 2/2/18
m+p-Xylenes	.	.	.		.25	U
o-Xylene	.	.	.		.25	U
124-Trimethylbenzene	17.677	-9.119	-9.187	13186	4.037	
Naphthalene	20.76	-12.269	-12.271	7207	~~2.283~~	No jmp 2/2/18

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.489	2.5	2.316	92.64	70-130

SB-LIF-17 8-10 Feet Batch ID: 117899

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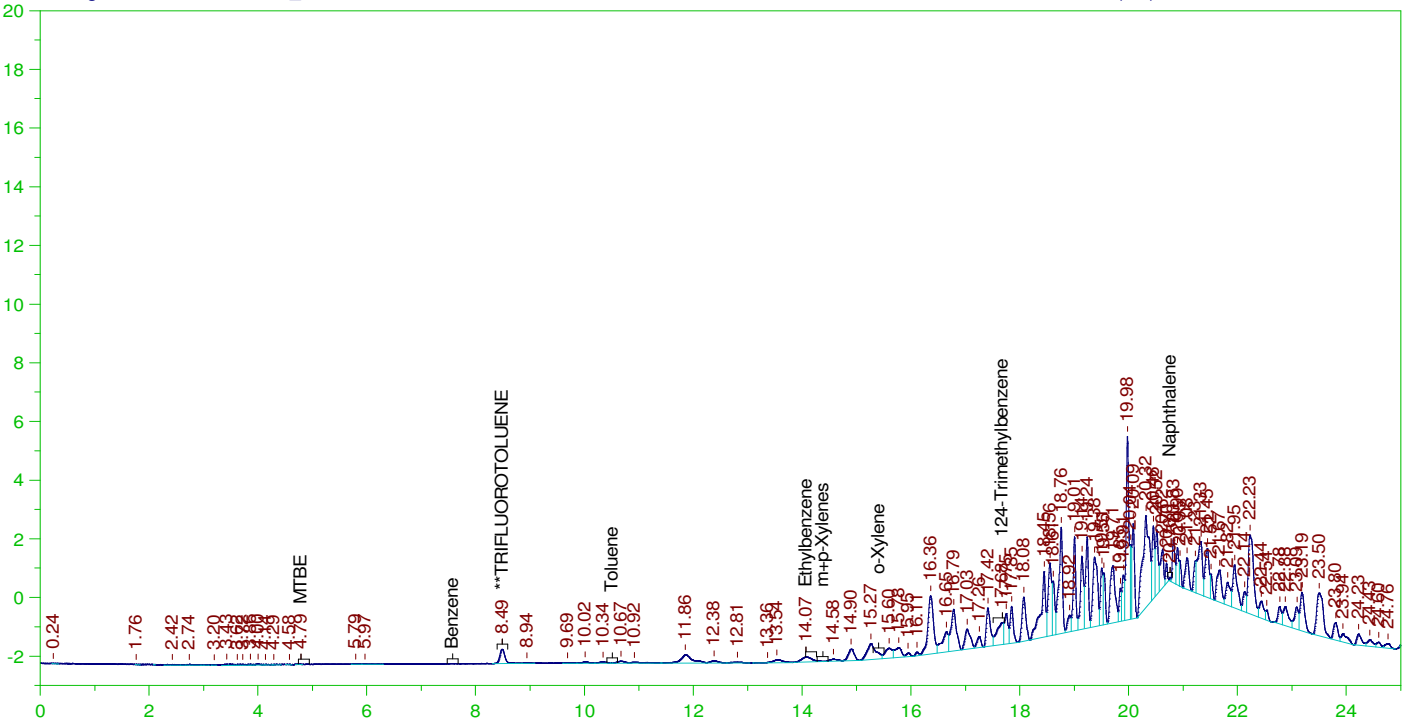


VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-003A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0023.RAW
Date & Time Acquired: 1/30/2018 9:01:39 PM
Method File: G:\Org\PE1\Methods\180118V1726-3N%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

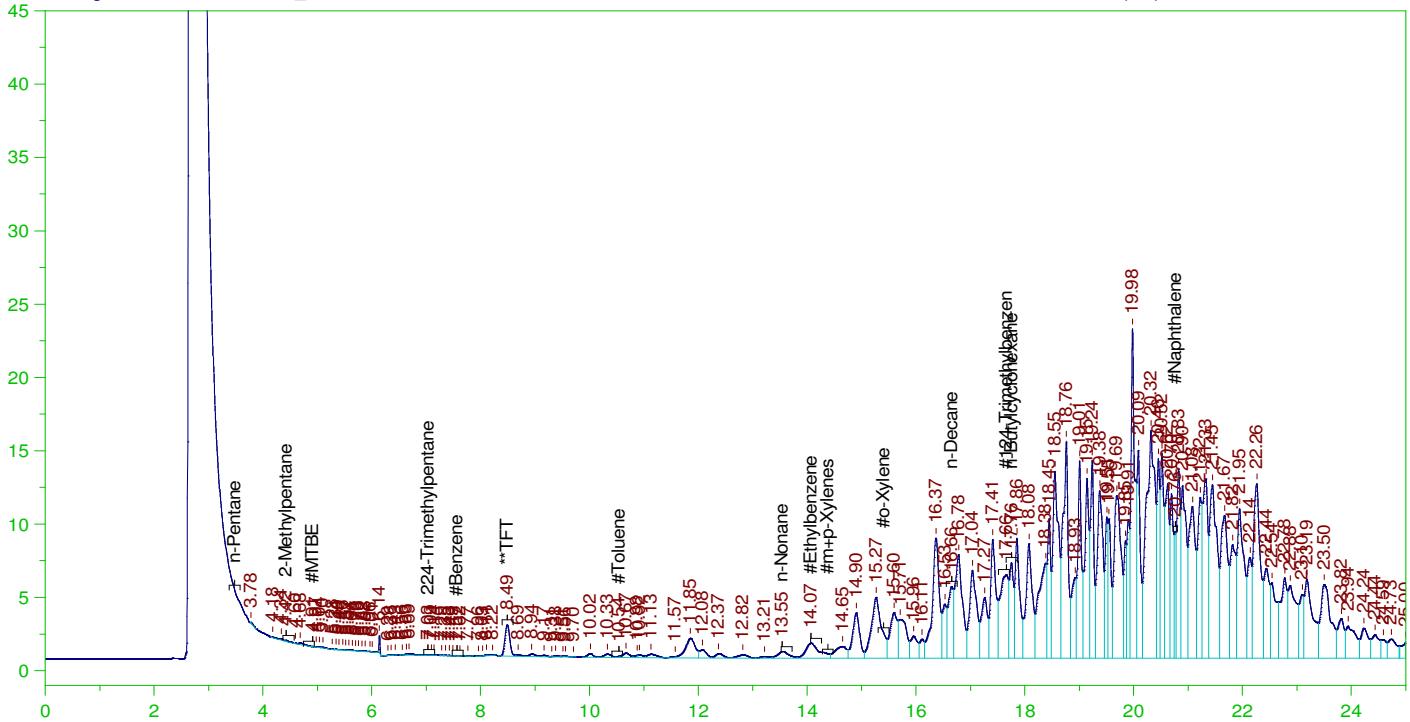
Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:295635.2 C9-C10 Aromatics Amount: 89.13215

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
~~MTBE~~	~~4.788~~	~~4.788~~	~~4.788~~	~~57~~	~~.5~~	~~U~~
~~Benzene~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~Toluene~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~Ethylbenzene~~	~~14.071~~	~~5.667~~	~~5.582~~	~~2468~~	~~.717~~	
~~m+p Xylenes~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~o-Xylene~~	~~.~~	~~.~~	~~.~~		~~.25~~	~~U~~
~~124-Trimethylbenzene~~	~~17.677~~	~~9.119~~	~~9.187~~	~~6289~~	~~1.925~~	
Naphthalene	20.76	20.76	20.76	216	.5	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.489	2.5	2.316	92.64	70-130

SB-LIF-17 8-10 Feet Batch ID: 117899

— G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0023.RAW B18011726-003A ;0130PE1 , $HC-VPH-MA-S,,(1,5)



VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-003A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0023.RAW
Date & Time Acquired: 1/30/2018 9:01:39 PM
Method File: G:\Org\PE1\Methods\180118V1726-3B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

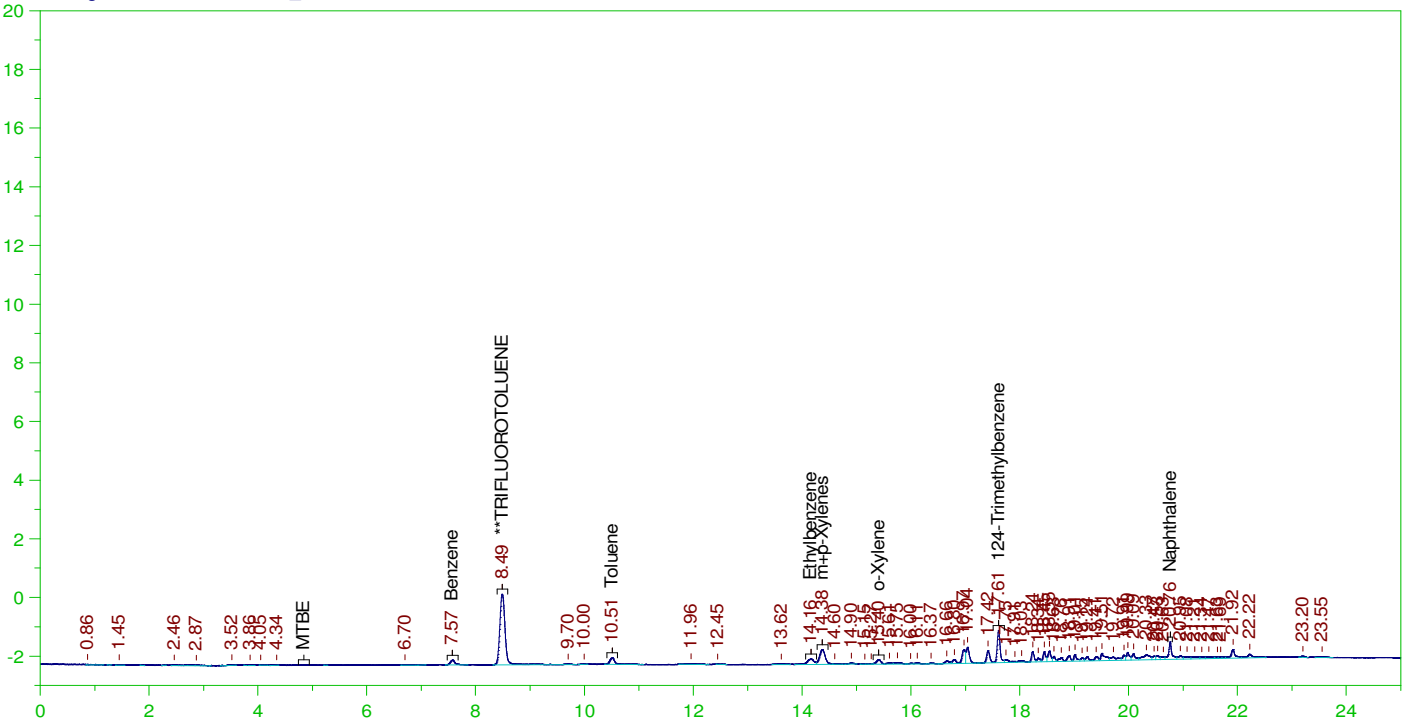
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
**TFT	8.49	2.5	2.321	92.84	-

GRO Area:372624.5 GRO Amount: 51.41858
TPH Area:3506178 TPH Amount: 483.8187

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:52252.52 C5-C8 Amount: 8.845188
C9-C12 Area:2143137 C9-C12 Amount: 403.6498

SB-LIF-03 2.5-3 Feet Batch ID: 117899

G:\Org\PE1\DAT\PE1013018_b\0130PE1.0015.RAW B18011726-004A ;0130PE1 , $HC-VPH-MA-S,



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-004A ;0130PE1 , $HC-VPH-MA-S,
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0015.RAW
Date & Time Acquired: 1/30/2018 4:22:27 PM
Method File: G:\Org\PE1\Methods\180118V1726-4%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:32040.52 C9-C10 Aromatics Amount: 1.932003

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		.1	U
Benzene	7.571	.918	.919	965	.041	J
Toluene	10.508	-2.015	-2.018	1471	.07	
Ethylbenzene	14.161	-5.667	-5.671	1613	.094	
m+p-Xylenes	14.375	-5.882	-5.886	3727	.184	
o-Xylene	15.405	-6.911	-6.915	884	.053	
124-Trimethylbenzene	17.612	-9.119	-9.122	4311	.264	
Naphthalene	20.764	-12.269	-12.274	2564	.162	

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.49	2.5	2.283	91.32	70-130

SB-LIF-03 2.5-3 Feet Batch ID: 117899

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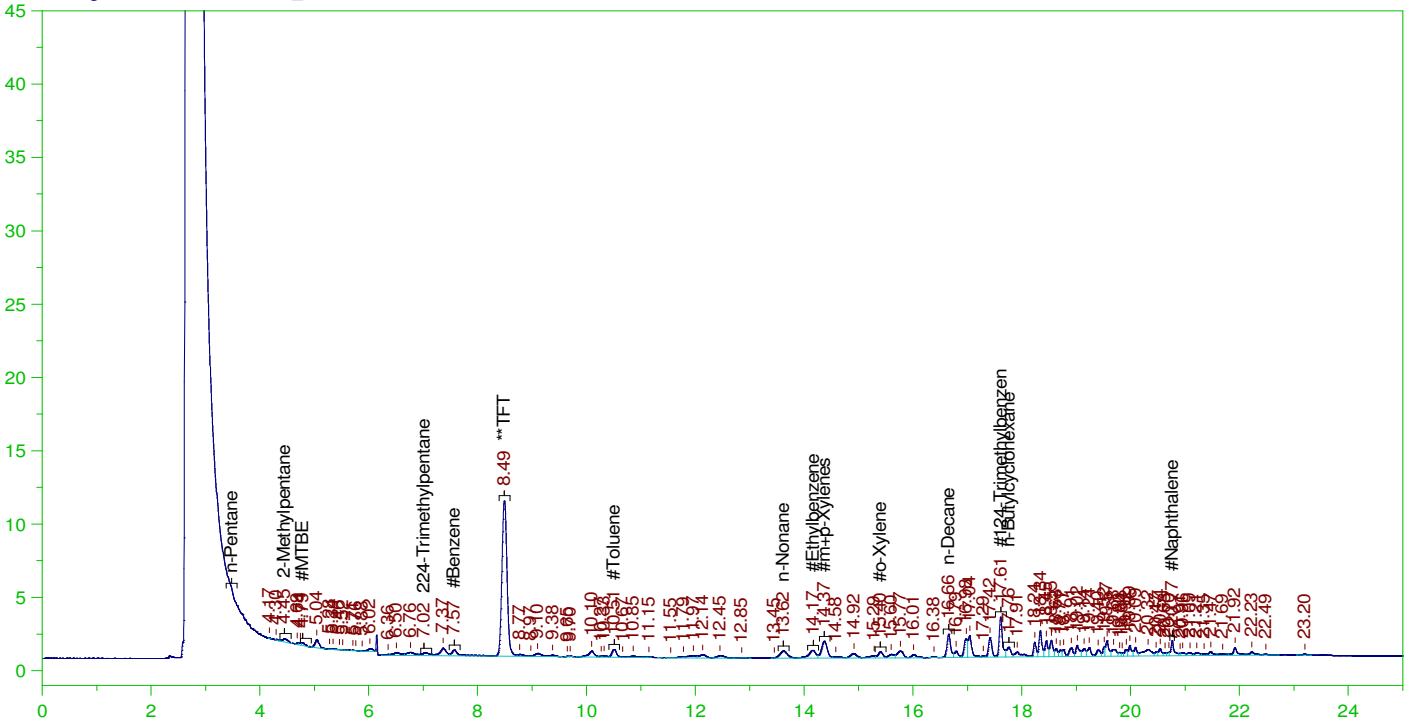


VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-004A ;0130PE1 , $HC-VPH-MA-S,
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0015.RAW
Date & Time Acquired: 1/30/2018 4:22:27 PM
Method File: G:\Org\PE1\Methods\180118V1726-4B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 1 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

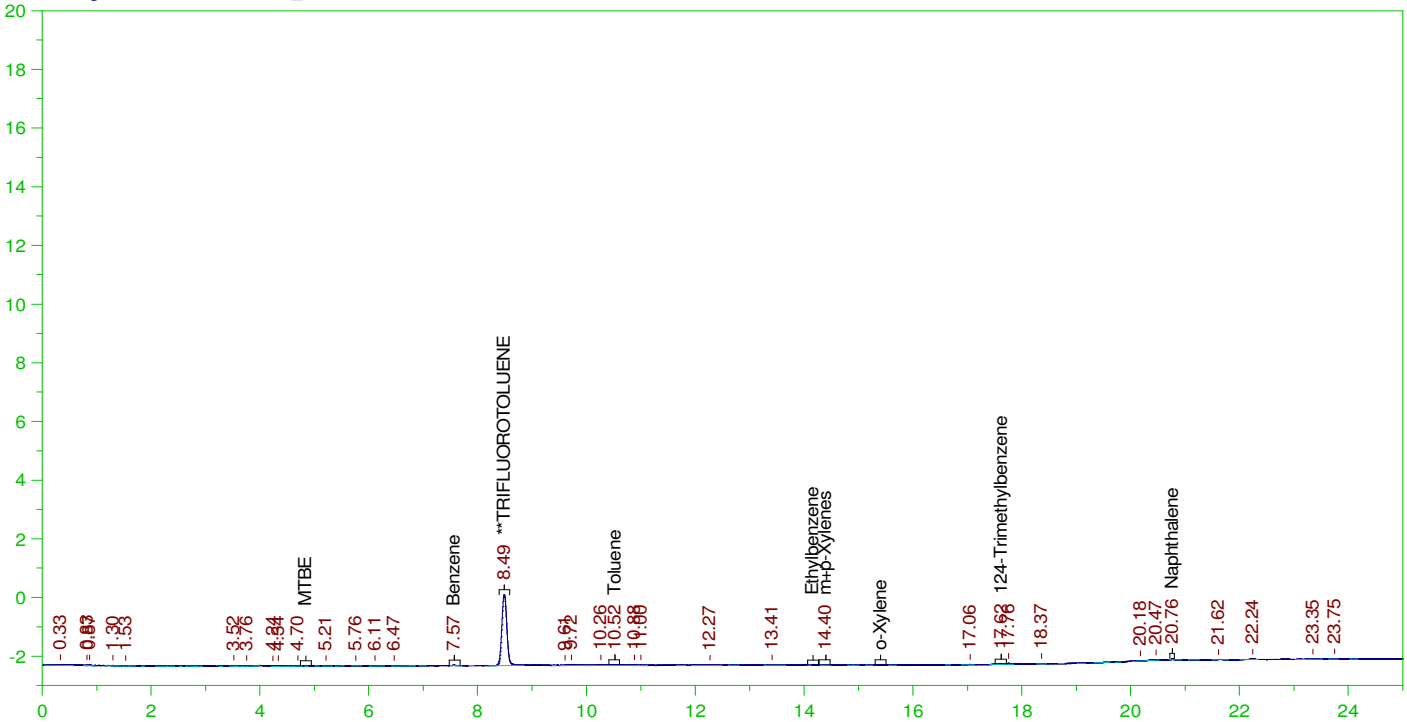
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC
**TFT	8.492	2.5	2.365	94.58 -

GRO Area:79452.16 GRO Amount: 2.192726
TPH Area:201762.1 TPH Amount: 5.568244

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:40584.41 C5-C8 Amount: 1.374007
C9-C12 Area:144221.7 C9-C12 Amount: 5.432695

SB-LIF-09B 4.5-5 Feet Batch ID: 117899

G:\Org\PE1\DAT\PE1013018_b\0130PE1.0014.RAW B18011726-005A ;0130PE1 , $HC-VPH-MA-S,



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-005A ;0130PE1 , $HC-VPH-MA-S,
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0014.RAW
Date & Time Acquired: 1/30/2018 3:47:13 PM
Method File: G:\Org\PE1\Methods\180118V1726-5%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:716.565 C9-C10 Aromatics Amount: 4.320797E-02

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		.1	U
Benzene	7.57	7.57	7.57	79	.05	U
Toluene	10.525	10.525	10.525	287	.05	U
Ethylbenzene	.	.	.		.05	U
m+p-Xylenes	14.399	14.399	14.399	80	.05	U
o-Xylene	.	.	.		.05	U
124-Trimethylbenzene	17.62	17.62	17.62	116	.05	U
Naphthalene	20.763	20.763	20.763	189	.1	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.49	2.5	2.209	88.37	70-130

SB-LIF-09B 4.5-5 Feet Batch ID: 117899

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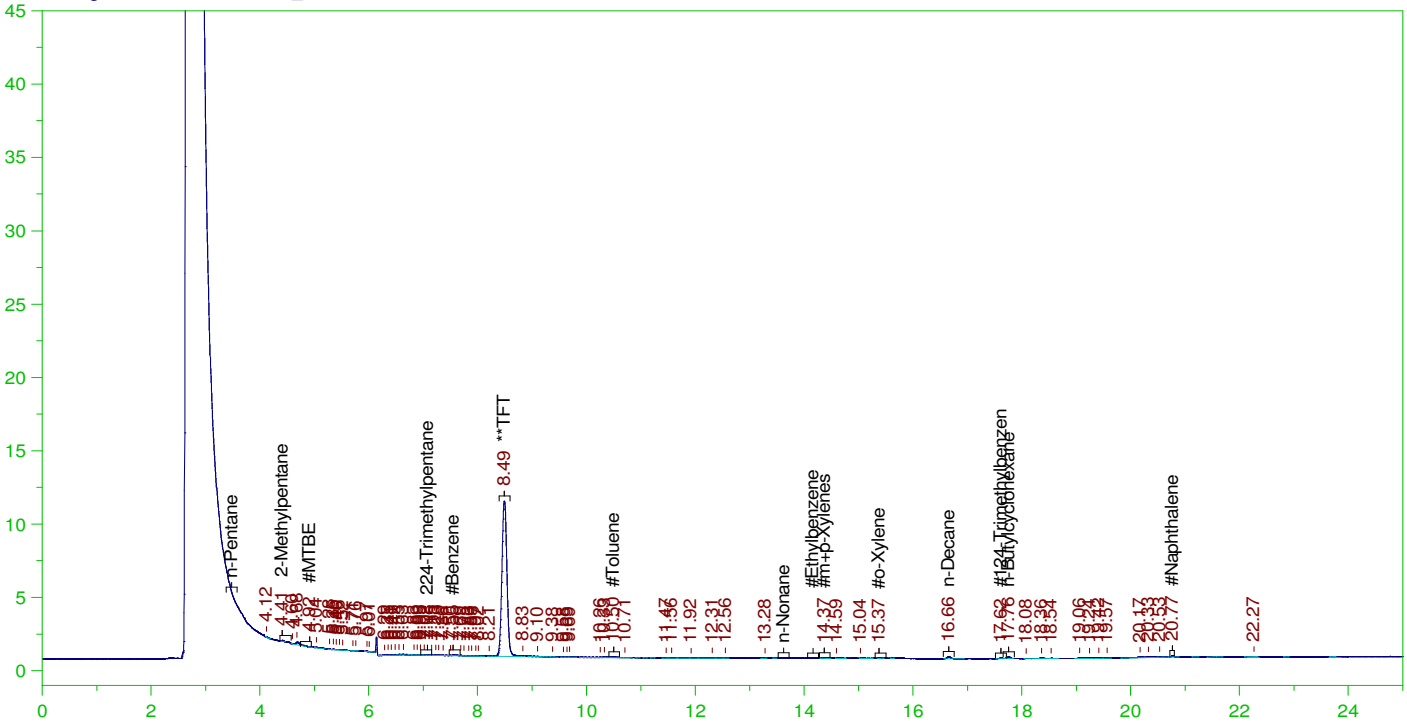


VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-005A ;0130PE1 , $HC-VPH-MA-S,
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0014.RAW
Date & Time Acquired: 1/30/2018 3:47:13 PM
Method File: G:\Org\PE1\Methods\180118V1726-5B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 1 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

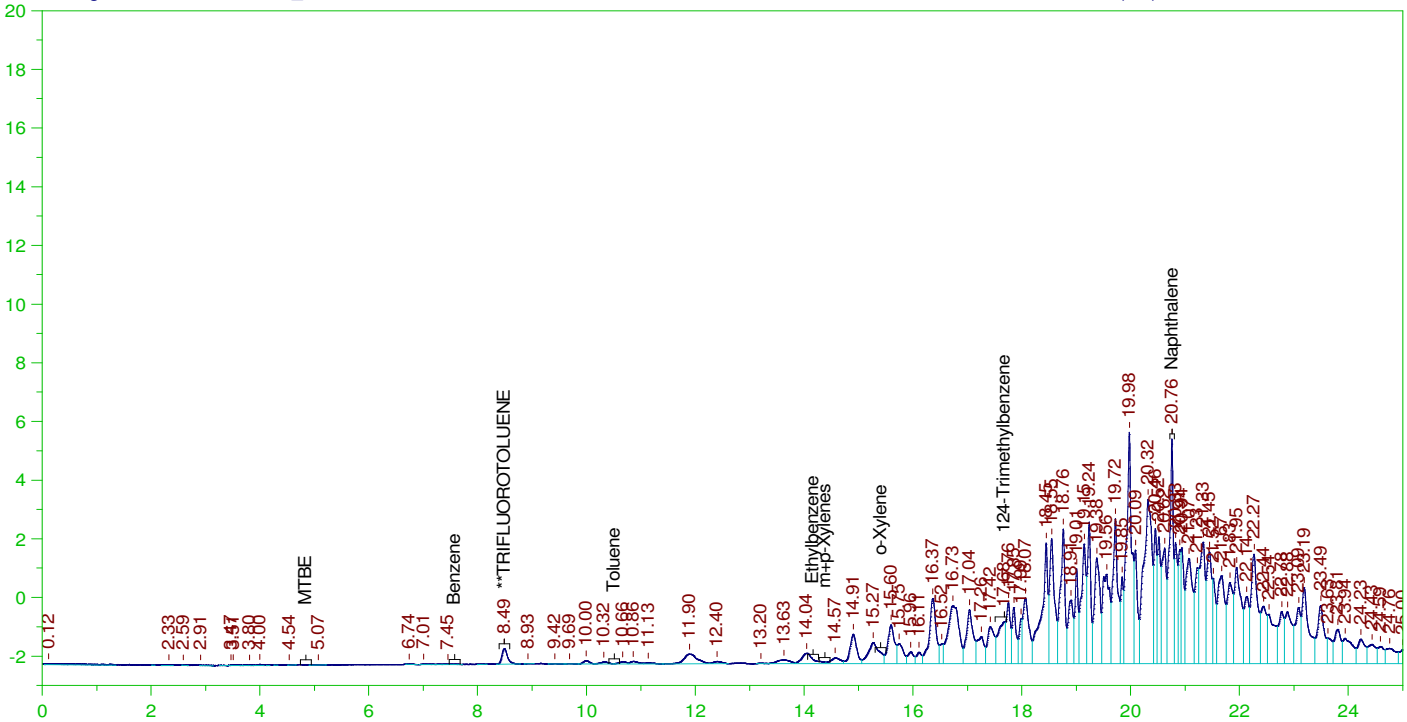
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC
**TFT	8.492	2.5	2.315	92.6 -

GRO Area:7827.586 GRO Amount: 0.2160262
TPH Area:10746.42 TPH Amount: 0.2965805

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:6778.602 C5-C8 Amount: 0.2294933
C9-C12 Area:3382.94 C9-C12 Amount: 0.1274322

SB-LIF-17 13.5-15 Feet Batch ID: 117899

— G:\Org\PE1\DAT\PE1013018_b\0130PE1.0027.RAW B18011726-006A ;0130PE1 , $HC-VPH-MA-S,,(1,5)



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-006A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0027.RAW
Date & Time Acquired: 1/30/2018 11:21:58 PM
Method File: G:\Org\PE1\Methods\180118V1726-6%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:611979.1 C9-C10 Aromatics Amount: 184.5079

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		.5	U
Benzene	.	.	.		.25	U
Toluene	.	.	.		.25	U
Ethylbenzene	.	.	.		.25	U
m+p-Xylenes	.	.	.		.25	U
o-Xylene	.	.	.		.25	U
124-Trimethylbenzene	17.677	-9.119	-9.187	12721	3.894	
Naphthalene	20.76	-12.269	-12.27	38869	~~12.311~~	No jmp 2/2/18

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.49	2.5	2.776	111.04	70-130

SB-LIF-17 13.5-15 Feet Batch ID: 117899

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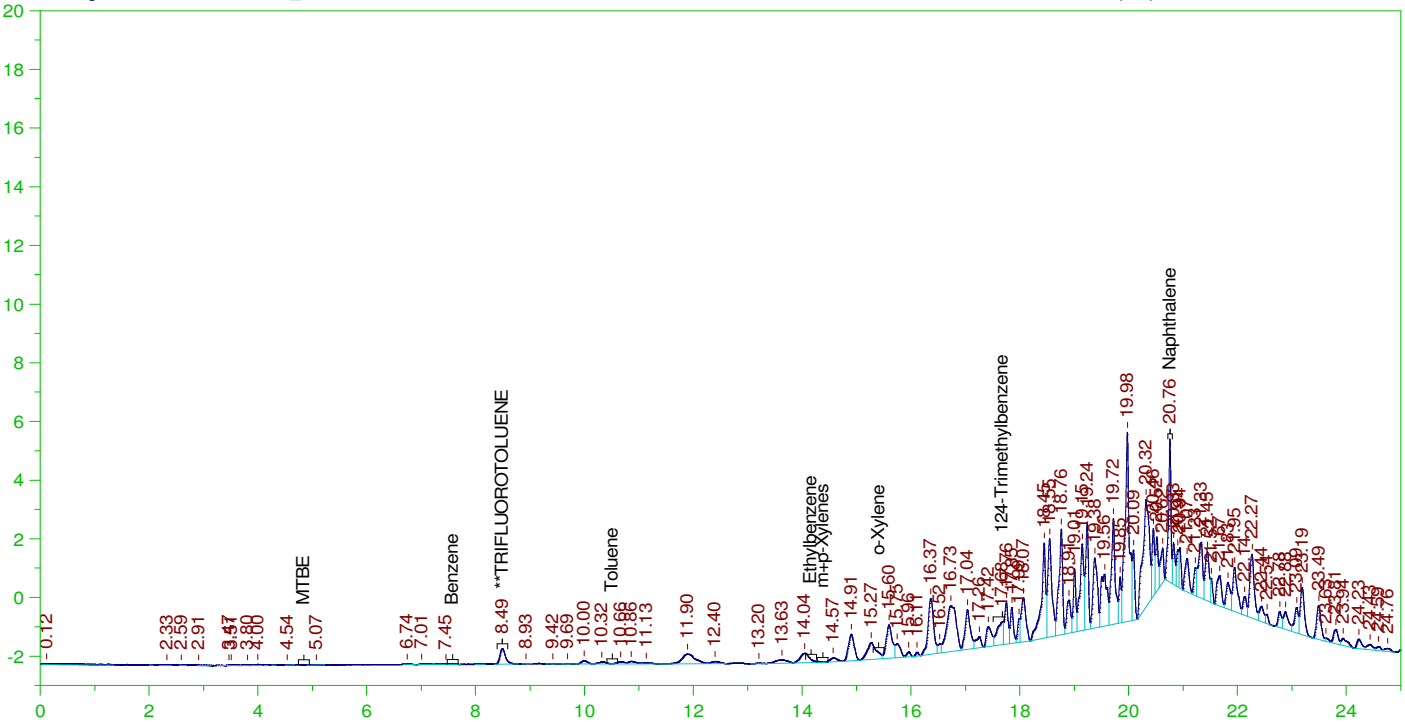

VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-006A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0027.RAW
Date & Time Acquired: 1/30/2018 11:21:58 PM
Method File: G:\Org\PE1\Methods\180118V1726-6N%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:338626.3 C9-C10 Aromatics Amount: 102.0937

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		.5	U
Benzene	.	.	.		.25	U
Toluene	.	.	.		.25	U
Ethylbenzene	.	.	.		.25	U
m+p-Xylenes	.	.	.		.25	U
o-Xylene	.	.	.		.25	U
124-Trimethylbenzene	17.677	-9.119	-9.187	6175	1.89	
Naphthalene	20.76	-12.269	-12.27	16171	5.122	

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.49	2.5	2.776	111.04	70-130

SB-LIF-17 13.5-15 Feet Batch ID: 117899

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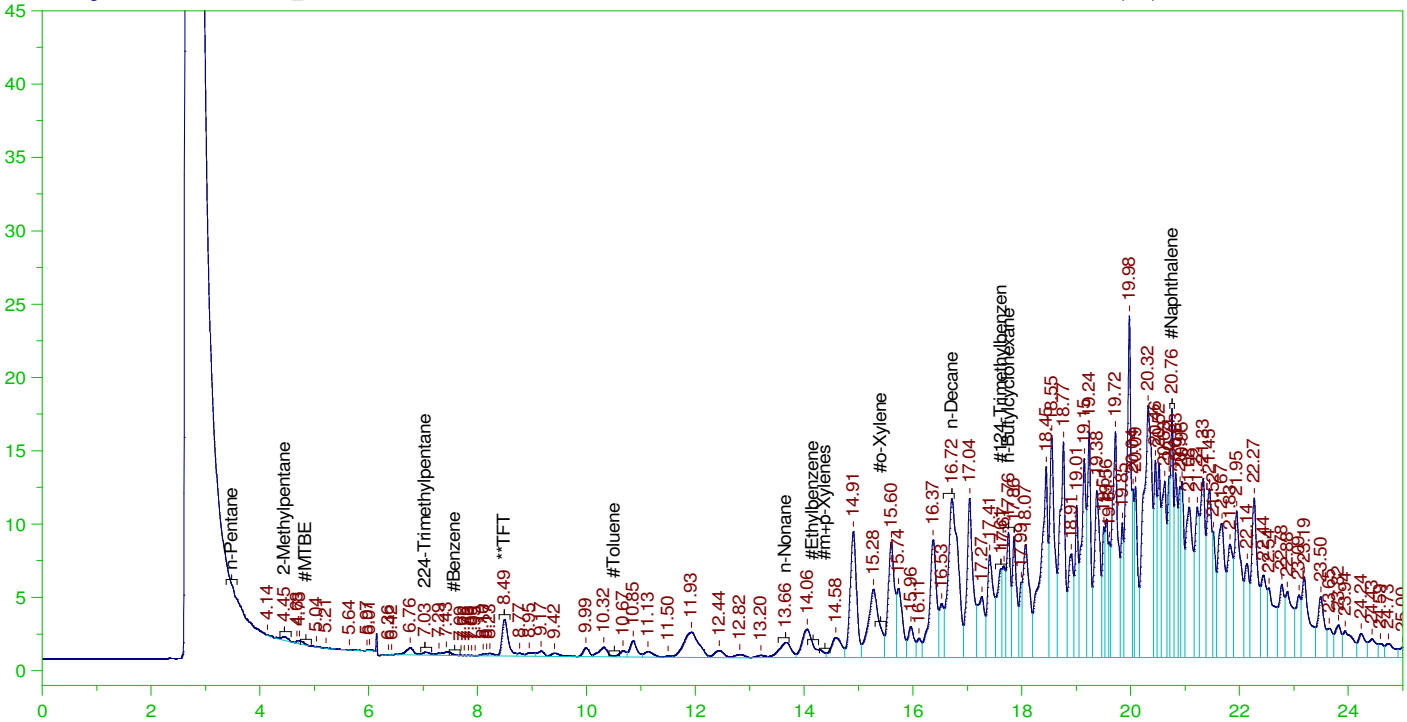

VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-006A ;0130PE1 , $HC-VPH-MA-S,,(1,5)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0027.RAW
Date & Time Acquired: 1/30/2018 11:21:58 PM
Method File: G:\Org\PE1\Methods\180118V1726-6B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 5 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
**TFT	8.495	2.5	3.423	136.91	-

GRO Area:663490.4 GRO Amount: 91.55525
TPH Area:3801333 TPH Amount: 524.5472

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:102265.9 C5-C8 Amount: 17.31135
C9-C12 Area:2452672 C9-C12 Amount: 461.9493

SB-LIF-05 2.5-3.5 Feet Batch ID: 117899

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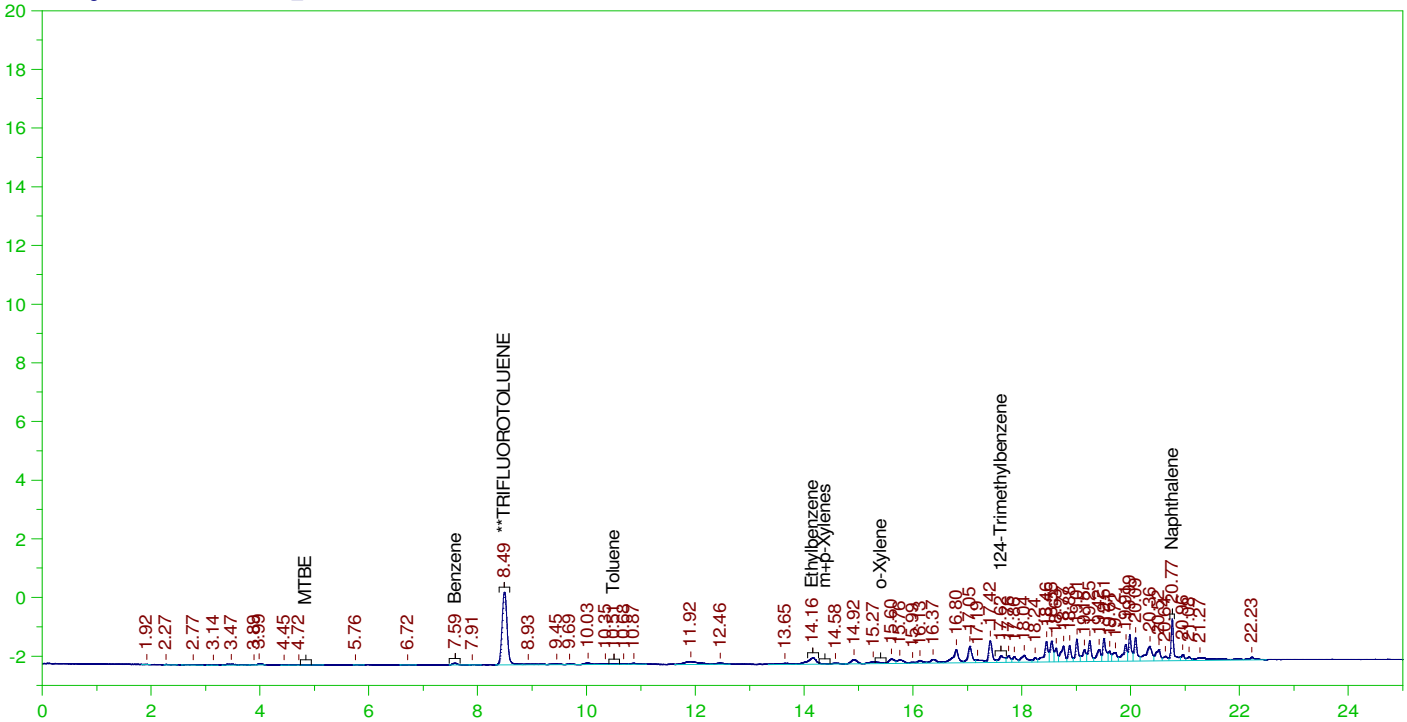

VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-007A ;0130PE1 , $HC-VPH-MA-S,
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0009.RAW
Date & Time Acquired: 1/30/2018 12:44:26 PM
Method File: G:\Org\PE1\Methods\180118V1726-7%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:67224.88 C9-C10 Aromatics Amount: 4.053576

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		.1	U
Benzene	7.587	7.587	7.587	365	.05	U
Toluene	10.507	10.507	10.507	141	.05	U
Ethylbenzene	14.158	-5.667	-5.664	2519	.146	
m+p-Xylenes	.	.	.		.05	U
o-Xylene	.	.	.		.05	U
124-Trimethylbenzene	17.618	-9.119	-9.124	1593	.098	
Naphthalene	20.766	-12.269	-12.272	4942	.313	

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.494	2.5	2.294	91.75	70-130

SB-LIF-05 2.5-3.5 Feet Batch ID: 117899

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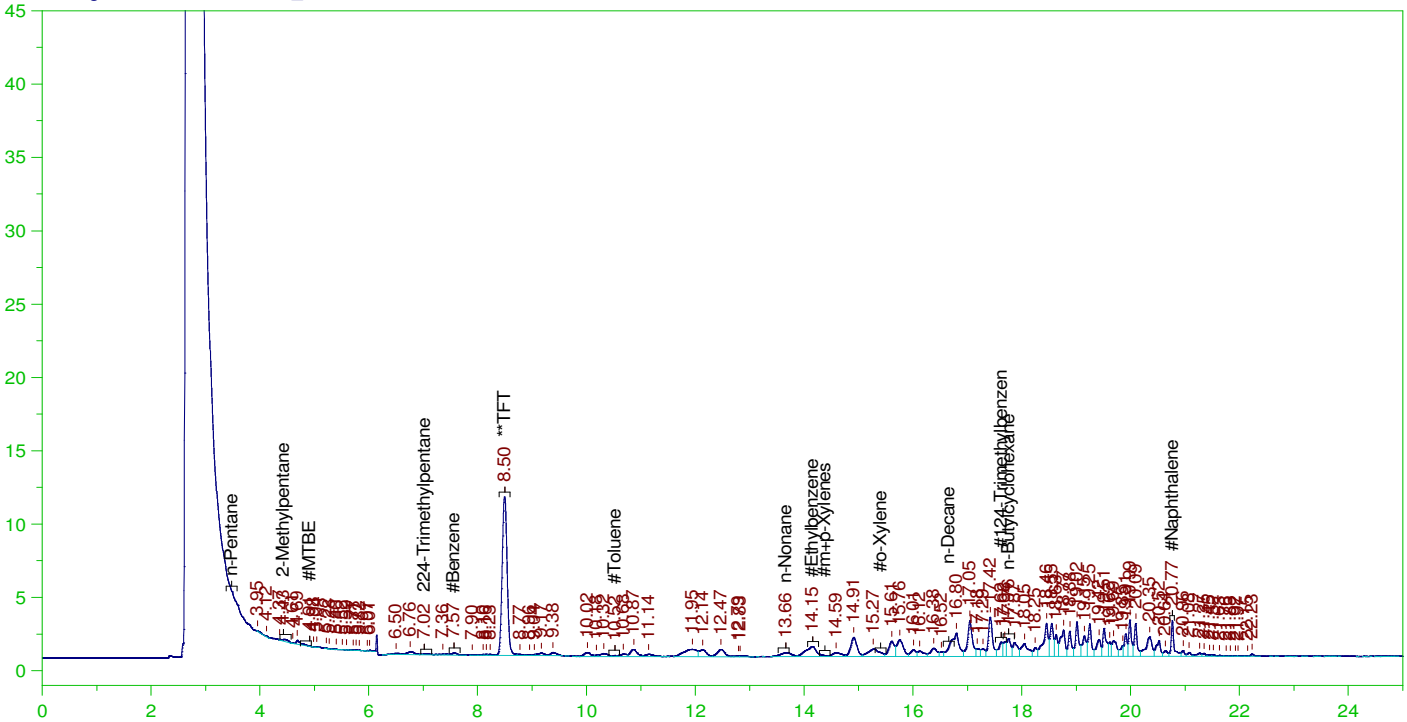


VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-007A ;0130PE1 , $HC-VPH-MA-S,
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0009.RAW
Date & Time Acquired: 1/30/2018 12:44:26 PM
Method File: G:\Org\PE1\Methods\180118V1726-7B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 1 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

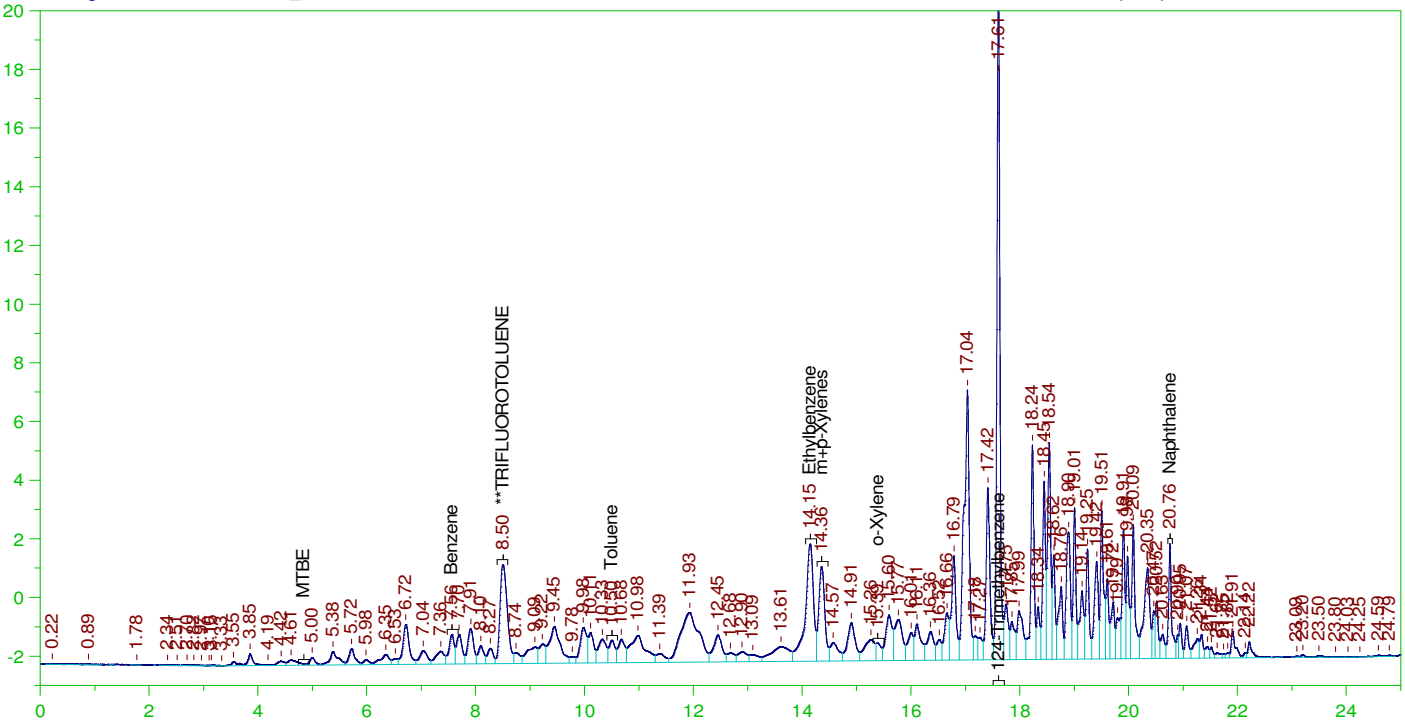
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
**TFT	8.496	2.5	2.376	95.04	-

GRO Area:107919 GRO Amount: 2.978357
TPH Area:356719.2 TPH Amount: 9.84476

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:44096.7 C5-C8 Amount: 1.492918
C9-C12 Area:295758.5 C9-C12 Amount: 11.14095

SB-LIF-11 7-8 Feet Batch ID: 117899

G:\Org\PE1\DAT\PE1013018_b\0130PE1.0031.RAW B18011726-008A ;0130PE1 , $HC-VPH-MA-S,,(1,10)



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-008A ;0130PE1 , $HC-VPH-MA-S,,(1,10)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0031.RAW
Date & Time Acquired: 1/31/2018 1:41:42 AM
Method File: G:\Org\PE1\Methods\180118V1726-8%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 10 S.A.: 10

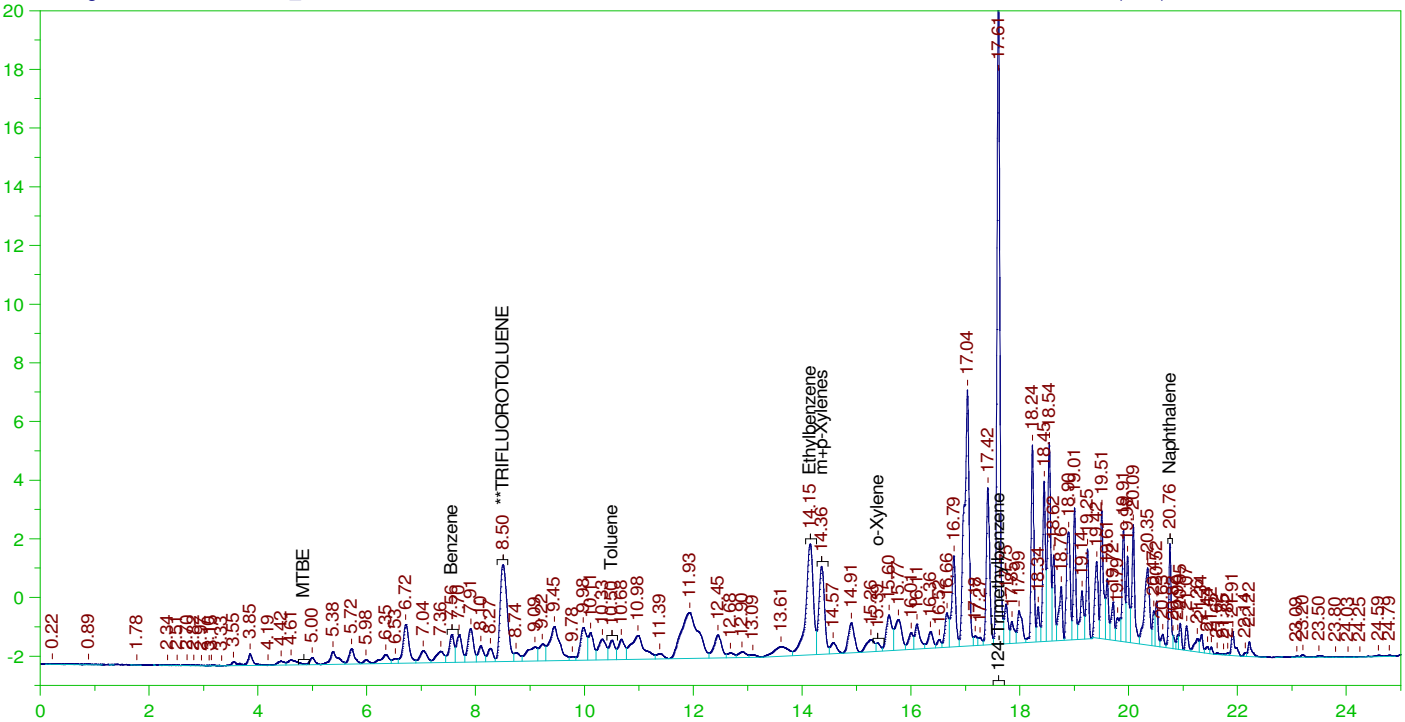
Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:656177.3 C9-C10 Aromatics Amount: 395.6667

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		1.	U
Benzene	7.562	.918	.941	6920	2.931	
Toluene	10.504	-2.015	-2.001	6008	2.84	
Ethylbenzene	14.149	-5.667	-5.647	42003	24.394	
m+p-Xylenes	14.359	-5.882	-5.857	25221	12.483	
o-Xylene	15.387	-6.911	-6.884	3642	~~2.163~~	< 2.6 jmp 2/2/18
124-Trimethylbenzene	17.608	-9.119	-9.106	91773	56.19	
Naphthalene	20.76	-12.269	-12.257	15601	~~9.882~~	No jmp 2/2/18

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.503	25.	45.586	182.34	70-130

SB-LIF-11 7-8 Feet Batch ID: 117899

G:\Org\PE1\DAT\PE1013018_b\0130PE1.0031.RAW B18011726-008A ;0130PE1 , $HC-VPH-MA-S,,(1,10)



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-008A ;0130PE1 , $HC-VPH-MA-S,,(1,10)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1.0031.RAW
Date & Time Acquired: 1/31/2018 1:41:42 AM
Method File: G:\Org\PE1\Methods\180118V1726-8N%.MET
Calibration File: G:\Org\PE1\Cals\180118VPH.CAL
Sample Weight: 50 Dilution: 10 S.A.: 10

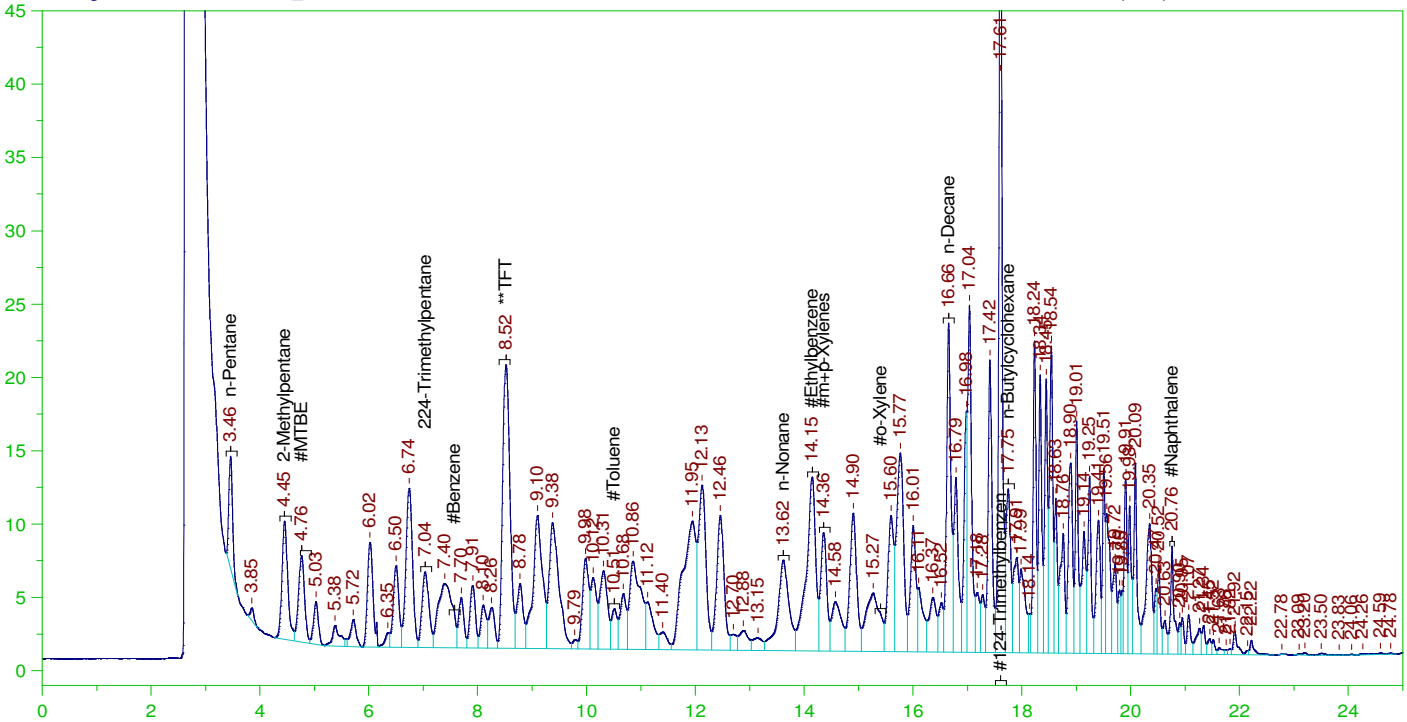
Mean RF for C9 to C10 Aromatic Hydrocarbons: 331.6818
Rt range for C9 to C10 Aromatics: 15.505 to 20.723
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:492915.2 C9-C10 Aromatics Amount: 297.2217

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
~~MTBE~~	~~.~~	~~.~~	~~.~~		~~1.~~	~~U~~
~~Benzene~~	~~7.562~~	~~.918~~	~~.941~~	~~6315~~	~~2.674~~	
~~Toluene~~	~~10.504~~	~~2.015~~	~~2.001~~	~~4976~~	~~2.352~~	
~~Ethylbenzene~~	~~14.149~~	~~5.667~~	~~5.647~~	~~36442~~	~~21.164~~	
~~m+p Xylenes~~	~~14.359~~	~~5.882~~	~~5.857~~	~~21899~~	~~10.839~~	
~~o-Xylene~~	~~15.387~~	~~-6.911~~	~~-6.884~~	~~1463~~	~~.869~~	
~~124-Trimethylbenzene~~	~~17.608~~	~~-9.119~~	~~-9.106~~	~~85976~~	~~52.641~~	
Naphthalene	20.76	-12.269	-12.257	10897	6.903	

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	8.503	25.	43.487	173.95	70-130

SB-LIF-11 7-8 Feet Batch ID: 117899

G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0031.RAW B18011726-008A ;0130PE1 , $HC-VPH-MA-S,,(1,10)



VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011726-008A ;0130PE1 , $HC-VPH-MA-S,,(1,10)
Raw File: G:\Org\PE1\DAT\PE1013018_b\0130PE1B.0031.RAW
Date & Time Acquired: 1/31/2018 1:41:42 AM
Method File: G:\Org\PE1\Methods\180118V1726-8B%.MET
Calibration File: G:\Org\PE1\Cals\180118VPHB.CAL
Sample Weight: 50 Dilution: 10 S.A.: 10

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 590.7451
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 530.9396
Mean RF for all calibrated compounds: 724.6885
Rt range for Gasoline Range Organics: 4.371975 to 16.75773
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.3779 to 13.52311
Rt range for C9 to C12 Aliphatic Hydrocarbons: 13.57311 to 20.72503

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC
**TFT	8.521	25.	62.891	251.56 -

GRO Area:2508622 GRO Amount: 692.3312
TPH Area:4582536 TPH Amount: 1264.691

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:1576460 C5-C8 Amount: 533.7191
C9-C12 Area:2889618 C9-C12 Amount: 1088.492

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8015M									Batch: 117894
Lab ID: LCS-117894	Laboratory Control Sample				Run: GCFID-HP5-B_180126B				01/26/18 19:57
Total Extractable Hydrocarbons	173	mg/kg	10	81	60	140			
Surr: o-Terphenyl			0.17	84	40	140			
Lab ID: MB-117894	Method Blank				Run: GCFID-HP5-B_180126B				01/26/18 20:39
Total Extractable Hydrocarbons	ND	mg/kg	10						
Surr: o-Terphenyl			0.17	75	40	140			
Lab ID: B18011726-001AMS	Sample Duplicate				Run: GCFID-HP5-B_180126B				01/26/18 22:05
Total Extractable Hydrocarbons	1910	mg/kg-dry	12		60	140	9.5	20	
Surr: o-Terphenyl			0.20	129	40	140			
Lab ID: B18011726-001AMSD	Sample Duplicate				Run: GCFID-HP5-B_180126B				01/26/18 22:48
Total Extractable Hydrocarbons	1920	mg/kg-dry	12		60	140	10.0	20	
Surr: o-Terphenyl			0.20	131	40	140			

- Because the sample amount was significantly higher than the spike amount, the MS and MSD spike samples are calculated as Duplicate samples based on the spike amount added plus the original sample concentration.

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.000: PH 11 Former Lee Anns Motel

Report Date: 02/06/18
Work Order: B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8015M									Analytical Run: R293766
Lab ID: CCV_0126HP516r-S	Continuing Calibration Verification Standard								01/26/18 18:31
n-Nonane	6.30	mg/kg		94	75	125			
n-Decane	6.54	mg/kg		98	75	125			
n-Dodecane	6.48	mg/kg		97	75	125			
n-Tetradecane	6.88	mg/kg		103	75	125			
n-Hexadecane	6.54	mg/kg		98	75	125			
n-Octadecane	6.46	mg/kg		97	75	125			
n-Nonadecane	6.35	mg/kg		95	75	125			
n-Eicosane	6.52	mg/kg		98	75	125			
n-Docosane	6.50	mg/kg		97	75	125			
n-Tetracosane	6.45	mg/kg		97	75	125			
n-Hexacosane	6.50	mg/kg		97	75	125			
n-Octacosane	6.52	mg/kg		98	75	125			
n-Triacontane	6.51	mg/kg		98	75	125			
n-Hexatriacontane	6.36	mg/kg		95	75	125			
Surr: o-Terphenyl			0.17	97	75	125			
Lab ID: CCV_0126HP531r-S	Continuing Calibration Verification Standard								01/27/18 05:11
n-Nonane	6.32	mg/kg		95	75	125			
n-Decane	6.44	mg/kg		97	75	125			
n-Dodecane	6.38	mg/kg		96	75	125			
n-Tetradecane	6.81	mg/kg		102	75	125			
n-Hexadecane	6.42	mg/kg		96	75	125			
n-Octadecane	6.32	mg/kg		95	75	125			
n-Nonadecane	6.21	mg/kg		93	75	125			
n-Eicosane	6.38	mg/kg		96	75	125			
n-Docosane	6.37	mg/kg		95	75	125			
n-Tetracosane	6.31	mg/kg		95	75	125			
n-Hexacosane	6.37	mg/kg		96	75	125			
n-Octacosane	6.38	mg/kg		96	75	125			
n-Triacontane	6.38	mg/kg		96	75	125			
n-Hexatriacontane	6.24	mg/kg		94	75	125			
Surr: o-Terphenyl			0.17	95	75	125			

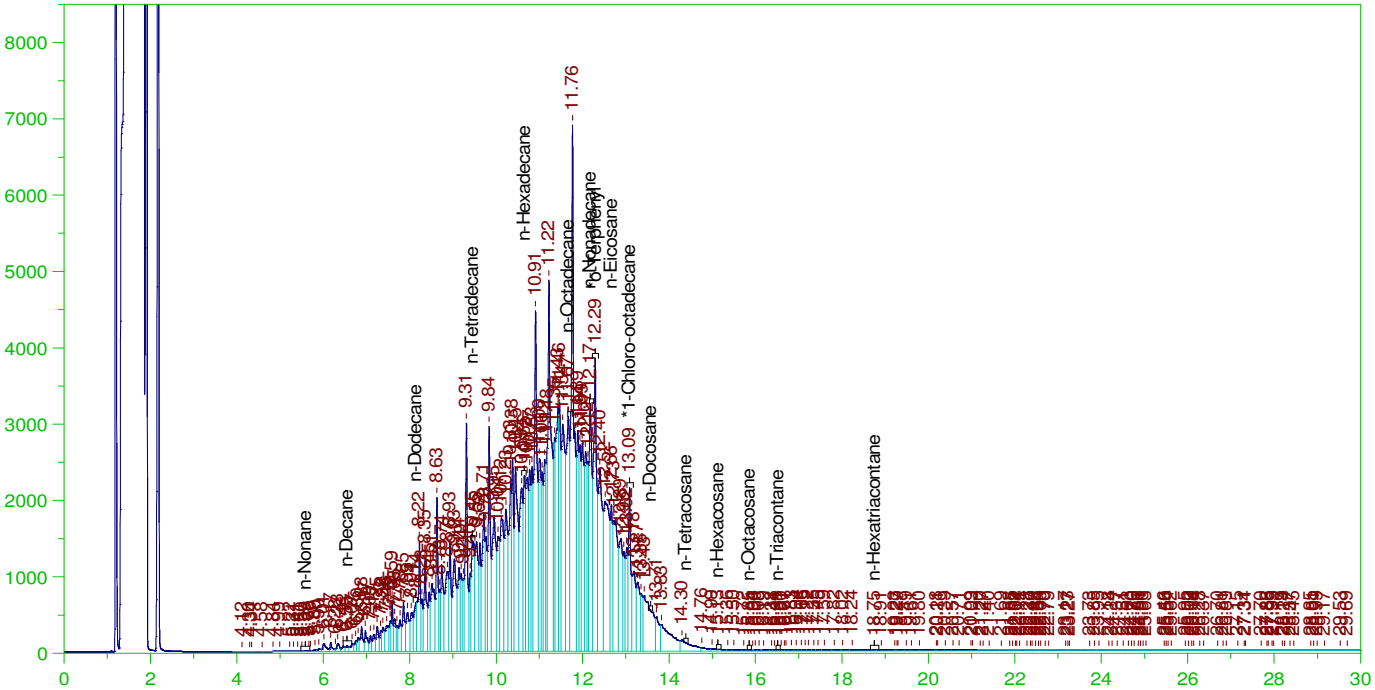
Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

SB-LIF-14 5.5-6.5 Feet Batch ID: 117894

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0020.RAW B18011726-001A ;0126HP5 , $HC-EPH-SCRN-S, V20



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-001A ;0126HP5 , $HC-EPH-SCRN-S, V20
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0020.RAW
Date & Time Acquired: 1/26/2018 9:22:41 PM
Method File: g:\org\HP5\Methods\S3_SCN-012620-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 30 Dilution: 2 S.A.: 1

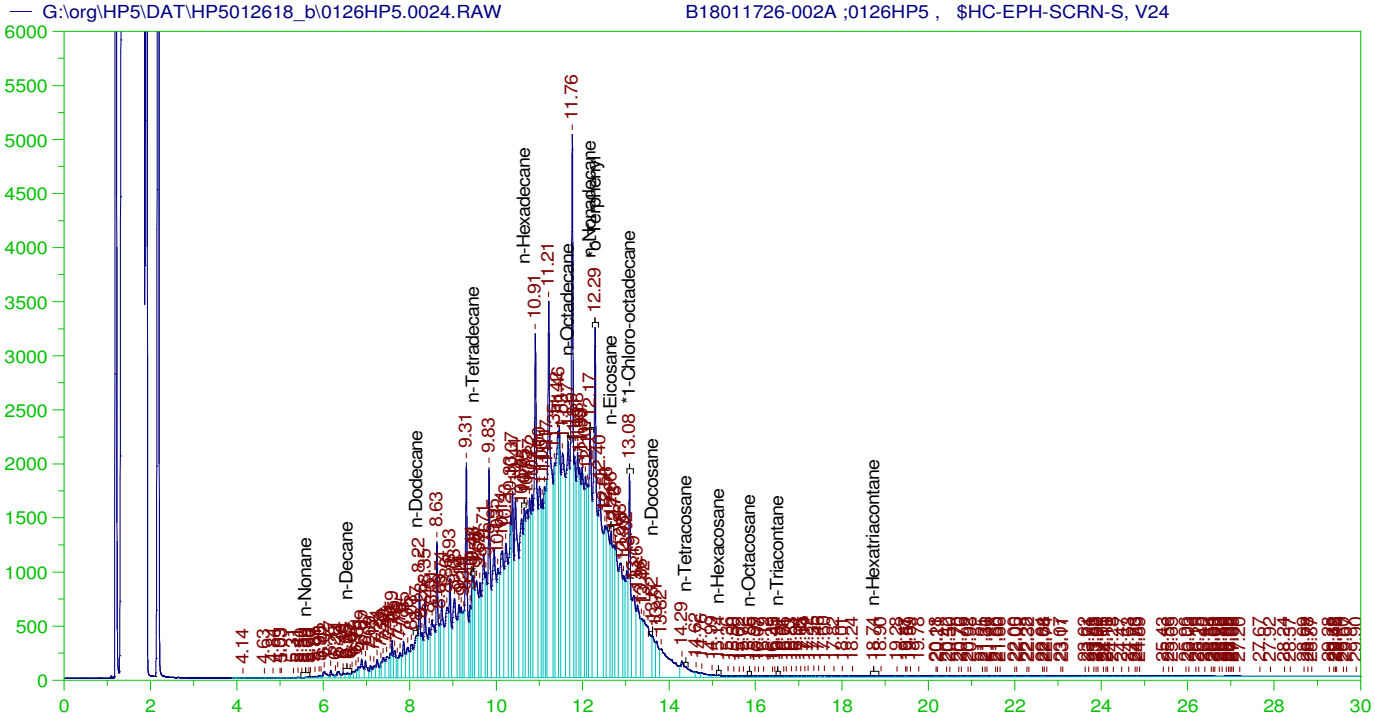
Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.29	20484440	6.667	37.88	568.2	-
*1-Chloro-octadecane	13.086	7995816	6.667	18.975	284.62	-

DRO Area:5.925107E+08 DRO Amount: 1238.953
TEH Area:6.00276E+08 TEH Amount: 1255.191
C9-C18 Area:4.875404E+08 C9-C18 Amount: 1026.386
C19-C36 Area:1.092826E+08C19-C36 Amount: 226.9803

SB-LIF-14 14-15 Feet Batch ID: 117894

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0024.RAW B18011726-002A ;0126HP5 , $HC-EPH-SCRN-S, V24



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-002A ;0126HP5 , $HC-EPH-SCRN-S, V24
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0024.RAW
Date & Time Acquired: 1/27/2018 12:13:40 AM
Method File: g:\org\HP5\Methods\S3_SCN-012624-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 30.06 Dilution: 2 S.A.: 1

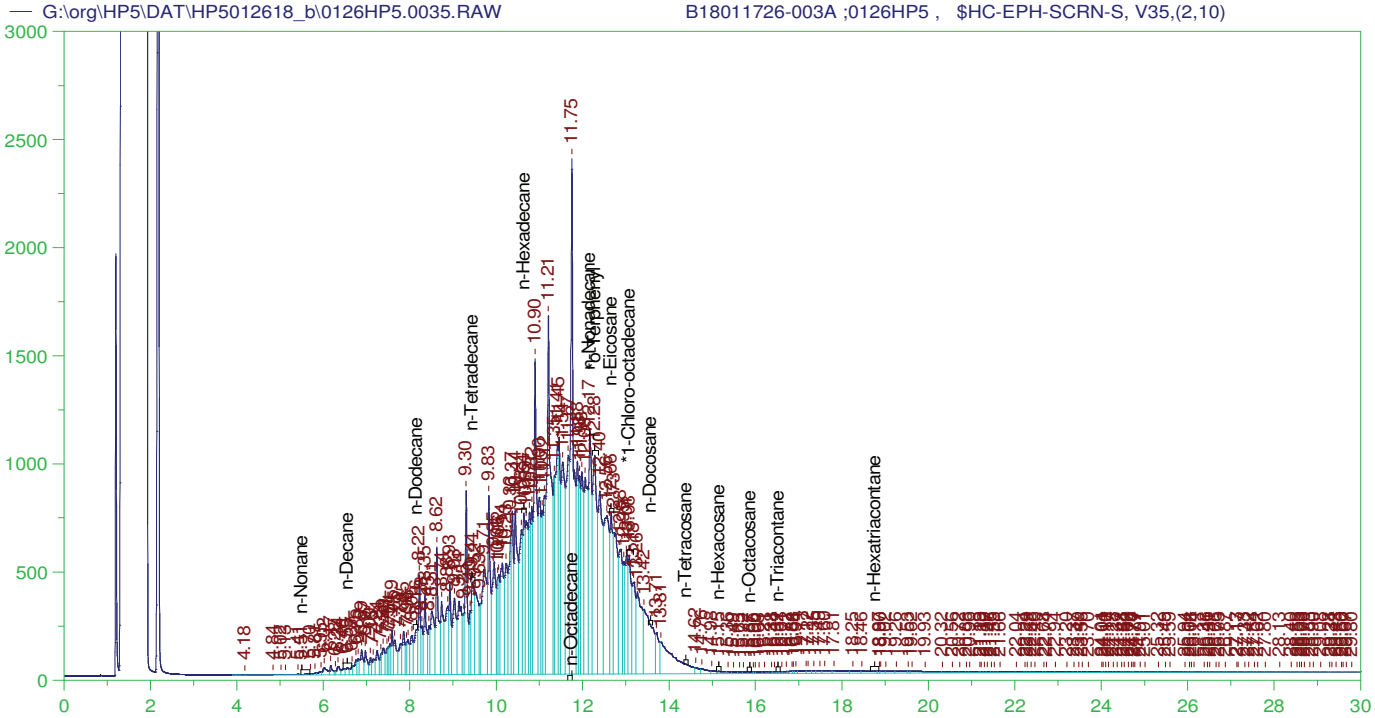
Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.287	15457580	6.653	28.527	428.77	-
*1-Chloro-octadecane	13.084	6405024	6.653	15.169	228.	-

DRO Area:4.073346E+08 DRO Amount: 850.0458
TEH Area:4.138902E+08 TEH Amount: 863.7263
C9-C18 Area:3.299755E+08 C9-C18 Amount: 693.2887
C19-C36 Area:8.072808E+07C19-C36 Amount: 167.3378

SB-LIF-17 8-10 Feet Batch ID: 117894

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0035.RAW B18011726-003A ;0126HP5 , $HC-EPH-SCRN-S, V35,(2,10)



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-003A ;0126HP5 , $HC-EPH-SCRN-S, V35,(2,10)
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0035.RAW
Date & Time Acquired: 1/27/2018 8:01:23 AM
Method File: g:\org\HP5\Methods\S3_SCN-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 29.95 Dilution: 20 S.A.: 1

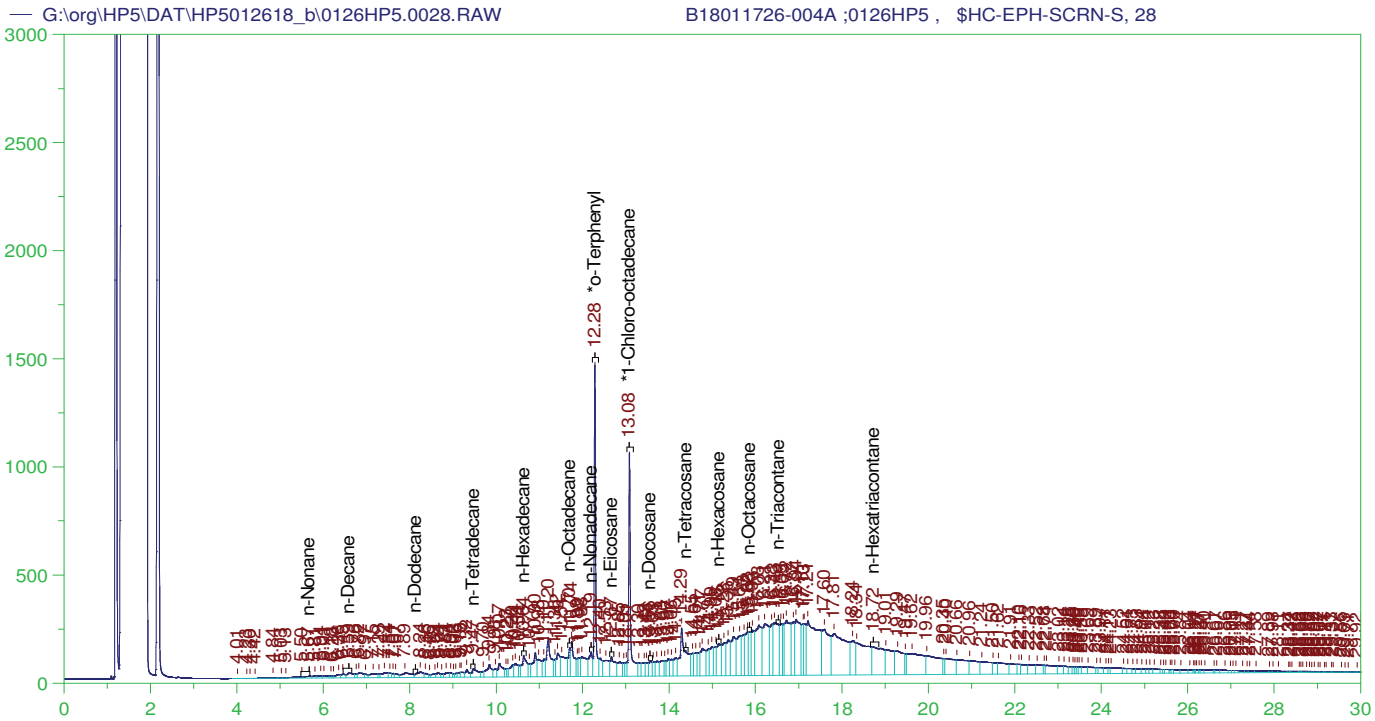
Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.278	6840205	6.678	126.702	1897.36	-
*1-Chloro-octadecane	13.078	2529386	6.678	60.125	900.37	-

DRO Area:1.990236E+08 DRO Amount: 4168.575
TEH Area:2.0454E+08 TEH Amount: 4284.118
C9-C18 Area:1.572986E+08 C9-C18 Amount: 3317.029
C19-C36 Area:4.428104E+07C19-C36 Amount: 921.254

G:\org\HP5\dat\HP5012618_b\Review\035_B18011726-003A_S3_SCN-DK-L%.xls

SB-LIF-03 2.5-3 Feet Batch ID: 117894



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-004A ;0126HP5 , $HC-EPH-SCRN-S, 28
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0028.RAW
Date & Time Acquired: 1/27/2018 3:04:10 AM
Method File: g:\org\HP5\Methods\S3_SCN-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 30.03 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.283	3420925	6.66	6.32	94.89	-
*1-Chloro-octadecane	13.083	3115746	6.66	7.387	110.91	-

DRO Area:4.467875E+07 DRO Amount: 93.33093
TEH Area:9.451835E+07 TEH Amount: 197.4426
C9-C18 Area:1.547763E+07 C9-C18 Amount: 32.55145
C19-C36 Area:5.711271E+07C19-C36 Amount: 118.5048

G:\org\HP5\dat\HP5012618_b\Review\028_B18011726-004A_S3_SCN-DK-L%.xls

SB-LIF-09B 4.5-5 Feet Batch ID: 117894

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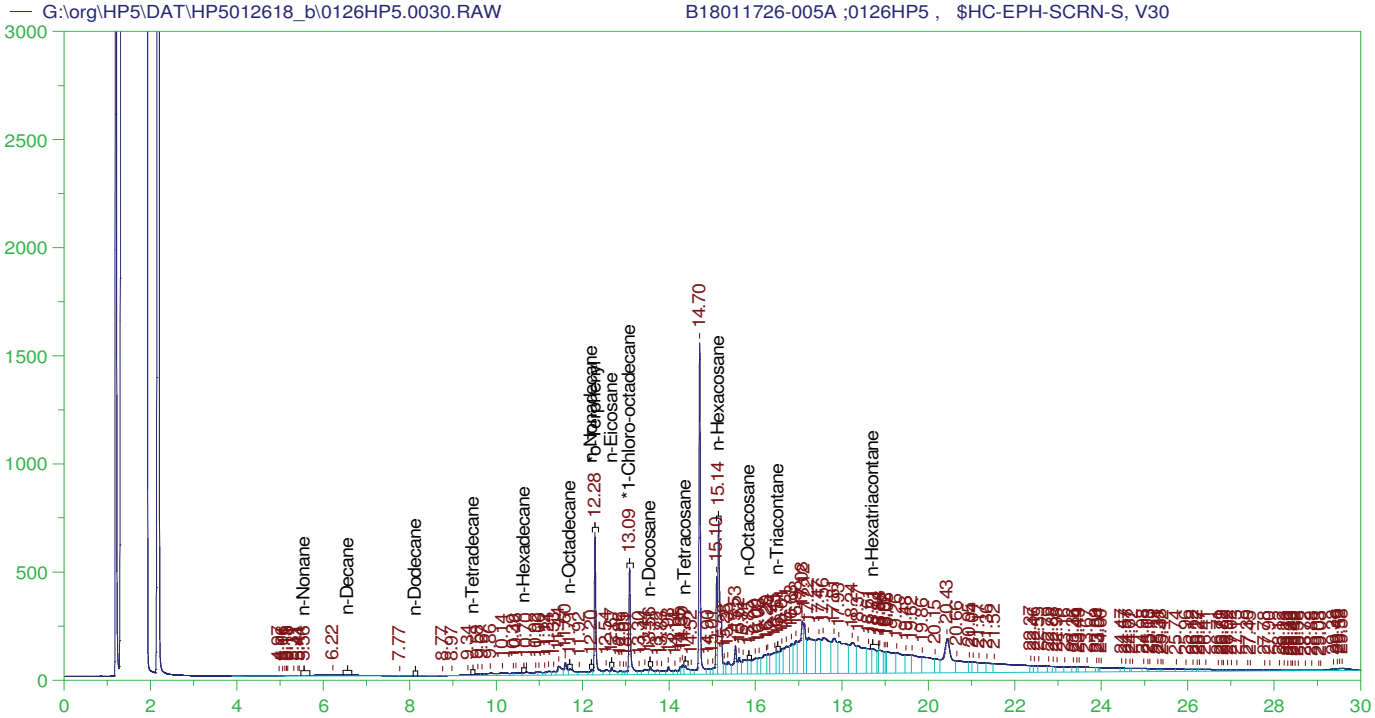


EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-005A ;0126HP5 , $HC-EPH-SCRN-S, V30
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0030.RAW
Date & Time Acquired: 1/27/2018 4:29:07 AM
Method File: g:\org\HP5\Methods\S3_SCN-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 30 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

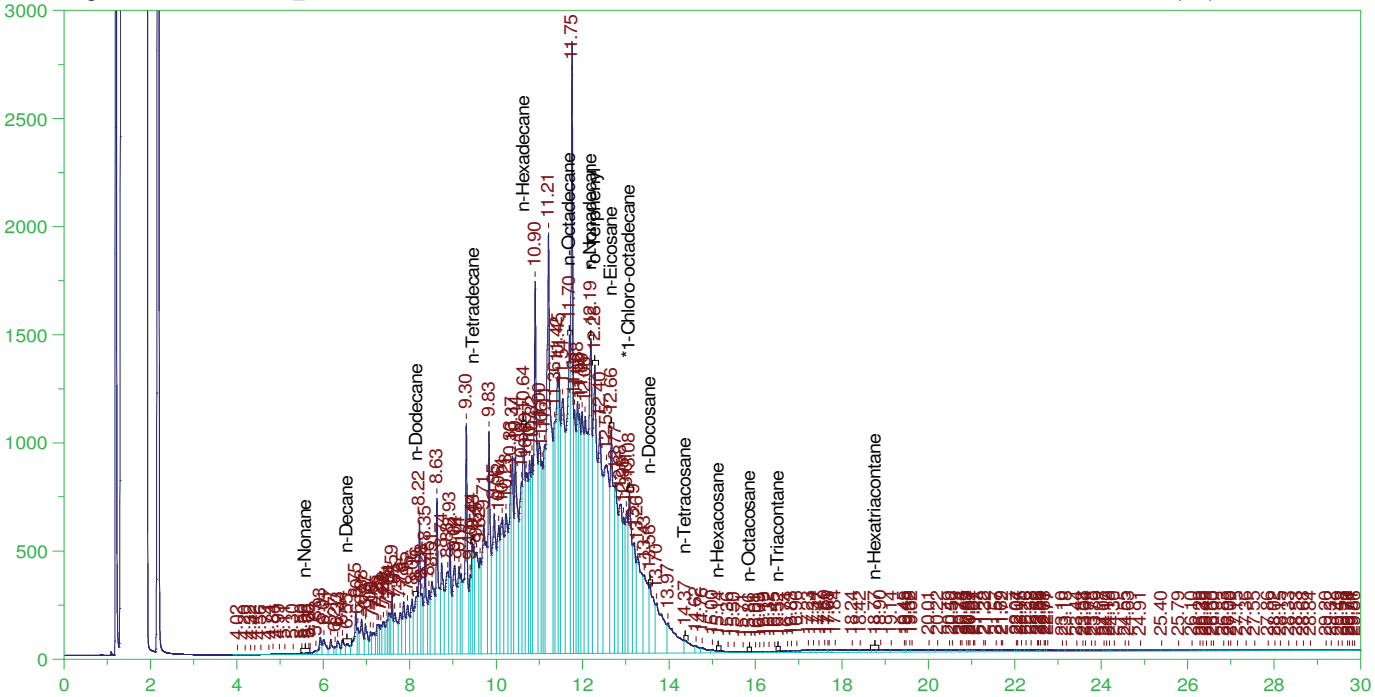
SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.284	1635853	6.667	3.025	45.38	-
*1-Chloro-octadecane	13.086	1409603	6.667	3.345	50.18	-

DRO Area:1.777444E+07 DRO Amount: 37.16676
TEH Area:5.586231E+07 TEH Amount: 116.8094
C9-C18 Area:2680170 C9-C18 Amount: 5.64238
C19-C36 Area:3.473248E+07C19-C36 Amount: 72.13947

G:\org\HP5\dat\HP5012618_b\Review\030_B18011726-005A_S3_SCN-DK-L%.xls

SB-LIF-17 13.5-15 Feet Batch ID: 117894

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0033.RAW B18011726-006A ;0126HP5 , $HC-EPH-SCRN-S, V33,(2,5)



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-006A ;0126HP5 , $HC-EPH-SCRN-S, V33,(2,5)
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0033.RAW
Date & Time Acquired: 1/27/2018 6:36:33 AM
Method File: g:\org\HP5\Methods\S3_SCN-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 30.03 Dilution: 10 S.A.: 1

Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

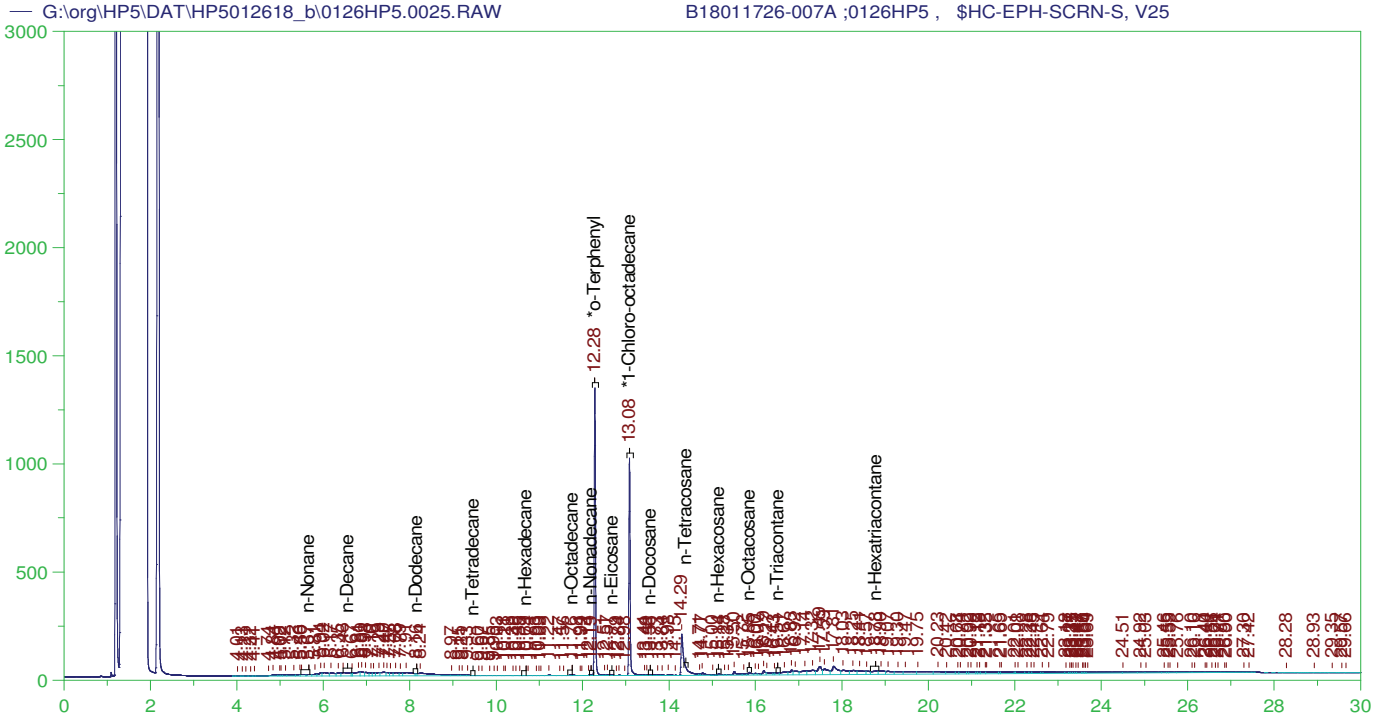
SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.281	8395042	6.66	77.544	1164.32	-
*1-Chloro-octadecane	13.083	4081860	6.66	48.385	726.5	-

DRO Area:2.411665E+08 DRO Amount: 2518.904
TEH Area:2.48346E+08 TEH Amount: 2593.891
C9-C18 Area:1.931756E+08 C9-C18 Amount: 2031.367
C19-C36 Area:5.142688E+07C19-C36 Amount: 533.5354

G:\org\HP5\dat\HP5012618_b\Review\033_B18011726-006A_S3_SCN-DK-L%.xls

SB-LIF-05 2.5-3.5 Feet Batch ID: 117894

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0025.RAW B18011726-007A ;0126HP5 , $HC-EPH-SCRN-S, V25



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-007A ;0126HP5 , $HC-EPH-SCRN-S, V25
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0025.RAW
Date & Time Acquired: 1/27/2018 12:56:23 AM
Method File: g:\org\HP5\Methods\SR_SCN-012625-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 30.02 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.282	2697138	6.662	4.984	74.81	-
*1-Chloro-octadecane	13.084	2175750	6.662	5.16	77.45	-

DRO Area:3540642 DRO Amount: 7.398629
TEH Area:9994218 TEH Amount: 20.88421
C9-C18 Area:2572838 C9-C18 Amount: 5.412815
C19-C36 Area:4189107 C19-C36 Amount: 8.69499

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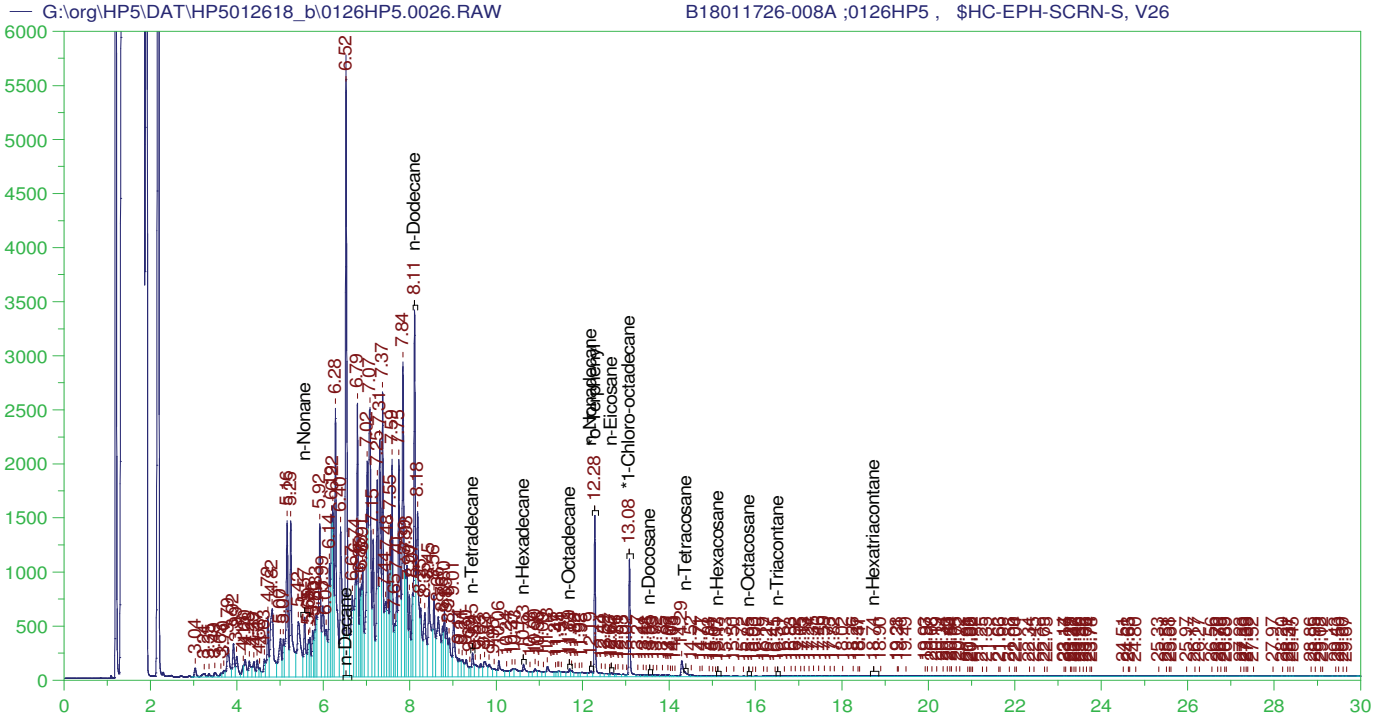
SB-LIF-11 7-8 Feet Batch ID: 117894

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0026.RAW B18011726-008A ;0126HP5 , $HC-EPH-SCRN-S, V26



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011726-008A ;0126HP5 , $HC-EPH-SCRN-S, V26
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0026.RAW
Date & Time Acquired: 1/27/2018 1:39:00 AM
Method File: g:\org\HP5\Methods\SR_SCN-012626-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 29.99 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.281	3175737	6.669	5.875	88.09	-
*1-Chloro-octadecane	13.083	2493126	6.669	5.918	88.75	-

DRO Area:1.551898E+08 DRO Amount: 324.6137
TEH Area:2.232376E+08 TEH Amount: 466.9505
C9-C18 Area:1.891526E+08 C9-C18 Amount: 398.343
C19-C36 Area:4626358 C19-C36 Amount: 9.612164

G:\org\HP5\dat\HP5012618_b\Review\026_B18011726-008A_SR_SCN-012626-DK-L%.xls

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Batch: 118142
Lab ID: LCS-118142-117894	Laboratory Control Sample				Run: GCFID-HP2-B_180201B				02/02/18 13:55
C9 to C18 Aliphatics	29.9	mg/kg	10	75	40	140			
C19 to C36 Aliphatics	52.7	mg/kg	10	99	40	140			
n-Nonane	2.86	mg/kg	0.17	43	30	140			
n-Decane	3.84	mg/kg	0.17	58	40	140			
n-Dodecane	4.67	mg/kg	0.17	70	40	140			
n-Tetradecane	5.42	mg/kg	0.17	81	40	140			
n-Hexadecane	6.00	mg/kg	0.17	89	40	140			
n-Octadecane	6.30	mg/kg	0.17	93	40	140			
n-Nonadecane	6.33	mg/kg	0.17	95	40	140			
n-Eicosane	6.51	mg/kg	0.17	96	40	140			
n-Docosane	6.65	mg/kg	0.17	99	40	140			
n-Tetracosane	6.63	mg/kg	0.17	99	40	140			
n-Hexacosane	6.63	mg/kg	0.17	100	40	140			
n-Octacosane	6.43	mg/kg	0.17	96	40	140			
n-Triacontane	5.88	mg/kg	0.17	88	40	140			
n-Hexatriacontane	7.25	mg/kg	0.17	109	40	140			
Surr: 1-Chloro-octadecane			0.17	84	40	140			
Lab ID: MB-118142-117894	Method Blank				Run: GCFID-HP2-B_180201B				02/02/18 15:27
C9 to C18 Aliphatics	ND	mg/kg	10						
C19 to C36 Aliphatics	ND	mg/kg	10						
Surr: 1-Chloro-octadecane			0.17	80	40	140			
Lab ID: B18011726-001AMS	Sample Duplicate				Run: GCFID-HP2-B_180201B				02/02/18 18:31
C9 to C18 Aliphatics	931	mg/kg-dry	24				17	20	
C19 to C36 Aliphatics	258	mg/kg-dry	24				23	20	R
- Because the sample amount was significantly higher than the spike amount for some analytes, the MS and MSD spike samples are calculated as Duplicate samples for those analytes based on the spike amount added plus the original sample concentration.									
Lab ID: B18011726-001AMS	Sample Matrix Spike				Run: GCFID-HP2-B_180201B				02/02/18 18:31
n-Nonane	2.88	mg/kg-dry	0.39	37	30	140			
n-Decane	4.28	mg/kg-dry	0.39	54	40	140			
n-Dodecane	6.35	mg/kg-dry	0.39	70	40	140			
n-Tetradecane	10.1	mg/kg-dry	0.39	74	40	140			
n-Hexadecane	6.36	mg/kg-dry	0.39	73	40	140			
n-Octadecane	7.58	mg/kg-dry	0.39	96	40	140			
n-Nonadecane	10.1	mg/kg-dry	0.39	88	40	140			
n-Eicosane	9.34	mg/kg-dry	0.39	111	40	140			
n-Docosane	7.62	mg/kg-dry	0.39	97	40	140			
n-Tetracosane	7.84	mg/kg-dry	0.39	98	40	140			
n-Hexacosane	7.79	mg/kg-dry	0.39	99	40	140			
n-Octacosane	7.54	mg/kg-dry	0.39	96	40	140			
n-Triacontane	6.91	mg/kg-dry	0.39	88	40	140			
n-Hexatriacontane	8.24	mg/kg-dry	0.39	105	40	140			
Surr: 1-Chloro-octadecane			0.39	83	40	140			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Batch: 118142
Lab ID: B18011726-001AMS	Sample Matrix Spike				Run: GCFID-HP2-B_180201B			02/02/18 18:31	
Lab ID: B18011726-001AMSD	Sample Duplicate				Run: GCFID-HP2-B_180201B			02/02/18 20:03	
C9 to C18 Aliphatics	965	mg/kg-dry	24				21	20	R
C19 to C36 Aliphatics	271	mg/kg-dry	24				28	20	R
- Because the sample amount was significantly higher than the spike amount for some analytes, the MS and MSD spike samples are calculated as Duplicate samples for those analytes based on the spike amount added plus the original sample concentration.									
Lab ID: B18011726-001AMSD	Sample Matrix Spike Duplicate				Run: GCFID-HP2-B_180201B			02/02/18 20:03	
n-Nonane	2.96	mg/kg-dry	0.39	38	30	140	3.0	30	
n-Decane	4.44	mg/kg-dry	0.39	56	40	140	3.6	20	
n-Dodecane	6.66	mg/kg-dry	0.39	74	40	140	4.8	20	
n-Tetradecane	10.6	mg/kg-dry	0.39	80	40	140	4.9	20	
n-Hexadecane	6.96	mg/kg-dry	0.39	80	40	140	9.1	20	
n-Octadecane	8.13	mg/kg-dry	0.39	103	40	140	7.0	20	
n-Nonadecane	10.3	mg/kg-dry	0.39	91	40	140	2.5	20	
n-Eicosane	9.80	mg/kg-dry	0.39	117	40	140	4.8	20	
n-Docosane	8.07	mg/kg-dry	0.39	102	40	140	5.7	20	
n-Tetracosane	8.26	mg/kg-dry	0.39	103	40	140	5.3	20	
n-Hexacosane	8.21	mg/kg-dry	0.39	104	40	140	5.2	20	
n-Octacosane	7.94	mg/kg-dry	0.39	101	40	140	5.2	20	
n-Triacontane	7.26	mg/kg-dry	0.39	92	40	140	4.9	20	
n-Hexatriacontane	8.78	mg/kg-dry	0.39	112	40	140	6.3	20	
Surr: 1-Chloro-octadecane			0.39	90	40	140			
Lab ID: LCS-118142-117894	Laboratory Control Sample				Run: GCFID-HP2-B_180201B			02/02/18 14:41	
C11 to C22 Aromatics	103	mg/kg	10	86	40	140			
Total Extractable Hydrocarbons	189	mg/kg	10	89	40	140			
Naphthalene	3.53	mg/kg	0.17	53	40	140			
2-MethylNaphthalene	4.21	mg/kg	0.17	63	40	140			
Acenaphthylene	4.69	mg/kg	0.17	70	40	140			
Acenaphthene	4.85	mg/kg	0.17	73	40	140			
Fluorene	5.34	mg/kg	0.17	80	40	140			
Phenanthrene	6.06	mg/kg	0.17	91	40	140			
Anthracene	6.02	mg/kg	0.17	90	40	140			
Fluoranthene	6.27	mg/kg	0.17	94	40	140			
Pyrene	6.28	mg/kg	0.17	94	40	140			
Benzo(a)Anthracene	6.60	mg/kg	0.17	99	40	140			
Benzo(a)Pyrene	6.16	mg/kg	0.17	92	40	140			
Benzo(b)Fluoranthene/Benzo(k)Fluoran	13.0	mg/kg	0.17	97	40	140			
Benzo(g,h,I)perylene	6.13	mg/kg	0.17	92	40	140			
Chrysene	6.50	mg/kg	0.17	98	40	140			
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	12.6	mg/kg	0.17	94	40	140			
Surr: 2-Bromonaphthalene			0.17	99	40	140			
Surr: 2-Fluorobiphenyl			0.17	86	40	140			
Surr: o-Terphenyl			0.17	93	40	140			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Batch: 118142
Lab ID: LCS-118142-117894	Laboratory Control Sample				Run: GCFID-HP2-B_180201B				02/02/18 14:41
Lab ID: MB-118142-117894	Method Blank				Run: GCFID-HP2-B_180201B				02/02/18 16:13
C11 to C22 Aromatics	ND	mg/kg	10						
Total Extractable Hydrocarbons	ND	mg/kg	10						
Naphthalene	ND	mg/kg	0.17						
2-MethylNaphthalene	ND	mg/kg	0.17						
Acenaphthylene	ND	mg/kg	0.17						
Acenaphthene	ND	mg/kg	0.17						
Fluorene	ND	mg/kg	0.17						
Phenanthrene	ND	mg/kg	0.17						
Anthracene	ND	mg/kg	0.17						
Fluoranthene	ND	mg/kg	0.17						
Pyrene	ND	mg/kg	0.17						
Benzo(a)Anthracene	ND	mg/kg	0.17						
Benzo(a)Pyrene	ND	mg/kg	0.17						
Benzo(b)Fluoranthene/Benzo(k)Fluoran	ND	mg/kg	0.17						
Benzo(g,h,I)perylene	ND	mg/kg	0.17						
Chrysene	ND	mg/kg	0.17						
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	ND	mg/kg	0.17						
Surr: 2-Bromonaphthalene			0.17	97	40	140			
Surr: 2-Fluorobiphenyl			0.17	88	40	140			
Surr: o-Terphenyl			0.17	83	40	140			
Lab ID: B18011726-001AMS	Sample Duplicate				Run: GCFID-HP2-B_180201B				02/02/18 19:17
C11 to C22 Aromatics	867	mg/kg-dry	24				12	20	
Total Extractable Hydrocarbons	2080	mg/kg-dry	24				14	20	
- Because the sample amount was significantly higher than the spike amount for some analytes, the MS and MSD spike samples are calculated as Duplicate samples for those analytes based on the spike amount added plus the original sample concentration.									
Lab ID: B18011726-001AMS	Sample Matrix Spike				Run: GCFID-HP2-B_180201B				02/02/18 19:17
Naphthalene	5.19	mg/kg-dry	0.39	55	40	140			
2-MethylNaphthalene	6.54	mg/kg-dry	0.39	65	40	140			
Acenaphthylene	8.33	mg/kg-dry	0.39	103	40	140			
Acenaphthene	7.36	mg/kg-dry	0.39	83	40	140			
Fluorene	9.69	mg/kg-dry	0.39	91	40	140			
Phenanthrene	9.16	mg/kg-dry	0.39	94	40	140			
Anthracene	7.68	mg/kg-dry	0.39	88	40	140			
Fluoranthene	8.47	mg/kg-dry	0.39	96	40	140			
Pyrene	7.72	mg/kg-dry	0.39	94	40	140			
Benzo(a)Anthracene	7.70	mg/kg-dry	0.39	98	40	140			
Benzo(a)Pyrene	7.41	mg/kg-dry	0.39	94	40	140			
Benzo(b)Fluoranthene/Benzo(k)Fluoran	15.2	mg/kg-dry	0.39	96	40	140			
Benzo(g,h,I)perylene	7.14	mg/kg-dry	0.39	91	40	140			
Chrysene	7.55	mg/kg-dry	0.39	96	40	140			
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	14.7	mg/kg-dry	0.39	93	40	140			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH								Batch: 118142	
Lab ID: B18011726-001AMS	Sample Matrix Spike				Run: GCFID-HP2-B_180201B			02/02/18 19:17	
Surr: 2-Bromonaphthalene			0.39	94	40	140			
Surr: 2-Fluorobiphenyl			0.39	92	40	140			
Surr: o-Terphenyl			0.39	87	40	140			
Lab ID: B18011726-001AMSD	Sample Duplicate				Run: GCFID-HP2-B_180201B			02/02/18 20:49	
C11 to C22 Aromatics	614	mg/kg-dry	24				22	20	R
Total Extractable Hydrocarbons	1870	mg/kg-dry	24				4.1	20	
- Because the sample amount was significantly higher than the spike amount for some analytes, the MS and MSD spike samples are calculated as Duplicate samples for those analytes based on the spike amount added plus the original sample concentration.									
Lab ID: B18011726-001AMSD	Sample Matrix Spike Duplicate				Run: GCFID-HP2-B_180201B			02/02/18 20:49	
Naphthalene	4.81	mg/kg-dry	0.39	51	40	140	7.7	20	
2-MethylNaphthalene	5.71	mg/kg-dry	0.39	54	40	140	13	20	
Acenaphthylene	6.72	mg/kg-dry	0.39	82	40	140	21	20	R
Acenaphthene	5.91	mg/kg-dry	0.39	64	40	140	22	20	R
Fluorene	7.40	mg/kg-dry	0.39	62	40	140	27	20	R
Phenanthrene	6.74	mg/kg-dry	0.39	63	40	140	30	20	R
Anthracene	5.68	mg/kg-dry	0.39	62	40	140	30	20	R
Fluoranthene	6.10	mg/kg-dry	0.39	66	40	140	33	20	R
Pyrene	5.54	mg/kg-dry	0.39	66	40	140	33	20	R
Benzo(a)Anthracene	5.53	mg/kg-dry	0.39	70	40	140	33	20	R
Benzo(a)Pyrene	5.32	mg/kg-dry	0.39	68	40	140	33	20	R
Benzo(b)Fluoranthene/Benzo(k)Fluoran	10.9	mg/kg-dry	0.39	69	40	140	33	20	R
Benzo(g,h,I)perylene	5.13	mg/kg-dry	0.39	65	40	140	33	20	R
Chrysene	5.41	mg/kg-dry	0.39	69	40	140	33	20	R
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	10.6	mg/kg-dry	0.39	67	40	140	33	20	R
Surr: 2-Bromonaphthalene			0.39	74	40	140			
Surr: 2-Fluorobiphenyl			0.39	77	40	140			
Surr: o-Terphenyl			0.39	63	40	140			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Analytical Run: R294208
Lab ID: CCV_0201HP232r-S	Continuing Calibration Verification Standard								02/02/18 11:11
n-Nonane	7.24	mg/kg	0.17	109	75	125			
n-Decane	7.30	mg/kg	0.17	110	75	125			
n-Dodecane	7.33	mg/kg	0.17	110	75	125			
n-Tetradecane	7.31	mg/kg	0.17	110	75	125			
n-Hexadecane	7.21	mg/kg	0.17	108	75	125			
n-Octadecane	7.26	mg/kg	0.17	109	75	125			
n-Nonadecane	7.38	mg/kg	0.17	111	75	125			
n-Eicosane	7.22	mg/kg	0.17	108	75	125			
n-Docosane	7.30	mg/kg	0.17	109	75	125			
n-Tetracosane	7.23	mg/kg	0.17	108	75	125			
n-Hexacosane	7.29	mg/kg	0.17	109	75	125			
n-Octacosane	7.14	mg/kg	0.17	107	75	125			
n-Triacontane	7.32	mg/kg	0.17	110	75	125			
n-Hexatriacontane	7.43	mg/kg	0.17	111	75	125			
Surr: 1-Chloro-octadecane			0.17	108	75	125			
Lab ID: CCV_0201HP245r-S	Continuing Calibration Verification Standard								02/02/18 21:35
n-Nonane	6.97	mg/kg	0.17	105	75	125			
n-Decane	6.94	mg/kg	0.17	104	75	125			
n-Dodecane	7.02	mg/kg	0.17	105	75	125			
n-Tetradecane	6.95	mg/kg	0.17	104	75	125			
n-Hexadecane	6.88	mg/kg	0.17	103	75	125			
n-Octadecane	6.93	mg/kg	0.17	104	75	125			
n-Nonadecane	7.05	mg/kg	0.17	106	75	125			
n-Eicosane	6.89	mg/kg	0.17	103	75	125			
n-Docosane	6.95	mg/kg	0.17	104	75	125			
n-Tetracosane	6.89	mg/kg	0.17	103	75	125			
n-Hexacosane	6.94	mg/kg	0.17	104	75	125			
n-Octacosane	6.80	mg/kg	0.17	102	75	125			
n-Triacontane	6.97	mg/kg	0.17	105	75	125			
n-Hexatriacontane	7.07	mg/kg	0.17	106	75	125			
Surr: 1-Chloro-octadecane			0.17	102	75	125			
Lab ID: CCV_0201HP233r-S	Continuing Calibration Verification Standard								02/02/18 11:57
Naphthalene	6.87	mg/kg	0.17	103	75	125			
2-MethylNaphthalene	6.86	mg/kg	0.17	103	75	125			
Acenaphthylene	6.79	mg/kg	0.17	102	75	125			
Acenaphthene	6.60	mg/kg	0.17	99	75	125			
Fluorene	6.77	mg/kg	0.17	102	75	125			
Phenanthrene	6.98	mg/kg	0.17	105	75	125			
Anthracene	6.62	mg/kg	0.17	99	75	125			
Fluoranthene	6.64	mg/kg	0.17	100	75	125			
Pyrene	6.72	mg/kg	0.17	101	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.000: PH 11 Former Lee Anns Motel **Work Order:** B18011726

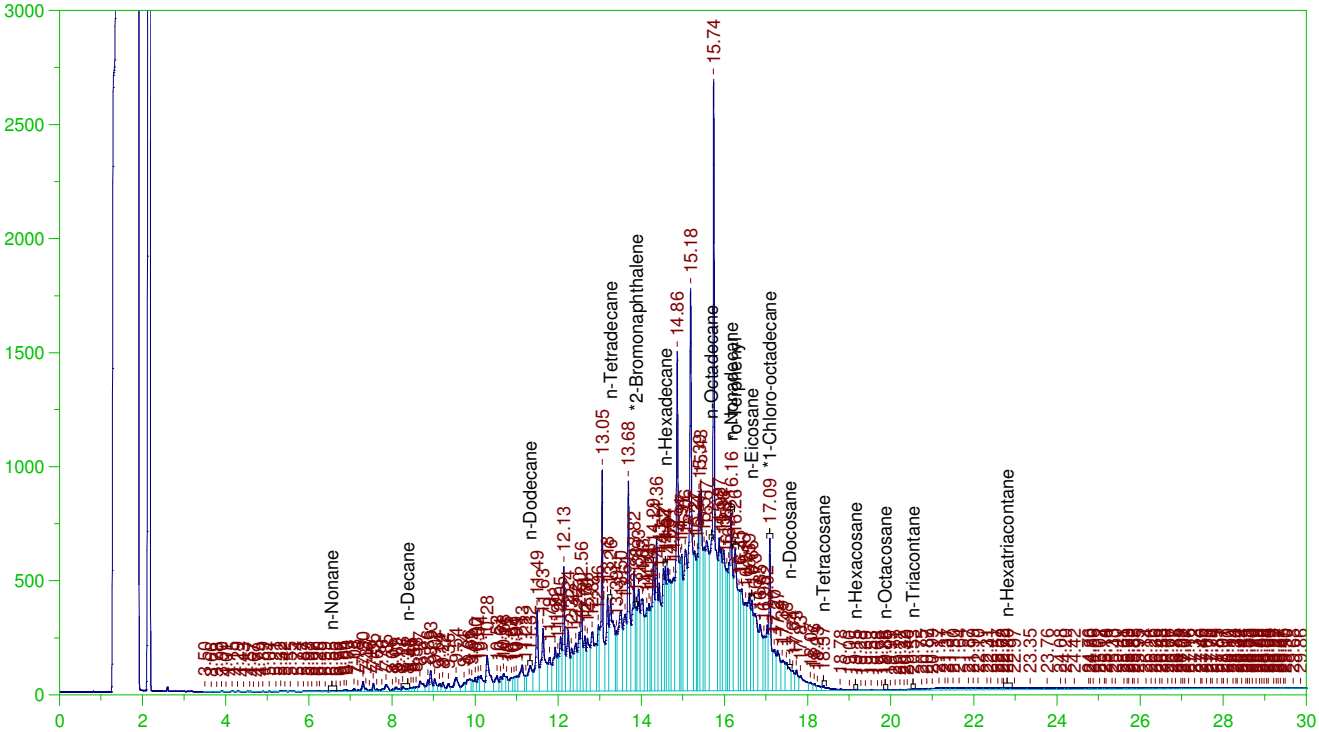
Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Analytical Run: R294208
Lab ID: CCV_0201HP233r-S	Continuing Calibration Verification Standard								02/02/18 11:57
Benzo(a)Anthracene	6.95	mg/kg	0.17	104	75	125			
Benzo(a)Pyrene	6.91	mg/kg	0.17	104	75	125			
Benzo(b)Fluoranthene/Benzo(k)Fluoran	13.6	mg/kg	0.17	102	75	125			
Benzo(g,h,I)perylene	6.85	mg/kg	0.17	103	75	125			
Chrysene	6.69	mg/kg	0.17	100	75	125			
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	13.8	mg/kg	0.17	104	75	125			
Surr: 2-Bromonaphthalene			0.17	108	75	125			
Surr: 2-Fluorobiphenyl			0.17	104	75	125			
Surr: o-Terphenyl			0.17	108	75	125			
Lab ID: CCV_0201HP246r-S	Continuing Calibration Verification Standard								02/02/18 22:20
Naphthalene	6.82	mg/kg	0.17	102	75	125			
2-MethylNaphthalene	6.81	mg/kg	0.17	102	75	125			
Acenaphthylene	6.74	mg/kg	0.17	101	75	125			
Acenaphthene	6.55	mg/kg	0.17	98	75	125			
Fluorene	6.72	mg/kg	0.17	101	75	125			
Phenanthrene	6.95	mg/kg	0.17	104	75	125			
Anthracene	6.61	mg/kg	0.17	99	75	125			
Fluoranthene	6.63	mg/kg	0.17	99	75	125			
Pyrene	6.69	mg/kg	0.17	100	75	125			
Benzo(a)Anthracene	6.94	mg/kg	0.17	104	75	125			
Benzo(a)Pyrene	6.87	mg/kg	0.17	103	75	125			
Benzo(b)Fluoranthene/Benzo(k)Fluoran	13.6	mg/kg	0.17	102	75	125			
Benzo(g,h,I)perylene	6.83	mg/kg	0.17	102	75	125			
Chrysene	6.62	mg/kg	0.17	99	75	125			
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	13.8	mg/kg	0.17	103	75	125			
Surr: 2-Bromonaphthalene			0.17	107	75	125			
Surr: 2-Fluorobiphenyl			0.17	103	75	125			
Surr: o-Terphenyl			0.17	107	75	125			

Qualifiers:

RL - Analyte reporting limit. ND - Not detected at the reporting limit.

SB-LIF-14 5.5-6.5 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0039.RAW B18011726-001A ;0201HP2 , $HC-ALI-GRP-S, V39



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011726-001A ;0201HP2 , $HC-ALI-GRP-S, V39
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0039.RAW
Date & Time Acquired: 2/2/2018 4:59:08 PM
Method File: g:\org\HP2\Methods\L3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 30 Dilution: 4 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

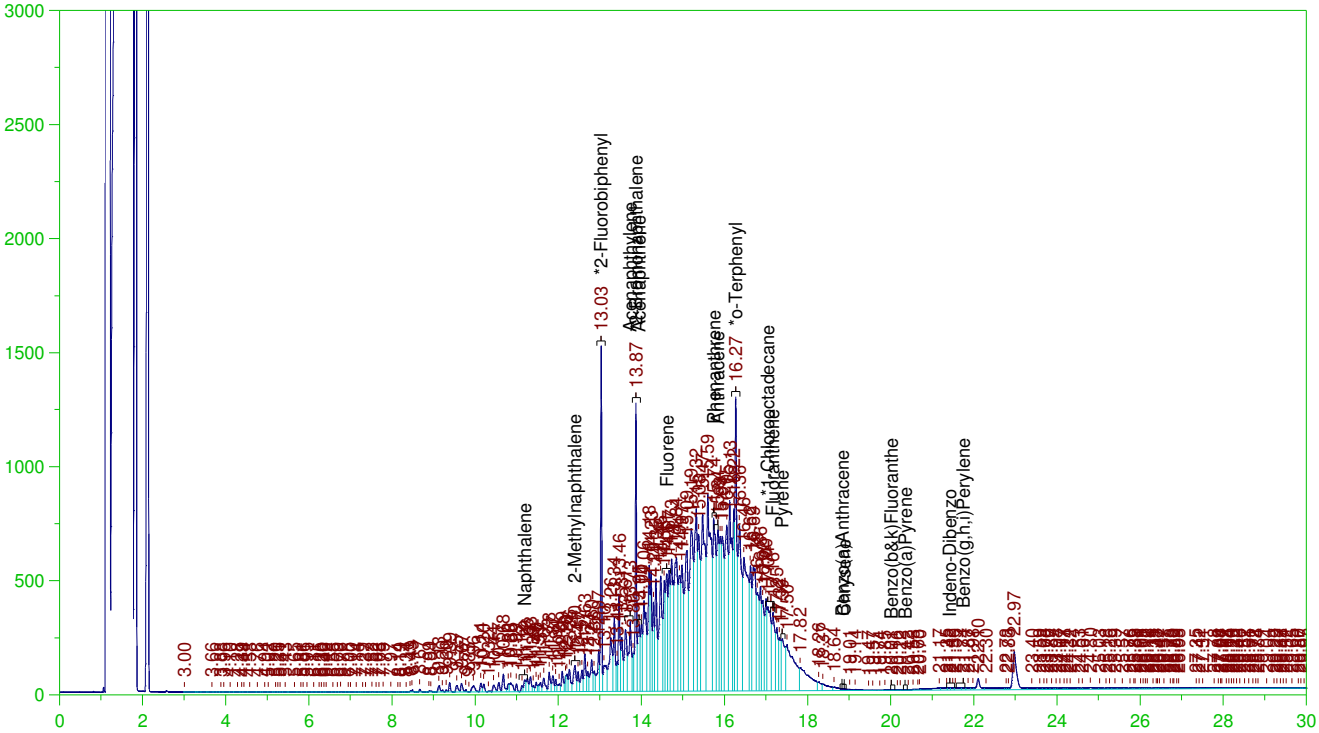
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane	17.088	6.667	11.027	165.41	-

DRO Area:1.507178E+08 DRO Amount: 721.2092
TEH Area:1.586925E+08 TEH Amount: 759.3698

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:1.285192E+08 C9-C18 Amount: 622.8209
C19-C36 Area:2.524792E+07C19-C36 Amount: 119.6861

SB-LIF-14 5.5-6.5 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0040.RAW B18011726-001A ;0201HP2 , $HC-ARO-GRP-S, V40



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011726-001A ;0201HP2 , $HC-ARO-GRP-S, V40
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0040.RAW
Date & Time Acquired: 2/2/2018 5:45:13 PM
Method File: g:\org\HP2\Methods\R3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30 Dilution: 4 S.A.: 1

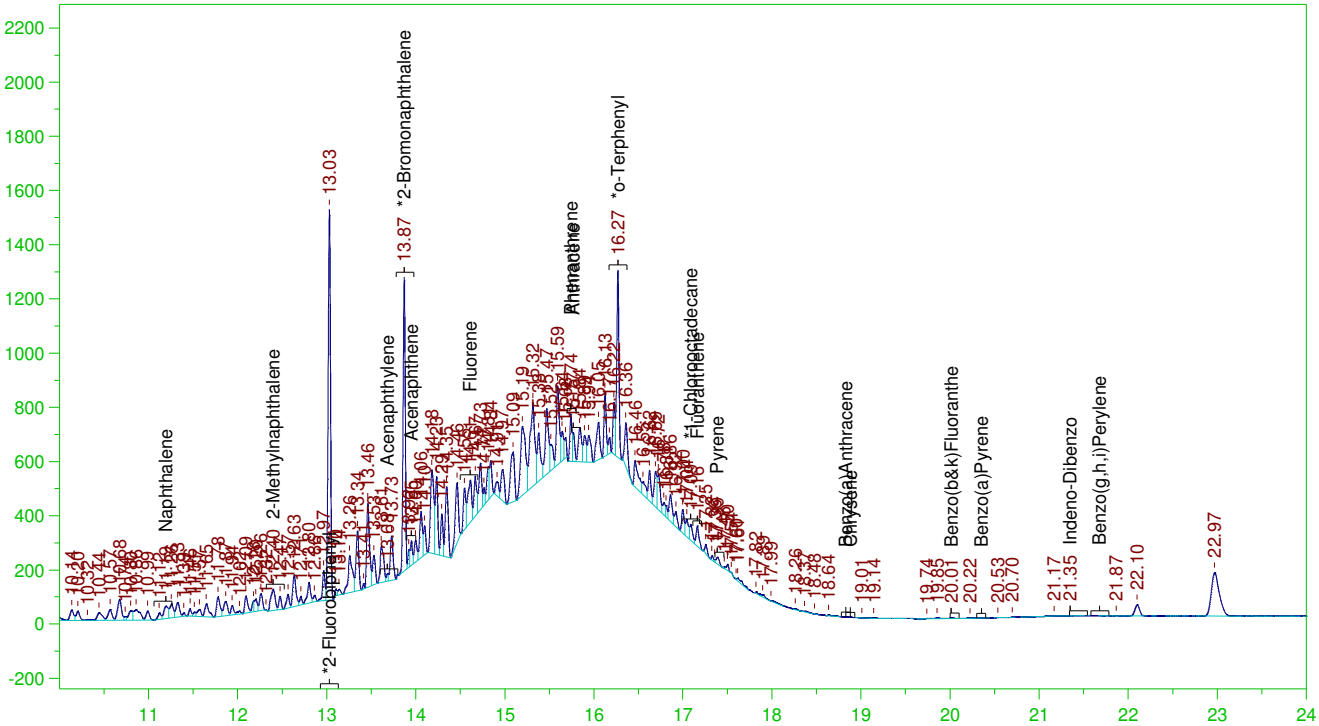
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.029	6.667	14.351	215.26	-
*2-Bromonaphthalene	13.87	6.667	19.877	298.16	-
*o-Terphenyl	16.268	6.667	16.727	250.9	-
*1-Chlorooctadecane	17.043	6.667	11.089	166.33	-

C11-C22 Aromatics Area:1.214166E+08 C11-C22 Aromatics Amount: 528.029
EPH Aromatics total Area:1.265261E+08 EPH Aromatics Total Amount: 550.2496

SB-LIF-14 5.5-6.5 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0040.RAW B18011726-001A ;0201HP2 , $HC-ARO-GRP-S, V40



EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

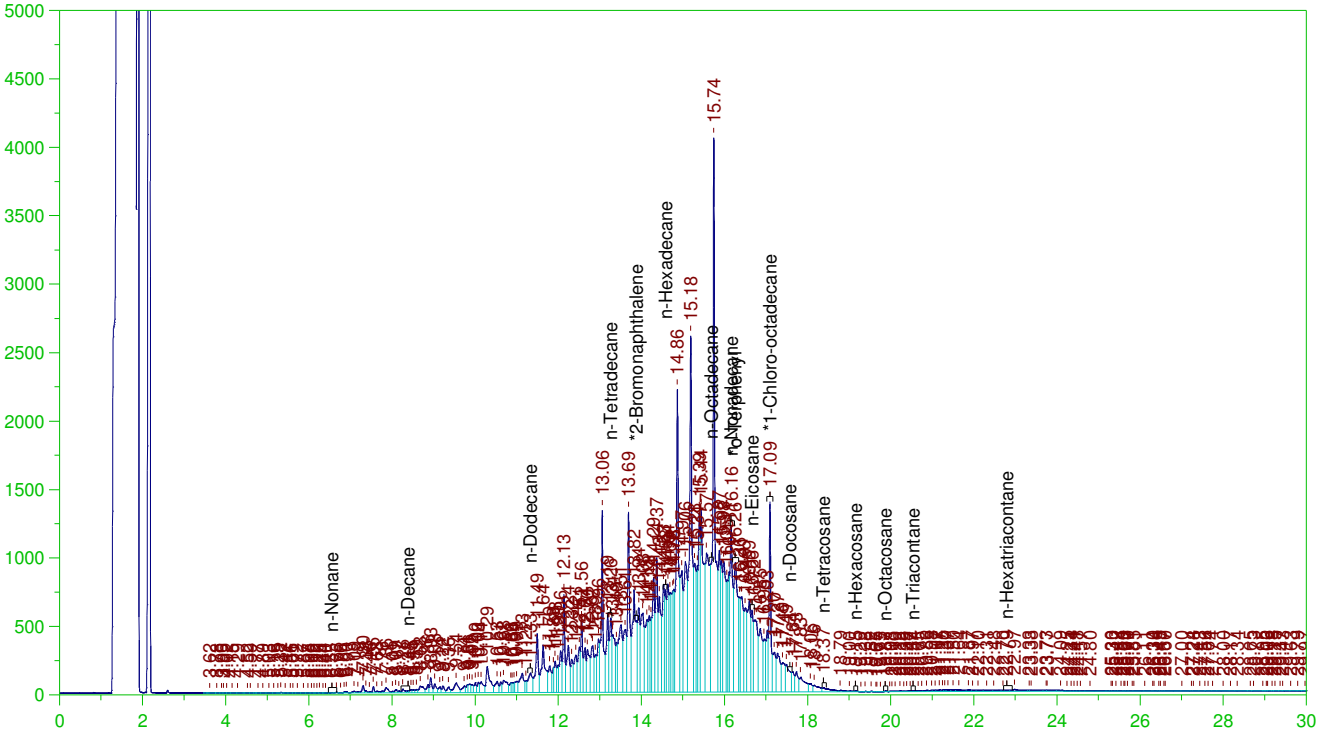
Sample Name: B18011726-001A ;0201HP2 , $HC-ARO-GRP-S, V40
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0040.RAW
Date & Time Acquired: 2/2/2018 5:45:13 PM
Method File: g:\org\HP2\Methods\RT_EPH-020140-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30 Dilution: 4 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.193	2.72	2.677	158328	.701	
2-Methylnaphthalene	12.399	1.46	1.471	270001	1.217	
Acenaphthylene	13.681	.18	.189	40804	.189	
Acenaphthene	13.949	-.07	-.079	168678	.717	
Fluorene	14.611	-.72	-.741	489375	2.124	
Phenanthrene	15.741	-1.87	-1.871	330587	1.479	
Anthracene	15.769	-1.92	-1.899	156768	.673	
Fluoranthene	17.16	-3.28	-3.29	186071	.781	
Pyrene	17.386	-3.53	-3.516	64940	.273	
Benzo(a)Anthracene	.	.	.		.133	U
Chrysene	.	.	.		.133	U
Benzo(b&k)Fluoranthe	20.015	20.015	20.015	5480	.267	U
Benzo(a)Pyrene	.	.	.		.133	U
Indeno-Dibenzo	21.346	21.346	21.346	1035	.267	U
Benzo(g,h,i)Perylene	.	.	.		.133	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.029	6.667	12.615	189.22	40-140
*2-Bromonaphthalene	13.87	6.667	12.969	194.53	40-140
*o-Terphenyl	16.268	6.667	5.602	84.04	40-140
*1-Chlorooctadecane	17.087	6.667	.666	9.99	40-140

SB-LIF-14 14-15 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0050.RAW B18011726-002A ;0201HP2 , $HC-ALI-GRP-S, V50



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011726-002A ;0201HP2 , $HC-ALI-GRP-S, V50
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0050.RAW
Date & Time Acquired: 2/3/2018 1:24:20 AM
Method File: g:\org\HP2\Methods\L3_EPH-020150-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 30.06 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

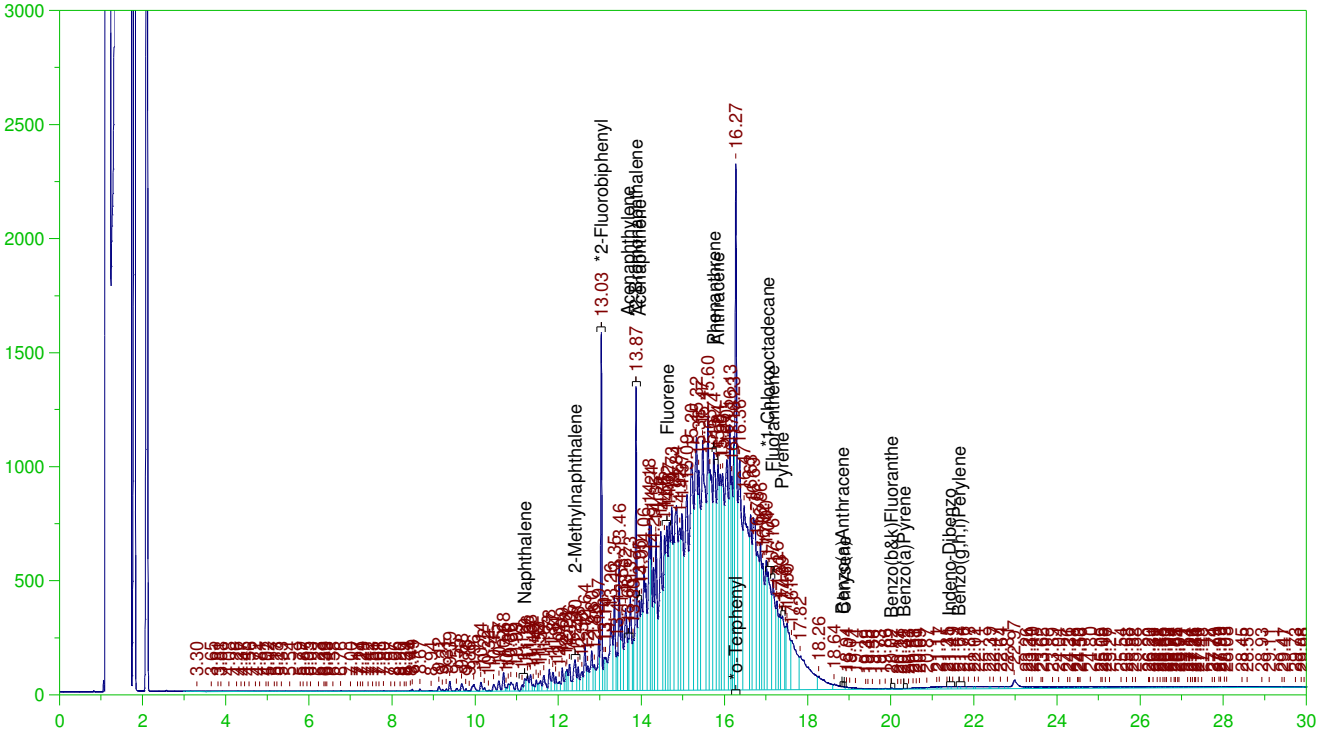
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane_____	17.091	6.653	10.229	153.74	-

DRO Area:2.210065E+08 DRO Amount: 527.7208
TEH Area:2.3078E+08 TEH Amount: 551.0579

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:1.843582E+08 C9-C18 Amount: 445.8202
C19-C36 Area:3.969332E+07C19-C36 Amount: 93.894

SB-LIF-14 14-15 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0051.RAW B18011726-002A ;0201HP2 , $HC-ARO-GRP-S, V51



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011726-002A ;0201HP2 , $HC-ARO-GRP-S, V51
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0051.RAW
Date & Time Acquired: 2/3/2018 2:10:20 AM
Method File: g:\org\HP2\Methods\R3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30.06 Dilution: 2 S.A.: 1

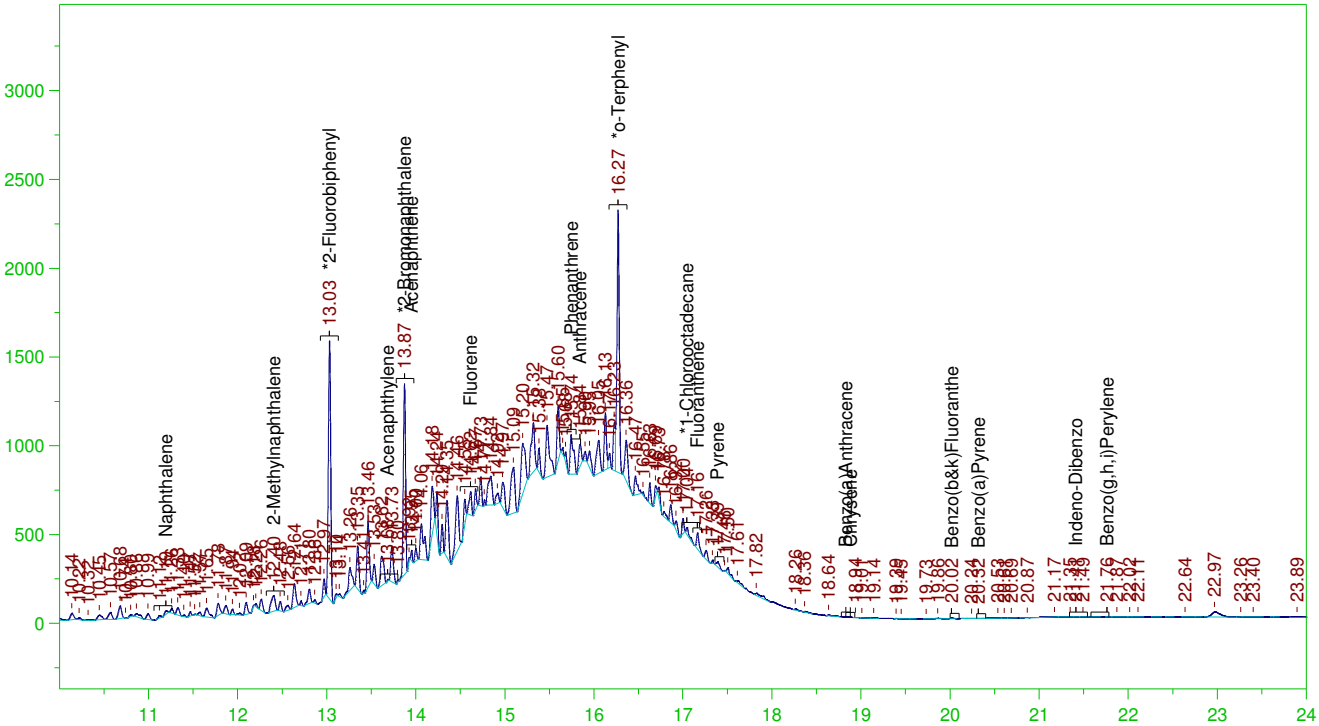
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.031	6.653	7.609	114.36	-
*2-Bromonaphthalene	13.873	6.653	11.23	168.78	-
*o-Terphenyl	16.271	6.653	13.895	208.84	-
*1-Chlorooctadecane	17.043	6.653	7.779	116.91	-

C11-C22 Aromatics Area:1.669111E+08 C11-C22 Aromatics Amount: 362.2156
EPH Aromatics total Area:1.714454E+08 EPH Aromatics Total Amount: 372.0555

SB-LIF-14 14-15 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0051.RAW B18011726-002A ;0201HP2 , $HC-ARO-GRP-S, V51



EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

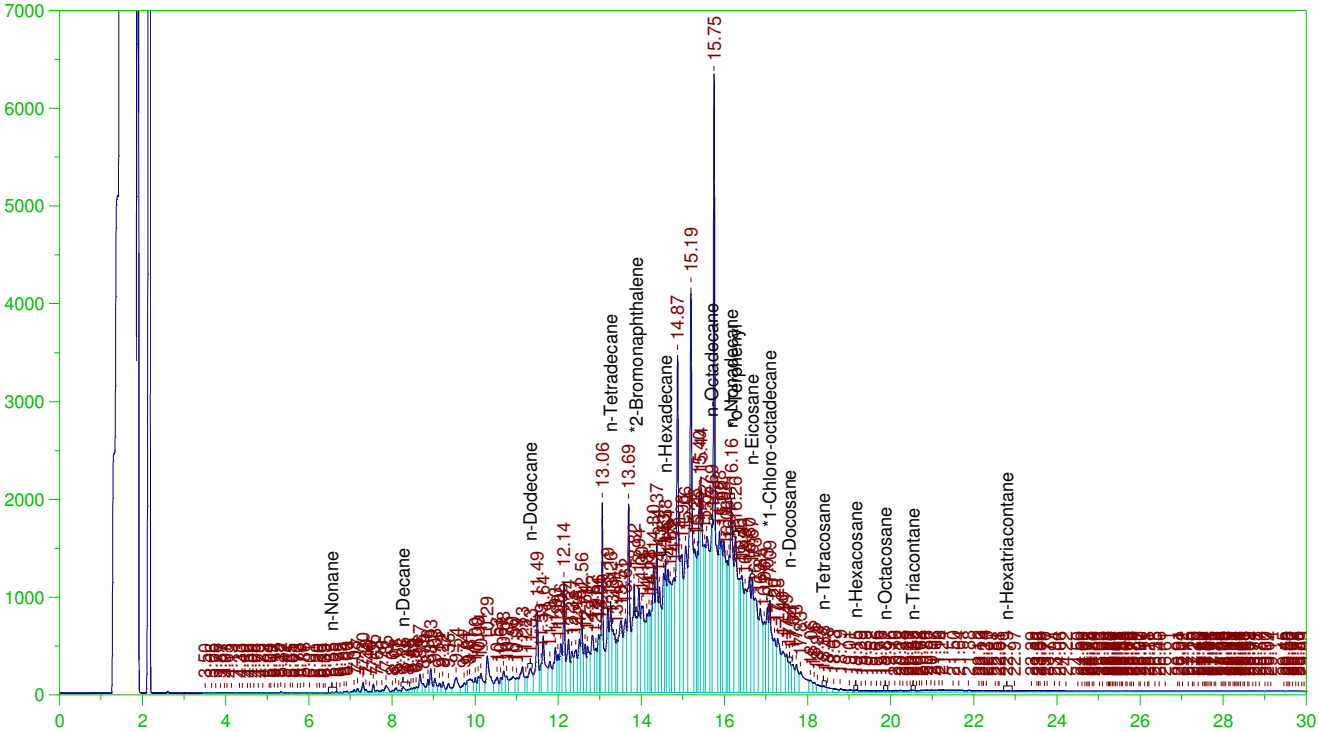
Sample Name: B18011726-002A ;0201HP2 , $HC-ARO-GRP-S, V51
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0051.RAW
Date & Time Acquired: 2/3/2018 2:10:20 AM
Method File: g:\org\HP2\Methods\RS_EPH-020151-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30.06 Dilution: 2 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.195	2.72	2.678	46614	.103	
2-Methylnaphthalene	12.404	1.46	1.469	296232	.666	
Acenaphthylene	13.684	13.684	13.684	10283	.067	U
Acenaphthene	13.952	-.07	-.079	74246	.158	
Fluorene	14.615	-.72	-.742	272164	.589	
Phenanthrene	15.744	-1.87	-1.871	632635	1.413	
Anthracene	15.842	-1.92	-1.969	266818	.571	
Fluoranthene	17.162	-3.28	-3.289	204825	.429	
Pyrene	17.391	-3.53	-3.518	70552	.148	
Benzo(a)Anthracene	.	.	.		.067	U
Chrysene	.	.	.		.067	U
Benzo(b&k)Fluoranthe	20.015	20.015	20.015	7896	.133	U
Benzo(a)Pyrene	20.316	20.316	20.316	1641	.067	U
Indeno-Dibenzo	21.41	21.41	21.41	1667	.133	U
Benzo(g,h,i)Perylene	21.76	21.76	21.76	549	.067	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.031	6.653	6.224	93.54	40-140
*2-Bromonaphthalene	13.873	6.653	6.435	96.71	40-140
*o-Terphenyl	16.271	6.653	6.027	90.59	40-140
*1-Chlorooctadecane	17.043	6.653	.242	3.64	40-140

SB-LIF-17 8-10 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0055.RAW B18011726-003A ;0201HP2 , $HC-ALI-GRP-S, V55



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011726-003A ;0201HP2 , $HC-ALI-GRP-S, V55
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0055.RAW
Date & Time Acquired: 2/3/2018 5:13:34 AM
Method File: g:\org\HP2\Methods\L3_EPH-020155-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 29.95 Dilution: 6 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

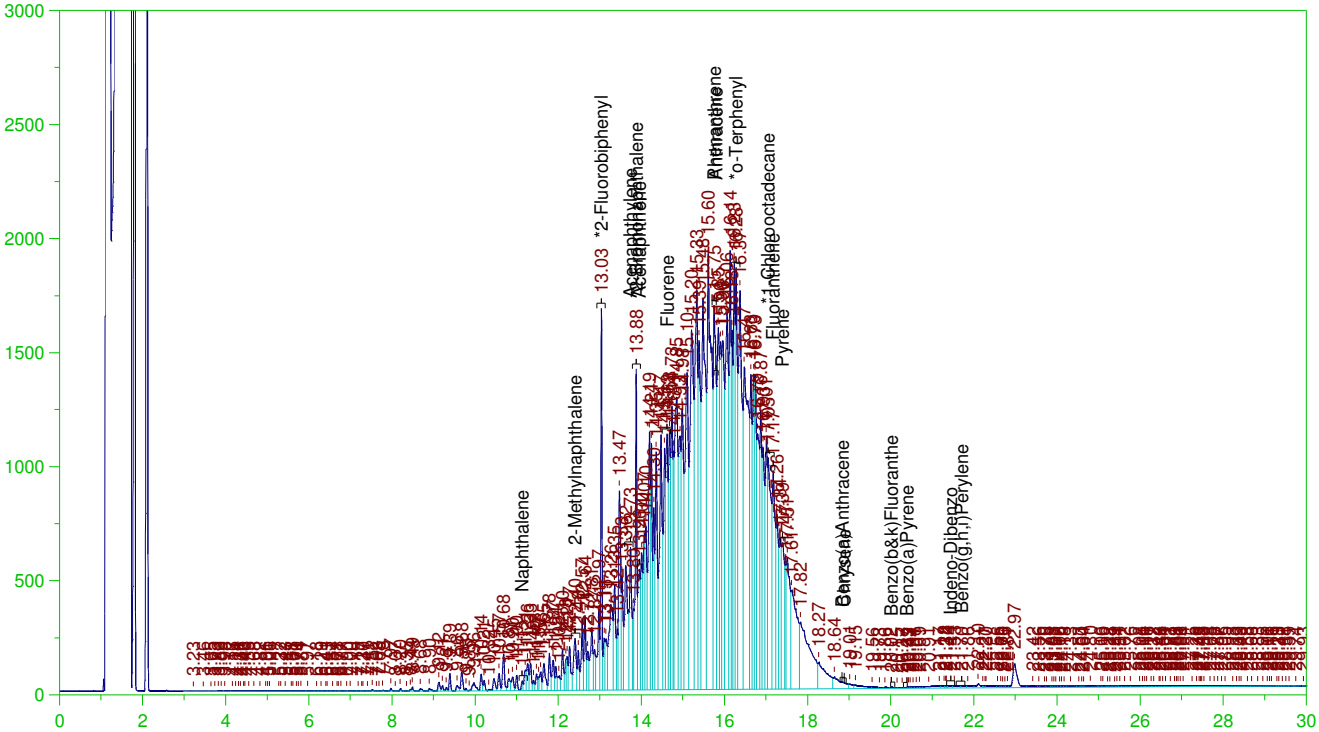
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane_____	17.088	6.678	33.731	505.13	-

DRO Area:3.661484E+08 DRO Amount: 2632.508
TEH Area:3.834112E+08 TEH Amount: 2756.623

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:2.985849E+08 C9-C18 Amount: 2174.095
C19-C36 Area:7.299899E+07C19-C36 Amount: 519.937

SB-LIF-17 8-10 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0056.RAW B18011726-003A ;0201HP2 , $HC-ARO-GRP-S, V56



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011726-003A ;0201HP2 , $HC-ARO-GRP-S, V56
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0056.RAW
Date & Time Acquired: 2/3/2018 5:59:31 AM
Method File: g:\org\HP2\Methods\R3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 29.95 Dilution: 6 S.A.: 1

Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.034	6.678	25.348	379.59	-
*2-Bromonaphthalene	13.877	6.678	40.852	611.76	-
*o-Terphenyl	16.277	6.678	40.086	600.29	-
*1-Chlorooctadecane	17.048	6.678	44.263	662.84	-

C11-C22 Aromatics Area:2.790532E+08 C11-C22 Aromatics Amount: 1823.401
EPH Aromatics total Area:2.852393E+08 EPH Aromatics Total Amount: 1863.823

SB-LIF-17 8-10 Feet Batch ID: 118142

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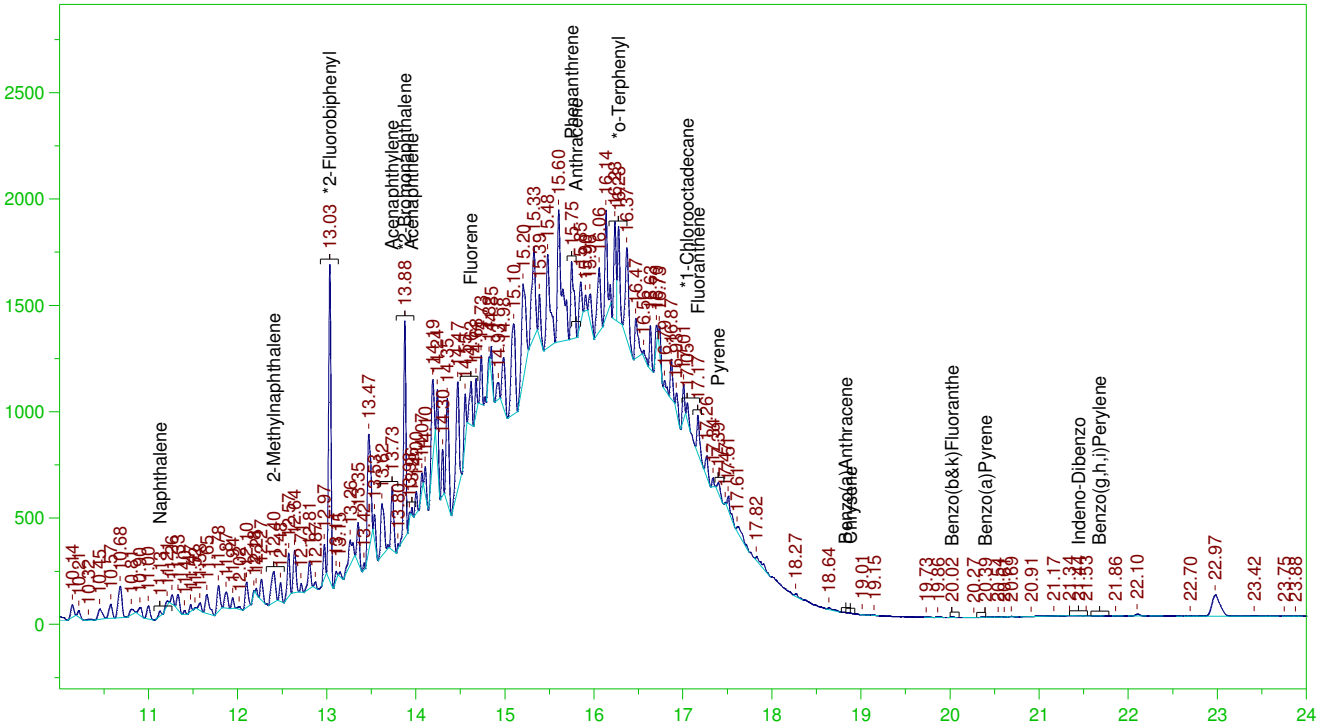


EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

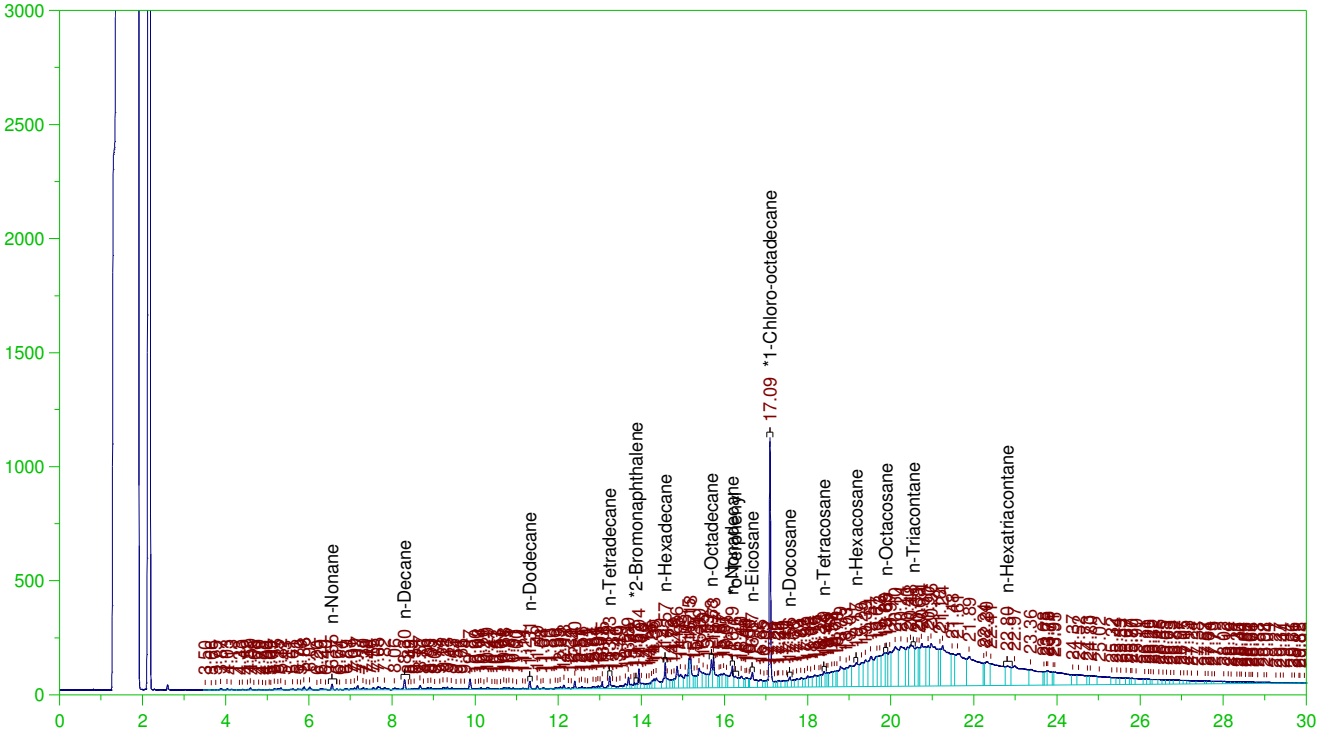
Sample Name: B18011726-003A ;0201HP2 , $HC-ARO-GRP-S, V56
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0056.RAW
Date & Time Acquired: 2/3/2018 5:59:31 AM
Method File: g:\org\HP2\Methods\RS_EPH-020151-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 29.95 Dilution: 6 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.128	2.72	2.749	54243	.361	
2-Methylnaphthalene	12.404	1.46	1.473	480117	3.251	
Acenaphthylene	13.734	.18	.142	623179	4.335	
Acenaphthene	13.957	-.07	-.08	44209	.282	
Fluorene	14.619	-.72	-.742	424861	2.77	
Phenanthrene	15.75	-1.87	-1.874	989588	6.653	
Anthracene	.	.	.		.2	U
Fluoranthene	17.167	-3.28	-3.291	413611	2.609	
Pyrene	17.395	-3.53	-3.518	116109	.733	
Benzo(a)Anthracene	.	.	.		.2	U
Chrysene	.	.	.		.2	U
Benzo(b&k)Fluoranthe	20.019	20.019	20.019	7139	.401	U
Benzo(a)Pyrene	20.394	20.394	20.394	621	.2	U
Indeno-Dibenzo	21.444	21.444	21.444	2034	.401	U
Benzo(g,h,i)Perylene	.	.	.		.2	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.034	6.678	19.127	286.43	40-140
*2-Bromonaphthalene	13.877	6.678	18.663	279.48	40-140
*o-Terphenyl	16.277	6.678	5.557	83.21	40-140
*1-Chlorooctadecane	17.048	6.678	.959	14.36	40-140

SB-LIF-03 2.5-3 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0058.RAW B18011726-004A ;0201HP2 , $HC-ALI-GRP-S, V58



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011726-004A ;0201HP2 , $HC-ALI-GRP-S, V58
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0058.RAW
Date & Time Acquired: 2/3/2018 7:31:11 AM
Method File: g:\org\HP2\Methods\L3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 30.03 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

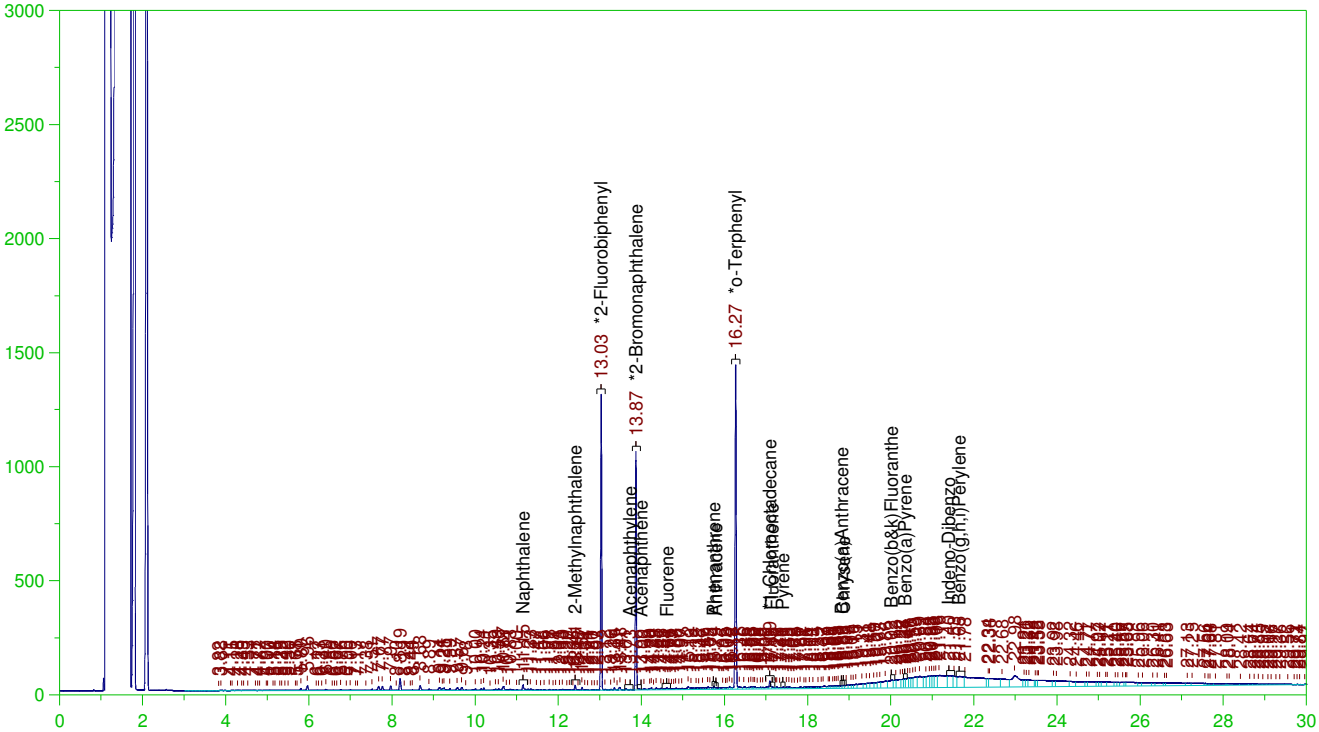
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane_____	17.091	6.66	6.219	93.38	-

DRO Area:2.32313E+07 DRO Amount: 55.52726
TEH Area:5.963937E+07 TEH Amount: 142.5495

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:9721954 C9-C18 Amount: 23.53339
C19-C36 Area:3.847742E+07C19-C36 Amount: 91.10873

SB-LIF-03 2.5-3 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0059.RAW B18011726-004A ;0201HP2 , $HC-ARO-GRP-S, V59



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011726-004A ;0201HP2 , $HC-ARO-GRP-S, V59
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0059.RAW
Date & Time Acquired: 2/3/2018 8:17:05 AM
Method File: g:\org\HP2\Methods\R3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30.03 Dilution: 2 S.A.: 1

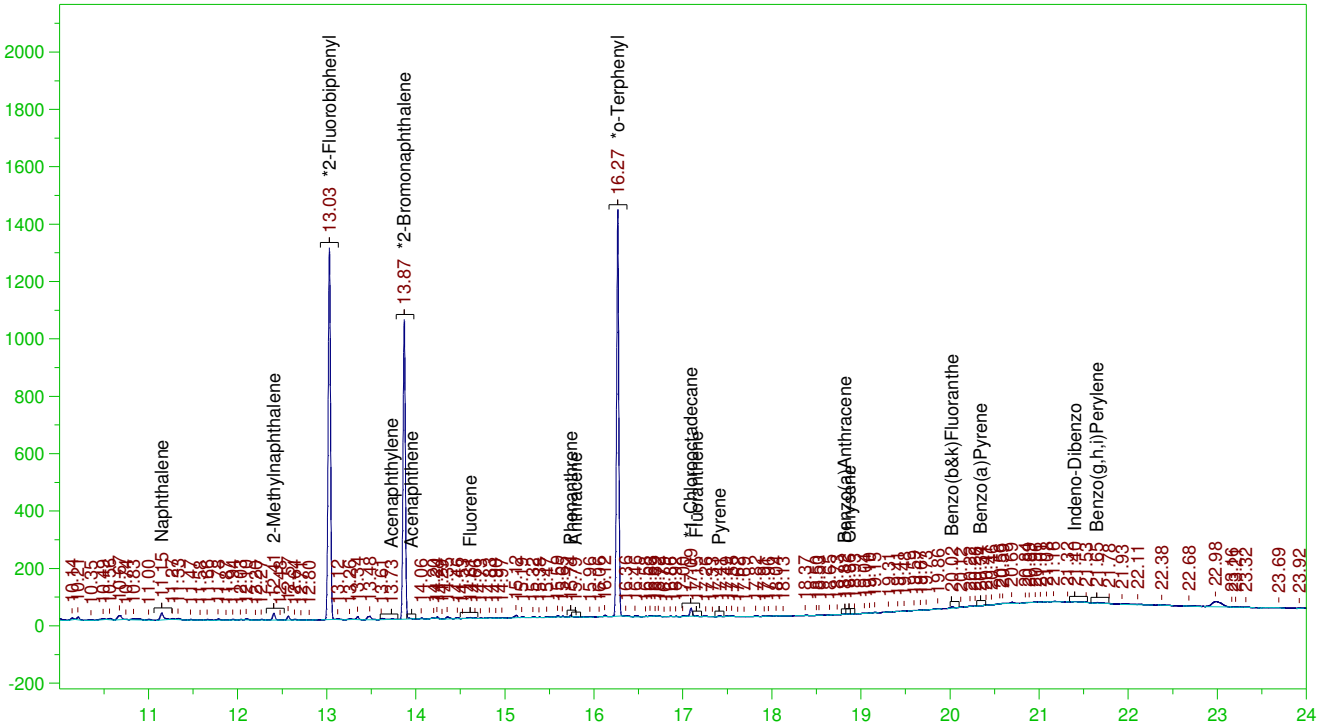
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.029	6.66	5.681	85.3	-
*2-Bromonaphthalene	13.87	6.66	6.621	99.41	-
*o-Terphenyl	16.267	6.66	5.785	86.87	-
*1-Chlorooctadecane	17.088	6.66	.236	3.55	-

C11-C22 Aromatics Area:8464087 C11-C22 Aromatics Amount: 18.38635
EPH Aromatics total Area:1.789434E+07 EPH Aromatics Total Amount: 38.87149

SB-LIF-03 2.5-3 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0059.RAW B18011726-004A ;0201HP2 , $HC-ARO-GRP-S, V59



EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

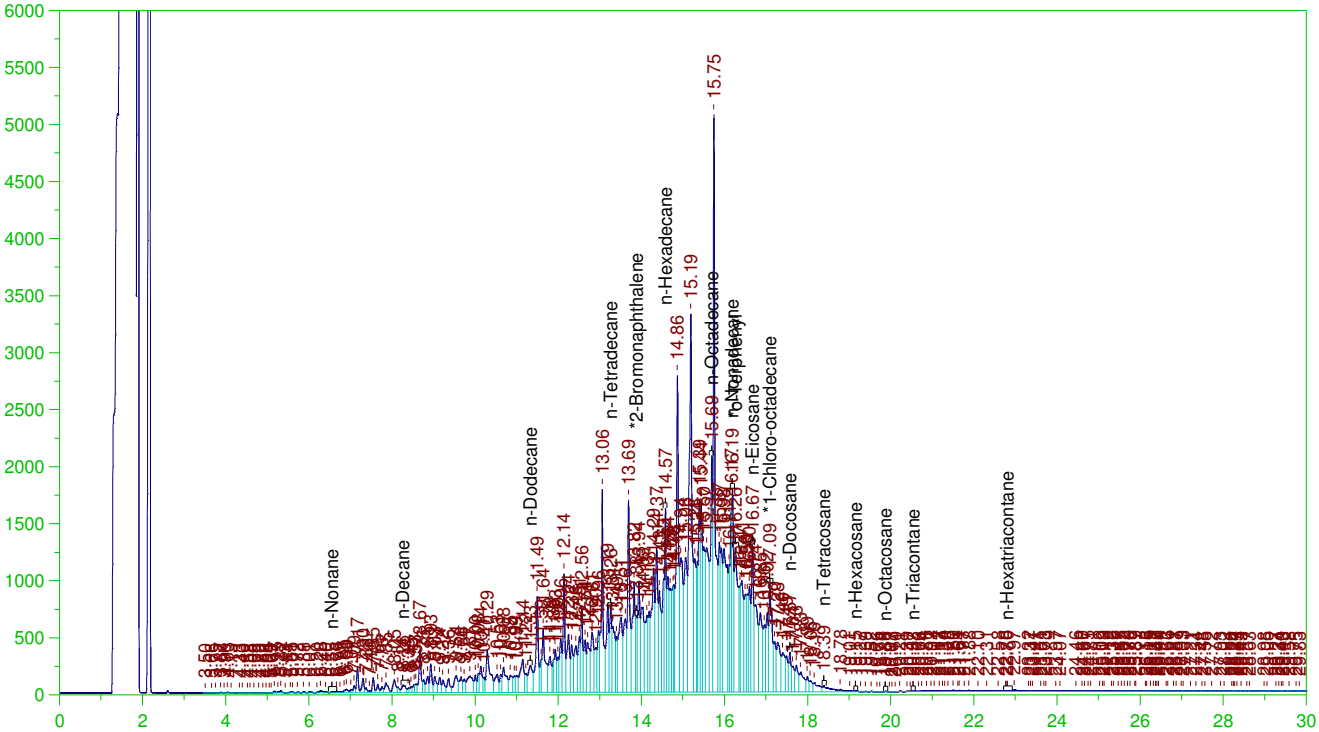
Sample Name: B18011726-004A ;0201HP2 , $HC-ARO-GRP-S, V59
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0059.RAW
Date & Time Acquired: 2/3/2018 8:17:05 AM
Method File: g:\org\HP2\Methods\RS_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30.03 Dilution: 2 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.147	2.72	2.722	67332	.149	
2-Methylnaphthalene	12.406	1.46	1.464	51540	.116	
Acenaphthylene	13.728	13.728	13.728	4926	.067	U
Acenaphthene	.	.	.		.067	U
Fluorene	14.612	14.612	14.612	11864	.067	U
Phenanthrene	15.738	15.738	15.738	13111	.067	U
Anthracene	15.793	15.793	15.793	1232	.067	U
Fluoranthene	17.151	17.151	17.151	2377	.067	U
Pyrene	17.406	17.406	17.406	6277	.067	U
Benzo(a)Anthracene	18.818	18.818	18.818	1424	.067	U
Chrysene	18.864	18.864	18.864	1349	.067	U
Benzo(b&k)Fluoranthe	20.017	20.017	20.017	11039	.133	U
Benzo(a)Pyrene	20.34	20.34	20.34	1530	.067	U
Indeno-Dibenzo	21.396	21.396	21.396	8808	.133	U
Benzo(g,h,i)Perylene	21.648	21.648	21.648	13073	.067	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.029	6.66	5.657	84.94	40-140
*2-Bromonaphthalene	13.87	6.66	6.573	98.69	40-140
*o-Terphenyl	16.267	6.66	5.663	85.03	40-140
*1-Chlorooctadecane	17.088	6.66	.147	2.21	40-140

SB-LIF-17 13.5-15 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0053.RAW B18011726-006A ;0201HP2 , $HC-ALI-GRP-S, V53



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011726-006A ;0201HP2 , $HC-ALI-GRP-S, V53
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0053.RAW
Date & Time Acquired: 2/3/2018 3:41:53 AM
Method File: g:\org\HP2\Methods\L3_EPH-020153-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 30.03 Dilution: 4 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

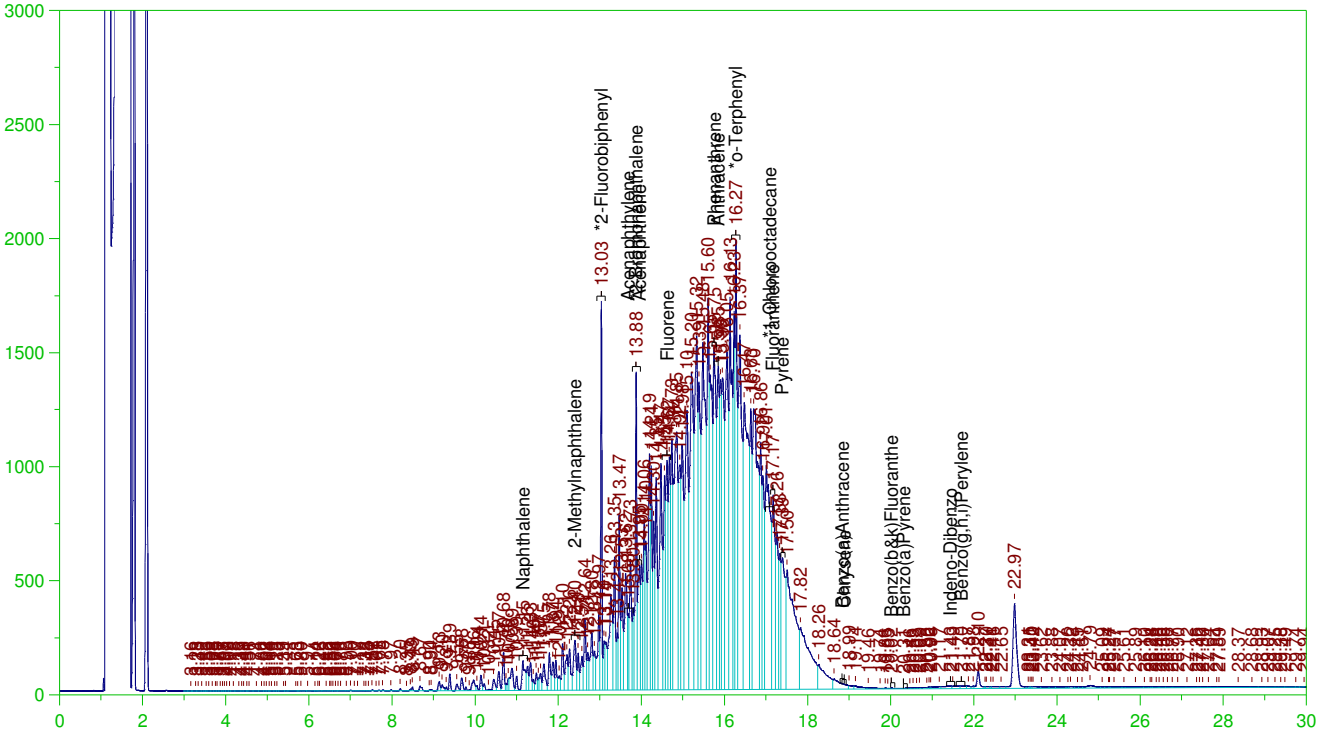
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane_____	17.09	6.66	23.243	348.99	-

DRO Area:3.129356E+08 DRO Amount: 1495.952
TEH Area:3.289529E+08 TEH Amount: 1572.521

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:2.610759E+08 C9-C18 Amount: 1263.944
C19-C36 Area:6.594026E+07C19-C36 Amount: 312.2732

SB-LIF-17 13.5-15 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0054.RAW B18011726-006A ;0201HP2 , $HC-ARO-GRP-S, V54



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011726-006A ;0201HP2 , $HC-ARO-GRP-S, V54
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0054.RAW
Date & Time Acquired: 2/3/2018 4:27:45 AM
Method File: g:\org\HP2\Methods\R3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30.03 Dilution: 4 S.A.: 1

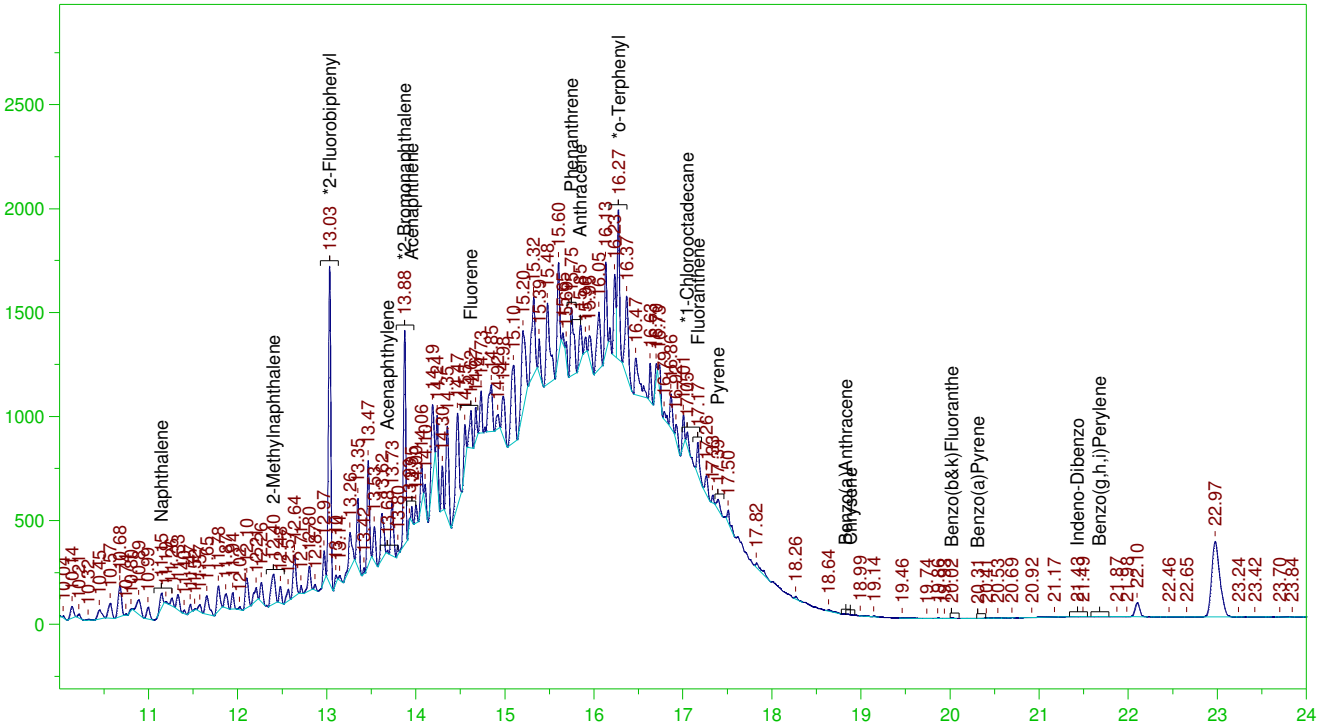
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.032	6.66	17.122	257.09	-
*2-Bromonaphthalene	13.875	6.66	25.768	386.9	-
*o-Terphenyl	16.274	6.66	28.12	422.23	-
*1-Chlorooctadecane	29.944	6.66	.	.	-

C11-C22 Aromatics Area:2.559663E+08 C11-C22 Aromatics Amount: 1112.06
EPH Aromatics total Area:2.645908E+08 EPH Aromatics Total Amount: 1149.53

SB-LIF-17 13.5-15 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0054.RAW B18011726-006A ;0201HP2 , $HC-ARO-GRP-S, V54



EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

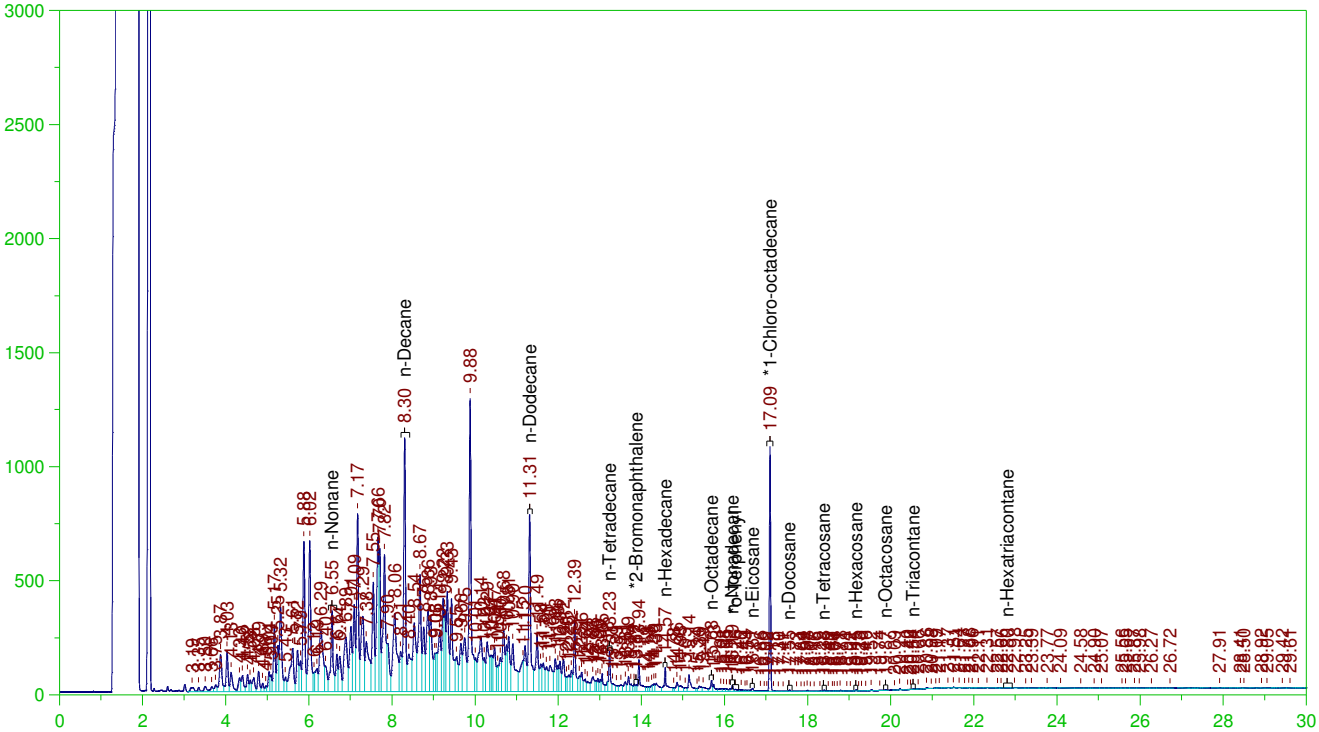
Sample Name: B18011726-006A ;0201HP2 , $HC-ARO-GRP-S, V54
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0054.RAW
Date & Time Acquired: 2/3/2018 4:27:45 AM
Method File: g:\org\HP2\Methods\RS_EPH-020151-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 30.03 Dilution: 4 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.146	2.72	2.729	173230	.767	
2-Methylnaphthalene	12.402	1.46	1.473	475058	2.139	
Acenaphthylene	13.681	13.681	13.681	15767	.133	U
Acenaphthene	13.954	-.07	-.079	87769	.373	
Fluorene	14.618	-.72	-.743	355313	1.54	
Phenanthrene	15.748	-1.87	-1.873	915342	4.092	
Anthracene	15.848	-1.92	-1.973	372211	1.596	
Fluoranthene	17.166	-3.28	-3.291	335449	1.407	
Pyrene	17.392	-3.53	-3.517	123318	.517	
Benzo(a)Anthracene	.	.	.		.133	U
Chrysene	.	.	.		.133	U
Benzo(b&k)Fluoranthe	20.016	20.016	20.016	8823	.266	U
Benzo(a)Pyrene	20.307	20.307	20.307	1147	.133	U
Indeno-Dibenzo	21.431	21.431	21.431	7666	.266	U
Benzo(g,h,i)Perylene	.	.	.		.133	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.032	6.66	13.138	197.26	40-140
*2-Bromonaphthalene	13.875	6.66	12.471	187.26	40-140
*o-Terphenyl	16.274	6.66	5.954	89.41	40-140
*1-Chlorooctadecane	17.047	6.66	.57	8.56	40-140

SB-LIF-11 7-8 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0048.RAW B18011726-008A ;0201HP2 , $HC-ALI-GRP-S, V48



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011726-008A ;0201HP2 , $HC-ALI-GRP-S, V48
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0048.RAW
Date & Time Acquired: 2/2/2018 11:52:48 PM
Method File: g:\org\HP2\Methods\LR_EPH-020148-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 29.99 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

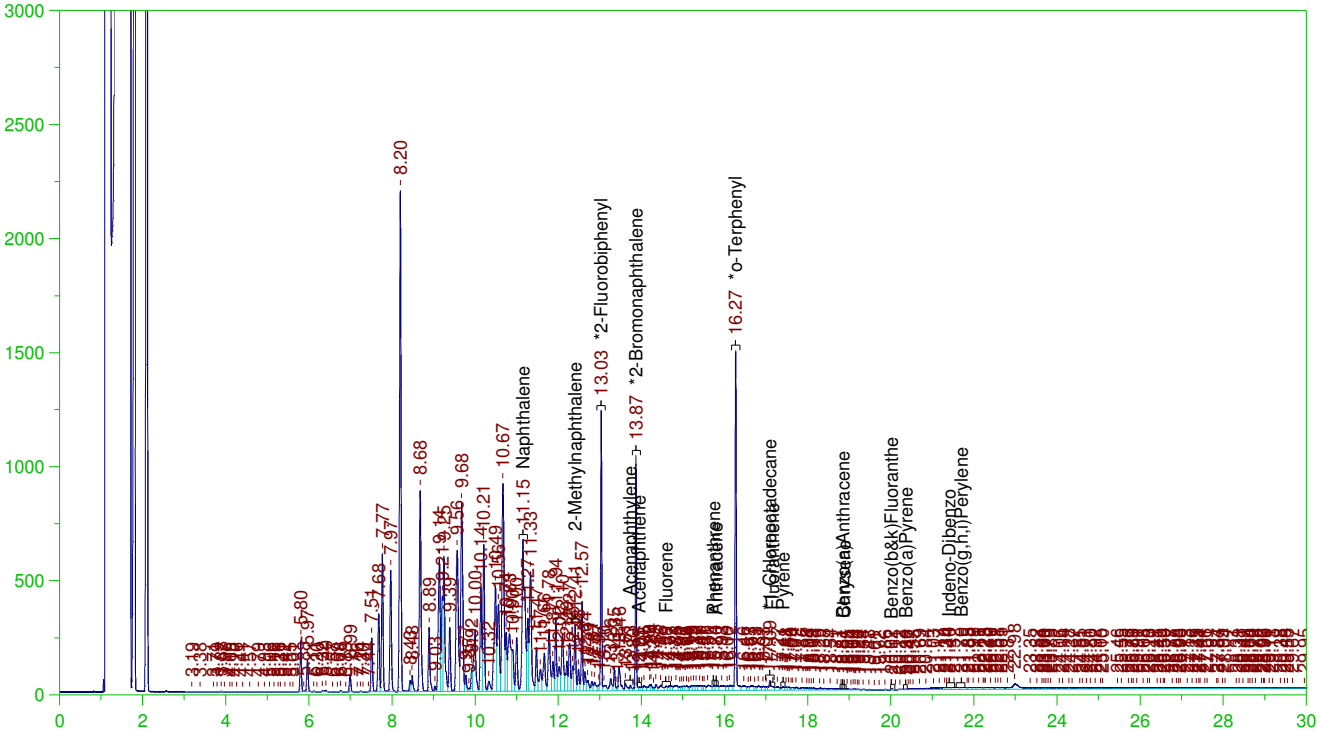
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane	17.092	6.669	5.484	82.23	-

DRO Area:5.635251E+07 DRO Amount: 134.873
TEH Area:9.868482E+07 TEH Amount: 236.1902

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:8.066814E+07 C9-C18 Amount: 195.5293
C19-C36 Area:510422.1 C19-C36 Amount: 1.210215

SB-LIF-11 7-8 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0049.RAW B18011726-008A ;0201HP2 , $HC-ARO-GRP-S, V49



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011726-008A ;0201HP2 , $HC-ARO-GRP-S, V49
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0049.RAW
Date & Time Acquired: 2/3/2018 12:38:31 AM
Method File: g:\org\HP2\Methods\RR_EPH-020149-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 29.99 Dilution: 2 S.A.: 1

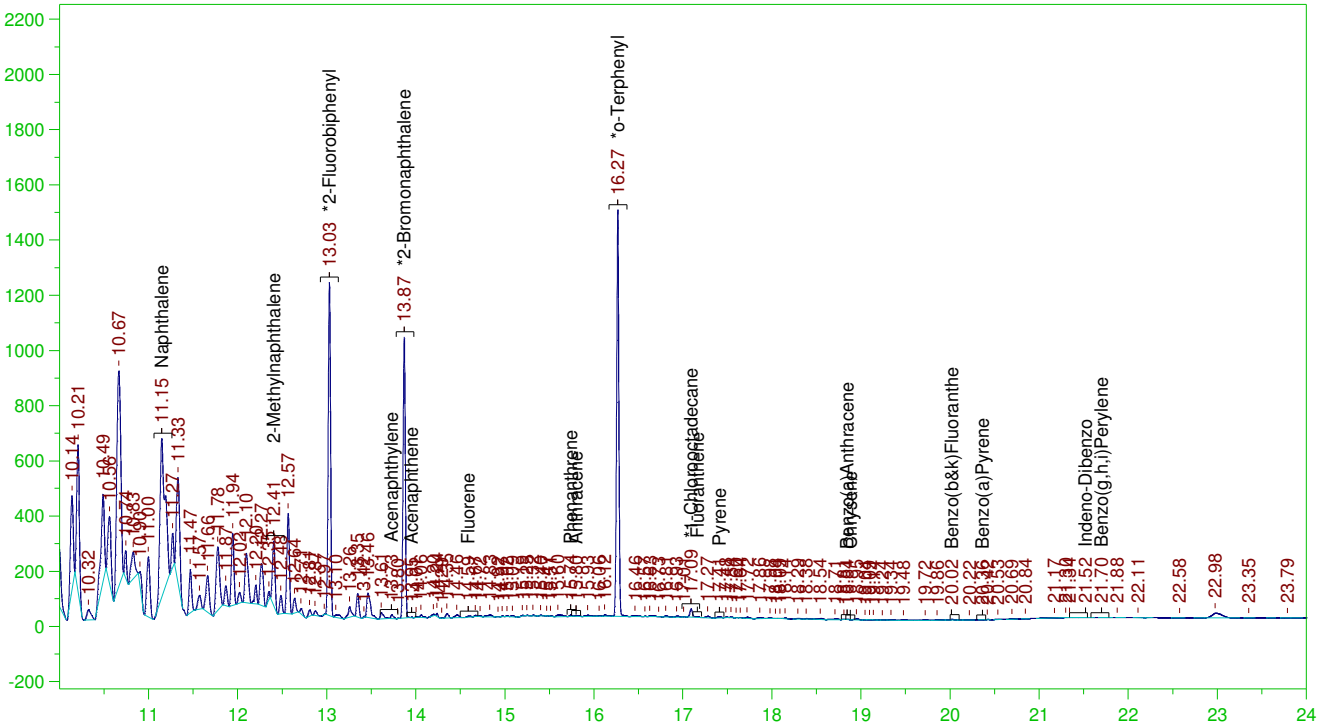
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.029	6.669	5.567	83.48	-
*2-Bromonaphthalene	13.87	6.669	6.608	99.09	-
*o-Terphenyl	16.267	6.669	6.401	95.98	-
*1-Chlorooctadecane	17.09	6.669	.519	7.78	-

C11-C22 Aromatics Area:2.078754E+07 C11-C22 Aromatics Amount: 45.21656
EPH Aromatics total Area:6.205776E+07 EPH Aromatics Total Amount: 134.9865

SB-LIF-11 7-8 Feet Batch ID: 118142

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0049.RAW B18011726-008A ;0201HP2 , $HC-ARO-GRP-S, V49



EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

Sample Name: B18011726-008A ;0201HP2 , $HC-ARO-GRP-S, V49
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0049.RAW
Date & Time Acquired: 2/3/2018 12:38:31 AM
Method File: g:\org\HP2\Methods\RS_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 29.99 Dilution: 2 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.149	2.72	2.721	2318527	5.136	
2-Methylnaphthalene	12.405	1.46	1.464	471158	1.062	
Acenaphthylene	13.728	.18	.142	31786	.074	
Acenaphthene	13.95	13.95	13.95	1986	.067	U
Fluorene	14.589	14.589	14.589	12090	.067	U
Phenanthrene	15.738	15.738	15.738	12734	.067	U
Anthracene	15.801	15.801	15.801	11970	.067	U
Fluoranthene	.	.	.		.067	U
Pyrene	17.411	17.411	17.411	12457	.067	U
Benzo(a)Anthracene	18.845	18.845	18.845	898	.067	U
Chrysene	.	.	.		.067	U
Benzo(b&k)Fluoranthe	20.018	20.018	20.018	7123	.133	U
Benzo(a)Pyrene	20.362	20.362	20.362	628	.067	U
Indeno-Dibenzo	21.522	21.522	21.522	1172	.133	U
Benzo(g,h,i)Perylene	21.702	21.702	21.702	1173	.067	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.029	6.669	5.267	78.98	40-140
*2-Bromonaphthalene	13.87	6.669	6.286	94.26	40-140
*o-Terphenyl	16.267	6.669	5.991	89.83	40-140
*1-Chlorooctadecane	17.09	6.669	.19	2.85	40-140

Work Order Receipt Checklist

NewFields

B18011726

Login completed by: Richard L. Shular

Date Received: 1/24/2018

Reviewed by: BL2000\tedwards

Received by: se

Reviewed Date: 1/29/2018

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Applicable ☑

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

The temperature of the sample(s) for shipping container 1 was 4.2°C, Temperature Blank temperature for shipping container 2 was 2.2°C and shipping container 3 was 1.0°C.

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	New Fields, LLC
Contact	Donna McCammon
Phone	(406) 549-8270
Mailing Address	700 SW Higgins Ste 15
City, State, Zip	Missoula, MT 59803
Email	dmccammon@newfields.com
Receive Invoice	☐ Hard Copy ☒ Email
Receive Report	☐ Hard Copy ☒ Email
Purchase Order	
Quote	
Bottle Order	1196886

Report Information (if different than Account Information)

Company/Name	New Fields, LLC
Contact	Lewis McKay
Phone	(406) 549-8270
Mailing Address	700 SW Higgins Ste 15
City, State, Zip	Missoula, MT 59803
Email	lmckay@newfields.com
Receive Report	☐ Hard Copy ☒ Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

LINE 6 WAS A MISTAKE; PLEASE IGNORE

Project Information 350.0339.000: PH. II

Project Name, PWSID, Permit, etc.	Fenner Leasing Motel
Sampler Name	Pat Moffitt
Sampler Phone	847 421 1345
Sample Origin State	MT
EPA/State Compliance	☒ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Analysis Requested: Metals 6PH	Metals 7PH	EPA 8260/8011							See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	SB-LF-14 5.5'-6.5'	1/19/18	0945	3	S	X	X	X									B18011726-001
2	SB-LF-14 14'-15'	1/19/18	0830	3	S	X	X	X									-002
3	SB-LF-17 8'-10'	1/19/18	1025	3	S	X	X	X									-003
4	SB-LF-03 2.5'-3'	1/19/18	1115	3	S	X	X	X									-004
5	SB-LF-03B 4.5'-5'	1/19/18	1320	3	S	X	X	X									-005
6	[redacted]																~~-006~~
7	SB-LF-17 13.5'-15'	1/19/18	1045	3	S	X	X	X									~~-007~~ -006
8	SB-LF-05 2.5'-3.5'	1/19/18	1300	3	S	X	X	X									-007
9	SB-LF-11 7'-8'	1/19/18	1200	3	S	X	X	X									-008
10	TB2-11-18 B-MX SH-P0271																-009

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Pat Moffitt	1/22/18: 1500			1/22/18 12:25	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-12/16 v.1

ANALYTICAL SUMMARY REPORT

February 06, 2018

NewFields
700 SW Higgins Ave Ste 15
Missoula, MT 59803-1489

Work Order: B18011733

Project Name: 350.0339.00 PH11 Former Lee Anns Motel

Energy Laboratories Inc Billings MT received the following 5 samples for NewFields on 1/24/2018 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B18011733-001	MW-1	01/20/18 12:45	01/24/18	Aqueous	EPH-Liquid-Liquid Extraction EPH Fractionation Hydrocarbons, Aliphatic Extractable Petroleum Hydrocarbons, Aromatic Extractable Petroleum Hydrocarbons, Extractable Petroleum Screen Volatile Petroleum Hydrocarbons 504 Microextraction EDB & EDC in Water by ECD 8260-Volatile Organic Compounds-Short List
B18011733-002	MW-2	01/20/18 14:15	01/24/18	Aqueous	Same As Above
B18011733-003	MW-3	01/20/18 8:40	01/24/18	Aqueous	Same As Above
B18011733-004	MW-4	01/20/18 11:00	01/24/18	Aqueous	Same As Above
B18011733-005	TripBlank Lot121817 B-JLB SHP0271	01/20/18 0:00	01/24/18	Trip Blank	Volatile Petroleum Hydrocarbons

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

The results as reported relate only to the item(s) submitted for testing.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: NewFields
Project: 350.0339.00 PH11 Former Lee Anns Motel
Work Order: B18011733

Report Date: 02/06/18

CASE NARRATIVE

Fractionation without PAHs was added to the following sample(s) per phone conversation with Levi McKAy on 1/29/18:

B18011733-001 MW-1

B18011733-002 MW-2

B18011733-003 MW-3

B18011733-004 MW-4

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.00 PH11 Former Lee Anns Motel
Lab ID: B18011733-001
Client Sample ID: MW-1

Report Date: 02/06/18
Collection Date: 01/20/18 12:45
DateReceived: 01/24/18
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
1,2-Dichloroethane	346	ug/L	*	50	4	SW8260B	02/01/18 14:18 / jrj
Surr: Dibromofluoromethane	91.0	%REC		77-126		SW8260B	02/01/18 14:18 / jrj
Surr: 1,2-Dichloroethane-d4	101	%REC		70-130		SW8260B	02/01/18 14:18 / jrj
Surr: Toluene-d8	95.0	%REC		79-122		SW8260B	02/01/18 14:18 / jrj
Surr: p-Bromofluorobenzene	89.0	%REC		76-127		SW8260B	02/01/18 14:18 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	ug/L		0.010	0.004	SW8011	01/29/18 19:28 / mim
Surr: 1,1,1,2-Tetrachloroethane	275	%REC	S	70-130		SW8011	01/29/18 19:28 / mim
-The high recovery of 1,1,1,2-Tetrachloroethane surrogate is attributed to co-eluting interference.							
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	ug/L	D	50	30	MA-VPH	01/30/18 17:58 / jjb
Benzene	3610	ug/L	*	25	5	MA-VPH	01/30/18 17:58 / jjb
Toluene	106	ug/L		25	1000	MA-VPH	01/30/18 17:58 / jjb
Ethylbenzene	610	ug/L		25	700	MA-VPH	01/30/18 17:58 / jjb
m+p-Xylenes	298	ug/L		25		MA-VPH	01/30/18 17:58 / jjb
o-Xylene	ND	ug/L	D	25		MA-VPH	01/30/18 17:58 / jjb
Xylenes, Total	298	ug/L		25	10000	MA-VPH	01/30/18 17:58 / jjb
Naphthalene	100	ug/L	*	50	100	MA-VPH	01/30/18 17:58 / jjb
C9 to C10 Aromatics	1420	ug/L	*	1000	1100	MA-VPH	01/30/18 17:58 / jjb
C5 to C8 Aliphatics	8580	ug/L	*	1000	650	MA-VPH	01/30/18 17:58 / jjb
C9 to C12 Aliphatics	2200	ug/L	*	1000	1400	MA-VPH	01/30/18 17:58 / jjb
Total Purgeable Hydrocarbons	14700	ug/L		1000		MA-VPH	01/30/18 17:58 / jjb
Surr: VPH Aromatics Surrogate	124	%REC		70-130		MA-VPH	01/30/18 17:58 / jjb
Surr: VPH Aliphatics Surrogate	122	%REC		70-130		MA-VPH	01/30/18 17:58 / jjb
- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.							
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.							
EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	16200	ug/L	*	300	1000	SW8015M	01/26/18 14:57 / amn
Surr: o-Terphenyl	74.0	%REC		40-140		SW8015M	01/26/18 14:57 / amn
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	ND	ug/L		300	1400	MA-EPH	02/02/18 06:33 / amn
C19 to C36 Aliphatics	ND	ug/L		300	1000	MA-EPH	02/02/18 06:33 / amn
Surr: 1-Chloro-octadecane	69.0	%REC		40-140		MA-EPH	02/02/18 06:33 / amn
C11 to C22 Aromatics	ND	ug/L		300	1100	MA-EPH	02/02/18 07:23 / amn
Total Extractable Hydrocarbons	1250	ug/L	*	300	1000	MA-EPH	02/02/18 07:23 / amn
Surr: 2-Bromonaphthalene	94.0	%REC		40-140		MA-EPH	02/02/18 07:23 / amn
Surr: 2-Fluorobiphenyl	88.0	%REC		40-140		MA-EPH	02/02/18 07:23 / amn
Surr: o-Terphenyl	83.0	%REC		40-140		MA-EPH	02/02/18 07:23 / amn
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
- A significant portion of the hydrocarbons measured in the EPH Screening analysis were not recovered from the silica gel fractionation cartridge. Silica gel can act as a cleanup media for non-petroleum hydrocarbons.							

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
S - Spike recovery outside of advisory limits.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.00 PH11 Former Lee Anns Motel
Lab ID: B18011733-002
Client Sample ID: MW-2

Report Date: 02/06/18
Collection Date: 01/20/18 14:15
DateReceived: 01/24/18
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
1,2-Dichloroethane	ND	ug/L		0.50	4	SW8260B	02/01/18 12:20 / jrj
Surr: Dibromofluoromethane	92.0	%REC		77-126		SW8260B	02/01/18 12:20 / jrj
Surr: 1,2-Dichloroethane-d4	103	%REC		70-130		SW8260B	02/01/18 12:20 / jrj
Surr: Toluene-d8	92.0	%REC		79-122		SW8260B	02/01/18 12:20 / jrj
Surr: p-Bromofluorobenzene	95.0	%REC		76-127		SW8260B	02/01/18 12:20 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	ug/L		0.010	0.004	SW8011	01/29/18 18:10 / mim
Surr: 1,1,1,2-Tetrachloroethane	106	%REC		70-130		SW8011	01/29/18 18:10 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	ug/L		1.0	30	MA-VPH	01/30/18 19:43 / jjb
Benzene	ND	ug/L		0.50	5	MA-VPH	01/30/18 19:43 / jjb
Toluene	ND	ug/L		0.50	1000	MA-VPH	01/30/18 19:43 / jjb
Ethylbenzene	ND	ug/L		0.50	700	MA-VPH	01/30/18 19:43 / jjb
m+p-Xylenes	ND	ug/L		0.50		MA-VPH	01/30/18 19:43 / jjb
o-Xylene	ND	ug/L	D	3.0		MA-VPH	01/30/18 19:43 / jjb
Xylenes, Total	ND	ug/L	D	3.0	10000	MA-VPH	01/30/18 19:43 / jjb
Naphthalene	ND	ug/L		1.0	100	MA-VPH	01/30/18 19:43 / jjb
C9 to C10 Aromatics	133	ug/L		20	1100	MA-VPH	01/30/18 19:43 / jjb
C5 to C8 Aliphatics	ND	ug/L		20	650	MA-VPH	01/30/18 19:43 / jjb
C9 to C12 Aliphatics	142	ug/L		20	1400	MA-VPH	01/30/18 19:43 / jjb
Total Purgeable Hydrocarbons	360	ug/L		20		MA-VPH	01/30/18 19:43 / jjb
Surr: VPH Aromatics Surrogate	84.0	%REC		70-130		MA-VPH	01/30/18 19:43 / jjb
Surr: VPH Aliphatics Surrogate	91.0	%REC		70-130		MA-VPH	01/30/18 19:43 / jjb

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	9010	ug/L	*	300	1000	SW8015M	01/26/18 15:40 / amn
Surr: o-Terphenyl	82.0	%REC		40-140		SW8015M	01/26/18 15:40 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	2220	ug/L	*	300	1400	MA-EPH	02/02/18 02:17 / amn
C19 to C36 Aliphatics	568	ug/L		300	1000	MA-EPH	02/02/18 02:17 / amn
Surr: 1-Chloro-octadecane	61.0	%REC		40-140		MA-EPH	02/02/18 02:17 / amn
C11 to C22 Aromatics	1900	ug/L	*	300	1100	MA-EPH	02/02/18 03:08 / amn
Total Extractable Hydrocarbons	5130	ug/L	*	300	1000	MA-EPH	02/02/18 03:08 / amn
Surr: 2-Bromonaphthalene	101	%REC		40-140		MA-EPH	02/02/18 03:08 / amn
Surr: 2-Fluorobiphenyl	88.0	%REC		40-140		MA-EPH	02/02/18 03:08 / amn
Surr: o-Terphenyl	86.0	%REC		40-140		MA-EPH	02/02/18 03:08 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.00 PH11 Former Lee Anns Motel
Lab ID: B18011733-003
Client Sample ID: MW-3

Report Date: 02/06/18
Collection Date: 01/20/18 08:40
DateReceived: 01/24/18
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
1,2-Dichloroethane	389	ug/L	*	50	4	SW8260B	02/01/18 15:17 / jrj
Surr: Dibromofluoromethane	94.0	%REC		77-126		SW8260B	02/01/18 15:17 / jrj
Surr: 1,2-Dichloroethane-d4	102	%REC		70-130		SW8260B	02/01/18 15:17 / jrj
Surr: Toluene-d8	94.0	%REC		79-122		SW8260B	02/01/18 15:17 / jrj
Surr: p-Bromofluorobenzene	92.0	%REC		76-127		SW8260B	02/01/18 15:17 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	ug/L		0.010	0.004	SW8011	01/29/18 18:36 / mim
Surr: 1,1,1,2-Tetrachloroethane	202	%REC	S	70-130		SW8011	01/29/18 18:36 / mim
-The high recovery of 1,1,1,2-Tetrachloroethane surrogate is attributed to co-eluting interference.							
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	ug/L	D	20	30	MA-VPH	01/30/18 21:29 / jjb
Benzene	2240	ug/L	*	10	5	MA-VPH	01/30/18 21:29 / jjb
Toluene	70	ug/L		10	1000	MA-VPH	01/30/18 21:29 / jjb
Ethylbenzene	64	ug/L		10	700	MA-VPH	01/30/18 21:29 / jjb
m+p-Xylenes	174	ug/L		10		MA-VPH	01/30/18 21:29 / jjb
o-Xylene	17	ug/L		10		MA-VPH	01/30/18 21:29 / jjb
Xylenes, Total	190	ug/L		10	10000	MA-VPH	01/30/18 21:29 / jjb
Naphthalene	32	ug/L		20	100	MA-VPH	01/30/18 21:29 / jjb
C9 to C10 Aromatics	694	ug/L		400	1100	MA-VPH	01/30/18 21:29 / jjb
C5 to C8 Aliphatics	5650	ug/L	*	400	650	MA-VPH	01/30/18 21:29 / jjb
C9 to C12 Aliphatics	920	ug/L		400	1400	MA-VPH	01/30/18 21:29 / jjb
Total Purgeable Hydrocarbons	8530	ug/L		400		MA-VPH	01/30/18 21:29 / jjb
Surr: VPH Aromatics Surrogate	133	%REC	S	70-130		MA-VPH	01/30/18 21:29 / jjb
Surr: VPH Aliphatics Surrogate	136	%REC	S	70-130		MA-VPH	01/30/18 21:29 / jjb
- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.							
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.							
- S=The Surrogate recovery was outside QC advisory limits due to positive sample matrix interference.							
EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	9500	ug/L	*	309	1000	SW8015M	01/26/18 17:05 / amn
Surr: o-Terphenyl	45.0	%REC		40-140		SW8015M	01/26/18 17:05 / amn
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	ND	ug/L		309	1400	MA-EPH	02/02/18 04:50 / amn
C19 to C36 Aliphatics	ND	ug/L		309	1000	MA-EPH	02/02/18 04:50 / amn
Surr: 1-Chloro-octadecane	37.0	%REC	S	40-140		MA-EPH	02/02/18 04:50 / amn
C11 to C22 Aromatics	ND	ug/L		309	1100	MA-EPH	02/02/18 05:42 / amn
Total Extractable Hydrocarbons	589	ug/L		309	1000	MA-EPH	02/02/18 05:42 / amn
Surr: 2-Bromonaphthalene	102	%REC		40-140		MA-EPH	02/02/18 05:42 / amn
Surr: 2-Fluorobiphenyl	92.0	%REC		40-140		MA-EPH	02/02/18 05:42 / amn
Surr: o-Terphenyl	50.0	%REC		40-140		MA-EPH	02/02/18 05:42 / amn
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
- A significant portion of the hydrocarbons measured in the EPH Screening analysis were not recovered from the silica gel fractionation cartridge. Silica gel can act as a cleanup media for non-petroleum hydrocarbons.							
- Extraction surrogate recoveries for the fractions reflect extraction surrogate recoveries from the screen analysis and indicated proper fractionation performance.							

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
S - Spike recovery outside of advisory limits.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.00 PH11 Former Lee Anns Motel
Lab ID: B18011733-004
Client Sample ID: MW-4

Report Date: 02/06/18
Collection Date: 01/20/18 11:00
DateReceived: 01/24/18
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
1,2-Dichloroethane	375	ug/L	*	25	4	SW8260B	02/01/18 19:12 / jrj
Surr: Dibromofluoromethane	92.0	%REC		77-126		SW8260B	02/01/18 19:12 / jrj
Surr: 1,2-Dichloroethane-d4	100	%REC		70-130		SW8260B	02/01/18 19:12 / jrj
Surr: Toluene-d8	94.0	%REC		79-122		SW8260B	02/01/18 19:12 / jrj
Surr: p-Bromofluorobenzene	91.0	%REC		76-127		SW8260B	02/01/18 19:12 / jrj
VOCS BY MICROEXTRACTION-ECD							
1,2-Dibromoethane	ND	ug/L		0.010	0.004	SW8011	01/29/18 19:02 / mim
Surr: 1,1,1,2-Tetrachloroethane	115	%REC		70-130		SW8011	01/29/18 19:02 / mim
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	ug/L	D	2.0	30	MA-VPH	01/30/18 02:34 / jjb
Benzene	119	ug/L	*	0.50	5	MA-VPH	01/30/18 02:34 / jjb
Toluene	ND	ug/L	D	3.0	1000	MA-VPH	01/30/18 02:34 / jjb
Ethylbenzene	29	ug/L		0.50	700	MA-VPH	01/30/18 02:34 / jjb
m+p-Xylenes	ND	ug/L	D	15		MA-VPH	01/30/18 02:34 / jjb
o-Xylene	ND	ug/L	D	3.0		MA-VPH	01/30/18 02:34 / jjb
Xylenes, Total	ND	ug/L	D	15	10000	MA-VPH	01/30/18 02:34 / jjb
Naphthalene	7.5	ug/L		1.0	100	MA-VPH	01/30/18 02:34 / jjb
C9 to C10 Aromatics	174	ug/L		20	1100	MA-VPH	01/30/18 02:34 / jjb
C5 to C8 Aliphatics	783	ug/L	*	20	650	MA-VPH	01/30/18 02:34 / jjb
C9 to C12 Aliphatics	253	ug/L		20	1400	MA-VPH	01/30/18 02:34 / jjb
Total Purgeable Hydrocarbons	1140	ug/L		20		MA-VPH	01/30/18 02:34 / jjb
Surr: VPH Aromatics Surrogate	133	%REC	S	70-130		MA-VPH	01/30/18 02:34 / jjb
Surr: VPH Aliphatics Surrogate	194	%REC	S	70-130		MA-VPH	01/30/18 02:34 / jjb

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.
- S=The Surrogate recovery was outside QC advisory limits due to positive sample matrix interference.

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN							
Total Extractable Hydrocarbons	5530	ug/L	*	303	1000	SW8015M	01/26/18 17:48 / amn
Surr: o-Terphenyl	68.0	%REC		40-140		SW8015M	01/26/18 17:48 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

EXTRACTABLE PETROLEUM HYDROCARBONS							
C9 to C18 Aliphatics	ND	ug/L		303	1400	MA-EPH	02/02/18 00:34 / amn
C19 to C36 Aliphatics	ND	ug/L		303	1000	MA-EPH	02/02/18 00:34 / amn
Surr: 1-Chloro-octadecane	63.0	%REC		40-140		MA-EPH	02/02/18 00:34 / amn
C11 to C22 Aromatics	ND	ug/L		303	1100	MA-EPH	02/02/18 01:25 / amn
Total Extractable Hydrocarbons	ND	ug/L		303	1000	MA-EPH	02/02/18 01:25 / amn
Surr: 2-Bromonaphthalene	96.0	%REC		40-140		MA-EPH	02/02/18 01:25 / amn
Surr: 2-Fluorobiphenyl	87.0	%REC		40-140		MA-EPH	02/02/18 01:25 / amn
Surr: o-Terphenyl	74.0	%REC		40-140		MA-EPH	02/02/18 01:25 / amn

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.
- A significant portion of the hydrocarbons measured in the EPH Screening analysis were not recovered from the silica gel fractionation cartridge. Silica gel can act as a cleanup media for non-petroleum hydrocarbons.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
* - The result exceeds the MCL.
S - Spike recovery outside of advisory limits.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
D - RL increased due to sample matrix.

LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.00 PH11 Former Lee Anns Motel
Lab ID: B18011733-005
Client Sample ID: TripBlank Lot121817 B-JLB SHP0271

Report Date: 02/06/18
Collection Date: 01/20/18
DateReceived: 01/24/18
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PETROLEUM HYDROCARBONS-VOLATILE							
Methyl tert-butyl ether (MTBE)	ND	ug/L		1.0	30	MA-VPH	01/29/18 14:46 / jjb
Benzene	ND	ug/L		0.50	5	MA-VPH	01/29/18 14:46 / jjb
Toluene	ND	ug/L		0.50	1000	MA-VPH	01/29/18 14:46 / jjb
Ethylbenzene	ND	ug/L		0.50	700	MA-VPH	01/29/18 14:46 / jjb
m+p-Xylenes	ND	ug/L		0.50		MA-VPH	01/29/18 14:46 / jjb
o-Xylene	ND	ug/L		0.50		MA-VPH	01/29/18 14:46 / jjb
Xylenes, Total	ND	ug/L		0.50	10000	MA-VPH	01/29/18 14:46 / jjb
Naphthalene	ND	ug/L		1.0	100	MA-VPH	01/29/18 14:46 / jjb
C9 to C10 Aromatics	ND	ug/L		20	1100	MA-VPH	01/29/18 14:46 / jjb
C5 to C8 Aliphatics	ND	ug/L		20	650	MA-VPH	01/29/18 14:46 / jjb
C9 to C12 Aliphatics	ND	ug/L		20	1400	MA-VPH	01/29/18 14:46 / jjb
Total Purgeable Hydrocarbons	ND	ug/L		20		MA-VPH	01/29/18 14:46 / jjb
Surr: VPH Aromatics Surrogate	92.0	%REC		70-130		MA-VPH	01/29/18 14:46 / jjb
Surr: VPH Aliphatics Surrogate	96.0	%REC		70-130		MA-VPH	01/29/18 14:46 / jjb

- Note 1: The C5 to C8 Aliphatics value is corrected for aromatic constituents Benzene and Toluene.
- Note 2: The C9 to C12 Aliphatics value is corrected for aromatic constituents Ethylbenzene, m+p-Xylenes, o-Xylene and C9 to C10 Aromatics.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8011								Analytical Run: 117974	
Lab ID: CK3-117974	Continuing Calibration Verification Standard							01/29/18 15:58	
1,2-Dibromoethane	0.109	ug/L	0.010	109	70	130			
Surr: 1,1,1,2-Tetrachloroethane			0.020	102	70	130			
Lab ID: CK5-117974	Continuing Calibration Verification Standard							01/29/18 21:13	
1,2-Dibromoethane	0.386	ug/L	0.010	97	70	130			
Surr: 1,1,1,2-Tetrachloroethane			0.020	93	70	130			
Method: SW8011								Batch: 117974	
Lab ID: LCS-117974	Laboratory Control Sample				Run: AECD.I_180129B			01/29/18 16:24	
1,2-Dibromoethane	0.255	ug/L	0.010	102	60	140			
Surr: 1,1,1,2-Tetrachloroethane			0.020	99	70	130			
Lab ID: LCS1-117974	Laboratory Control Sample				Run: AECD.I_180129B			01/29/18 16:51	
1,2-Dibromoethane	0.108	ug/L	0.010	108	60	140			
Surr: 1,1,1,2-Tetrachloroethane			0.020	102	70	130			
Lab ID: MB-117974	Method Blank				Run: AECD.I_180129B			01/29/18 17:18	
1,2-Dibromoethane	ND	ug/L	0.010						
Surr: 1,1,1,2-Tetrachloroethane			0.020	100	70	130			
Lab ID: B18011733-001CMS	Sample Matrix Spike				Run: AECD.I_180129B			01/29/18 19:54	
1,2-Dibromoethane	0.250	ug/L	0.010	100	60	140			
Surr: 1,1,1,2-Tetrachloroethane			0.020	230	70	130			S
-The high recovery of 1,1,1,2-Tetrachloroethane surrogate is attributed to co-eluting interference.									
Lab ID: B18011733-001CMSD	Sample Matrix Spike Duplicate				Run: AECD.I_180129B			01/29/18 20:20	
1,2-Dibromoethane	0.248	ug/L	0.010	99	60	140	1.1	40	
Surr: 1,1,1,2-Tetrachloroethane			0.020	223	70	130			S
-The high recovery of 1,1,1,2-Tetrachloroethane surrogate is attributed to co-eluting interference.									

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B								Analytical Run: R294040	
Lab ID: ccv020118	Continuing Calibration Verification Standard							02/01/18 09:45	
1,2-Dichloroethane	5.25	ug/L	0.50	105	70	130			
Surr: 1,2-Dichloroethane-d4			0.50	97	70	130			
Surr: Dibromofluoromethane			0.50	91	77	126			
Surr: p-Bromofluorobenzene			0.50	93	76	127			
Surr: Toluene-d8			0.50	92	79	122			
Method: SW8260B								Batch: R294040	
Lab ID: lcs020118	Laboratory Control Sample				Run: 5971A.I_180201A			02/01/18 10:52	
1,2-Dichloroethane	5.13	ug/L	0.50	103	57	146			
Surr: 1,2-Dichloroethane-d4			0.50	100	70	130			
Surr: Dibromofluoromethane			0.50	93	77	126			
Surr: p-Bromofluorobenzene			0.50	91	76	127			
Surr: Toluene-d8			0.50	92	79	122			
Lab ID: blk020118	Method Blank				Run: 5971A.I_180201A			02/01/18 11:51	
1,2-Dichloroethane	ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4			0.50	100	70	130			
Surr: Dibromofluoromethane			0.50	92	77	126			
Surr: p-Bromofluorobenzene			0.50	93	76	127			
Surr: Toluene-d8			0.50	94	79	122			
Lab ID: b18020039-001ams	Sample Matrix Spike				Run: 5971A.I_180201A			02/01/18 20:11	
1,2-Dichloroethane	275	ug/L	25	110	57	146			
Surr: 1,2-Dichloroethane-d4			25	103	70	130			
Surr: Dibromofluoromethane			25	94	77	126			
Surr: p-Bromofluorobenzene			25	94	76	127			
Surr: Toluene-d8			25	94	79	122			
Lab ID: b18020039-001amsd	Sample Matrix Spike Duplicate				Run: 5971A.I_180201A			02/01/18 20:40	
1,2-Dichloroethane	264	ug/L	25	106	57	146	3.8	20	
Surr: 1,2-Dichloroethane-d4			25	103	70	130			
Surr: Dibromofluoromethane			25	94	77	126			
Surr: p-Bromofluorobenzene			25	94	76	127			
Surr: Toluene-d8			25	94	79	122			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-VPH									Analytical Run: R294060
Lab ID: CCV_0129VAR04r-W	Continuing Calibration Verification Standard								01/29/18 11:13
1,2,4-Trimethylbenzene	23.3	ug/L	1.0	93	75	125			
2,2,4-Trimethylpentane	24.5	ug/L	1.0	98	75	125			
2-Methylpentane	25.8	ug/L	1.0	103	75	125			
n-Butylcyclohexane	23.3	ug/L	1.0	93	75	125			
n-Decane	23.7	ug/L	1.0	95	75	125			
Methyl tert-butyl ether (MTBE)	23.0	ug/L	1.0	92	75	125			
Benzene	23.6	ug/L	0.50	94	75	125			
Toluene	23.2	ug/L	0.50	93	75	125			
Ethylbenzene	23.3	ug/L	0.50	93	75	125			
m+p-Xylenes	47.4	ug/L	0.50	95	75	125			
o-Xylene	23.4	ug/L	0.50	93	75	125			
Naphthalene	21.9	ug/L	1.0	88	75	125			
n-Pentane	26.5	ug/L	1.0	106	75	125			
Surr: VPH Aromatics Surrogate			1.0	91	75	125			
Surr: VPH Aliphatics Surrogate			1.0	95	75	125			
Lab ID: CCV_0129VAR44r-W	Continuing Calibration Verification Standard								01/30/18 10:54
1,2,4-Trimethylbenzene	23.5	ug/L	1.0	94	75	125			
2,2,4-Trimethylpentane	25.2	ug/L	1.0	101	75	125			
2-Methylpentane	25.5	ug/L	1.0	102	75	125			
n-Butylcyclohexane	24.4	ug/L	1.0	98	75	125			
n-Decane	23.9	ug/L	1.0	96	75	125			
Methyl tert-butyl ether (MTBE)	23.7	ug/L	1.0	95	75	125			
Benzene	23.6	ug/L	0.50	94	75	125			
Toluene	23.3	ug/L	0.50	93	75	125			
Ethylbenzene	23.8	ug/L	0.50	95	75	125			
m+p-Xylenes	47.9	ug/L	0.50	96	75	125			
o-Xylene	23.6	ug/L	0.50	94	75	125			
Naphthalene	23.4	ug/L	1.0	93	75	125			
n-Pentane	25.9	ug/L	1.0	103	75	125			
Surr: VPH Aromatics Surrogate			1.0	92	75	125			
Surr: VPH Aliphatics Surrogate			1.0	95	75	125			
Method: MA-VPH									Batch: R294060
Lab ID: LCS_0129VAR05r	Laboratory Control Sample				Run: VARIAN1_180129A				01/29/18 11:49
1,2,4-Trimethylbenzene	24.7	ug/L	1.0	99	70	130			
2,2,4-Trimethylpentane	25.6	ug/L	1.0	103	70	130			
2-Methylpentane	26.2	ug/L	1.0	105	70	130			
n-Butylcyclohexane	26.1	ug/L	1.0	104	70	130			
n-Decane	24.9	ug/L	1.0	100	70	130			
Methyl tert-butyl ether (MTBE)	23.8	ug/L	1.0	95	70	130			
Benzene	24.5	ug/L	0.50	98	70	130			
Toluene	23.7	ug/L	0.50	95	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-VPH									Batch: R294060
Lab ID: LCS_0129VAR05r	Laboratory Control Sample				Run: VARIAN1_180129A				01/29/18 11:49
Ethylbenzene	24.2	ug/L	0.50	97	70	130			
m+p-Xylenes	49.4	ug/L	0.50	99	70	130			
o-Xylene	24.4	ug/L	0.50	98	70	130			
Naphthalene	23.2	ug/L	1.0	93	70	130			
Total Purgeable Hydrocarbons	382	ug/L	20	102	70	130			
n-Pentane	26.2	ug/L	1.0	105	70	130			
Surr: VPH Aromatics Surrogate			1.0	94	70	130			
Surr: VPH Aliphatics Surrogate			1.0	97	70	130			
Lab ID: MBLK_0129VAR08r	Method Blank				Run: VARIAN1_180129A				01/29/18 13:35
Methyl tert-butyl ether (MTBE)	ND	ug/L	1.0						
Benzene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Xylenes, Total	ND	ug/L	0.50						
Naphthalene	ND	ug/L	1.0						
C9 to C10 Aromatics	ND	ug/L	20						
C5 to C8 Aliphatics	ND	ug/L	20						
C9 to C12 Aliphatics	ND	ug/L	20						
Total Purgeable Hydrocarbons	ND	ug/L	20						
Surr: VPH Aromatics Surrogate			1.0	89	70	130			
Surr: VPH Aliphatics Surrogate			1.0	93	70	130			
Lab ID: LCS_0129VAR45r	Laboratory Control Sample				Run: VARIAN1_180129A				01/30/18 11:30
1,2,4-Trimethylbenzene	23.5	ug/L	1.0	94	70	130			
2,2,4-Trimethylpentane	24.9	ug/L	1.0	100	70	130			
2-Methylpentane	25.1	ug/L	1.0	100	70	130			
n-Butylcyclohexane	25.4	ug/L	1.0	102	70	130			
n-Decane	23.4	ug/L	1.0	94	70	130			
Methyl tert-butyl ether (MTBE)	23.2	ug/L	1.0	93	70	130			
Benzene	23.0	ug/L	0.50	92	70	130			
Toluene	22.7	ug/L	0.50	91	70	130			
Ethylbenzene	23.4	ug/L	0.50	94	70	130			
m+p-Xylenes	47.5	ug/L	0.50	95	70	130			
o-Xylene	23.4	ug/L	0.50	93	70	130			
Naphthalene	22.6	ug/L	1.0	90	70	130			
Total Purgeable Hydrocarbons	369	ug/L	20	98	70	130			
n-Pentane	24.5	ug/L	1.0	98	70	130			
Surr: VPH Aromatics Surrogate			1.0	92	70	130			
Surr: VPH Aliphatics Surrogate			1.0	98	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-VPH									Batch: R294060
Lab ID: MBLK_0129VAR48r	Method Blank				Run: VARIAN1_180129A				01/30/18 13:15
Methyl tert-butyl ether (MTBE)	ND	ug/L	1.0						
Benzene	ND	ug/L	0.50						
Toluene	ND	ug/L	0.50						
Ethylbenzene	ND	ug/L	0.50						
m+p-Xylenes	ND	ug/L	0.50						
o-Xylene	ND	ug/L	0.50						
Xylenes, Total	ND	ug/L	0.50						
Naphthalene	ND	ug/L	1.0						
C9 to C10 Aromatics	ND	ug/L	20						
C5 to C8 Aliphatics	ND	ug/L	20						
C9 to C12 Aliphatics	ND	ug/L	20						
Total Purgeable Hydrocarbons	ND	ug/L	20						
Surr: VPH Aromatics Surrogate			1.0	94	70	130			
Surr: VPH Aliphatics Surrogate			1.0	97	70	130			
Lab ID: B18011721-001AMS	Sample Matrix Spike				Run: VARIAN1_180129A				01/30/18 13:50
Methyl tert-butyl ether (MTBE)	22.4	ug/L	1.0	89	70	130			
Benzene	22.4	ug/L	0.50	90	70	130			
Toluene	22.3	ug/L	0.50	89	70	130			
Ethylbenzene	23.0	ug/L	0.50	92	70	130			
m+p-Xylenes	46.8	ug/L	0.50	94	70	130			
o-Xylene	23.0	ug/L	0.50	92	70	130			
Naphthalene	21.4	ug/L	1.0	86	70	130			
Total Purgeable Hydrocarbons	356	ug/L	20	95	70	130			
Surr: VPH Aromatics Surrogate			1.0	90	70	130			
Surr: VPH Aliphatics Surrogate			1.0	91	70	130			
Lab ID: B18011721-001AMSD	Sample Matrix Spike Duplicate				Run: VARIAN1_180129A				01/30/18 14:25
Methyl tert-butyl ether (MTBE)	22.6	ug/L	1.0	90	70	130	0.9	20	
Benzene	22.6	ug/L	0.50	90	70	130	0.7	20	
Toluene	22.2	ug/L	0.50	89	70	130	0.4	20	
Ethylbenzene	23.0	ug/L	0.50	92	70	130	0.1	20	
m+p-Xylenes	46.8	ug/L	0.50	94	70	130	0.0	20	
o-Xylene	23.1	ug/L	0.50	92	70	130	0.2	20	
Naphthalene	22.4	ug/L	1.0	90	70	130	4.6	20	
Total Purgeable Hydrocarbons	359	ug/L	20	96	70	130	0.9	20	
Surr: VPH Aromatics Surrogate			1.0	89	70	130			
Surr: VPH Aliphatics Surrogate			1.0	90	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MW-1

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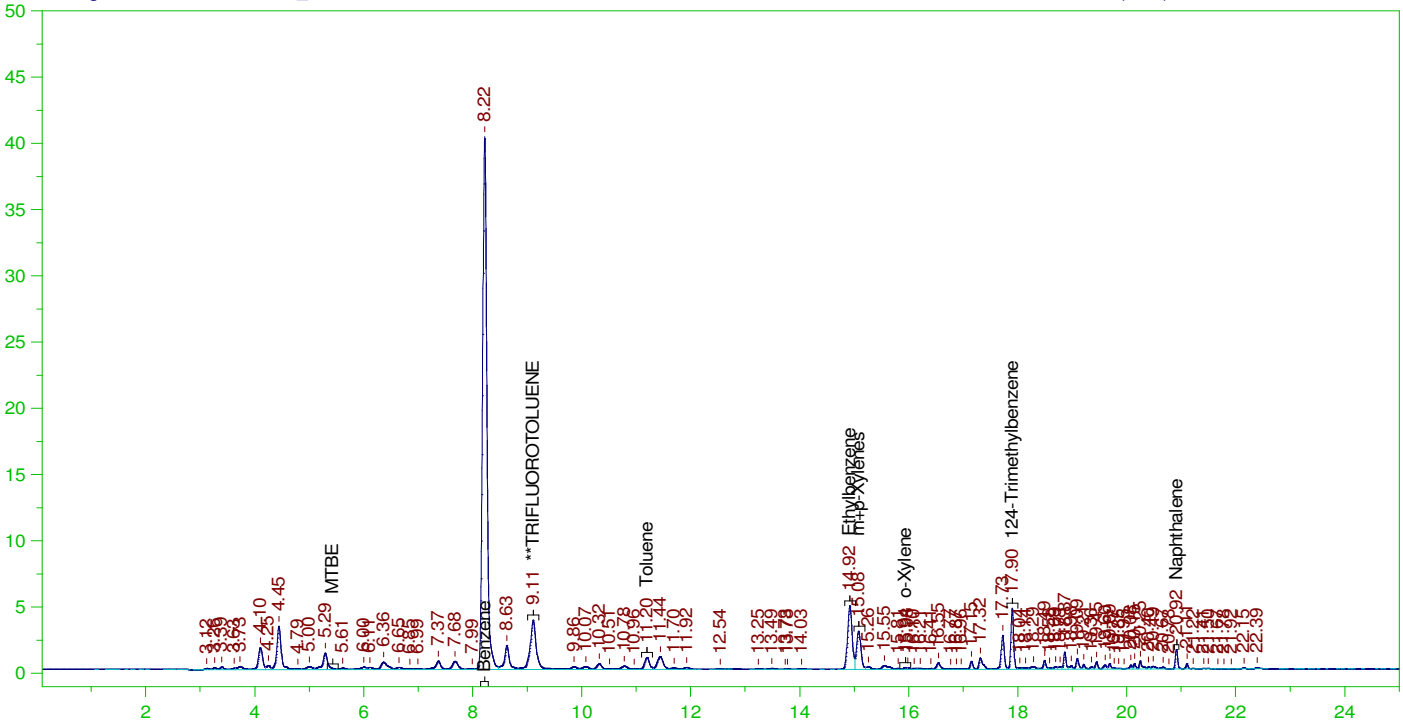


VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

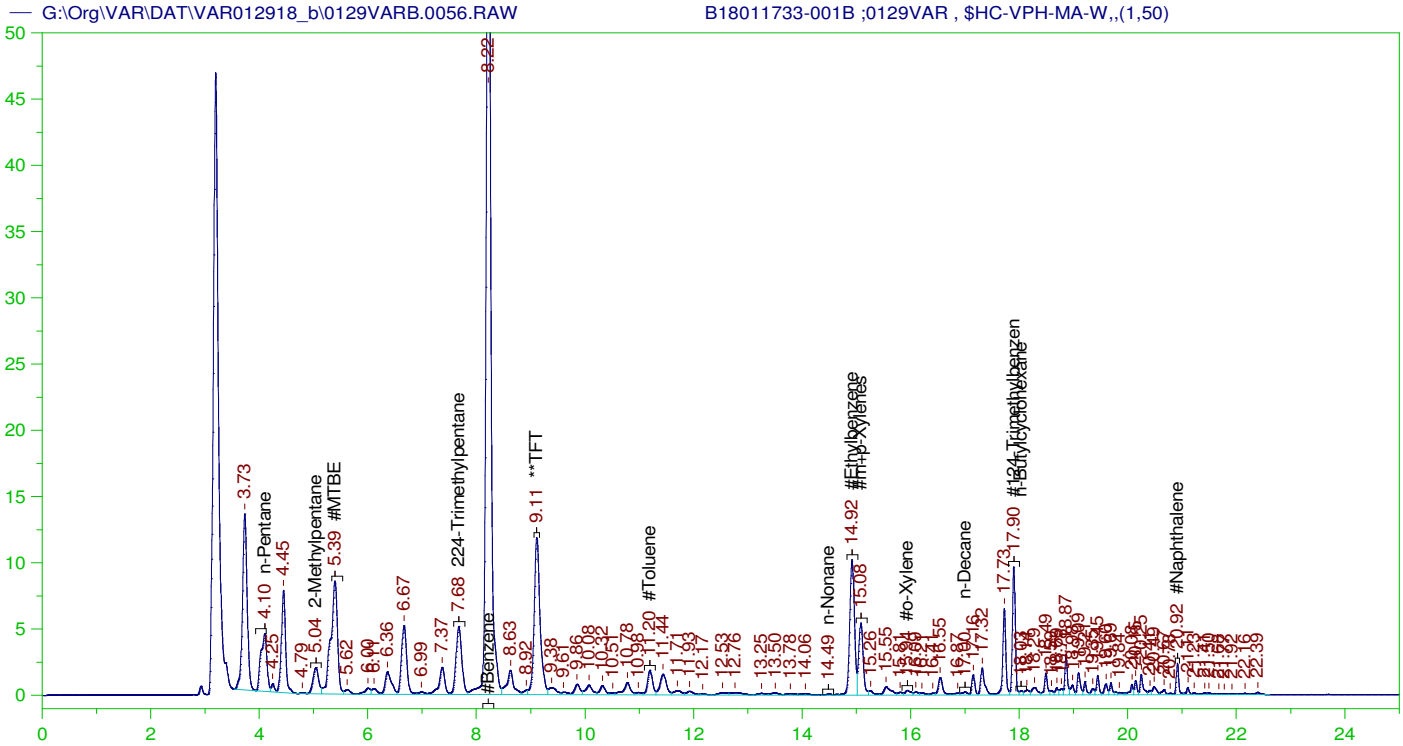
Sample Name: B18011733-001B ;0129VAR , $HC-VPH-MA-W,,(1,50)
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VAR.0056.RAW
Date & Time Acquired: 1/30/2018 5:58:06 PM
Method File: G:\Org\VAR\Methods\180105V17331%.MET
Calibration File: G:\Org\VAR\Cals\180105VPH.CAL
Sample Weight: 5 Dilution: 50 S.A.: 50

Mean RF for C9 to C10 Aromatic Hydrocarbons: 476.5201
Rt range for C9 to C10 Aromatics: 16.036 to 20.874
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:67597.84 C9-C10 Aromatics Amount: 1418.573

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		50.	U
Benzene	8.22	.892	.891	222442	3607.183	
Toluene	11.198	-2.087	-2.087	5896	106.445	
Ethylbenzene	14.923	-5.817	-5.812	28648	609.513	
m+p-Xylenes	15.084	-5.985	-5.974	16395	297.55	
o-Xylene	15.942	15.942	15.942	580	25.	U
124-Trimethylbenzene	17.903	-8.793	-8.792	16496	347.708	
Naphthalene	20.917	-11.804	-11.806	4373	100.465	

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	9.111	1250.	1552.07	124.17	70-130

MW-1



VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-001B ;0129VAR , $HC-VPH-MA-W,,(1,50)
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Date & Time Acquired: 1/30/2018 5:58:06 PM
Method File: G:\Org\VAR\Methods\180105V17331B%.MET
Calibration File: G:\Org\VAR\Cals\180105VPHB.CAL
Sample Weight: 5 Dilution: 50 S.A.: 50

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 633.1379
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 608.7612
Mean RF for all calibrated compounds: 784.5927
Rt range for Gasoline Range Organics: 4.946 to 17.103
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.929 to 14.378
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.428 to 20.875

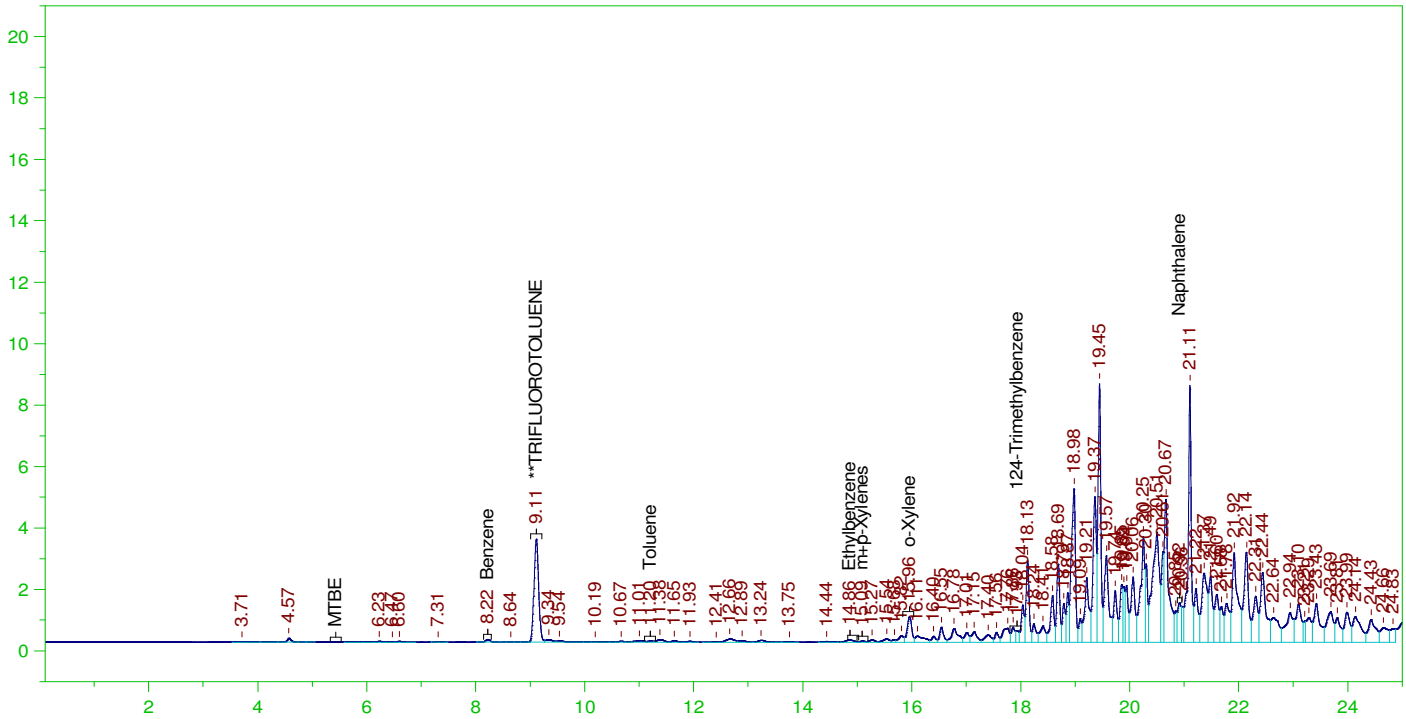
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
**TFT	9.114	1250.	1522.577	121.81	-

GRO Area:817442.4 GRO Amount: 10418.69
TPH Area:1149801 TPH Amount: 14654.75

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:778211.2 C5-C8 Amount: 12291.34
C9-C12 Area:275787.2 C9-C12 Amount: 4530.301

MW-2

G:\Org\VAR\DAT\VAR012918_b\0129VAR.0059.RAW B18011733-002B ;0129VAR , $HC-VPH-MA-W,



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-002B ;0129VAR , $HC-VPH-MA-W,
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VAR.0059.RAW
Date & Time Acquired: 1/30/2018 7:43:18 PM
Method File: G:\Org\VAR\Methods\180105V17332%.MET
Calibration File: G:\Org\VAR\Cals\180105VPH.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 476.5201
Rt range for C9 to C10 Aromatics: 16.036 to 20.874
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:317586.8 C9-C10 Aromatics Amount: 133.2942

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		1.	U
Benzene	8.219	8.219	8.219	585	.5	U
Toluene	11.205	11.205	11.205	252	.5	U
Ethylbenzene	14.864	14.864	14.864	675	.5	U
m+p-Xylenes	15.094	15.094	15.094	197	.5	U
o-Xylene	15.962	-6.826	-6.849	4956	~~2.071~~	<3.0 JJB 2/1/18
124-Trimethylbenzene	17.935	-8.793	-8.822	1341	.565	
Naphthalene	20.916	-11.804	-11.803	5599	~~2.572~~	No JJB 2/1/18

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	9.113	25.	21.017	84.07	70-130

MW-2

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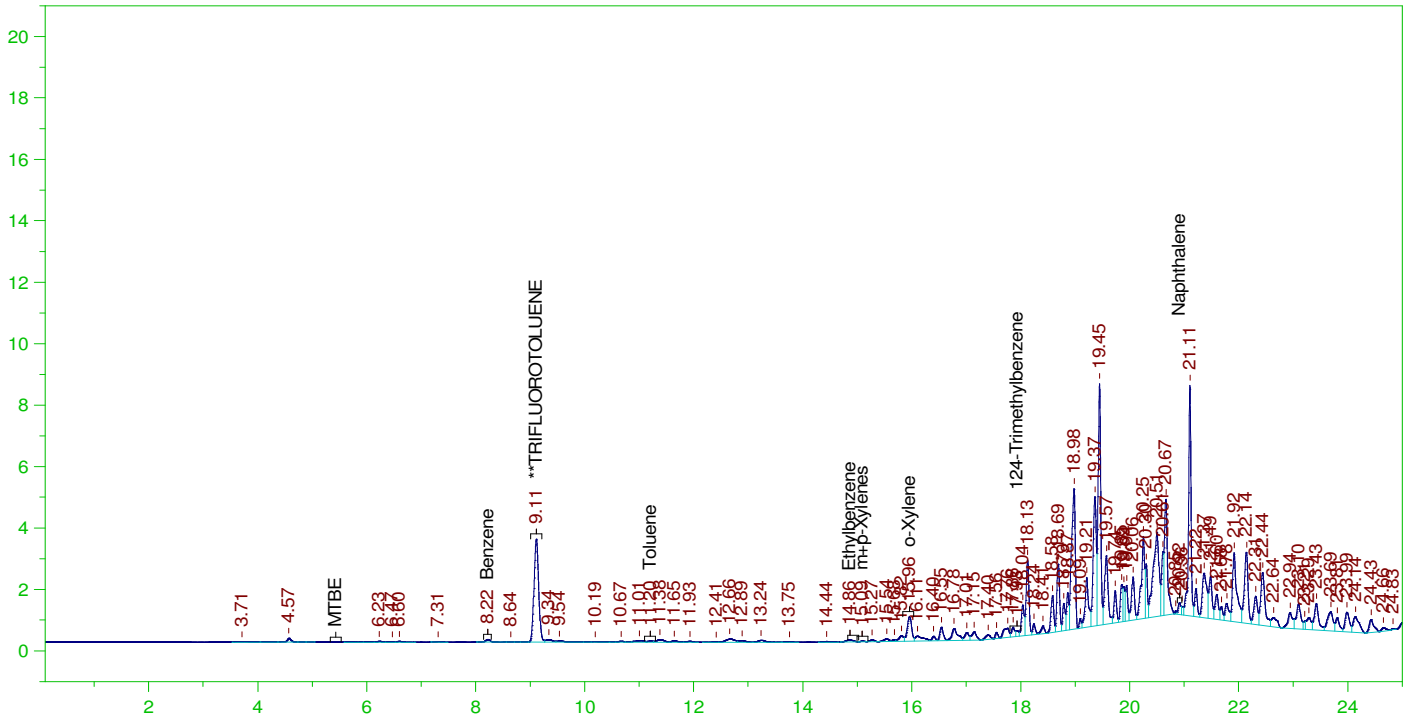

VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-002B ;0129VAR , $HC-VPH-MA-W,
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VAR.0059.RAW
Date & Time Acquired: 1/30/2018 7:43:18 PM
Method File: G:\Org\VAR\Methods\180105V17332AN%.MET
Calibration File: G:\Org\VAR\Cals\180105VPH.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 476.5201
Rt range for C9 to C10 Aromatics: 16.036 to 20.874
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:212237.8 C9-C10 Aromatics Amount: 89.0782

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
~~MTBE~~	.	.	.		~~1.~~	~~U~~
~~Benzene~~	~~8.219~~	~~8.219~~	~~8.219~~	~~585~~	~~.5~~	~~U~~
~~Toluene~~	~~11.205~~	~~11.205~~	~~11.205~~	~~252~~	~~.5~~	~~U~~
~~Ethylbenzene~~	~~14.864~~	~~14.864~~	~~14.864~~	~~581~~	~~.5~~	~~U~~
~~m+p Xylenes~~	~~15.094~~	~~15.094~~	~~15.094~~	~~116~~	~~.5~~	~~U~~
~~o-Xylene~~	~~15.962~~	~~-6.826~~	~~-6.849~~	~~4599~~	~~1.922~~	
~~124-Trimethylbenzene~~	~~17.935~~	~~17.935~~	~~17.935~~	~~609~~	~~.5~~	~~U~~
Naphthalene	20.916	20.916	20.916	1239	1.	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	9.113	25.	21.017	84.07	70-130

MW-2

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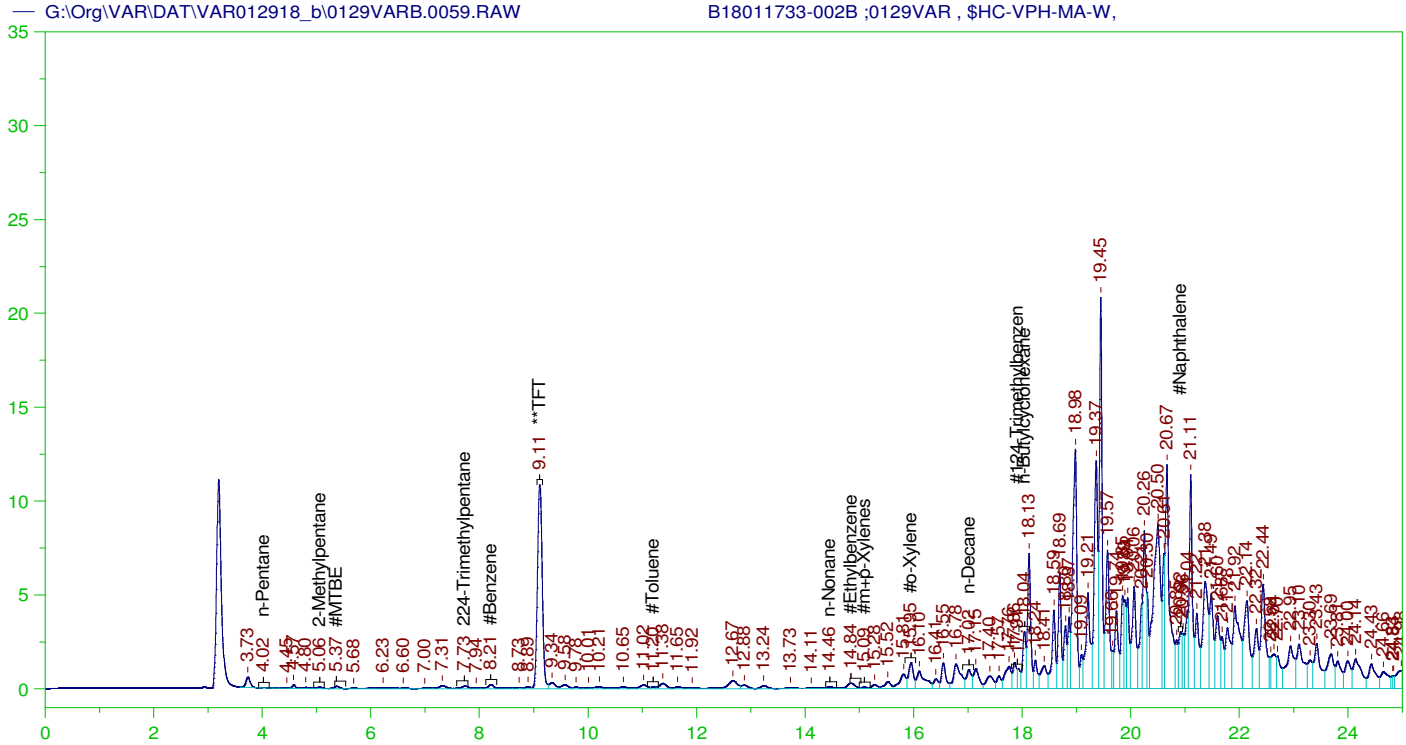


VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-002B ;0129VAR , $HC-VPH-MA-W,
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VARB.0059.RAW
Date & Time Acquired: 1/30/2018 7:43:18 PM
Method File: G:\Org\VAR\Methods\180105V17332B%.MET
Calibration File: G:\Org\VAR\Cals\180105VPHB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

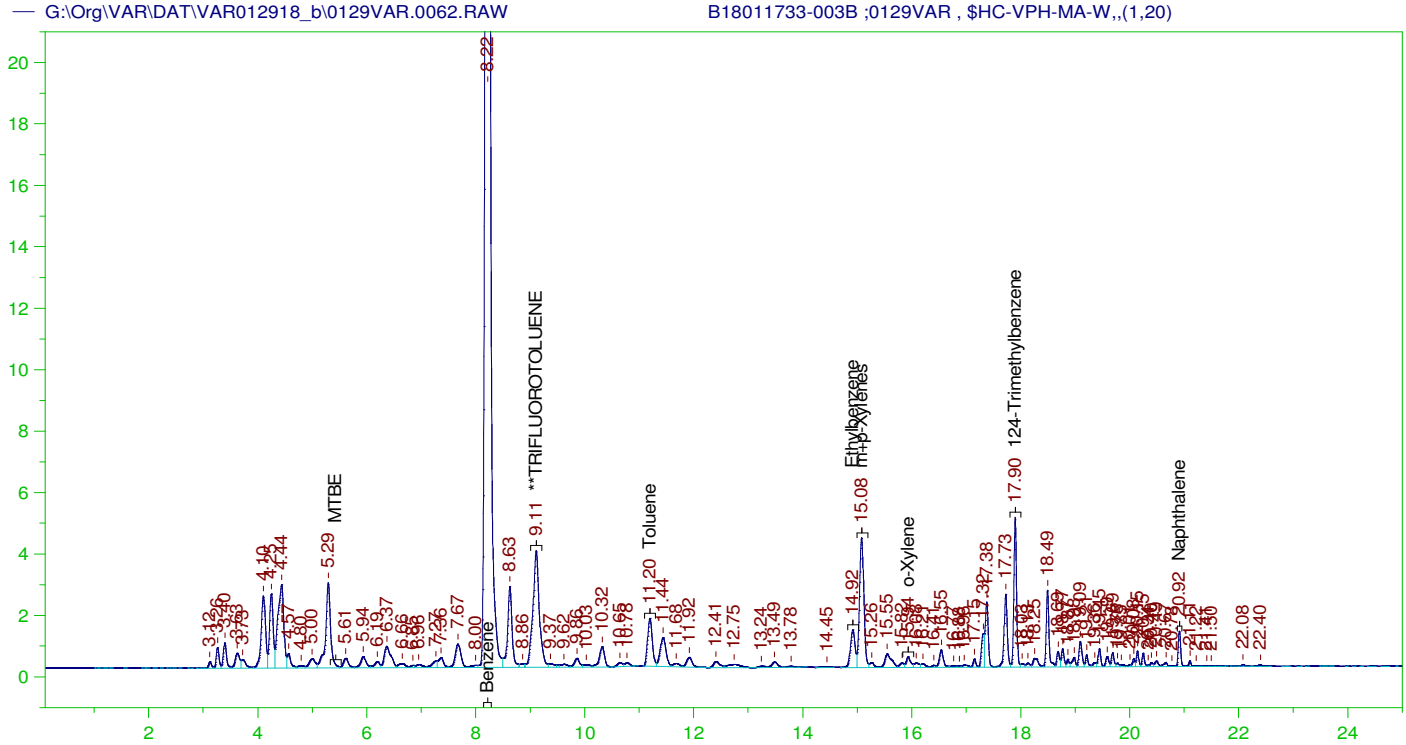
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 633.1379
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 608.7612
Mean RF for all calibrated compounds: 784.5927
Rt range for Gasoline Range Organics: 4.946 to 17.103
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.929 to 14.378
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.428 to 20.875

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC
**TFT	9.113	25.	22.718	90.87 -

GRO Area:104522.6 GRO Amount: 26.6438
TPH Area:1412544 TPH Amount: 360.0707

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:40791.66 C5-C8 Amount: 12.88555
C9-C12 Area:837085.8 C9-C12 Amount: 275.0128

MW-3



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-003B ;0129VAR , $HC-VPH-MA-W,,(1,20)
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VAR.0062.RAW
Date & Time Acquired: 1/30/2018 9:29:54 PM
Method File: G:\Org\VAR\Methods\180105VPH%.MET
Calibration File: G:\Org\VAR\Cals\180105VPH.CAL
Sample Weight: 5 Dilution: 20 S.A.: 20

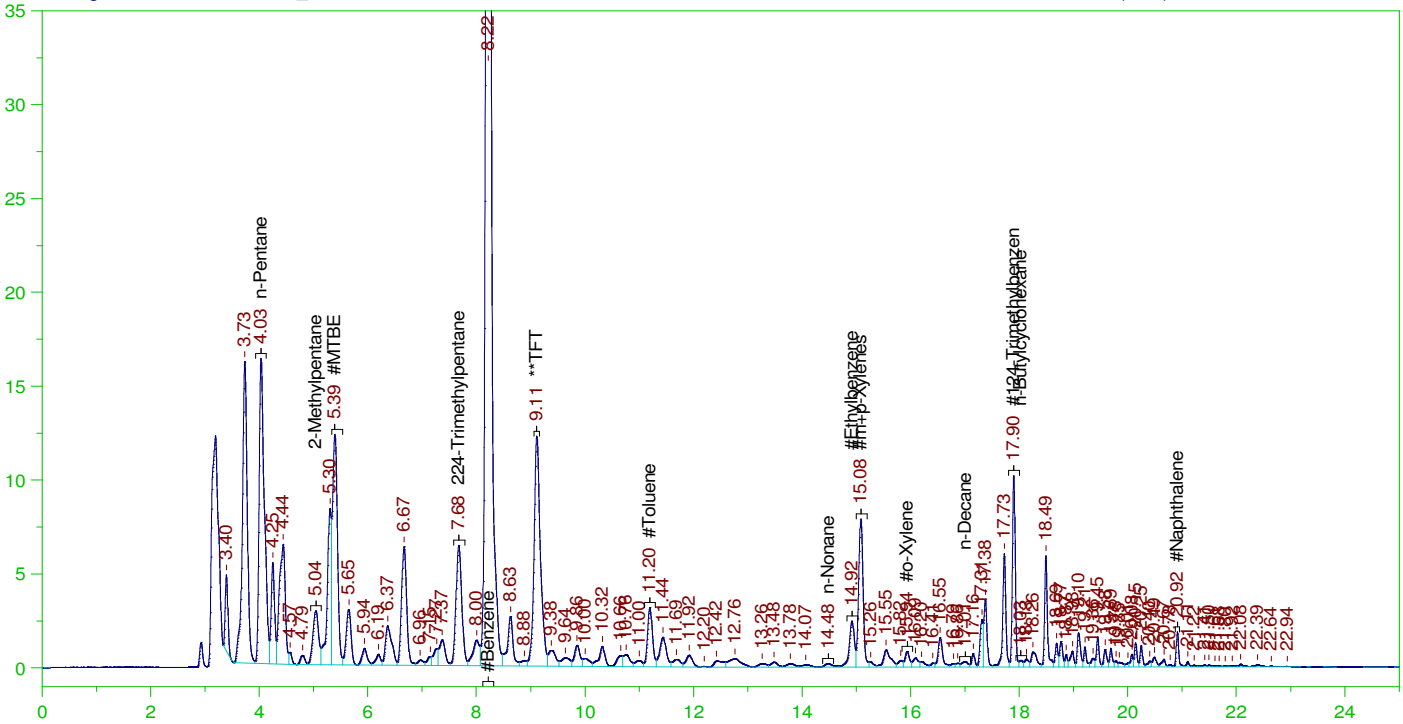
Mean RF for C9 to C10 Aromatic Hydrocarbons: 476.5201
Rt range for C9 to C10 Aromatics: 16.036 to 20.874
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:82644.25 C9-C10 Aromatics Amount: 693.7316

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		20.	U
Benzene	8.219	.892	.892	344691	2235.842	
Toluene	11.197	-2.087	-2.086	9648	69.674	
Ethylbenzene	14.922	-5.817	-5.811	7492	63.763	
m+p-Xylenes	15.084	-5.985	-5.973	23929	173.711	
o-Xylene	15.938	-6.826	-6.827	1980	16.55	
124-Trimethylbenzene	17.903	-8.793	-8.792	17383	146.558	
Naphthalene	20.916	-11.804	-11.805	3451	31.715	

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	9.111	500.	662.611	132.52	70-130

MW-3

G:\Org\VAR\DAT\VAR012918_b\0129VARB.0062.RAW B18011733-003B ;0129VAR , $HC-VPH-MA-W,,(1,20)



VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-003B ;0129VAR , $HC-VPH-MA-W,,(1,20)
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VARB.0062.RAW
Date & Time Acquired: 1/30/2018 9:29:54 PM
Method File: G:\Org\VAR\Methods\180105V17333B%.MET
Calibration File: G:\Org\VAR\Cals\180105VPHB.CAL
Sample Weight: 5 Dilution: 20 S.A.: 20

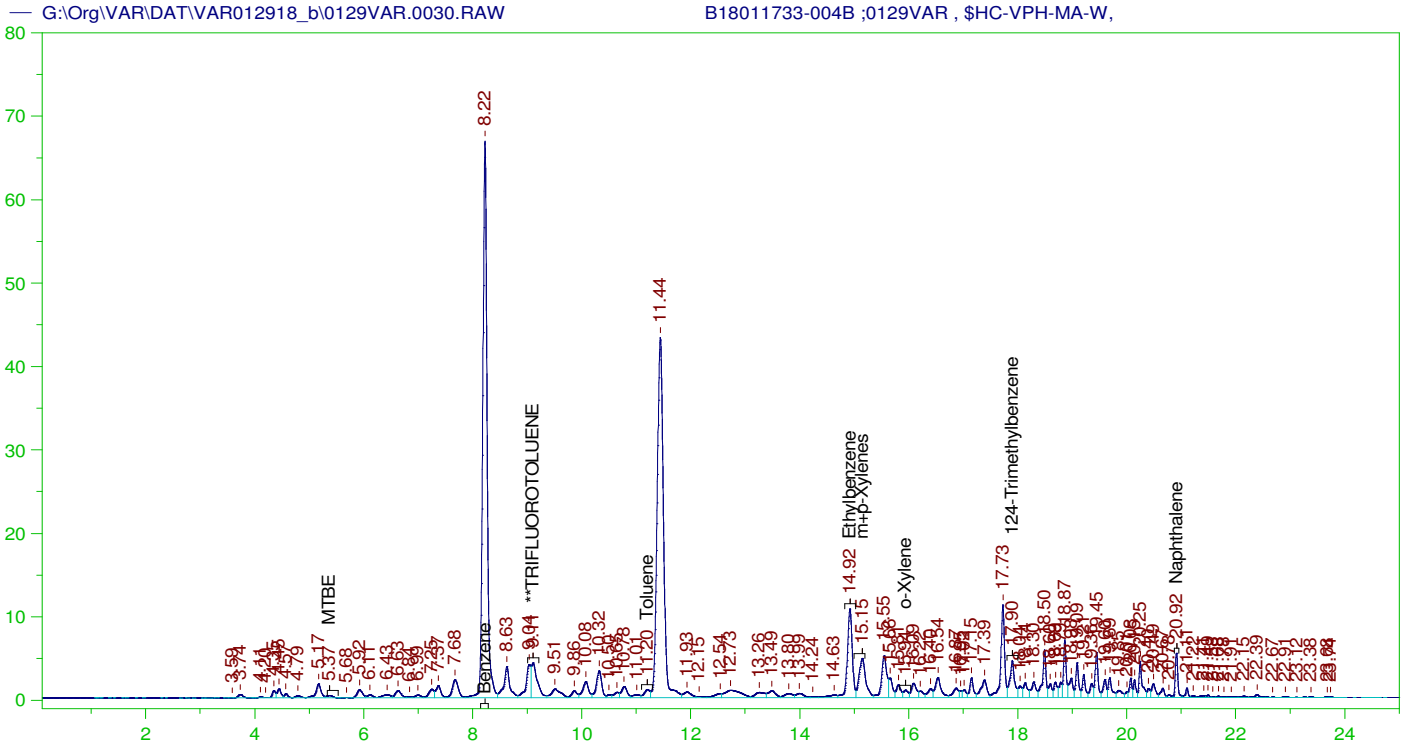
Mean RF for C5 to C8 Aliphatic Hydrocarbons: 633.1379
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 608.7612
Mean RF for all calibrated compounds: 784.5927
Rt range for Gasoline Range Organics: 4.946 to 17.103
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.929 to 14.378
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.428 to 20.875

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
**TFT	9.114	500.	678.092	135.62	-

GRO Area:1170344 GRO Amount: 5966.63
TPH Area:1673182 TPH Amount: 8530.195

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:1258705 C5-C8 Amount: 7952.169
C9-C12 Area:284326.2 C9-C12 Amount: 1868.228

MW-4



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-004B ;0129VAR , $HC-VPH-MA-W,
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VAR.0030.RAW
Date & Time Acquired: 1/30/2018 2:34:02 AM
Method File: G:\Org\VAR\Methods\180105V17334%.MET
Calibration File: G:\Org\VAR\Cals\180105VPH.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 476.5201
Rt range for C9 to C10 Aromatics: 16.036 to 20.874
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:413571 C9-C10 Aromatics Amount: 173.5797

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	5.373	3.677	3.734	2144	~~1.587~~	< 2.0 JJB 2/1/18
Benzene	8.224	.892	.883	367835	119.298	
Toluene	11.203	-2.087	-2.096	7146	~~2.58~~	< 3.0 JJB 2/1/18
Ethylbenzene	14.924	-5.817	-5.817	67195	28.593	
m+p-Xylenes	15.151	-5.985	-6.043	40298	~~14.627~~	< 15.0 JJB 2/1/18
o-Xylene	15.943	-6.826	-6.836	5205	~~2.175~~	< 3.0 JJB 2/1/18
124-Trimethylbenzene	17.905	-8.793	-8.798	26822	11.307	
Naphthalene	20.917	-11.804	-11.809	16382	7.527	

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	9.107	25.	33.373	133.49	70-130

MW-4

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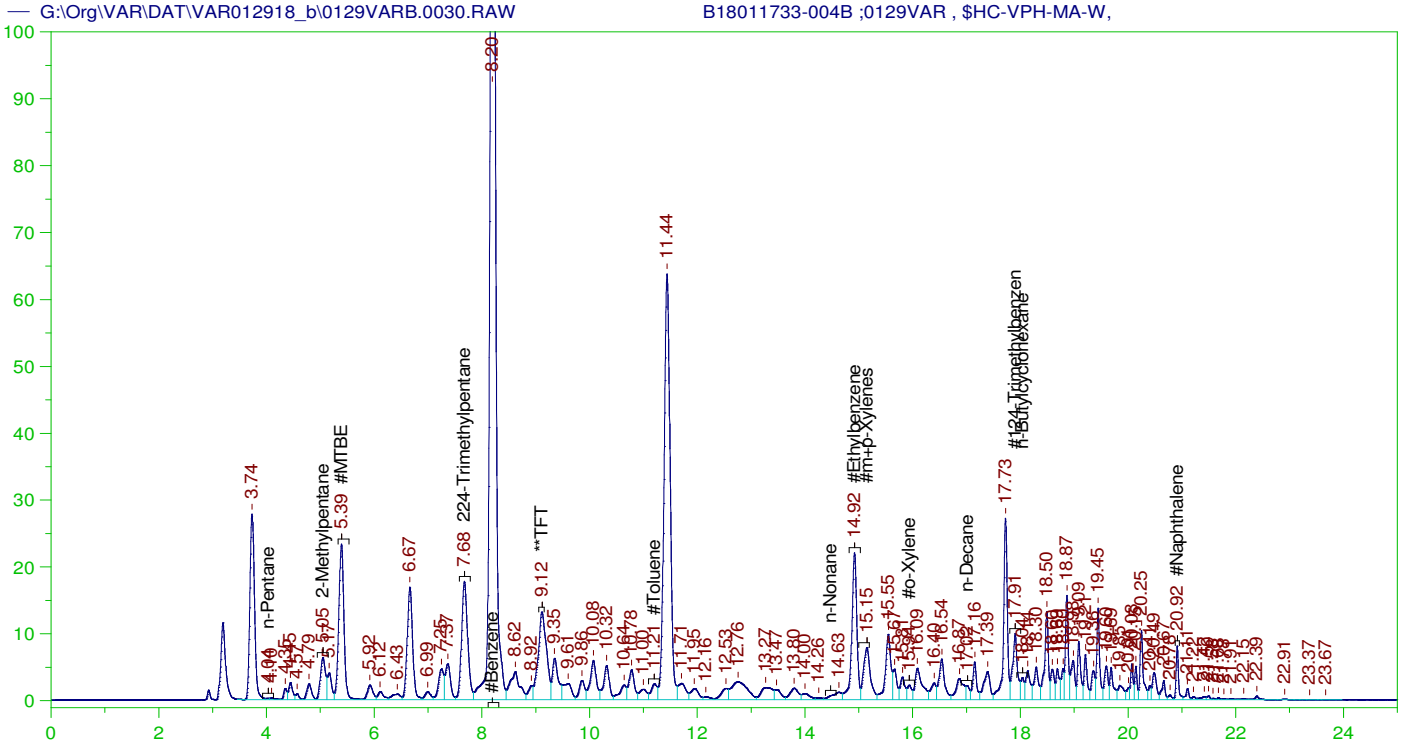


VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-004B ;0129VAR , $HC-VPH-MA-W,
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VARB.0030.RAW
Date & Time Acquired: 1/30/2018 2:34:02 AM
Method File: G:\Org\VAR\Methods\180105V17334B%.MET
Calibration File: G:\Org\VAR\Cals\180105VPHB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 633.1379
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 608.7612
Mean RF for all calibrated compounds: 784.5927
Rt range for Gasoline Range Organics: 4.946 to 17.103
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.929 to 14.378
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.428 to 20.875

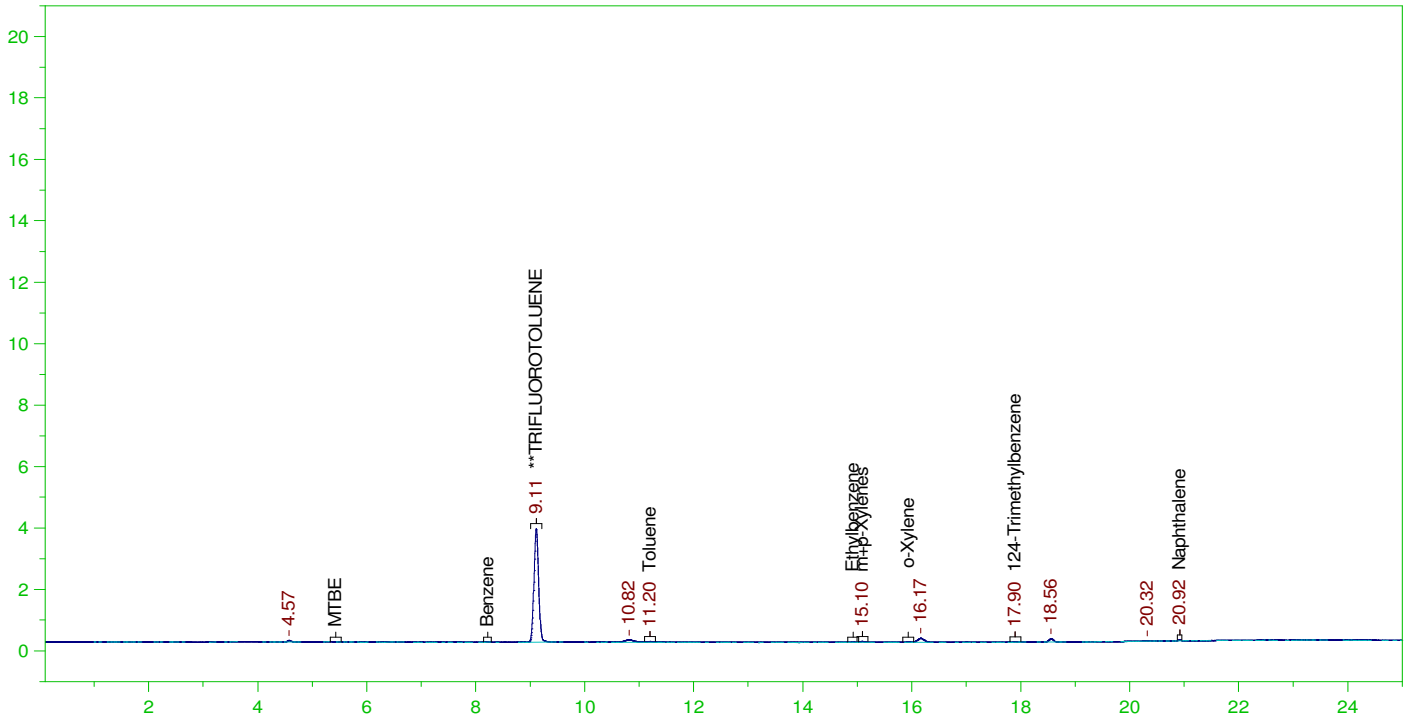
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC
**TFT	9.119	25.	48.376	193.5 -

GRO Area:3324553 GRO Amount: 847.4597
TPH Area:4463544 TPH Amount: 1137.799

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:2855288 C5-C8 Amount: 901.9481
C9-C12 Area:1386292 C9-C12 Amount: 455.4468

TripBlank Lot121817 B-JLB SHP0271

— G:\Org\VAR\DAT\VAR012918_b\0129VAR.0010.RAW B18011733-005A ;0129VAR , $HC-VPH-MA-W,



VPH AROMATICS PHOTOIONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-005A ;0129VAR , $HC-VPH-MA-W,
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VAR.0010.RAW
Date & Time Acquired: 1/29/2018 2:46:37 PM
Method File: G:\Org\VAR\Methods\180105VPH%.MET
Calibration File: G:\Org\VAR\Cals\180105VPH.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Mean RF for C9 to C10 Aromatic Hydrocarbons: 476.5201
Rt range for C9 to C10 Aromatics: 16.036 to 20.874
Aromatic Hydrocarbon Range Area and Quantitation:
C9-C10 Aromatics Area:2183.589 C9-C10 Aromatics Amount: 0.9164731

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
MTBE	.	.	.		1.	U
Benzene	.	.	.		.5	U
Toluene	11.197	11.197	11.197	162	.5	U
Ethylbenzene	.	.	.		.5	U
m+p-Xylenes	15.096	15.096	15.096	174	.5	U
o-Xylene	.	.	.		.5	U
124-Trimethylbenzene	17.901	17.901	17.901	66	.5	U
Naphthalene	20.917	20.917	20.917	117	1.	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
**TRIFLUOROTOLUENE	9.112	25.	23.119	92.48	70-130

TripBlank Lot121817 B-JLB SHP0271

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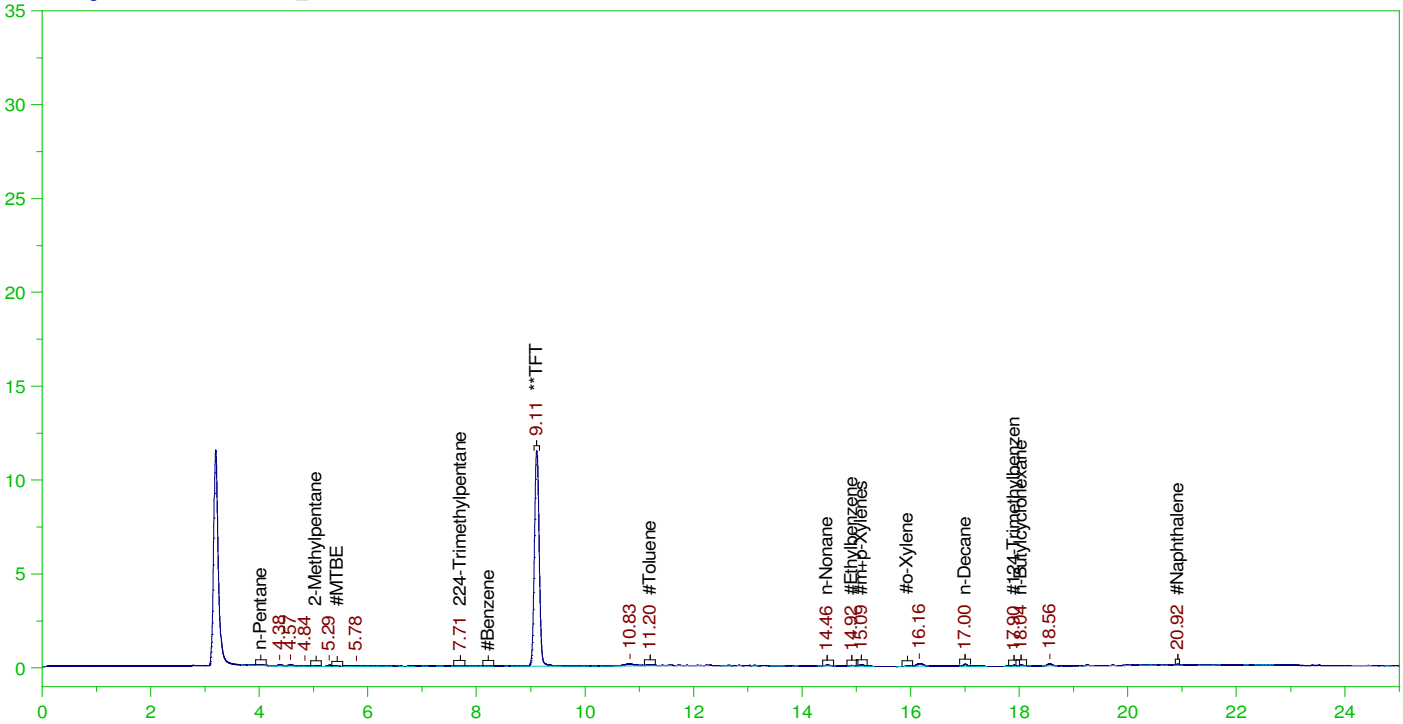

VPH ALIPHATICS FLAME IONIZATION DETECTOR CHROMATOGRAM REPORT

Sample Name: B18011733-005A ;0129VAR , $HC-VPH-MA-W,
Raw File: G:\Org\VAR\DAT\VAR012918_b\0129VARB.0010.RAW
Date & Time Acquired: 1/29/2018 2:46:37 PM
Method File: G:\Org\VAR\Methods\180105VPHB%.MET
Calibration File: G:\Org\VAR\Cals\180105VPHB.CAL
Sample Weight: 5 Dilution: 1 S.A.: 1

Mean RF for C5 to C8 Aliphatic Hydrocarbons: 633.1379
Mean RF for C9 to C12 Aliphatic Hydrocarbons: 608.7612
Mean RF for all calibrated compounds: 784.5927
Rt range for Gasoline Range Organics: 4.946 to 17.103
Rt range for C5 to C8 Aliphatic Hydrocarbons: 3.929 to 14.378
Rt range for C9 to C12 Aliphatic Hydrocarbons: 14.428 to 20.875

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
**TFT	9.112	25.	23.908	95.63	-

GRO Area:7608.898 GRO Amount: 1.939579
TPH Area:11174.77 TPH Amount: 2.848552

Aliphatic Hydrocarbon Areas and Quantitations uncorrected for Aromatics:
C5-C8 Area:5969.477 C5-C8 Amount: 1.88568
C9-C12 Area:4448.867 C9-C12 Amount: 1.461613

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields
Project: 350.0339.00 PH11 Former Lee Anns Motel

Report Date: 02/06/18
Work Order: B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8015M									Batch: 117891
Lab ID: LCS-117891	Laboratory Control Sample				Run: GCFID-HP5-B_180126A				01/26/18 10:39
Total Extractable Hydrocarbons	5250	ug/L	300	82	60	140			
Surr: o-Terphenyl				85	40	140			
Lab ID: MB-117891	Method Blank				Run: GCFID-HP5-B_180126A				01/26/18 11:22
Total Extractable Hydrocarbons	ND	ug/L	300						
Surr: o-Terphenyl				74	40	140			
Lab ID: B18011732-001DMS	Sample Matrix Spike				Run: GCFID-HP5-B_180126A				01/26/18 12:48
Total Extractable Hydrocarbons	11100	ug/L	630	84	60	140			
Surr: o-Terphenyl				85	40	140			
Lab ID: B18011732-001DMSD	Sample Matrix Spike Duplicate				Run: GCFID-HP5-B_180126A				01/26/18 13:31
Total Extractable Hydrocarbons	11000	ug/L	630	83	60	140	1.1	20	
Surr: o-Terphenyl				84	40	140			
Method: SW8015M									Analytical Run: R293761
Lab ID: CCV_0126HP503r-W	Continuing Calibration Verification Standard								01/26/18 09:14
n-Nonane	187	ug/L		93	75	125			
n-Decane	190	ug/L		95	75	125			
n-Dodecane	186	ug/L		93	75	125			
n-Tetradecane	200	ug/L		100	75	125			
n-Hexadecane	190	ug/L		95	75	125			
n-Octadecane	187	ug/L		94	75	125			
n-Nonadecane	184	ug/L		92	75	125			
n-Eicosane	189	ug/L		94	75	125			
n-Docosane	188	ug/L		94	75	125			
n-Tetracosane	186	ug/L		93	75	125			
n-Hexacosane	187	ug/L		94	75	125			
n-Octacosane	188	ug/L		94	75	125			
n-Triacontane	188	ug/L		94	75	125			
n-Hexatriacontane	184	ug/L		92	75	125			
Surr: o-Terphenyl				94	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MW-1 Batch ID: 117891

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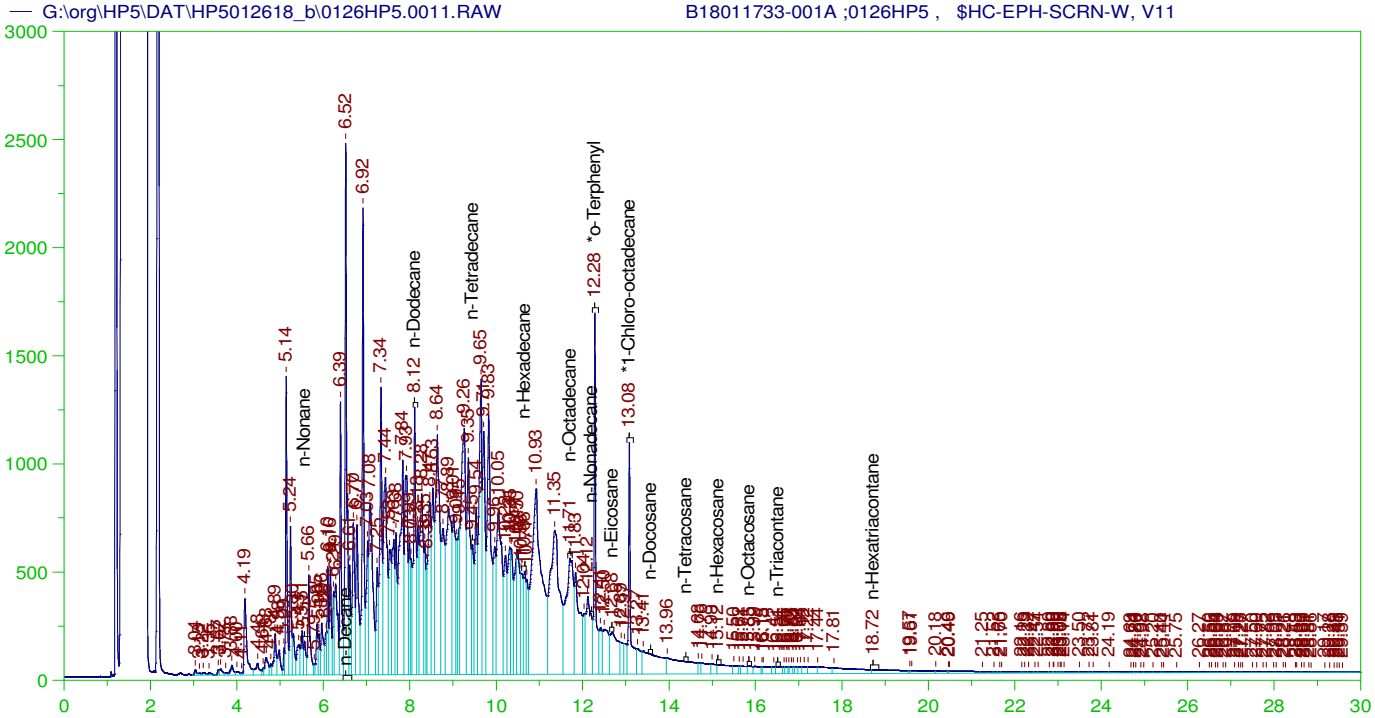


EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011733-001A ;0126HP5 , $HC-EPH-SCRN-W, V11
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0011.RAW
Date & Time Acquired: 1/26/2018 2:57:11 PM
Method File: g:\org\HP5\Methods\SR_SCN-012611-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 1 Dilution: 2 S.A.: 1

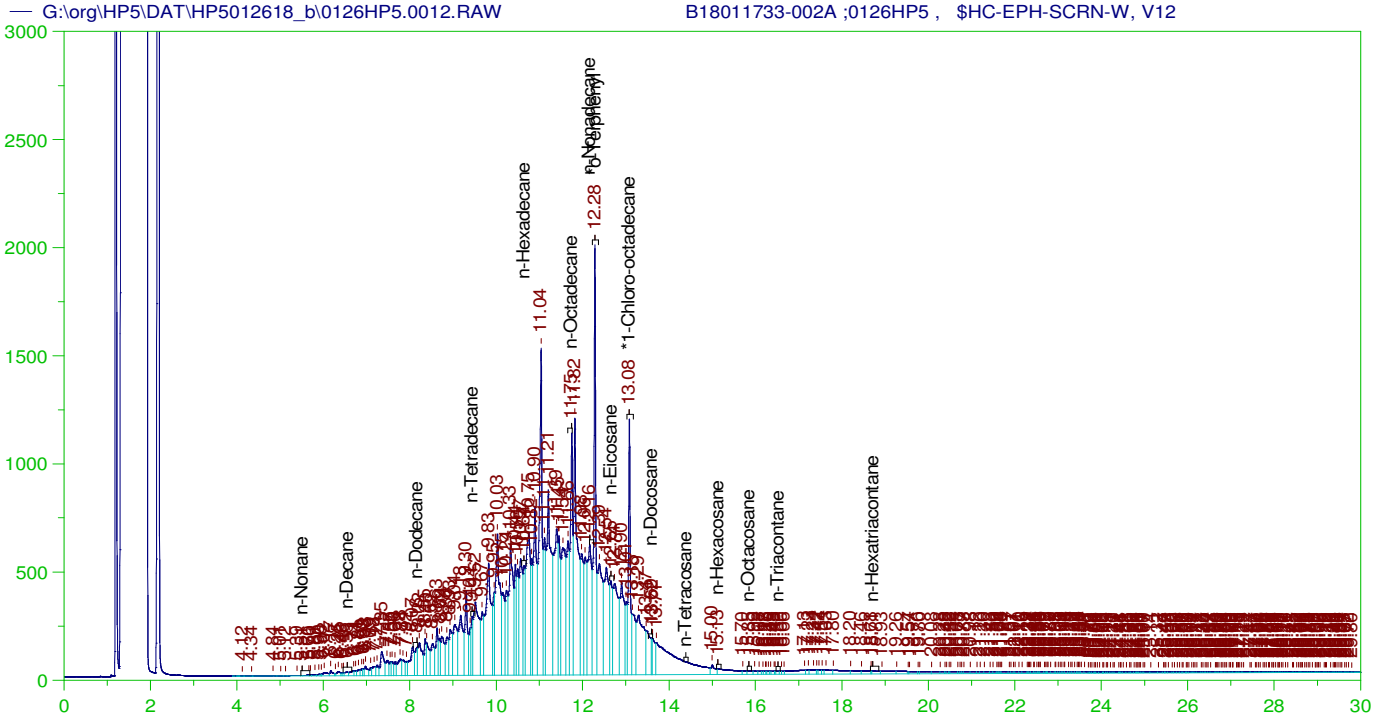
Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.282	4699388	200.	260.707	130.35	-
*1-Chloro-octadecane	13.081	3542701	200.	252.214	126.11	-

DRO Area:2.252782E+08 DRO Amount: 14131.86
TEH Area:2.576096E+08 TEH Amount: 16160.02
C9-C18 Area:2.220769E+08 C9-C18 Amount: 14025.71
C19-C36 Area:2.151572E+07C19-C36 Amount: 1340.646

MW-2 Batch ID: 117891

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0012.RAW B18011733-002A ;0126HP5 , $HC-EPH-SCRN-W, V12



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011733-002A ;0126HP5 , $HC-EPH-SCRN-W, V12
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0012.RAW
Date & Time Acquired: 1/26/2018 3:40:04 PM
Method File: g:\org\HP5\Methods\SR_SCN-012612-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 1.01 Dilution: 2 S.A.: 1

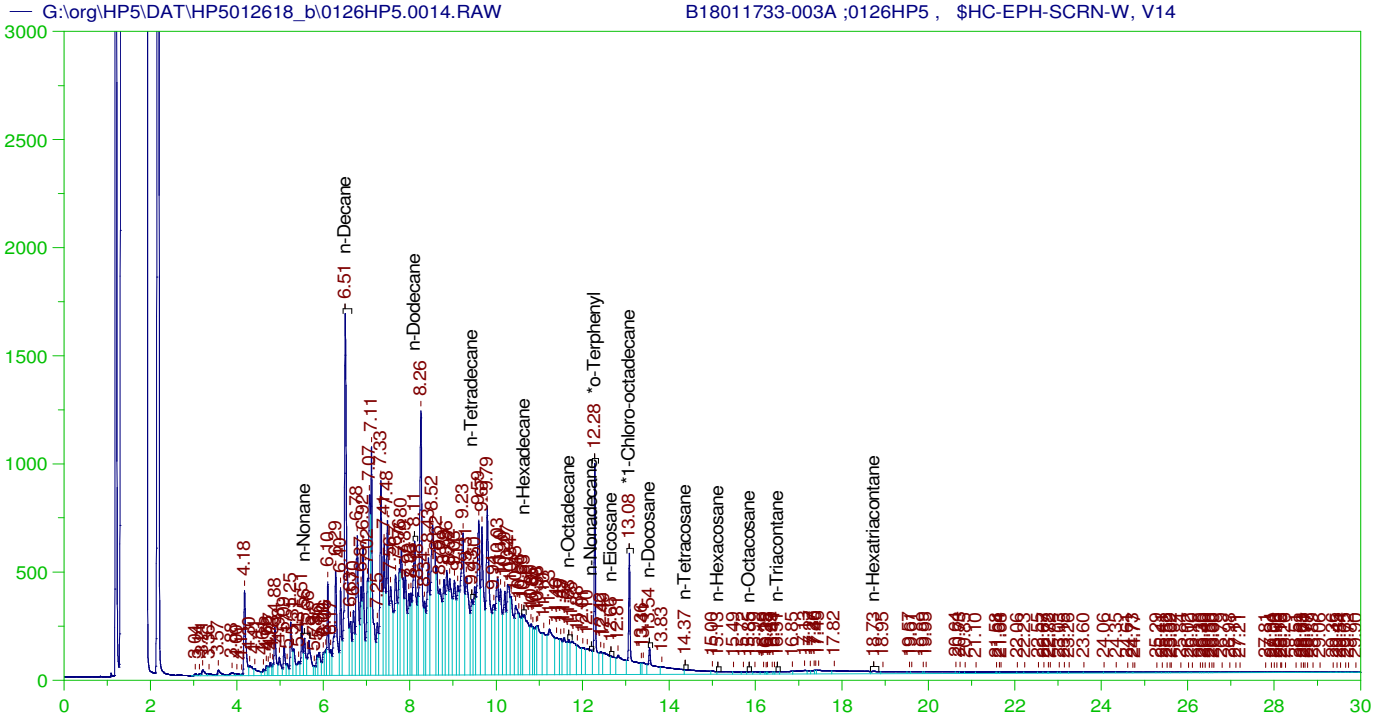
Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.283	6225470	198.02	341.949	172.68	-
*1-Chloro-octadecane	13.082	3622935	198.02	255.373	128.96	-

DRO Area:1.385952E+08 DRO Amount: 8608.093
TEH Area:1.450743E+08 TEH Amount: 9010.503
C9-C18 Area:1.074122E+08 C9-C18 Amount: 6716.664
C19-C36 Area:3.397687E+07C19-C36 Amount: 2096.14

MW-3 Batch ID: 117891

— G:\org\HP5\DAT\HP5012618_b\0126HP5.0014.RAW B18011733-003A ;0126HP5 , $HC-EPH-SCRN-W, V14



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011733-003A ;0126HP5 , $HC-EPH-SCRN-W, V14
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0014.RAW
Date & Time Acquired: 1/26/2018 5:05:49 PM
Method File: g:\org\HP5\Methods\SR_SCN-012611-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 0.97 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.28	2600376	206.186	148.722	72.13	-
*1-Chloro-octadecane	13.081	2169904	206.186	159.259	77.24	-

DRO Area:1.277827E+08 DRO Amount: 8263.811
TEH Area:1.468495E+08 TEH Amount: 9496.875
C9-C18 Area:1.288043E+08 C9-C18 Amount: 8386.487
C19-C36 Area:9103732 C19-C36 Amount: 584.7983

MW-4 Batch ID: 117891

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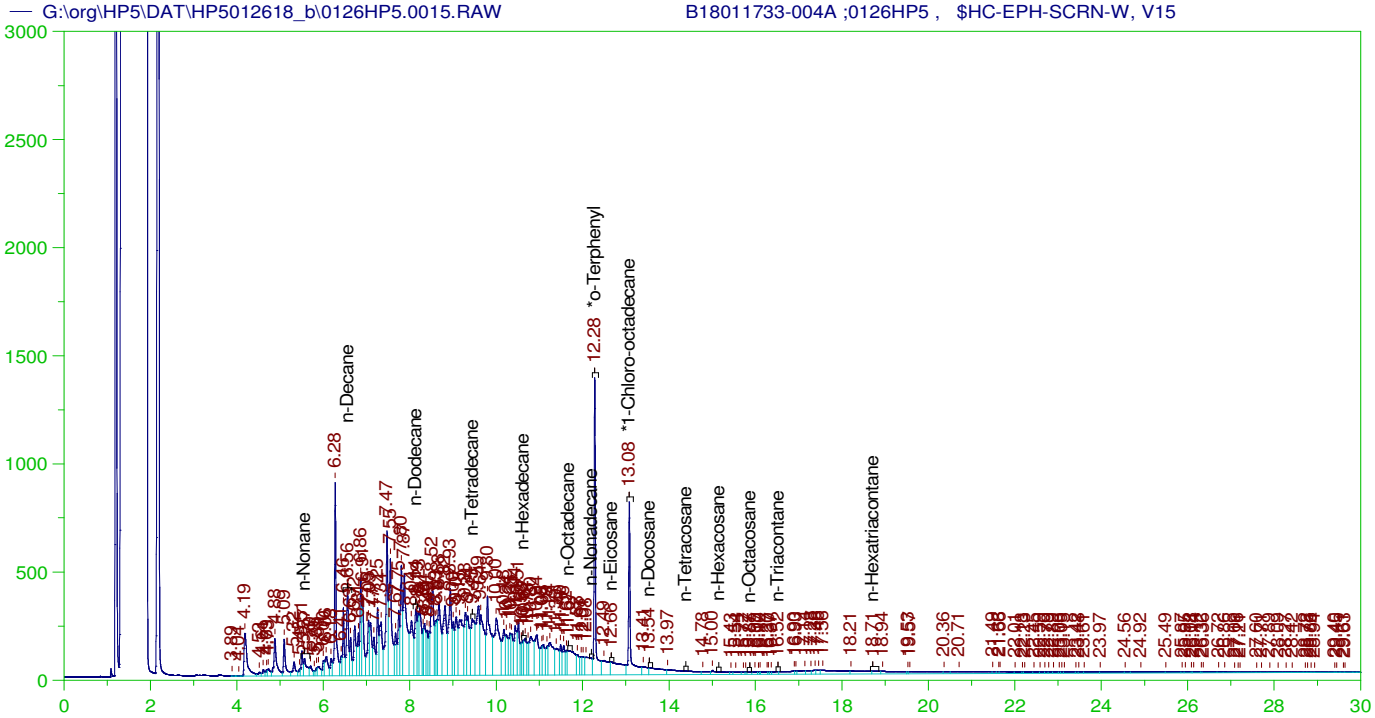

EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: B18011733-004A ;0126HP5 , $HC-EPH-SCRN-W, V15
Raw File: G:\org\HP5\DAT\HP5012618_b\0126HP5.0015.RAW
Date & Time Acquired: 1/26/2018 5:48:43 PM
Method File: g:\org\HP5\Methods\S3_SCN-DK-L%.met
Calibration File: G:\Org\HP5\Cals\SC151022DK.CAL
Sample Weight: 0.99 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Hydrocarbons: 31667.13
Mean RF for C19 to C36 Hydrocarbons: 32097.53
Mean RF for Total Extractable Hydrocarbons: 31882.33
Rt range for Diesel Range Organics: 6.46 to 16.574
Rt range for C9 to C18 Hydrocarbons: 5.485 to 12.228
Rt range for C19 to C36 Hydrocarbons: 12.263 to 18.858

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	12.279	3331847	202.02	186.707	92.42	-
*1-Chloro-octadecane	13.08	2472691	202.02	177.816	88.02	-

DRO Area:7.407983E+07 DRO Amount: 4694.018
TEH Area:8.730293E+07 TEH Amount: 5531.891
C9-C18 Area:7.41102E+07 C9-C18 Amount: 4727.855
C19-C36 Area:6801160 C19-C36 Amount: 428.0615

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Batch: 118037
Lab ID: LCS-118037-117891	Laboratory Control Sample				Run: GCFID-HP2-B_180201A				02/01/18 13:30
C9 to C18 Aliphatics	909	ug/L	300	76	40	140			
C19 to C36 Aliphatics	1550	ug/L	300	97	40	140			
n-Nonane	87.7	ug/L	5.0	44	30	140			
n-Decane	118	ug/L	5.0	59	40	140			
n-Dodecane	141	ug/L	5.0	70	40	140			
n-Tetradecane	162	ug/L	5.0	81	40	140			
n-Hexadecane	181	ug/L	5.0	91	40	140			
n-Octadecane	193	ug/L	5.0	96	40	140			
n-Nonadecane	196	ug/L	5.0	98	40	140			
n-Eicosane	202	ug/L	5.0	101	40	140			
n-Docosane	208	ug/L	5.0	104	40	140			
n-Tetracosane	209	ug/L	5.0	105	40	140			
n-Hexacosane	209	ug/L	5.0	105	40	140			
n-Octacosane	203	ug/L	5.0	101	40	140			
n-Triacontane	183	ug/L	5.0	91	40	140			
n-Hexatriacontane	126	ug/L	5.0	63	40	140			
Surr: 1-Chloro-octadecane			5.0	91	40	140			
Lab ID: MB-118037-117891	Method Blank				Run: GCFID-HP2-B_180201A				02/01/18 15:11
C9 to C18 Aliphatics	ND	ug/L	300						
C19 to C36 Aliphatics	ND	ug/L	300						
Surr: 1-Chloro-octadecane			5.0	62	40	140			
Lab ID: B18011732-001DMS	Sample Matrix Spike				Run: GCFID-HP2-B_180201A				02/01/18 18:35
C9 to C18 Aliphatics	1820	ug/L	630	73	40	140			
C19 to C36 Aliphatics	3240	ug/L	630	97	40	140			
n-Nonane	157	ug/L	5.0	38	30	140			
n-Decane	224	ug/L	5.0	54	40	140			
n-Dodecane	282	ug/L	5.0	68	40	140			
n-Tetradecane	333	ug/L	5.0	80	40	140			
n-Hexadecane	373	ug/L	5.0	90	40	140			
n-Octadecane	397	ug/L	5.0	95	40	140			
n-Nonadecane	403	ug/L	5.0	97	40	140			
n-Eicosane	417	ug/L	5.0	99	40	140			
n-Docosane	431	ug/L	5.0	103	40	140			
n-Tetracosane	432	ug/L	5.0	104	40	140			
n-Hexacosane	432	ug/L	5.0	104	40	140			
n-Octacosane	418	ug/L	5.0	100	40	140			
n-Triacontane	380	ug/L	5.0	91	40	140			
n-Hexatriacontane	291	ug/L	5.0	70	40	140			
Surr: 1-Chloro-octadecane			10	87	40	140			
Lab ID: B18011732-001DMSD	Sample Matrix Spike Duplicate				Run: GCFID-HP2-B_180201A				02/01/18 20:18
C9 to C18 Aliphatics	1710	ug/L	630	69	40	140	6.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Batch: 118037
Lab ID: B18011732-001DMSD	Sample Matrix Spike Duplicate				Run: GCFID-HP2-B_180201A			02/01/18 20:18	
C19 to C36 Aliphatics	3050	ug/L	630	92	40	140	5.8	20	
n-Nonane	150	ug/L	5.0	36	30	140	4.6	30	
n-Decane	211	ug/L	5.0	51	40	140	5.9	20	
n-Dodecane	261	ug/L	5.0	63	40	140	8.0	20	
n-Tetradecane	306	ug/L	5.0	73	40	140	8.5	20	
n-Hexadecane	344	ug/L	5.0	83	40	140	8.1	20	
n-Octadecane	367	ug/L	5.0	87	40	140	7.9	20	
n-Nonadecane	371	ug/L	5.0	89	40	140	8.3	20	
n-Eicosane	386	ug/L	5.0	92	40	140	7.7	20	
n-Docosane	402	ug/L	5.0	96	40	140	6.9	20	
n-Tetracosane	404	ug/L	5.0	97	40	140	6.6	20	
n-Hexacosane	405	ug/L	5.0	97	40	140	6.6	20	
n-Octacosane	392	ug/L	5.0	94	40	140	6.5	20	
n-Triacontane	357	ug/L	5.0	86	40	140	6.2	20	
n-Hexatriacontane	308	ug/L	5.0	74	40	140	5.8	20	
Surr: 1-Chloro-octadecane			10	82	40	140			
Lab ID: LCS-118037-117891	Laboratory Control Sample				Run: GCFID-HP2-B_180201A			02/01/18 14:21	
C11 to C22 Aromatics	3160	ug/L	300	88	40	140			
Total Extractable Hydrocarbons	5650	ug/L	300	88	40	140			
Naphthalene	111	ug/L	5.0	56	40	140			
2-MethylNaphthalene	131	ug/L	5.0	66	40	140			
Acenaphthylene	144	ug/L	5.0	72	40	140			
Acenaphthene	149	ug/L	5.0	75	40	140			
Fluorene	160	ug/L	5.0	80	40	140			
Phenanthrene	181	ug/L	5.0	91	40	140			
Anthracene	180	ug/L	5.0	90	40	140			
Fluoranthene	188	ug/L	5.0	94	40	140			
Pyrene	189	ug/L	5.0	95	40	140			
Benzo(a)Anthracene	200	ug/L	5.0	100	40	140			
Chrysene	199	ug/L	5.0	100	40	140			
Benzo(b)Fluoranthene/Benzo(k)Fluoran	397	ug/L	5.0	99	40	140			
Benzo(a)Pyrene	193	ug/L	5.0	96	40	140			
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	383	ug/L	5.0	96	40	140			
Benzo(g,h,I)perylene	186	ug/L	5.0	93	40	140			
Surr: 2-Bromonaphthalene			5.0	104	40	140			
Surr: 2-Fluorobiphenyl			5.0	91	40	140			
Surr: o-Terphenyl			5.0	94	40	140			
Lab ID: MB-118037-117891	Method Blank				Run: GCFID-HP2-B_180201A			02/01/18 16:02	
C11 to C22 Aromatics	ND	ug/L	300						
Total Extractable Hydrocarbons	ND	ug/L	300						
Naphthalene	ND	ug/L	5.0						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Batch: 118037
Lab ID: MB-118037-117891	Method Blank				Run: GCFID-HP2-B_180201A				02/01/18 16:02
2-MethylNaphthalene	ND	ug/L	5.0						
Acenaphthylene	ND	ug/L	5.0						
Acenaphthene	ND	ug/L	5.0						
Fluorene	ND	ug/L	5.0						
Phenanthrene	ND	ug/L	5.0						
Anthracene	ND	ug/L	5.0						
Fluoranthene	ND	ug/L	5.0						
Pyrene	ND	ug/L	5.0						
Benzo(a)Anthracene	ND	ug/L	5.0						
Chrysene	ND	ug/L	5.0						
Benzo(b)Fluoranthene/Benzo(k)Fluoran	ND	ug/L	5.0						
Benzo(a)Pyrene	ND	ug/L	5.0						
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	ND	ug/L	5.0						
Benzo(g,h,I)perylene	ND	ug/L	5.0						
Surr: 2-Bromonaphthalene			5.0	104	40	140			
Surr: 2-Fluorobiphenyl			5.0	94	40	140			
Surr: o-Terphenyl			5.0	89	40	140			
Lab ID: B18011732-001DMS	Sample Matrix Spike				Run: GCFID-HP2-B_180201A				02/01/18 19:26
C11 to C22 Aromatics	6750	ug/L	630	90	40	140			
Total Extractable Hydrocarbons	11900	ug/L	630	89	40	140			
Naphthalene	230	ug/L	10	55	40	140			
2-MethylNaphthalene	276	ug/L	10	66	40	140			
Acenaphthylene	312	ug/L	10	75	40	140			
Acenaphthene	323	ug/L	10	78	40	140			
Fluorene	349	ug/L	10	84	40	140			
Phenanthrene	387	ug/L	10	93	40	140			
Anthracene	391	ug/L	10	94	40	140			
Fluoranthene	402	ug/L	10	96	40	140			
Pyrene	403	ug/L	10	97	40	140			
Benzo(a)Anthracene	429	ug/L	10	103	40	140			
Chrysene	422	ug/L	10	101	40	140			
Benzo(b)Fluoranthene/Benzo(k)Fluoran	847	ug/L	10	102	40	140			
Benzo(a)Pyrene	414	ug/L	10	99	40	140			
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	821	ug/L	10	99	40	140			
Benzo(g,h,I)perylene	396	ug/L	10	95	40	140			
Surr: 2-Bromonaphthalene			10	105	40	140			
Surr: 2-Fluorobiphenyl			10	90	40	140			
Surr: o-Terphenyl			10	94	40	140			
Lab ID: B18011732-001DMSD	Sample Matrix Spike Duplicate				Run: GCFID-HP2-B_180201A				02/01/18 21:09
C11 to C22 Aromatics	6600	ug/L	630	88	40	140	2.2	20	
Total Extractable Hydrocarbons	11600	ug/L	630	87	40	140	2.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Batch: 118037
Lab ID: B18011732-001DMSD	Sample Matrix Spike Duplicate				Run: GCFID-HP2-B_180201A			02/01/18 21:09	
Naphthalene	218	ug/L	10	52	40	140	5.4	20	
2-MethylNaphthalene	262	ug/L	10	63	40	140	5.2	20	
Acenaphthylene	296	ug/L	10	71	40	140	5.5	20	
Acenaphthene	309	ug/L	10	74	40	140	4.4	20	
Fluorene	337	ug/L	10	81	40	140	3.5	20	
Phenanthrene	379	ug/L	10	91	40	140	2.1	20	
Anthracene	380	ug/L	10	91	40	140	3.1	20	
Fluoranthene	395	ug/L	10	95	40	140	1.7	20	
Pyrene	395	ug/L	10	95	40	140	2.1	20	
Benzo(a)Anthracene	424	ug/L	10	102	40	140	1.2	20	
Chrysene	424	ug/L	10	102	40	140	0.5	20	
Benzo(b)Fluoranthene/Benzo(k)Fluoran	844	ug/L	10	101	40	140	0.3	20	
Benzo(a)Pyrene	401	ug/L	10	96	40	140	3.1	20	
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	817	ug/L	10	98	40	140	0.5	20	
Benzo(g,h,I)perylene	393	ug/L	10	94	40	140	0.6	20	
Surr: 2-Bromonaphthalene			10	101	40	140			
Surr: 2-Fluorobiphenyl			10	89	40	140			
Surr: o-Terphenyl			10	92	40	140			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Billings, MT Branch

Client: NewFields **Report Date:** 02/06/18

Project: 350.0339.00 PH11 Former Lee Anns Motel **Work Order:** B18011733

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: MA-EPH									Analytical Run: R294124
Lab ID: CCV_0201HP216r-W	Continuing Calibration Verification Standard								02/01/18 22:01
n-Nonane	210	ug/L	5.0	105	75	125			
n-Decane	212	ug/L	5.0	106	75	125			
n-Dodecane	213	ug/L	5.0	106	75	125			
n-Tetradecane	213	ug/L	5.0	106	75	125			
n-Hexadecane	212	ug/L	5.0	106	75	125			
n-Octadecane	213	ug/L	5.0	107	75	125			
n-Nonadecane	217	ug/L	5.0	108	75	125			
n-Eicosane	212	ug/L	5.0	106	75	125			
n-Docosane	213	ug/L	5.0	107	75	125			
n-Tetracosane	211	ug/L	5.0	106	75	125			
n-Hexacosane	213	ug/L	5.0	106	75	125			
n-Octacosane	208	ug/L	5.0	104	75	125			
n-Triacontane	213	ug/L	5.0	106	75	125			
n-Hexatriacontane	215	ug/L	5.0	107	75	125			
Surr: 1-Chloro-octadecane			5.0	105	75	125			
Lab ID: CCV_0201HP217r-W	Continuing Calibration Verification Standard								02/01/18 22:52
Naphthalene	203	ug/L	5.0	102	75	125			
2-MethylNaphthalene	203	ug/L	5.0	101	75	125			
Acenaphthylene	201	ug/L	5.0	100	75	125			
Acenaphthene	195	ug/L	5.0	98	75	125			
Fluorene	200	ug/L	5.0	100	75	125			
Phenanthrene	207	ug/L	5.0	103	75	125			
Anthracene	196	ug/L	5.0	98	75	125			
Fluoranthene	197	ug/L	5.0	98	75	125			
Pyrene	199	ug/L	5.0	99	75	125			
Benzo(a)Anthracene	206	ug/L	5.0	103	75	125			
Chrysene	198	ug/L	5.0	99	75	125			
Benzo(b)Fluoranthene/Benzo(k)Fluoran	403	ug/L	5.0	101	75	125			
Benzo(a)Pyrene	204	ug/L	5.0	102	75	125			
Dibenz(a,h)anthracene/Indeno(1,2,3-cd	409	ug/L	5.0	102	75	125			
Benzo(g,h,I)perylene	203	ug/L	5.0	101	75	125			
Surr: 2-Bromonaphthalene			5.0	106	75	125			
Surr: 2-Fluorobiphenyl			5.0	103	75	125			
Surr: o-Terphenyl			5.0	106	75	125			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

MW-1 Batch ID: 118037

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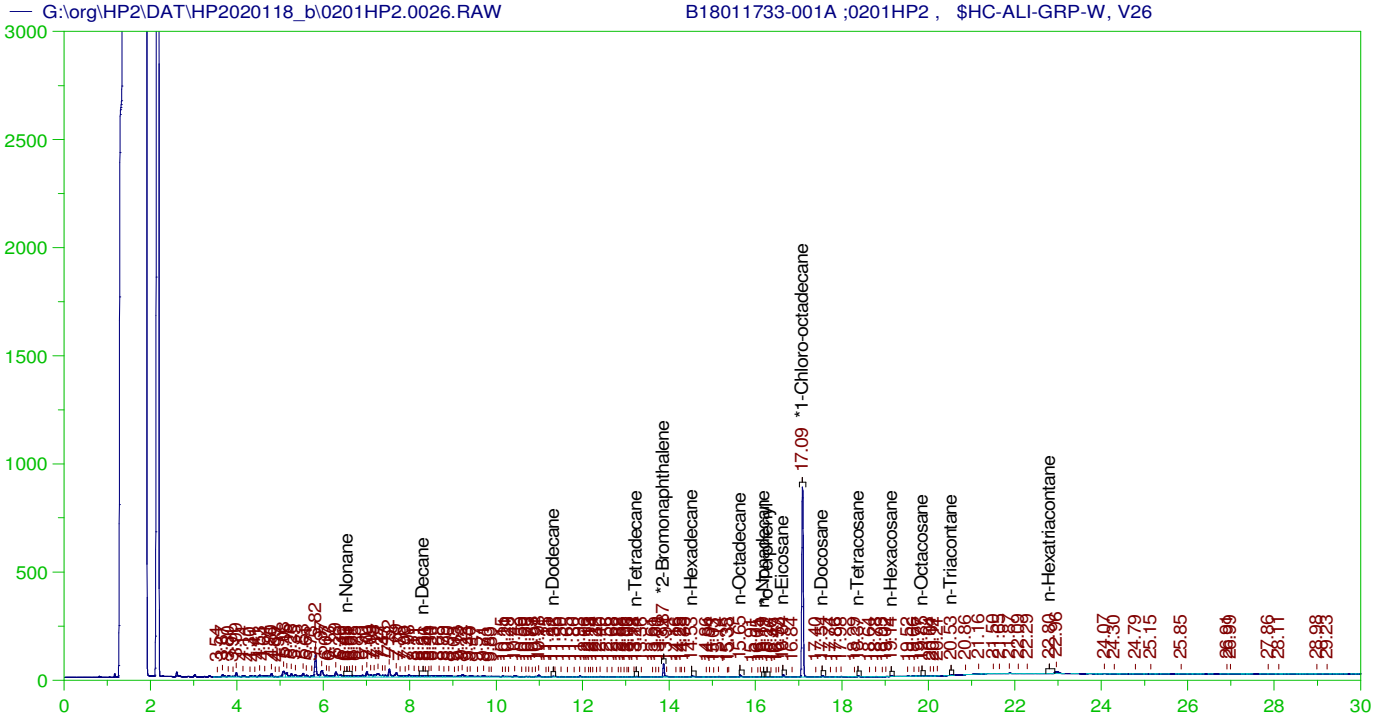


EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011733-001A ;0201HP2 , $HC-ALI-GRP-W, V26
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0026.RAW
Date & Time Acquired: 2/2/2018 6:33:37 AM
Method File: g:\org\HP2\Methods\LR_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 1 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

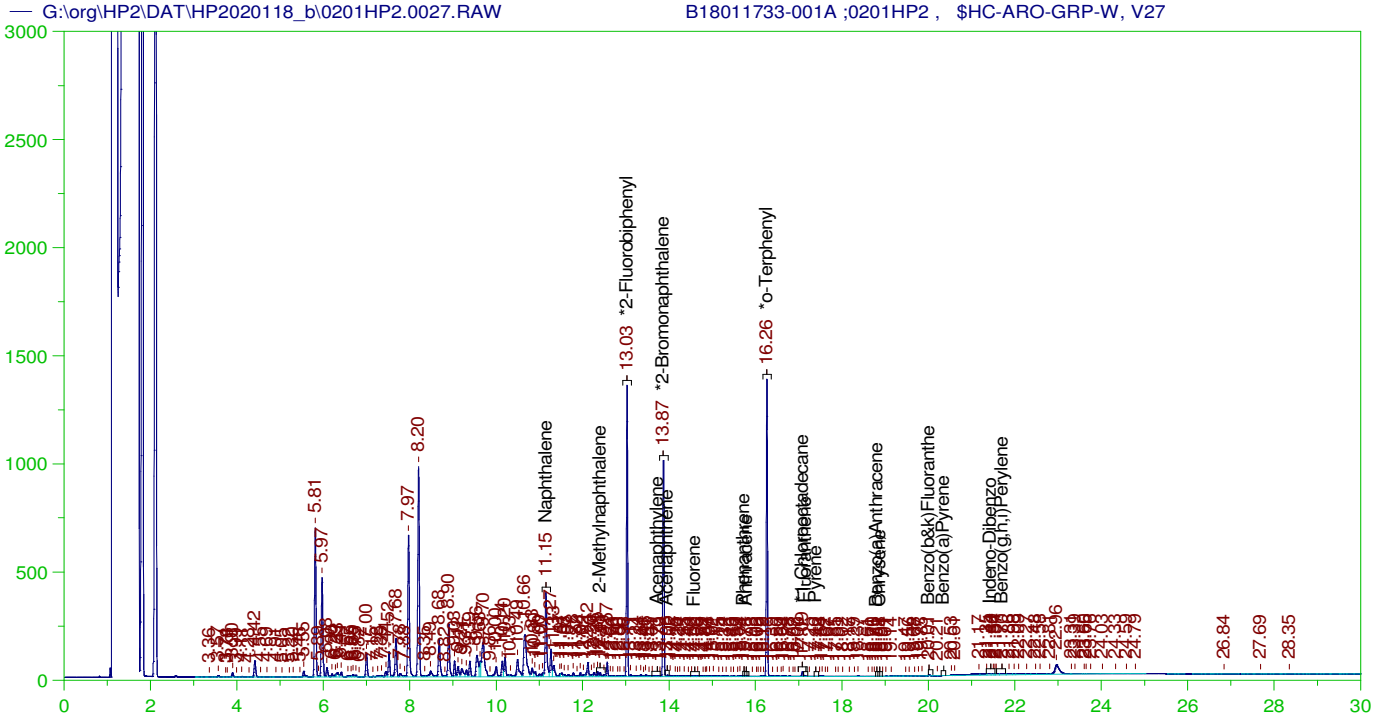
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane	17.086	200.	138.207	69.1	-

DRO Area:1018245 DRO Amount: 73.087
TEH Area:3542564 TEH Amount: 254.2762

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:1881791 C9-C18 Amount: 136.7911
C19-C36 Area:166385.6 C19-C36 Amount: 11.8311

MW-1 Batch ID: 118037

G:\org\HP2\DAT\HP2020118_b\0201HP2.0027.RAW B18011733-001A ;0201HP2 , $HC-ARO-GRP-W, V27



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011733-001A ;0201HP2 , $HC-ARO-GRP-W, V27
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0027.RAW
Date & Time Acquired: 2/2/2018 7:23:18 AM
Method File: g:\org\HP2\Methods\RR_EPH-020127-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 1 Dilution: 2 S.A.: 1

Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.028	200.	178.468	89.23	-
*2-Bromonaphthalene	13.868	200.	189.288	94.64	-
*o-Terphenyl	16.263	200.	167.483	83.74	-
*1-Chlorooctadecane	17.085	200.	4.604	2.3	-

C11-C22 Aromatics Area:3740430 C11-C22 Aromatics Amount: 244.0014
EPH Aromatics total Area:1.923599E+07 EPH Aromatics Total Amount: 1254.832

MW-1 Batch ID: 118037

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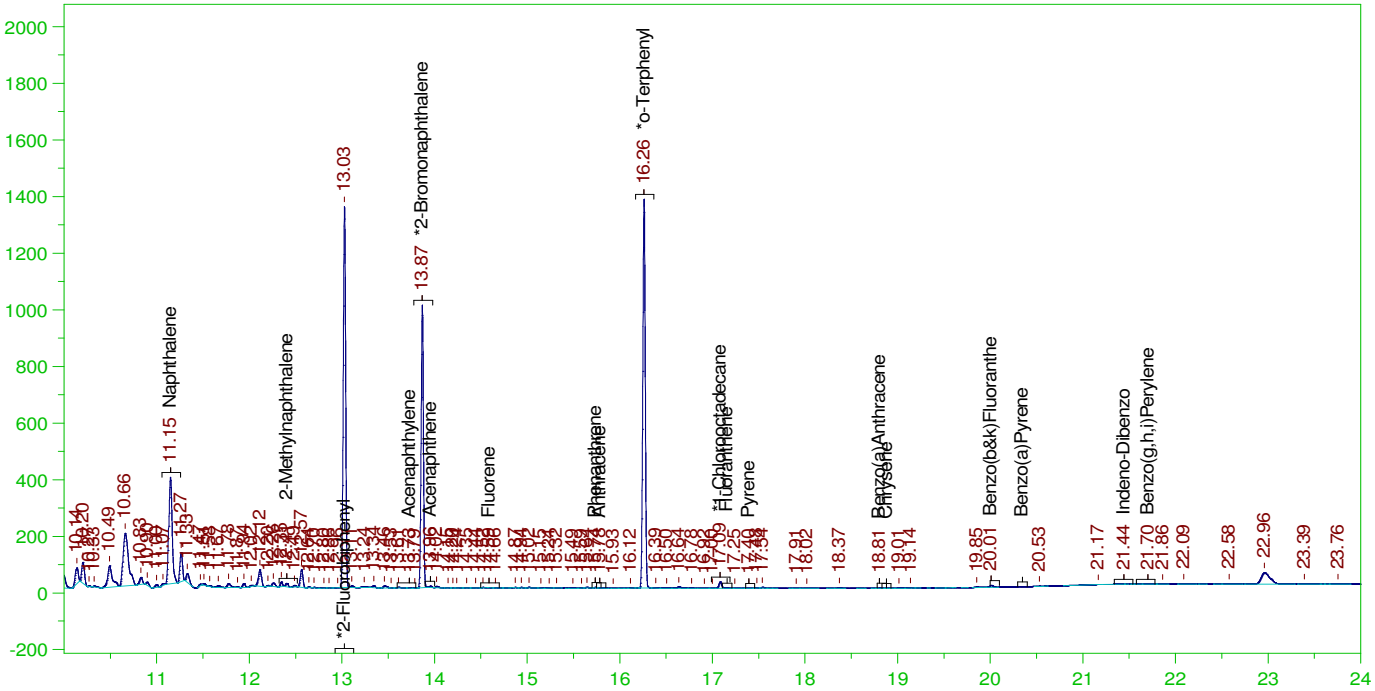

EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

Sample Name: B18011733-001A ;0201HP2 , $HC-ARO-GRP-W, V27
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0027.RAW
Date & Time Acquired: 2/2/2018 7:23:18 AM
Method File: g:\org\HP2\Methods\RS_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 1 Dilution: 2 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.149	2.72	2.72	948471	63.015	
2-Methylnaphthalene	12.407	1.46	1.461	24653	1.667	J
Acenaphthylene	13.73	13.73	13.73	2581	2.	U
Acenaphthene	13.958	13.958	13.958	7026	2.	U
Fluorene	14.591	14.591	14.591	624	2.	U
Phenanthrene	15.736	15.736	15.736	3399	2.	U
Anthracene	15.785	15.785	15.785	2402	2.	U
Fluoranthene	.	.	.		2.	U
Pyrene	17.396	17.396	17.396	729	2.	U
Benzo(a)Anthracene	18.807	18.807	18.807	859	2.	U
Chrysene	.	.	.		2.	U
Benzo(b&k)Fluoranthe	20.01	20.01	20.01	15813	4.	U
Benzo(a)Pyrene	.	.	.		2.	U
Indeno-Dibenzo	21.444	21.444	21.444	2858	4.	U
Benzo(g,h,i)Perylene	21.704	21.704	21.704	1708	2.	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.028	200.	176.838	88.42	40-140
*2-Bromonaphthalene	13.868	200.	187.	93.5	40-140
*o-Terphenyl	16.263	200.	166.7	83.35	40-140
*1-Chlorooctadecane	17.085	200.	3.891	1.95	40-140

MW-2 Batch ID: 118037

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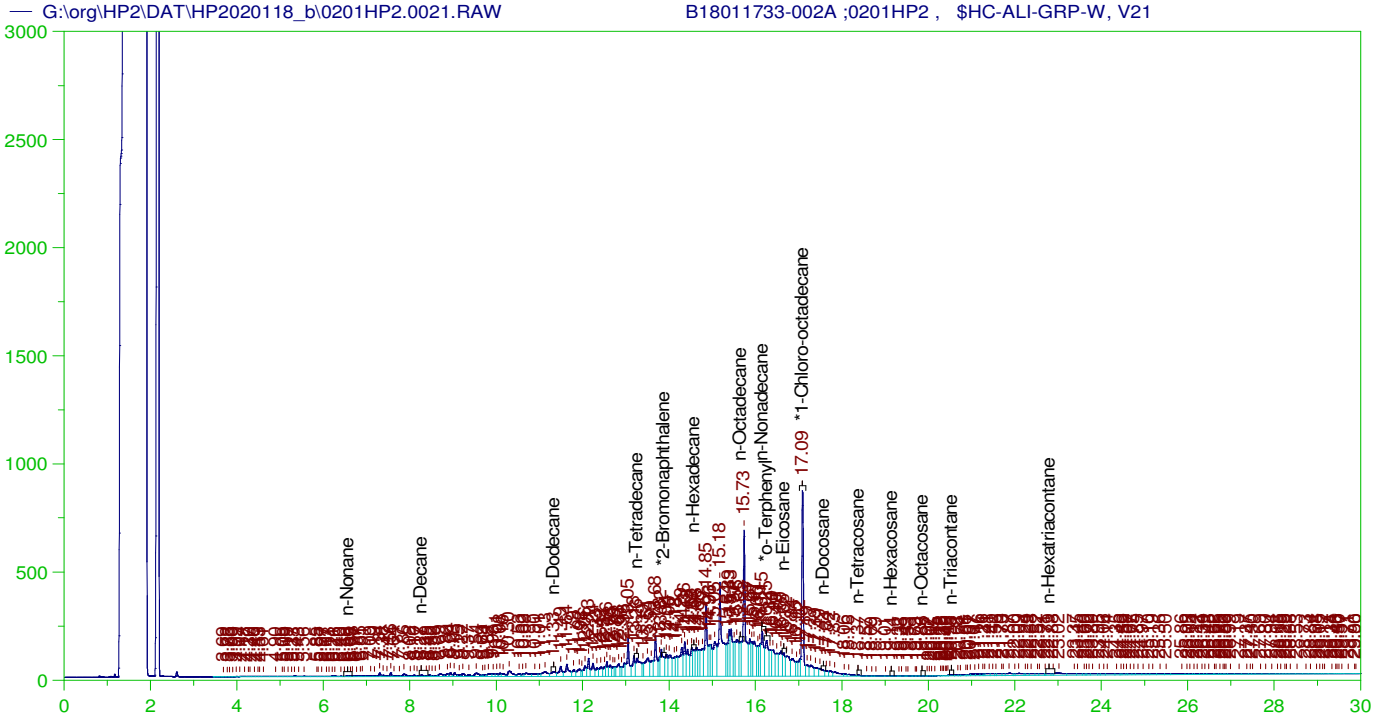

EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011733-002A ;0201HP2 , $HC-ALI-GRP-W, V21
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0021.RAW
Date & Time Acquired: 2/2/2018 2:17:01 AM
Method File: g:\org\HP2\Methods\L3_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 1.01 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane	17.086	198.02	152.488	77.01	-

DRO Area:3.713064E+07 DRO Amount: 2638.755
TEH Area:4.186294E+07 TEH Amount: 2975.064

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:3.083816E+07 C9-C18 Amount: 2219.491
C19-C36 Area:8067807 C19-C36 Amount: 567.9938

MW-2 Batch ID: 118037

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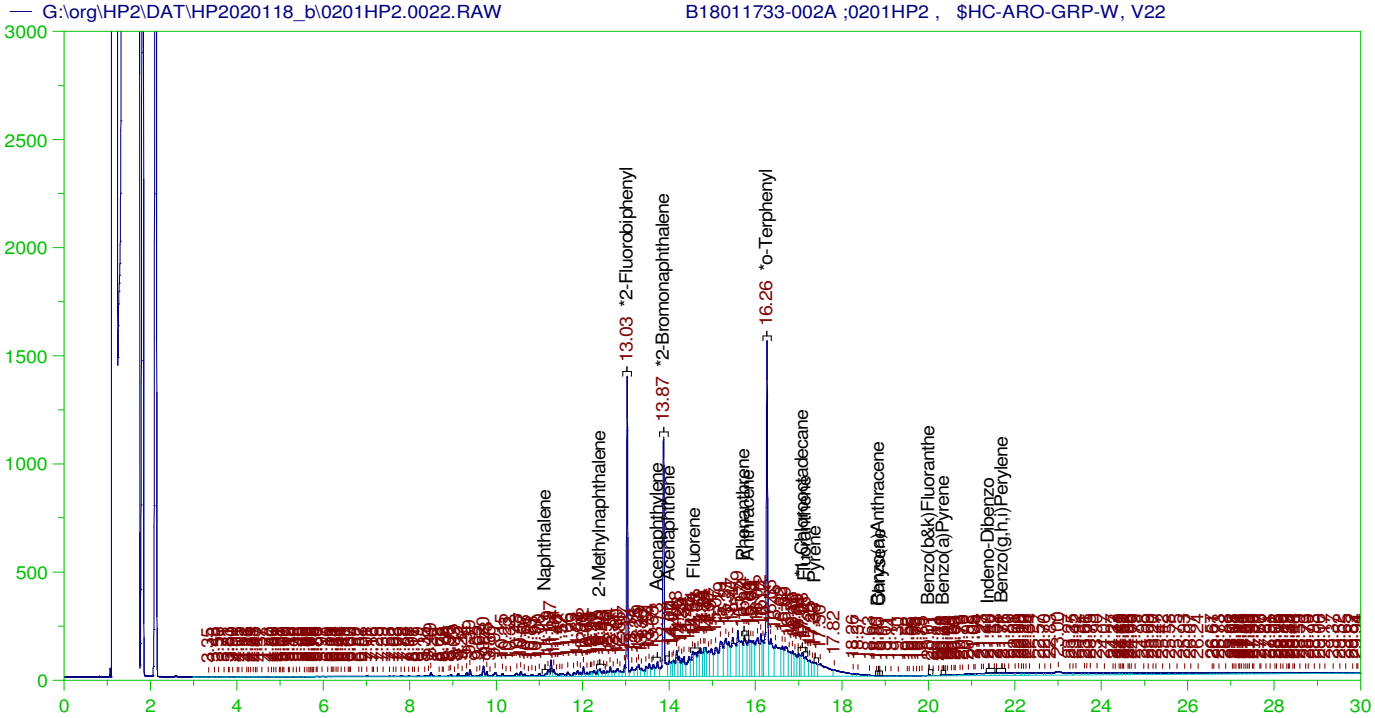


EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011733-002A ;0201HP2 , $HC-ARO-GRP-W, V22
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0022.RAW
Date & Time Acquired: 2/2/2018 3:08:25 AM
Method File: g:\org\HP2\Methods\RR_EPH-020122-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 1.01 Dilution: 2 S.A.: 1

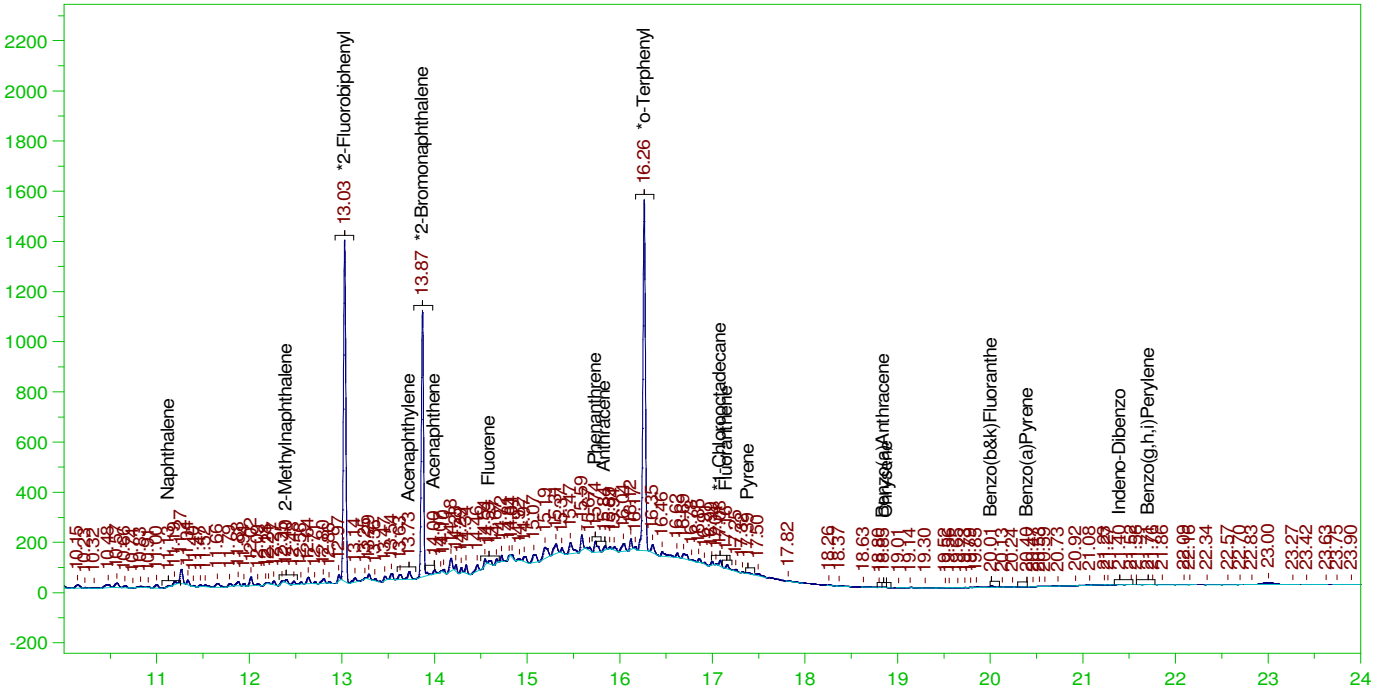
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.029	198.02	183.938	92.89	-
*2-Bromonaphthalene	13.87	198.02	250.201	126.35	-
*o-Terphenyl	16.264	198.02	240.287	121.35	-
*1-Chlorooctadecane	17.084	198.02	30.594	15.45	-

C11-C22 Aromatics Area:2.948793E+07 C11-C22 Aromatics Amount: 1904.556
EPH Aromatics total Area:3.329879E+07 EPH Aromatics Total Amount: 2150.69

MW-2 Batch ID: 118037

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0022.RAW B18011733-002A ;0201HP2 , $HC-ARO-GRP-W, V22



EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

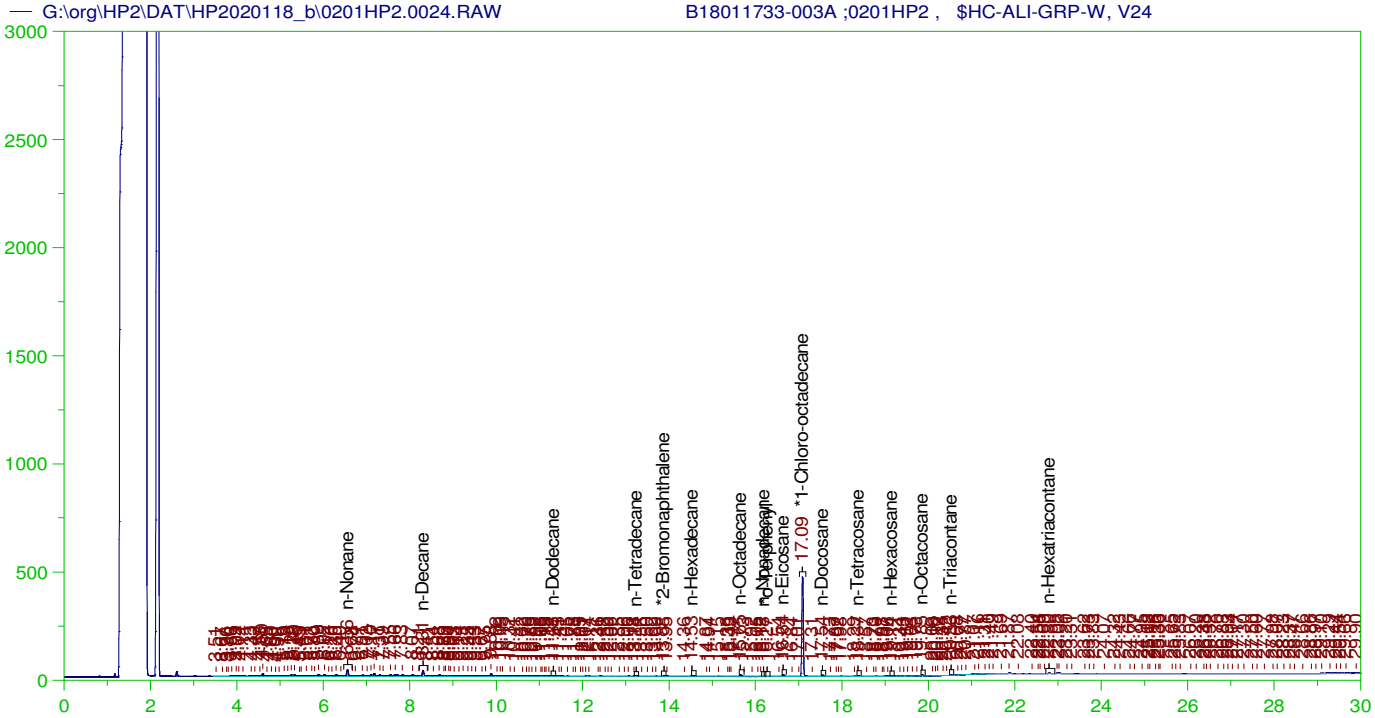
Sample Name: B18011733-002A ;0201HP2 , $HC-ARO-GRP-W, V22
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0022.RAW
Date & Time Acquired: 2/2/2018 3:08:25 AM
Method File: g:\org\HP2\Methods\RS_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 1.01 Dilution: 2 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.13	11.13	11.13	9551	1.98	U
2-Methylnaphthalene	12.4	1.46	1.47	28050	1.878	J
Acenaphthylene	13.727	.18	.143	80064	5.506	
Acenaphthene	13.999	-.07	-.129	33193	2.096	
Fluorene	14.589	-.72	-.719	35895	2.313	
Phenanthrene	15.736	-1.87	-1.866	113634	7.551	
Anthracene	15.839	-1.92	-1.969	33226	2.118	
Fluoranthene	17.156	-3.28	-3.286	32608	2.033	
Pyrene	17.385	17.385	17.385	11014	1.98	U
Benzo(a)Anthracene	18.848	18.848	18.848	1383	1.98	U
Chrysene	.	.	.		1.98	U
Benzo(b&k)Fluoranthe	20.011	20.011	20.011	15323	3.96	U
Benzo(a)Pyrene	20.399	20.399	20.399	4611	1.98	U
Indeno-Dibenzo	21.399	21.399	21.399	5786	3.96	U
Benzo(g,h,i)Perylene	21.708	21.708	21.708	1712	1.98	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.029	198.02	173.5	87.62	40-140
*2-Bromonaphthalene	13.87	198.02	199.221	100.61	40-140
*o-Terphenyl	16.264	198.02	170.956	86.33	40-140
*1-Chlorooctadecane	17.084	198.02	3.085	1.56	40-140

MW-3 Batch ID: 118037

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0024.RAW B18011733-003A ;0201HP2 , $HC-ALI-GRP-W, V24



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011733-003A ;0201HP2 , $HC-ALI-GRP-W, V24
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0024.RAW
Date & Time Acquired: 2/2/2018 4:50:59 AM
Method File: g:\org\HP2\Methods\LR_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 0.97 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

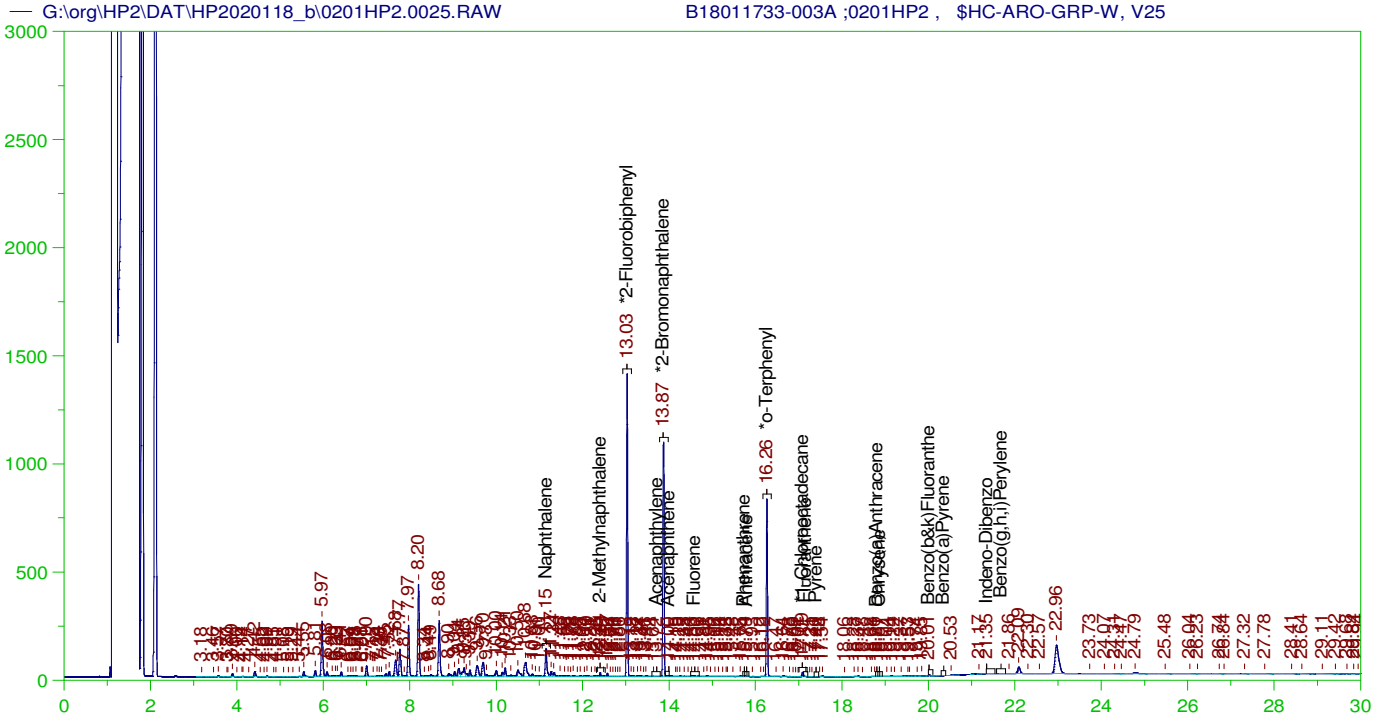
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane	17.086	206.186	76.038	36.88	-

DRO Area:1110873 DRO Amount: 82.20168
TEH Area:2497413 TEH Amount: 184.802

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:1604500 C9-C18 Amount: 120.2415
C19-C36 Area:221223.5 C19-C36 Amount: 16.21695

MW-3 Batch ID: 118037

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0025.RAW B18011733-003A ;0201HP2 , $HC-ARO-GRP-W, V25



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011733-003A ;0201HP2 , $HC-ARO-GRP-W, V25
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0025.RAW
Date & Time Acquired: 2/2/2018 5:42:10 AM
Method File: g:\org\HP2\Methods\RR_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 0.97 Dilution: 2 S.A.: 1

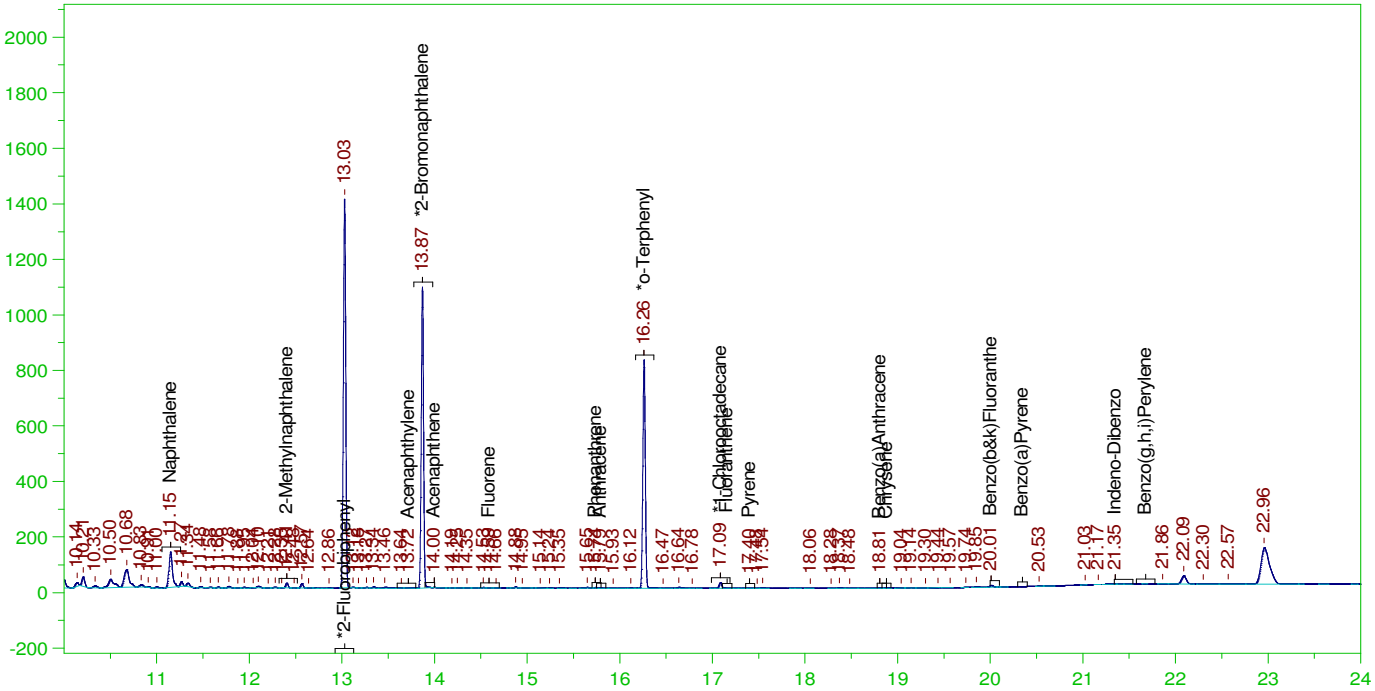
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.029	206.186	190.873	92.57	-
*2-Bromonaphthalene	13.87	206.186	212.23	102.93	-
*o-Terphenyl	16.263	206.186	104.148	50.51	-
*1-Chlorooctadecane	17.087	206.186	3.839	1.86	-

C11-C22 Aromatics Area:1175278 C11-C22 Aromatics Amount: 79.03866
EPH Aromatics total Area:8754278 EPH Aromatics Total Amount: 588.7344

MW-3 Batch ID: 118037

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0025.RAW B18011733-003A ;0201HP2 , $HC-ARO-GRP-W, V25



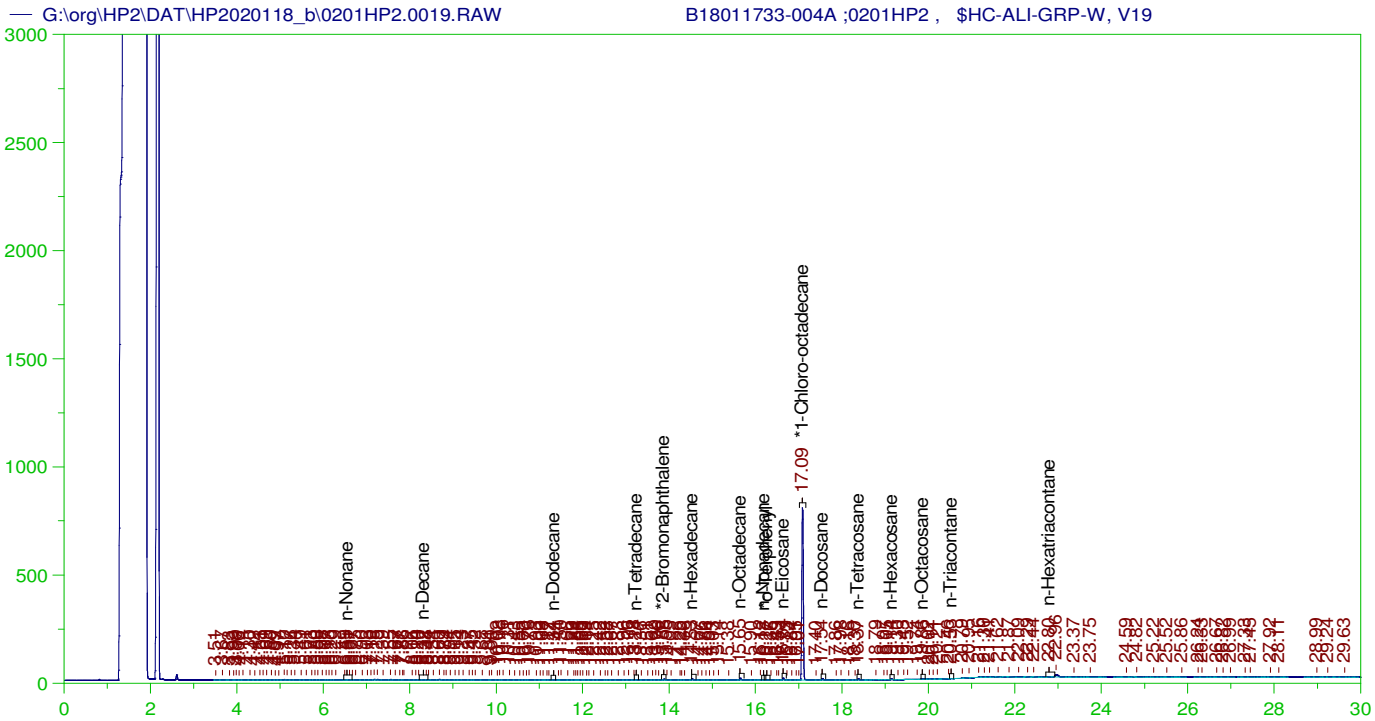
EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

Sample Name: B18011733-003A ;0201HP2 , $HC-ARO-GRP-W, V25
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0025.RAW
Date & Time Acquired: 2/2/2018 5:42:10 AM
Method File: g:\org\HP2\Methods\RS_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 0.97 Dilution: 2 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.15	2.72	2.719	328740	22.517	
2-Methylnaphthalene	12.406	1.46	1.463	32760	2.283	
Acenaphthylene	13.717	13.717	13.717	2324	2.062	U
Acenaphthene	13.998	13.998	13.998	3881	2.062	U
Fluorene	14.59	14.59	14.59	1257	2.062	U
Phenanthrene	15.738	15.738	15.738	3762	2.062	U
Anthracene	15.792	15.792	15.792	995	2.062	U
Fluoranthene	.	.	.		2.062	U
Pyrene	17.402	17.402	17.402	681	2.062	U
Benzo(a)Anthracene	18.811	18.811	18.811	1977	2.062	U
Chrysene	.	.	.		2.062	U
Benzo(b&k)Fluoranthe	20.011	20.011	20.011	15066	4.124	U
Benzo(a)Pyrene	.	.	.		2.062	U
Indeno-Dibenzo	21.35	21.35	21.35	2210	4.124	U
Benzo(g,h,i)Perylene	.	.	.		2.062	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.029	206.186	189.369	91.84	40-140
*2-Bromonaphthalene	13.87	206.186	210.25	101.97	40-140
*o-Terphenyl	16.263	206.186	103.491	50.19	40-140
*1-Chlorooctadecane	17.087	206.186	3.53	1.71	40-140

MW-4 Batch ID: 118037



EPH ALIPHATICS (FID) ANALYSIS REPORT

Sample Name: B18011733-004A ;0201HP2 , $HC-ALI-GRP-W, V19
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0019.RAW
Date & Time Acquired: 2/2/2018 12:34:37 AM
Method File: g:\org\HP2\Methods\LR_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AL180111DB.CAL
Sample Weight: 0.99 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 Aliphatic Hydrocarbons: 27513.36
Mean RF for C19 to C36 Aliphatic Hydrocarbons: 28126.81
Mean RF for Total Extractable Hydrocarbons: 27863.9
Rt range for Diesel Range Organics: 8.219999 to 19.93
Rt range for C9 to C18 Aliphatic Hydrocarbons: 6.47 to 16.14
Rt range for C19 to C36 Aliphatic Hydrocarbons: 16.165 to 22.92

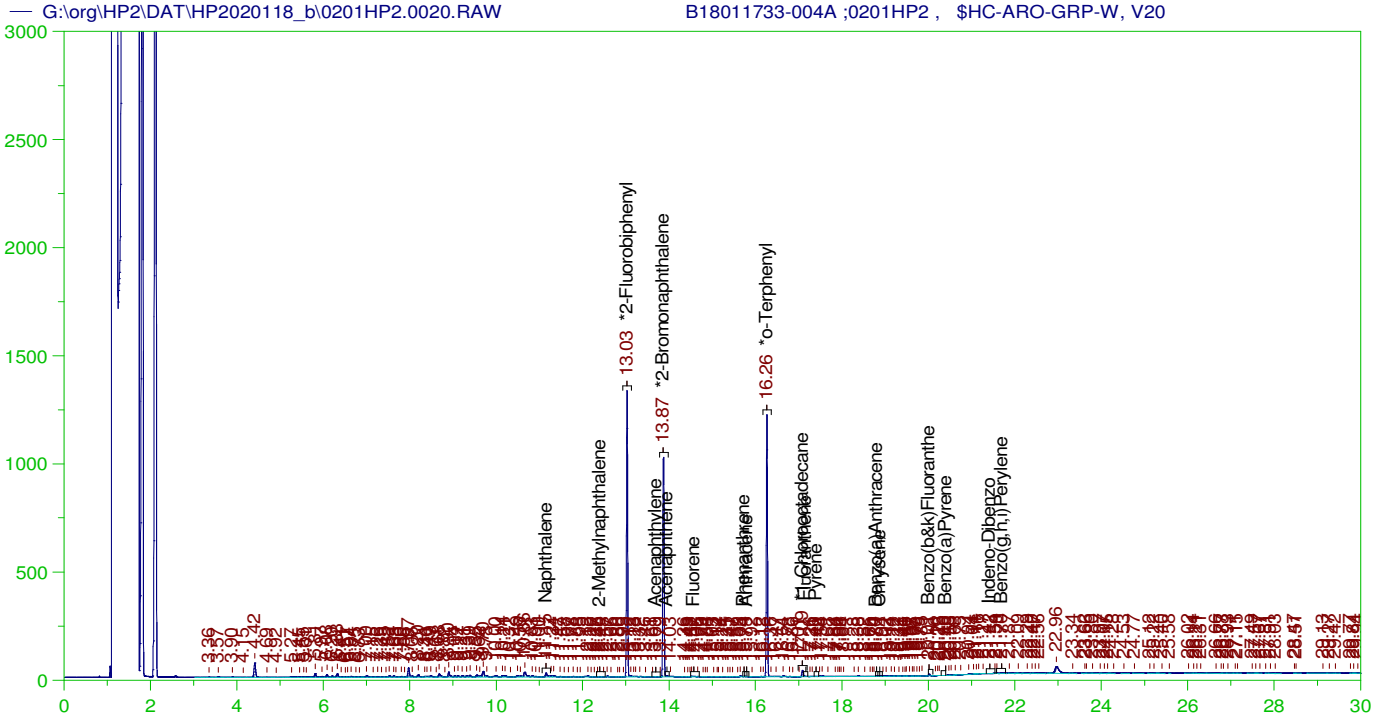
SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*1-Chloro-octadecane	17.086	202.02	127.087	62.91	-

DRO Area:477804.8 DRO Amount: 34.64203
TEH Area:924345.1 TEH Amount: 67.01731

Aliphatic Hydrocarbon Areas and Amounts:
C9-C18 Area:538712.3 C9-C18 Amount: 39.5556
C19-C36 Area:140498.7 C19-C36 Amount: 10.09129

MW-4 Batch ID: 118037

G:\org\HP2\DAT\HP2020118_b\0201HP2.0020.RAW B18011733-004A ;0201HP2 , $HC-ARO-GRP-W, V20



EPH AROMATICS RANGE VALUES (FID) ANALYSIS REPORT

Sample Name: B18011733-004A ;0201HP2 , $HC-ARO-GRP-W, V20
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0020.RAW
Date & Time Acquired: 2/2/2018 1:25:53 AM
Method File: g:\org\HP2\Methods\RR_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 0.99 Dilution: 2 S.A.: 1

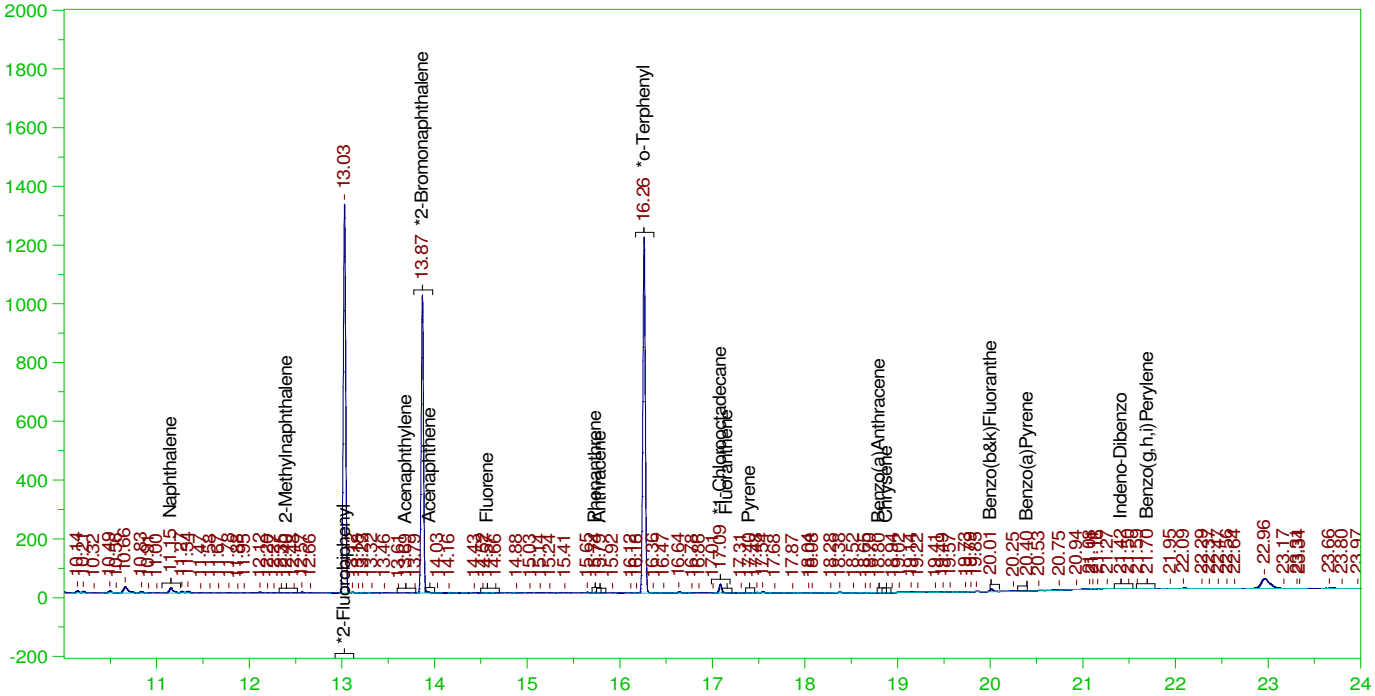
Mean RF EPH Aromatics: 30659.08
Rt range for EPH C11 to C22 Aromatics: 11.06 to 21.78

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	
*2-Fluorobiphenyl	13.028	202.02	176.164	87.2	-
*2-Bromonaphthalene	13.869	202.02	195.811	96.93	-
*o-Terphenyl	16.263	202.02	148.945	73.73	-
*1-Chlorooctadecane	17.086	202.02	5.477	2.71	-

C11-C22 Aromatics Area:571587.9 C11-C22 Aromatics Amount: 37.66333
EPH Aromatics total Area:2292871 EPH Aromatics Total Amount: 151.0829

MW-4 Batch ID: 118037

— G:\org\HP2\DAT\HP2020118_b\0201HP2.0020.RAW B18011733-004A ;0201HP2 , $HC-ARO-GRP-W, V20



EPH AROMATICS TARGET VALUES (FID) ANALYSIS REPORT

Sample Name: B18011733-004A ;0201HP2 , $HC-ARO-GRP-W, V20
Raw File: G:\org\HP2\DAT\HP2020118_b\0201HP2.0020.RAW
Date & Time Acquired: 2/2/2018 1:25:53 AM
Method File: g:\org\HP2\Methods\RS_EPH-DB-L%.met
Calibration File: G:\Org\HP2\Cals\AR180111DB.CAL
Sample Weight: 0.99 Dilution: 2 S.A.: 1

TARGET ANALYTES	RT	CAL RRT	RRT	AREA	AMOUNT	FLAG
Naphthalene	11.152	2.72	2.717	52458	3.52	
2-Methylnaphthalene	12.403	12.403	12.403	1580	2.02	U
Acenaphthylene	13.692	13.692	13.692	1220	2.02	U
Acenaphthene	.	.	.		2.02	U
Fluorene	14.574	14.574	14.574	1377	2.02	U
Phenanthrene	15.737	15.737	15.737	3272	2.02	U
Anthracene	15.79	15.79	15.79	1461	2.02	U
Fluoranthene	.	.	.		2.02	U
Pyrene	17.403	17.403	17.403	1750	2.02	U
Benzo(a)Anthracene	18.805	18.805	18.805	888	2.02	U
Chrysene	.	.	.		2.02	U
Benzo(b&k)Fluoranthe	20.009	20.009	20.009	21846	4.04	U
Benzo(a)Pyrene	20.398	20.398	20.398	3591	2.02	U
Indeno-Dibenzo	21.415	21.415	21.415	5246	4.04	U
Benzo(g,h,i)Perylene	21.696	21.696	21.696	6573	2.02	U

SURROGATE COMPOUND	RT	ACTUAL	MEASURED	%REC	QC LIMITS
*2-Fluorobiphenyl	13.028	202.02	175.166	86.71	40-140
*2-Bromonaphthalene	13.869	202.02	194.193	96.13	40-140
*o-Terphenyl	16.263	202.02	148.636	73.57	40-140
*1-Chlorooctadecane	17.086	202.02	5.193	2.57	40-140

Work Order Receipt Checklist

NewFields

B18011733

Login completed by: Richard L. Shular

Reviewed by: BL2000\tedwards

Reviewed Date: 1/29/2018

Date Received: 1/24/2018

Received by: se

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	°C On Ice		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

The temperature of the sample(s) for shipping container 1 was 4.2°C, Temperature Blank temperature for shipping container 2 was 2.2°C and shipping container 3 was 1.0°C.

One of three voa vials for sample MW-2 was received empty. There is sufficient volume to proceed with analysis using the remaining vials.

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Chain of Custody & Analytical Request Record

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Page 1 of 1

Account Information (Billing information)

Company/Name	NEWFIELDS, LLC
Contact	DONNA McCAMMON
Phone	(406) 549-8270
Mailing Address	700 SW HIGGINS STE 15
City, State, Zip	MISSOULA, MT 59803
Email	dmccammon@newfields.com
Receive Invoice	☐ Hard Copy ☒ Email
Receive Report	☐ Hard Copy ☒ Email
Purchase Order	
Quote	
Bottle Order	119686

Report Information (if different than Account Information)

Company/Name	NEWFIELDS, LLC
Contact	LEW McKAY
Phone	(406) 549-8270
Mailing Address	700 SW HIGGINS STE 15
City, State, Zip	MISSOULA, MT 59803
Email	lmckay@newfields.com
Receive Report	☐ Hard Copy ☒ Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

MW-3 SAMPLING: WELL HAD MASSIVE DRAWDOWN WHICH REQUIRED RECHARGE OVERNIGHT TO FINISH SAMPLING – STILL ONLY FILLED 1 FULL LITER AND ALL VOA VIALS

Project Information 390.0331.000: PH. 11

Project Name, PWSID, Permit, etc.	FERNET LEGACY MOTEL
Sampler Name	PAT MOFFITT
Sampler Phone	817 421 1345
Sample Origin State	MT
EPA/State Compliance	☒ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	[redacted]	MWCC GRP	MWCC VOA	EPA 8260/8011								See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	MW-1	1/20/18	1245	11	W		X	X	X										B18011733-001
2	MW-2	1/20/18	1415	11	W		X	X	X										-002
3	MW-3	1/19/18-1/20/18	1700+0846	11	W		X	X	X										-003
4	MW-4	1/20/18	1100	11	W		X	X	X										-004
	TB3 12-18-2017 B:LB SHP0271																		-005
6																			
7																			
8																			
9																			
10																			

3

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	PATRICK MOFFITT	1/22/18 1500		FEDEX	1/22/18 1500	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
					1/22/18 12:25	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI COC 12/16

Appendix C
Groundwater Sampling Forms

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Chain of Custody & Analytical Request Record

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Account Information (Billing information)

Company/Name	NEW FIELDS, LLC.
Contact	DONNA McCAMMON
Phone	(406) 549-8260
Mailing Address	700 SW HIGGINS STE 15
City, State, Zip	MISSOULA, MT 59803
Email	dmccammon@NEWFIELDS.com
Receive Invoice	☐ Hard Copy ☒ Email
Receive Report	☐ Hard Copy ☒ Email
Purchase Order	
Quote	
Bottle Order	119686

Report Information (if different than Account Information)

Company/Name	NEW FIELDS, LLC.
Contact	LEVI MCKAY
Phone	(406) 549-8270
Mailing Address	700 SW HIGGINS STE 15
City, State, Zip	MISSOULA, MT 59803
Email	lmckay@NEWFIELDS.com
Receive Report	☐ Hard Copy ☒ Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

LINE 6 WAS A MISTAKE; PLEASE IGNORE

Project Information 350.0339.000: PH. II

Project Name, PWSID, Permit, etc.	FORMER LEEANNS MOTEL
Sampler Name	PAT MOFFITT
Sampler Phone	847 421 1345
Sample Origin State	MT
EPA/State Compliance	☒ Yes ☐ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Analysis Requested

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	MDEQ SPH	MDEQ VPH	EPA 8260/8011							See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	SB-LIF-14 5.5'-6.5'	1/19/18	0945	3	S	X	X	X									
2	SB-LIF-14 14'-15'	1/19/18	0830	3	S	X	X	X									
3	SB-LIF-17 8'-10'	1/19/18	1025	3	S	X	X	X									
4	SB-LIF-03 2.5'-3'	1/19/18	1115	3	S	X	X	X									
5	SB-LIF-03B 4.5'-5'	1/19/18	1320	3	S	X	X	X									
6	[redacted]																
7	SB-LIF-17 13.5'-15'	1/19/18	1045	3	S	X	X	X									
8	SB-LIF-05 2.5'-3.5'	1/19/18	1300	3	S	X	X	X									
9	SB-LIF-11 7'-8'	1/19/18	1200	3	S	X	X	X									
10																	

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	PATRICK MOFFITT	1/22/18: 1500	[signature]			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Chain of Custody & Analytical Request Record

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Account Information (Billing information)

Company/Name NEWFIELDS, LLC.
Contact DONNA McCAMMON
Phone (406) 549-8270
Mailing Address 700 SW HIGGINS STE 15
City, State, Zip MISSOULA, MT 59803
Email dmccammon@NEWFIELDS.com
Receive Invoice ☐ Hard Copy ☒ Email | Receive Report ☐ Hard Copy ☒ Email
Purchase Order | Quote | Bottle Order 119686

Report Information (if different than Account Information)

Company/Name NEWFIELDS, LLC
Contact LEWI McKAY
Phone (406) 549-8270
Mailing Address 700 SW HIGGINS STE 15
City, State, Zip MISSOULA, MT 59803
Email lmckay@NEWFIELDS.com
Receive Report ☐ Hard Copy ☒ Email
Special Report/Formats:
☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

MW-3 SAMPLING: WELL HAD MASSIVE DRAWDOWN WHICH REQUIRED RECHARGE OVERNIGHT TO FINISH SAMPLING – STILL ONLY FILLED 1 FULL LITER AND ALL VOA VIALS

Project Information 382.0331.000: PA.11

Project Name, PWSID, Permit, etc. FARMER LEGACY MOTEL
Sampler Name PAT MOFFITT | Sampler Phone 817 421 1345
Sample Origin State MT | EPA/State Compliance ☒ Yes ☐ No
MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	~~[illegible]~~	MDEQ 1017	EPA 8260/8011							See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1	MW-1	1/20/18	1245	11	W	X	X	X									
2	MW-2	1/20/18	1415	11	W	X	X	X									
3	MW-3	1/19/18-1/20/18	1700 + 0840	11	W	X	X	X									
4	MW-4	1/20/18	1100	11	W	X	X	X									
5																	
6																	
7																	
8																	
9																	
10																	

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	PATRICK MOFFITT	1/22/18: 1500	[signature]	[illegible]	1/22/18: 1500	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals Y N C B	Intact Y N	Receipt Temp °C	Temp Blank Y N	On Ice Y N	Payment Type CC Cash Check_____	Amount $	Receipt Number (cash/check only)

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

NewFields
Perspective. Vision. Solutions.

Project: Lakeland Motel
Project # 350.0331
Date/Time: 1/20/18 1150

Personnel: P. Moffit

Groundwater Sampling and/or Development Field Form

Well ID/Sample Location: MW-1
Measuring Point (mp) -1" bgs (+GS)
Well Type: MW
Total Depth: 23.9' (bgs / bmp)
Casing Type: PVC
SWL before purging: 8.01 (bgs / bmp)
SWL post purge: 12.01 (bgs / bmp)
Well Diameter: 2" ( )
Well Locked: Y / N
Cap/lid: Y / N
Photos taken: Y / N
Monument Type: Flush Mount

Purge & Sampling Equipment:

Pump Type: Bladder
Pump Depth: 14' ( ) bgs / bmp
Purging Method: Low Flow
Sampling Method: Low Flow
1ft³ = 7.48 gal
1 Casing Vol: ~ 2.70 gal
3 Casing Vol: [illegible] gal
Total Vol. Removed: ~ 1.32 gal

Instrument Calibration: See Calibration Sheet on 1/20/18

Well Evacuation & Monitoring Data

Time	DTW (bmp)	Purge Rate (L/min)	Purge Vol. (L)	Temp (°C)	pH	SC (µS/cm)	DO (mg/L)	ORP (mV)	Turb (NTU)	Comments
Guidelines/Goals	<0.3'	0.1-0.5	---	± 3%	± 0.1	± 3%	±10% if >0.5 or 3 @ <0.5	± 10mV	± 10% or <10NTU	Note: Refer to SOP-12 A-C
1155	8.32	0.1		7.7	6.79	8511	4.0	166.3	3.62	CLEAR - STRONG
1200	8.76	0.1	0.5	7.3	6.82	8507	3.7	149.8	3.67	HYDROCARBON ODOR
1205	9.26	0.1	1	7.0	6.82	7972	3.3	109.3	4.17	" "
1210	9.70	0.1	1.5	6.8	6.85	7284	3.3	92.0	6.20	" "
1215	10.15	0.1	2	6.7	6.89	6910	2.9	78.1	4.71	" "
1220	10.58	0.1	2.5	6.7	6.88	6890	2.6	72.0	6.04	" "
1225	10.97	0.1	3	6.8	6.88	6894	2.5	68.6	5.96	" "

→ SAMPLE TIME

1245 - FINISHED SAMPLING

↳ 50 MIN OF PURGING → 5 L → 1.32 gal

Sampling Data

Bottle Label	Sample Time	Sampling Parameter(s)	Preservative	Method	Other
MW-1	1225	VPH	HCL		
		EPH	HCL		
		LEAD SCAN.	HCL		

Samples Analyzed by: Lab Name: ENERGY LABS

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Perspective. Vision. Solutions.

Project: LEE ANNS MOTEL
Project # 350.0339
Date/Time: 1/20/18 1325
Personnel: P. MOFFITT

Groundwater Sampling and/or Development Field Form

Well ID/Sample Location: MW-2
Measuring Point (mp) -4" bgs (+GS)
Well Type: MW
Total Depth: 24.72 (bgs / bmp)
Casing Type: PVC
SWL before purging: 9.83 (bgs / bmp)
SWL post purge: 11.05 (bgs / bmp)
Well Diameter: 2" ( )
Well Locked: Y / N
Cap/lid: Y / N
Photos taken: Y / N
Monument Type: FLUSH MOUNT

Purge & Sampling Equipment:

Pump Type: BLADDER
Pump Depth: ~15' ( ) bgs / bmp
Purging Method: LOW FLOW
Sampling Method: LOW FLOW
$1ft^3 = 7.48$ gal
1 Casing Vol: 2.53 gal
3 Casing Vol: 7.59
Total Vol. Removed: ~1.19 gal

Instrument Calibration: See Calibration Sheet on 1/20/18

Well Evacuation & Monitoring Data

Time	DTW (bmp)	Purge Rate (L/min)	Purge Vol. (L)	Temp (°C)	pH	SC (µS/cm)	DO (mg/L)	ORP (mV)	Turb (NTU)	Comments
Guidelines/Goals	<0.3'	0.1-0.5	---	± 3%	± 0.1	± 3%	±10% if >0.5 or 3 @ <0.5	± 10mV	± 10% or <10NTU	Note: Refer to SOP-12 A-C
1330	10.15'	0.1		7.4	6.64	7704	8.9	122.0	13.0	CLEAR - STRONG
1335	10.29'	0.1	0.5	7.1	6.77	7924	5.1	113.9	10.73	HYDROCARBON ODOR
1340	10.39	0.1	1	6.8	6.78	7902	5.5	110.8	11.1	CLEAR
1345	10.50	0.1	1.5	6.4	6.87	7927	4.9	107.9	9.80	
1350	→ SAMPLE TIME									
1415	→ FINISHED SAMPLING									
			↳ 45 MIN OF PURGING → ~4.5 L → 1.19 gal							
1420	- WELL LOCKED (2013) MASTER LOCK									

Sampling Data

Bottle Label	Sample Time	Sampling Parameter(s)	Preservative	Method	Other
MW-2	1350	VPH	HCl		
		EPH	HCl		
		LEAD SCAV.	HCl		

Samples Analyzed by: Lab Name: ENERGY LABS

NewFields Perspective. Vision. Solutions.

Project: LEGANES MOTEL		Personnel: P. MOFFITT
Project # 350.0331		
Date/Time: 1/19/18 1650 / 1/20/18 0830		

Groundwater Sampling and/or Development Field Form

Well ID/Sample Location: MW-3		Measuring Point (mp) 2"	(+GS)
Well Type: MW	Total Depth: 29.55 (bgs / bmp)	Casing Type: PVC	
SWL before purging: 7.92' (bgs / bmp)	SWL post purge: (bgs / bmp)	Well Diameter: OD: (" ID: 2")	
Well Locked: Y / N	Cap/lid: Y / N	Photos taken: Y / N	Monument Type: FLUSH MOUNT

Purge & Sampling Equipment:

Pump Type: PERISTALTIC	Pump Depth: ~18' ( ) bgs / bmp	
Purging Method: LOW FLOW	Sampling Method: LOW FLOW	$1ft^3$ = 7.48 gal
1 Casing Vol: 0.97 gal	3 Casing Vol: 2.91 gal	Total Vol. Removed: ~1.58 gal

Instrument Calibration: See Calibration Sheet on _____

Well Evacuation & Monitoring Data

Time	DTW (bmp)	Purge Rate (L/min)	Purge Vol. (L)	Temp (°C)	pH	SC (µS/cm)	DO (mg/L)	ORP (mV)	Turb (NTU)	Comments
Guidelines/Goals	<0.3'	0.1-0.5	---	± 3%	± 0.1	± 3%	±10% if >0.5 or 3 @ <0.5	± 10mV	± 10% or <10NTU	Note: Refer to SOP-12 A-C
1625	11.20	0.1		7.9	6.73	7629	6.6	80.0	87.1	
1630	13.60	0.1	0.5	7.9	6.77	7243	6.8	54.0	721	
1635	13.85'	0.1	1	7.7	6.79	7899	9.5	44.3	1601	LOWER TUBING TO 22'
1640	16.67'	0.1	1.5	7.5	6.78	7544	11.9	52.7	976	DRAWDOWN TOO FAST
1645	18.91'	0.1	2	8.0	6.77	7684	7.6	53.0	1275	
1650										

↳ SAMPLE TIME - DIDN'T REACH STABLE TURBIDITY, WORRIED ABOUT DRAWDOWN

1715 - WELL DRAWDOWN COMPLETELY WHILE FILLING LAST BOTTLE (1L)
↳ WILL COME BACK TOMOR AND FINISH THE FILL

- HISTORICALLY MW-3 DOESN'T MAKE ANY WATER, THIS WAS EXPECTED.

1/20/18
SEE NOTE AT BOTTOM OF PAGE

↳ PURGED/SAMPLED FOR 10 MIN ON 1/20/18 → TOTAL PURGE TIME = 60 MIN → 6 L → 1.58 gal

Sampling Data

Bottle Label	Sample Time	Sampling Parameter(s)	Preservative	Method	Other
MW-3	~~1830~~	VOH	HCL		
	1650	EPH	HCl		
		LEAD SCAN.	HCl		

Samples Analyzed by: | Lab Name:

NOTE: 1/20/18 → SWL = 19.58' bmp, NEED TO FILL 1.5 L (2 BOTTLES, 1 IS ALREADY HALF FILL).
→ CAN'T TAKE PARAMETERS AS THERE IS NOT ENOUGH WATER IN WELL, WILL JUST FILL IMMEDIATELY AFTER STARTING PURGE

NewFields
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Project: LEGANES MOTEL
Project # 380.0331
Date/Time: 1/20/18 0920
Personnel: P. MOFFITT

Groundwater Sampling and/or Development Field Form

Well ID/Sample Location: MW-4
Measuring Point (mp) -4" bgs (+GS)
Well Type: MW
Total Depth: 19.65' (bgs / bmp)
Casing Type: PVC
SWL before purging: 8.88' (bgs / bmp)
SWL post purge: 11.11 (bgs / bmp)
Well Diameter: OD. 1" ID. 3/4")
Well Locked: Y / N
Cap/lid: Y / N
Photos taken: Y / N
Monument Type: FLUSH MOUNT

Purge & Sampling Equipment:

Pump Type: PERISTALTIC
Pump Depth: 16' ( ) bgs / bmp
Purging Method: LOW FLOW
Sampling Method: LOW FLOW
$1ft^3 = 7.48$ gal
1 Casing Vol: 0.48 gal
3 Casing Vol: 1.44 gal
Total Vol. Removed: ~ 1.98 gal

Instrument Calibration: See Calibration Sheet on 1/20/18

Well Evacuation & Monitoring Data

Time	DTW (bmp)	Purge Rate (L/min)	Purge Vol. (L)	Temp (°C)	pH	SC (µS/cm)	DO (mg/L)	ORP (mV)	Turb (NTU)	Comments
Guidelines/Goals	<0.3'	0.1-0.5	---	± 3%	± 0.1	± 3%	±10% if >0.5 or 3 @ <0.5	± 10mV	± 10% or <10NTU	Note: Refer to SOP-12 A-C
0945	9.45'	0.1		1.0	6.83	10766	52.2	118.7	1442	STRONG HYDROCARBON ODOR
0950	9.78	0.1	0.5	4.7	6.76	10375	21.0	106.6	623	↳ YELLOW COLOR
0955	9.89	0.1	1	5.2	6.77	10396	12.8	103.3	27.0	- CLEAR (SLIGHTLY YELLOW)
1000	9.92	0.1	1.5	4.5	6.76	10405	9.5	102.9	69.7	" "
1005	10.25	0.1	2	5.9	6.86	10320	6.7	99.8	59.3	- CLEAR
1010	10.45	0.1	2.5	5.9	6.98	10469	4.6	99.0	40.2	" "
1015	10.66	0.1	3	5.5	6.70	10516	3.6	99.9	31.9	" "
1020	10.85	0.1	3.5	5.5	6.71	10458	2.9	100.0	56.7	" "
1025	11.00	0.1	4	5.7	6.76	10399	3.3	99.1	69.5	
1030	11.19	0.1	4.5	5.9	6.77	10421	2.9	97.9	60.7	
1035	11.41	0.1	5	6.0	6.76	10401	3.0	96.8	61.4	
1040	→ SAMPLE TIME									
1100	→ FINISHED SAMPLING									
	↳ 75 MIN OF PURGING → 7.5 L → 1.98 gal									

Sampling Data

Bottle Label	Sample Time	Sampling Parameter(s)	Preservative	Method	Other
MW-4	1040	VPH	HCL		
		EPH	HCL		
		LEAD SCAN.	HCL		

Samples Analyzed by: Lab Name: ENERGY LABS

NewFields Perspective. Vision. Solutions.	Project: Lee Ann's Motel	Personnel: P. Moffitt
	Project # 320.0339	
	Date/Time: 1/19/18 1/20/18	

Groundwater Sampling and/or Development Field Form

Well ID/Sample Location: MW-5		Measuring Point (mp) -3" (+GS)	
Well Type: MW	Total Depth: 15.71 (bgs / bmp)	Casing Type: PVC	
SWL before purging: 6.57 (bgs / bmp)	SWL post purge: (bgs / bmp)	Well Diameter: OD: 1" ID: 3/4 ( )	
Well Locked: Y / N	Cap/lid: Y / N	Photos taken: Y / N	Monument Type: Flush Mount

Purge & Sampling Equipment:

Pump Type: Peristaltic Pump	Pump Depth: 10' ( ) bgs / bmp	
Purging Method:	Sampling Method:	$1ft^3 = 7.48$ gal
1 Casing Vol:	3 Casing Vol:	Total Vol. Removed: NA

Instrument Calibration: See Calibration Sheet on 1/19/18

Well Evacuation & Monitoring Data

Time	DTW (bmp)	Purge Rate (L/min)	Purge Vol. (L)	Temp (°C)	pH	SC (µS/cm)	DO (mg/L)	ORP (mV)	Turb (NTU)	Comments
Guidelines/Goals	<0.3'	0.1-0.5	---	± 3%	± 0.1	± 3%	±10% if >0.5 or 3 @ <0.5	± 10mV	± 10% or <10NTU	Note: Refer to SOP-12 A-C

1520 * WELL DRAWDOWN PAST POLY TUBING W/IN FIRST
1/19/18 MINUTE OF PURGE → WILL LET RECOVER OVERNIGHT AND SAMPLE IN MORNING W/OUT PURGING/REMAINING PARAMETERS

1/20/18 → NOT ENOUGH WATER IN WELL TO COLLECT A SAMPLE FROM

∇ = 14.14' btoc

Sampling Data

Bottle Label	Sample Time	Sampling Parameter(s)	Preservative	Method	Other
NA					

Samples Analyzed by: Lab Name: ENERGY LABS

APPENDIX B
Proposed Project Schedule

Proposed Schedule
Former LeeAnn's Motel Site Cleanup Project
Poplar, Montana

Day	2/14/20	2/21/20	2/28/20	3/6/20	3/13/20	3/20/20	3/27/20	4/3/20	4/10/20	4/17/20	4/24/20	5/1/20	5/8/20	5/15/20	5/22/20	5/29/20	6/5/20	6/12/20	6/19/20	6/26/20	7/3/20	7/10/20	7/17/20	7/24/20	7/31/20	8/7/20	8/14/20	8/21/20	8/28/20	9/4/20	9/11/20	9/18/20	9/25/20
CLEANUP PLANNING																																	
Submit Draft Soil Cleanup Plan to FPT and DEQ	D																																
DEQ Review of Draft Soil Cleanup Plan																																	
Prepare Final Soil Cleanup Plan					D																												
PTS Submits Cleanup Plan Approval to Petrofund Board																																	
PTRCB Approval and Obligation of Cleanup Plan																																	
SITE CLEANUP																																	
Cleanup Logistical Planning																																	
Contract Excavation company																																	
Soil Excavation, Confirmation Sampling and Backfill																																	
Replacement Well Installation																																	
Initial Groundwater Sampling [1]																																	
CLEANUP REPORTING																																	
Analysis of Soil Confirmation and Groundwater Samples																																	
Prepare Draft Cleanup Report																												D					
DEQ Review of Draft Soil Cleanup Plan																																	
Prepare Final Cleanup Report, including Request for GW Monitoring Status Determination																															D		
Regulatory Approval of Cleanup Report																																◊	
Site Cleanup Complete																																	◊

Notes:

D - Deliverable

◊ - Milestone

[1] Frequency of post-cleanup groundwater sampling will be determined with DEQ after cleanup is complete.

Project Schedule depends on review and approval of documents by agencies within timeframes indicated.

- NewFields

- Regulatory Agency

APPENDIX C
Health & Safety Plan

NewFields

HEALTH AND SAFETY PLAN

Former LeeAnns Motel, Poplar, Montana

Project No.: 350.0143.016

1. HASP Preparation and Approval

Project Name: Former LeeAnns Motel, Poplar, Montana
Task: Petroleum-contaminated Soil Excavation, Monitoring Well Installation, Groundwater Sampling
Proposed Start Date: May 2020

Created by:

Printed Name: David Sanborn

Signature_____ Date February 11, 2020

Title: Environmental Scientist

Approved by:

Printed Name: Chris Cerquone

Signature _____ Date February 11, 2020

Title: Project Manager

Note to Project Managers:

A signed and completed copy of the Health and Safety Plan and a signed and completed copy of the safety briefing (last page) must be included in the project file.

2. Project Description:

NewFields has completed a Corrective Action Plan (CAP) for the contaminated soil excavation and disposal at the Former LeeAnns Motel on behalf of the current site owner, Keith Red Elk, in response to correspondence from the Montana Department of Environmental Quality (DEQ). The plan proposes the following tasks:

- Excavation of subsurface petroleum-contaminated soils
- Confirmation soil sampling
- Groundwater removal from excavation
- Monitoring well installation, removal, and replacement

3. Location:

The one-parcel Site is located at 150 F Street in Poplar, Montana and lies in Township 27 North, Range 50 East, Section 12. The approximate latitude and longitude of the Site is 48° 06' 45.87"' North and 105° 11' 46.69" West, respectively. The Site is located at an elevation of approximately 1,995 feet above mean sea level.

4. Site Description:

The site is located in Poplar, Montana (**Figure 1**). As shown in **Figure 2**, the site has five structures: a former laundry building, three motel buildings, and a shop/abandoned gas station building. The northern-most motel building burned in February 2014, and the Fort Peck Tribes will be demolishing all of the buildings except the shop building in the northeastern corner of the site in the spring of 2020. The Site is bordered to the west by 2nd Avenue West, to the east by 1st Avenue West, and to the north by F Street West (concurrent with U.S. Highway 2).

5. Proposed Personnel and Tasks:

Field Team Leader: Levi McKay

Field Personnel: Sam Pickett, Pat Moffitt, or Heather Grotbo

Proposed Field Team	Job Function/Tasks
Levi McKay	Project Coordination, Health & Safety Oversight, Project Reporting
Sam Pickett, Pat Moffitt, or Heather Grotbo	Site Cleanup Oversight, Data Collection & Documentation

Note that all Field Personnel and the Field Team Leader have the authority to stop work, should unsafe conditions or violations of the Cleanup Plan specifications be observed.

6. Confined Space Entry

A confined space is defined as any space not currently used or intended for human occupancy, having a limited means of egress, which is subject to the accumulation of toxic contaminants, a flammable or oxygen deficient atmosphere, or other hazards, such as engulfment, or electrical or mechanical hazards should equipment be inadvertently activated while an employee is in the space. Confined spaces include but are not limited to storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, air pollution control devices, smoke stacks, underground utility vaults, sewers, septic tanks, and open top spaces more than four feet in depth such as test pits, waste disposal trenches, sumps and vats.

Will this task require entry into any confined or partially confined space? ☐ YES - Describe below

☒ No

7. Cutting and Welding

Will this task involve use of a cutting torch or welding?

☐ YES - Describe below

☒ No

8. Other Potential Hazards

☒ Chemical
☐ Radiological
☒ Fire/Explosion
☒ Cold Stress
☒ Electrical
☒ Machinery/Mechanical Equipment
☒ Trips, Slips, Falls
☒ Trenching/Shoring
☒ Heavy Equipment/Vehicular Traffic (adjacent to site)
☐ Overhead Hazards
☒ Unstable/Uneven Terrain
☒ Other - Describe below

9. Chemical/Radiological Hazard Evaluation

Waste Media	**Hazardous Characteristics**
☒ Airborne Contamination (petroleum)	☒ Ignitable
☒ Surface Contamination	☐ Corrosive
☒ Contaminated Soil	☐ Reactive
☒ Contaminated Groundwater	☐ Explosive
☐ Contaminated Surface Water	☒ Toxic (non-radiological)
☒ Solid Waste	☐ Radioactive
☒ Liquid Waste	
☐ Sludge	

This task involves a reasonable possibility of exposure to the substances listed below at concentrations or in quantities which may be hazardous to the health of the site personnel.

- Petroleum Hydrocarbons

11. Ambient Air/Site Monitoring Procedures

The following instruments shall be used to monitor the work environment and workers' breathing zones prior to site entry and at the specified intervals.

Instrument	**Monitoring Frequency**				
☒ PID (HNU, OVM) w/ 10.6 eV lamp	Cont.	15min.	30min.	hourly	other _____
☐ Multi Gas Meter – including PID	Cont.	15min.	30min.	hourly	other _____
☐ Combustible Gas Indicator	Cont.	15min.	30min.	hourly	other _____
☐ H2S Detector	Cont.	15min.	30min.	hourly	other _____
☐ Colorimetric Detector Tubes	Cont.	15min.	30min.	hourly	other _____
☐ Other (describe below)	Cont.	15min.	30min.	hourly	other _____

12. Action Levels

- 25 ppm of petroleum vapors in breathing space while petroleum-related work is completed.

13. Personal Monitoring

☐ Passive Dosimeter ☐ Personal Air Sampling ☒ Other: visual and olfactory observation

14. Onsite Control

The site will be fenced during the site cleanup work to keep site visitors from entering the property. Should a visitor enter the fenced area (i.e. work zone), they will be required to review and sign this HASP.

15. Personal Protective Equipment

List the specific protective equipment, where applicable, for each Level of Protection identified below:

Level D PPE ☒

- ☐ Flame resistant clothing
- ☒ Hard hat, steel toed boots, safety glasses
- ☒ Ear protection during equip. operation
- ☒ Protective Eyewear
- ☒ Inert latex or nitrile gloves

16. Special Instructions

<u>Excavation of Petroleum-Impacted Soils</u>

The excavation and removal of subsurface petroleum-contaminated soil will involve use of heavy equipment in a small area and collection of subsurface soil samples in excavations greater than 4 feet. Key elements to maintain a safe work environment during this project include:

a) No smoking is allowed on the site during all phases of work.

b) No food of any kind shall be consumed on site. When breaking for lunch or another meal, wash your hands prior to eating to prevent inadvertent exposure.

c) A first aid kit, including a portable eye wash bottle, shall be on site during the work. If something gets in your eye, thoroughly flush with the eye wash bottle for 10 minutes, or until the irritant is removed. Don't hesitate to go to the Poplar Community Hospital if the irritant cannot be removed, or if a chemical has entered your eye. With eye injuries, time is of the essence when protecting your vision.

d) No on-site workers shall enter any excavation greater than 3 feet deep, or be allowed within 3 feet of the excavation sidewall.

e) The excavation shall at all times have sidewall slopes equal or greater than 1:2 vertical to horizontal.

f) All clean soils exhumed to reach contaminated soils shall be stockpiled a minimum of 3 feet from the excavation sidewalls.

g) Soil samples required from the excavations at depth greater than 3 feet below ground shall be collected from the excavator bucket at ground surface after the excavator has exhumed the subsurface soil.

h) A communication plan between the NewFields scientist overseeing the excavation and the earthwork contractor should be developed prior to beginning of excavation work. It is recommended that hand-held radios to be used to allow workers to communicate around heavy equipment.

i) When working in close proximity to the excavator or other heavy equipment, on-site workers shall always approach the equipment from the front and make eye contact with the operator prior to approaching. Confirmation from the operator that he sees you and has authorized approach to the equipment is required prior to approaching within 25 feet of any heavy equipment.

j) Workers shall be in Level D protection during the project. Air monitoring using the Photoionization Detector (PID) shall be completed periodically to ensure on-site personnel are not exposed to elevated concentrations of

volatile organic compounds. Should PID readings consistently approach 10 ppm in the breathing zone, on site workers shall don a half- or –full face respirator to continue work, or stop work until levels consistently lower to below 10 ppm.

k) When you lift any piece of equipment or material greater than 40 pounds, ensure no one is in close proximity that may alter your footing, ensure you have adequate solid footing, be close enough to what you are lifting to not require significant leaning forward, and bend at the knees to allow your legs to do the work. Don't twist or jerk your body, or lift something far from you to avoid back or other muscle injuries.

l) Pay attention to the weather and be prepared by having appropriate clothing to keep you warm and dry. Take frequent breaks, if needed.

m) Only authorized personnel who have reviewed and signed this HASP will be allowed on site. Prior to initiation of work, a work zone will be delineated with six-foot chain link fencing. Only personnel required to excavate the contaminated soil will be allowed in the work zone, including the operator of the excavator, the project scientist present to collect samples, and regulatory personnel who has read and signed this health and safety plan.

Groundwater Removal

a. A high pressure vacuum truck will be used on site to remove any groundwater accumulating in the bottom of the excavation. No on site personnel shall enter the excavation to complete this task.
b. All vacuum hoses shall be dropped into excavation from the vac truck operator. No one other than the vac truck operator shall touch or assist in the removal of the water.
c. Keep at least 3 feet away from the rear of the vac truck and any valves or hose connections.
d. At no point shall on site personnel place their hands or any body part near the suction end of the vac hose.
e. The vacuum truck shall remain at least 10 feet from the edge of the excavation. The weight of a full vac truck has the potential to collapse soils.
f. Hearing protection, preferably ear muffs shall be work whenever the vac truck is in operation.
g. All contaminated groundwater shall be disposed of at a proper facility.

Well Installation

NewFields will oversee the installation of replacement wells after contaminated soils have been removed and the excavation has been backfilled. A Job Safety Analysis specific to drilling is attached to this HASP.

17. Sanitation Requirements

Potable water supply available on work site?	☐ Yes ☒ No
Portable toilets required on work site?	☒ Yes, how many? 1 ☐ No
Temporary washing/shower facilities required at work site?	☐ Yes, describe below. ☒ No

18. Emergency Procedures (This page is to be posted at prominent location on site)

Yes No

☐ ☒ On-site Communications Required? Emergency Channel: _____

Nearest Telephone: Cell phone

Fire and Explosion

In the event of a fire or explosion:

1. Evacuate the area – Safe Refuge Area (empty lot located south of work area).
2. Notify emergency personnel (Emergency Services: 911).
3. Notify NewFields project coordinator (Chris Cerquone: 406-830-6102)

On Site Injury or Illness

In the event of an injury requiring more than minor first aid, or any employee reporting any sign or symptom of exposure to hazardous substances, immediately call for emergency medical assistance by calling:
Emergency Services: 911.

Local Emergency Room *(SEE ATTACHED MAP)*

Name: **Poplar Community Hospital**
Location: **211 H ST E, Poplar, MT 59255** (see attached map)
Phone: **(406) 768-6100**

Contacts in Case of Injury, Illness, or Near Miss:

Project Manager: Levi McKay Phone (cell): 406-370-4536

Health and Safety Officer: Chris Cerquone Phone (cell): 406-830-6102

19. Safety Briefings and Signature

Each morning, NewFields will facilitate a safety briefing before work begins. If a visitor must enter the work zone, a separate safety briefing shall be held for this individual. Pertinent tasks to be completed for the day and the potential safety hazards should be discussed at the safety briefings, and the following should be confirmed prior to beginning work each day.

Fully charged ABC Class fire extinguisher available on site? ☐ YES

Fully stocked First Aid Kit available on site? ☐ YES

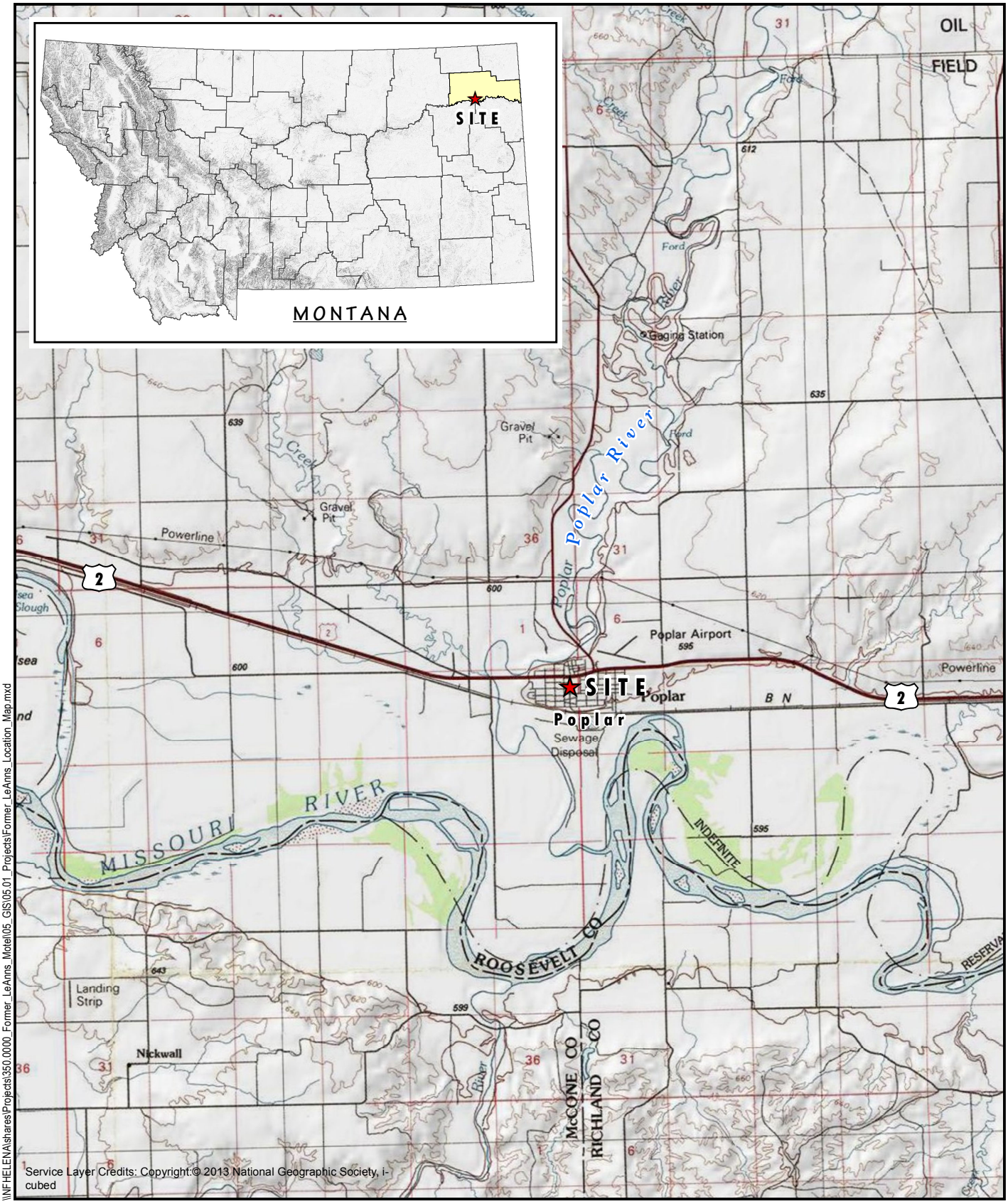
All project personnel advised of location of nearest phone? ☐ YES

All project personnel advised of location of designated medical facility or facilities? ☐ YES

All personnel, including visitors entering the work zone must sign below indicating they have read the HASP and are familiar with its provisions:

Printed Name	Signature

SITE FIGURES



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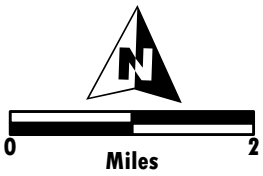
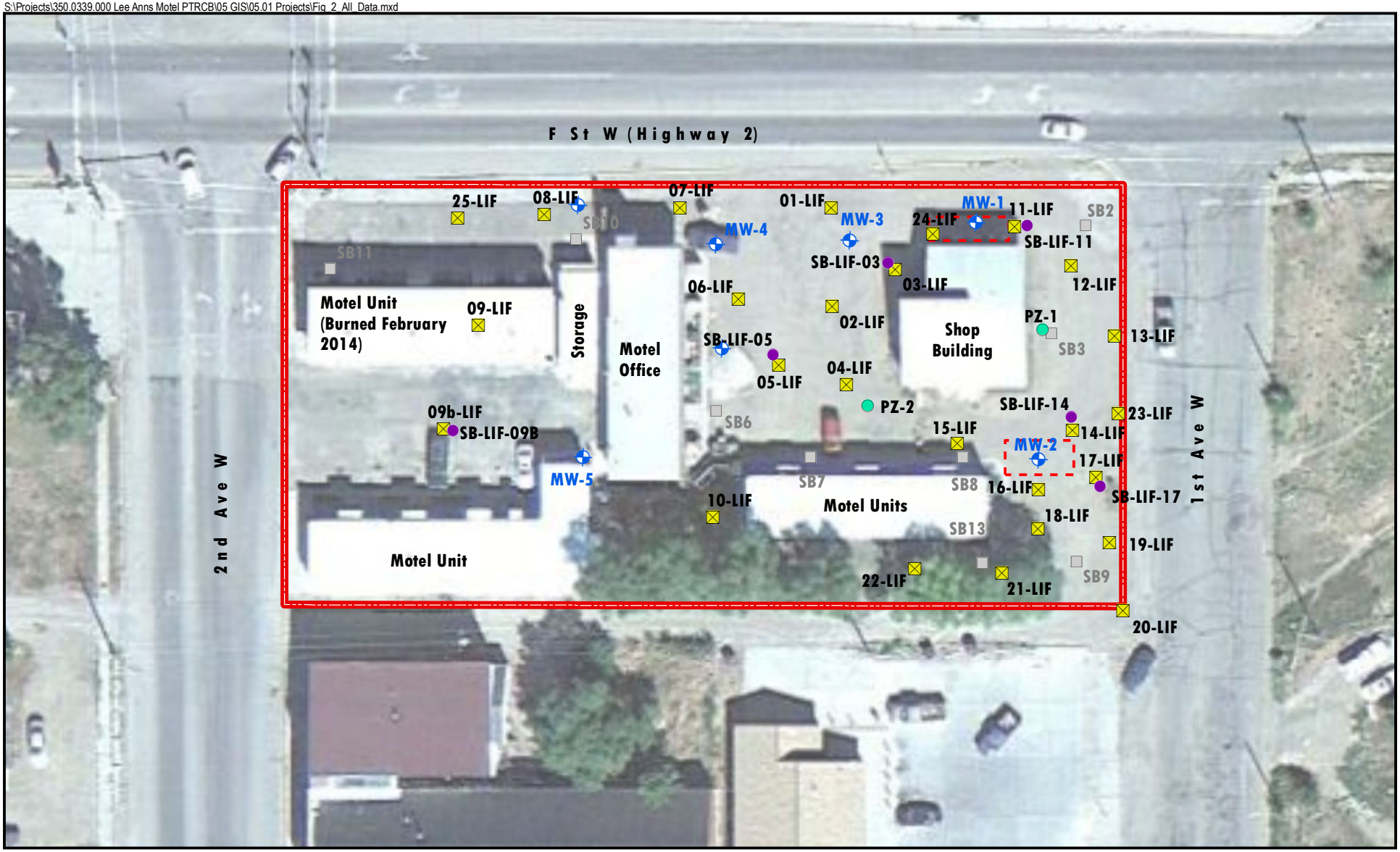


NewFields

Location Map
Former LeeAnns's Motel
Poplar, Montana
FIGURE 1

S:\Projects\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\Fig_2_All_Data.mxd



Source: Google Earth Imagery, 2013

N

0 Feet 50

NewFields

NewFields Sample Locations (2018)

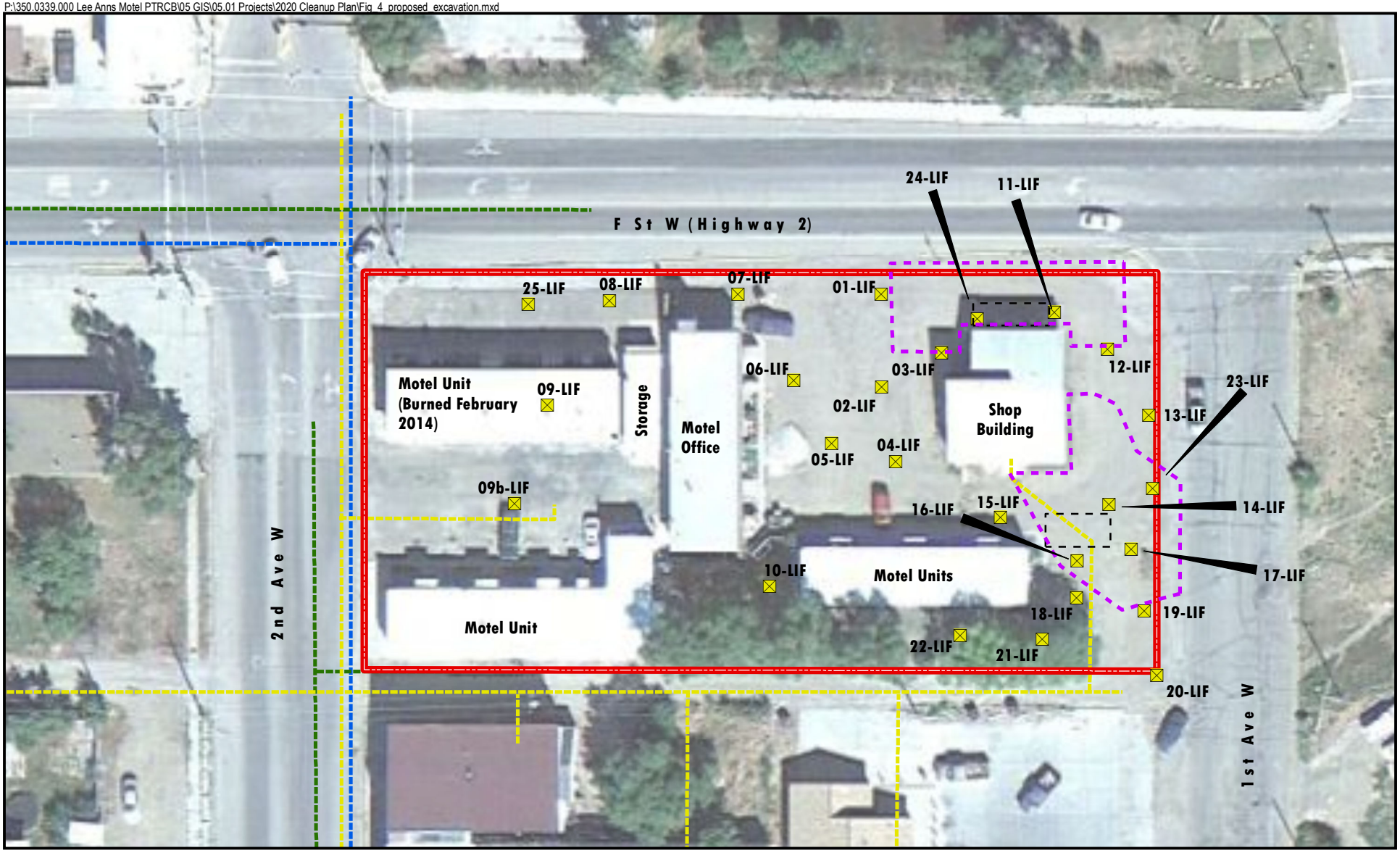
- 2018 Confirmation Soil Borings
- 2018 LIF Borings
- Approximate Property Boundary
- Former UST Basin

JBR Sample Locations (2013)

- Soil Borings
- Monitoring Well
- Piezometer

Site Plan
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 2

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\2020 Cleanup Plan\Fig_4_proposed_excavation.mxd



Source: Google Earth Imagery, 2013

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NewFields

Approximate Property Boundary

2018 LIF Borings

Former UST Basins (Approximate)

Proposed Excavation

Underground Utilities (Approximate)

Gas Service Line

Sanitary Sewer Service Line

Water Service Line

Proposed Excavation Map
Former LeeAnn's Motel
150 F Street
Poplar, Montana
FIGURE 5

P:\350.0339.000 Lee Anns Motel PTRCB\05 GIS\05.01 Projects\2020 Cleanup Plan\Fig_4_proposed_excavation.mxd

Source: Google Earth Imagery, 2013

0 Feet 50

NewFields

Approximate Property Boundary

Former UST Basins (Approximate)

Proposed Excavation

New/Replacement Monitoring Well

Existing Monitoring Well

Underground Utilities (Approximate)

Gas Service Line

Sanitary Sewer Service Line

Water Service Line

Existing & Proposed Monitoring Wells
Former LeeAnn's
Motel 150 F Street
Poplar, Montana
FIGURE 6

MAP TO HOSPITAL

Google Maps 150 F St W, Poplar, MT 59255 to Poplar Community Hospital

Drive 0.4 mile, 2 min

Imagery ©2020 Maxar Technologies, Map data ©2020 100 ft

150 F St W

Poplar, MT 59255

1. Head east on US-2 E toward 1st Ave W — 0.2 mi
2. Turn left onto Court Ave — 0.1 mi
3. Turn left toward H St W — 112 ft
4. Slight left onto H St W — 282 ft
5. Turn right — 56 ft
   - Destination will be on the right

Poplar Community Hospital

211 H St W, Poplar, MT 59255

Drilling JSA

JOB SAFETY ANALYSIS
Borehole Drilling/Well Installation

Project: LeeAnns Motel		**Project No.:** 350.0143.016
Date: 2/11/2020	**Project Manager:** Levi McKay	**Health & Safety Officer:** Chris Cerquone
Task: Well Drilling		**Location:** Poplar, Montana

Required Personal Protective Equipment:

Safety Glasses __X___ Steel Toed Shoes __X___ Hard Hat __X___ Nitrile Gloves __X___ Leather Gloves_____
Hearing Protection __X___ FRC Clothing _____ Safety Vest __X__

TASK	POTENTIAL HAZARDS	PREVENTATIVE/CORRECTIVE ACTION
Travel to site	General Safety	❒ Follow general traffic rules, obey speed limit. ❒ Drive according to road conditions. ❒ Fasten seat belt. ❒ If traveling alone check in with PM after driving. ❒ No cell phone use while driving. ❒ Route should be planned in advance. ❒ Driver should be rested and alert. ❒ Inspect area around vehicle prior to putting it in motion.
	Driving accidents – poor road conditions (muddy, wet, ice, snow) and heavy truck traffic	
Work Site Set-Up	Heat Stress	❒ Consume adequate food/beverages. ❒ Wear appropriate clothing for weather conditions. ❒ Take breaks if necessary to cool-down or warm up.
	Sunburn	❒ Minimize sun exposure. ❒ Wear long clothing. ❒ Apply sunscreen regularly.
	Vehicle/equipment traffic	❒ Coordinate with driller to review this JSA, discuss safety issues, and required location of equipment to create safe working conditions. ❒ Inspect area around work location prior to initiating activities to ensure no slip/trip/fall or biological hazards.
	Unhealthy atmospheres	❒ Monitor work area with PID. If PID readings in the breathing zone are consistently above 10 ppm, workers, including the driller, wear respirators.
	Hearing damage from high noise levels	❒ Use hearing protection (ear muffs or ear plugs) if noise > 85 db around operating equipment on drill pad.
	Uneven or unstable ground	❒ Visually examine site prior to initiating / commencing work, fully inspect work area to identify and mitigate any trip hazards (i.e. steep slopes or uneven terrain), as well as any biological hazards.
	Inclement weather	❒ Wear proper attire for weather conditions. Ensure outer layer is high visible. Bring additional items for weather changes and / or removal of wet clothing. Monitor for effects of working in hot climates. Know the symptoms of heat-related illnesses. Plan and take breaks to combat weather related illnesses.

JOB SAFETY ANALYSIS
Borehole Drilling/Well Installation

Project: LeeAnns Motel			**Project No.:** 350.0143.016
Date: 2/11/2020	**Project Manager:** Levi McKay	**Health & Safety Officer:** Chris Cerquone	
Task: Well Drilling			**Location:** Poplar, Montana

Required Personal Protective Equipment:
Safety Glasses __X___ Steel Toed Shoes __X___ Hard Hat __X___ Nitrile Gloves __X___ Leather Gloves_____
Hearing Protection __X___ FRC Clothing _____ Safety Vest __X__

TASK	POTENTIAL HAZARDS	PREVENTATIVE/CORRECTIVE ACTION
	Slip, trip & fall	❒ Inspect work area to determine footing and ground conditions. Don safety glasses, high visible shirt, leather gloves and steel toe boots, include non-slip rubber boots, ice cleats when working on wet, icy or slick surfaces. ❒ Do not run. ❒ Keep work area free of excess material and debris.
Drilling	Drilling Hazards; rotating equipment, hydraulic lines, overhead lifting,	❒ Stay away from the drill, establish good communication with driller. ❒ Set up logging away from rig, minimize time spent near drill rig ❒ If possible have driller/helper collect cuttings samples. ❒ Stay away from overheard lifting, know hand signals.
	Mud hazards; slippery surface, chemical dust, mud pit or tank	❒ Stay upwind of any grout mixing. If necessary to be in close proximity to mixing wear dust mask. ❒ Wash hands or other skin areas which come into contact with drilling mud. ❒ Fence-off mud tank or sump area(s).
	Welding hazards; eye hazard, fire hazard,	❒ Monitor air with 4 gas meter prior to welding. ❒ Stay away from welding activates. ❒ Do not look at arc flash directly.
	Hearing damage from high noise levels	❒ Use hearing protection (ear muffs or ear plugs) if noise > 85 db around operating equipment on drill pad.
Piezometer Installation	Installing steel & PVC casing down drill hole, overhead lifting	❒ Always clamp casing securely while installing. Stay off platform.
	Slips, trips, falls	❒ Ensure good housekeeping around rig. ❒ Drilling areas are very muddy and slippery; mitigate surfaces as necessary. ❒ Ensure good communication with driller when around drill rig.
	Mixing and pumping cement & bentonite grout	❒ Wear dust masks when around mixing cement and bentonite.

APPENDIX D
Cost Estimate

Cleanup Cost Estimate
Petroleum Release
Former Lee Ann's, Poplar, Montana
February 2020

PROJECT TASK	UNITS	RATE		COST
Task 1: Remediation of Petroleum Impacted Soil (per DEQ and EPA requirements)				
Task 1A: Soil Excavation and Disposal				
Consultant Labor				
Project Scientist (planning, coordination, oversight, ROW Encroachment Permit)	32	$125	/hour	$4,000
Staff Scientist (mobilization, field excavation oversight and sampling)	110	$90	/hour	$9,900
			Labor Subtotal	$13,900
Direct Costs				
Excavation				
Temporary Fencing	600	$5.50	/lin. ft.	$3,300
Excavation Contractor Mobilization	1	$6,500	/lump sum	$6,500
Concrete Removal and Disposal	647	$15.00	/square yard	$9,705
Excavation Overburden	817	$4.00	/cubic yard	$3,268
Excavation Contaminated	1,470	$4.00	/cubic yard	$5,880
Overburden Trucking to Staging Area (3 trucks, with operator, for 2 days)	6	$810	/day	$4,860
Trucking Contaminated to Staging Area (3 trucks for 4 days)	12	$810	/day	$9,720
Loader and Operator (pile overburden and contaminated at staging area)	56	$110	/hour	$6,160
Backfill Material	1,470	$20	/cubic yard	$29,400
Backfilling Placement (inlcuding compactor)	2,287	$5.00	/cubic yard	$11,435
Reroute Gas Line	1	$8,500.00	/l.s.	$8,500
Excavation Crew Per diem (4 guys, 6 days)	24	$150	/day	$3,600
Water Removal and disposal	1	$15,000	/lump sum	$16,050
Soil Disposal				
Loader and Operator (load trucks for disposal to Glasgow)	50	$110	/hour	$5,500
Trucking contaminated soil to Glasgow for disposal (5 side dump trucks for 5 days)	25	$1,050	/day	$26,250
Landfill disposal fee	1,840	$20	/ton	$36,800
Analytical - Confirmation and Backfill Source Soil Samples				
VPH	24	$85	/sample	$2,040
EPH Screen	24	$60	/sample	$1,440
EPH Fractions (assuming half of samples need it)	12	$110	/sample	$1,320
RCRA Metals backfill materials	2	$100	/sample	$200
Sample shipment	4	$200	/lump sum	$800
Miscellaneous Direct Costs				
PID	6	$45.00	/day	$270
Visqueen plastic	4	$80.00	/rolls	$320
misc. field equipment	1	$250	/lump sum	$250
per diem	10	$30	/day	$300
lodging	8	$100	/day	$800
field vehicle	10	$100	/day	$1,000
fuel	1	$250	/lump sum	$250
			Direct Cost Subtotal	$195,918
			Task 1A Total	$209,818

Cleanup Cost Estimate
Petroleum Release
Former Lee Ann's, Poplar, Montana
February 2020

PROJECT TASK	UNITS	RATE	COST
Task 1B: Monitoring Well Replacement and Groundwater Sampling			
Consultant Labor			
Staff Scientist (field oversight of well installation)	20	$90 /hour	$1,800
Staff Scientist (groundwater sampling)	16	$90 /hour	$1,440
		Labor Subtotal	$3,240
Direct Costs			
Driller - Drill and install 3 replacement wells and 2 new wells	1	$8,500 /lump sum	$9,095
Analytical - Groundwater Samples (7 wells, plus duplicate and ERB, trip blank)			
VPH	10	$85 /sample	$850
EPH Screen	9	$60 /sample	$540
EPH Fractions (assuming roughly half of samples need it)	5	$110 /sample	$550
Sample shipment	3	$200 /lump sum	$600
PID	1	$45.00 /day	$45
Well surveying	1	$1,400.00 /lump sum	$1,498
Bladder Pump with Controller	2	$150 /day	$300
per diem	2	$35 /day	$70
lodging	2	$100 /day	$200
field vehicle	2	$100 /day	$200
fuel	1	$75 /lump sum	$75
		Direct Cost Subtotal	$14,023
		Total Task 1B	$17,263
		Total Task 1 (Remediation of Petroleum-Impacted Soil)	**$227,081**
Task 2: Preparation of Cleanup Report (Petroleum Cleanup Work)			
Consultant Labor			
Principal Review	8	$165 /hour	$1,320
Project Scientist	12	$125 /hour	$1,500
Staff Scientist	80	$90 /hour	$7,200
GIS/CADD	12	$90 /hour	$1,080
Administrative Assistant	4	$65 /hour	$260
Document Production	5	$65 /each	$325
		Total Task 2 (Preparation of Cleanup Report)	**$11,685**
		Subtotal	**$238,766**
		Total Task 3 (Project Management)	**$16,714**
		TOTAL ESTIMATED CLEANUP COST	**$255,480**

Key Assumptions/Notes

1) Actual costs for engineering oversight will be charged on a time and materials basis, and therefore may be higher or lower.

2) Estimate for the earthwork are based on experience. Bids will be obtained by earthwork contractors. Estimate assumes excavation of overburde contaminated will require 6 days, and backfilling will require 2 days.

3) Estimate assumes contaminated soils will be transported and disposed of at Valley County Landfill in Glasgow, Montana.

4) Cost estimate assumes replacing abandoned wells (MW-1 & MW-2) and replacing both.

5) Water removal during during excavation will serve two purposes: 1) removing water from excavation floor and 2) disposal of petroleum-contami to aid in gw remediation