ARCADIS Design & Consultancy for natural and built assets

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Subject:
Southern Terminals Investigation Summary Report
Cold Springs Terminals
Hillside Road, Lysander, New York

ENVIRONMENT

Date:
September 28, 2018

Contact:
Vin Maresco

Phone:
315 671 9256

Email:
vin.maresco@arcadis.com

Our ref:
B0090004.0008

Dear Harry:

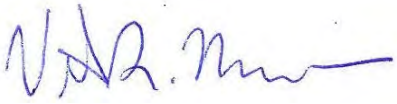
Enclosed you will find one hard copy of the above-referenced document. This document summarizes the findings generated as a result of the execution of the previously approved field work plan pertaining to the subject site. I believe this report can inform the adjustments needed to the existing October 2015 Remedial Action Work Plan (GES) as there is data in this document from areas of the site not previously accessible.

Once you have had a chance to review the document I would be more than happy to meet in person and discuss the findings and conclusions. I will be in touch in early October to discuss a possible meeting.

If you have any questions or require additional information before that time, please call me at 315.671.9256.

Sincerely,

Arcadis of New York, Inc.



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Krista Manley, Buckeye (electronic copy)
Stephen Gonzalski, BP (electronic copy)
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Enclosure:
Southern Terminals Investigation Summary Report

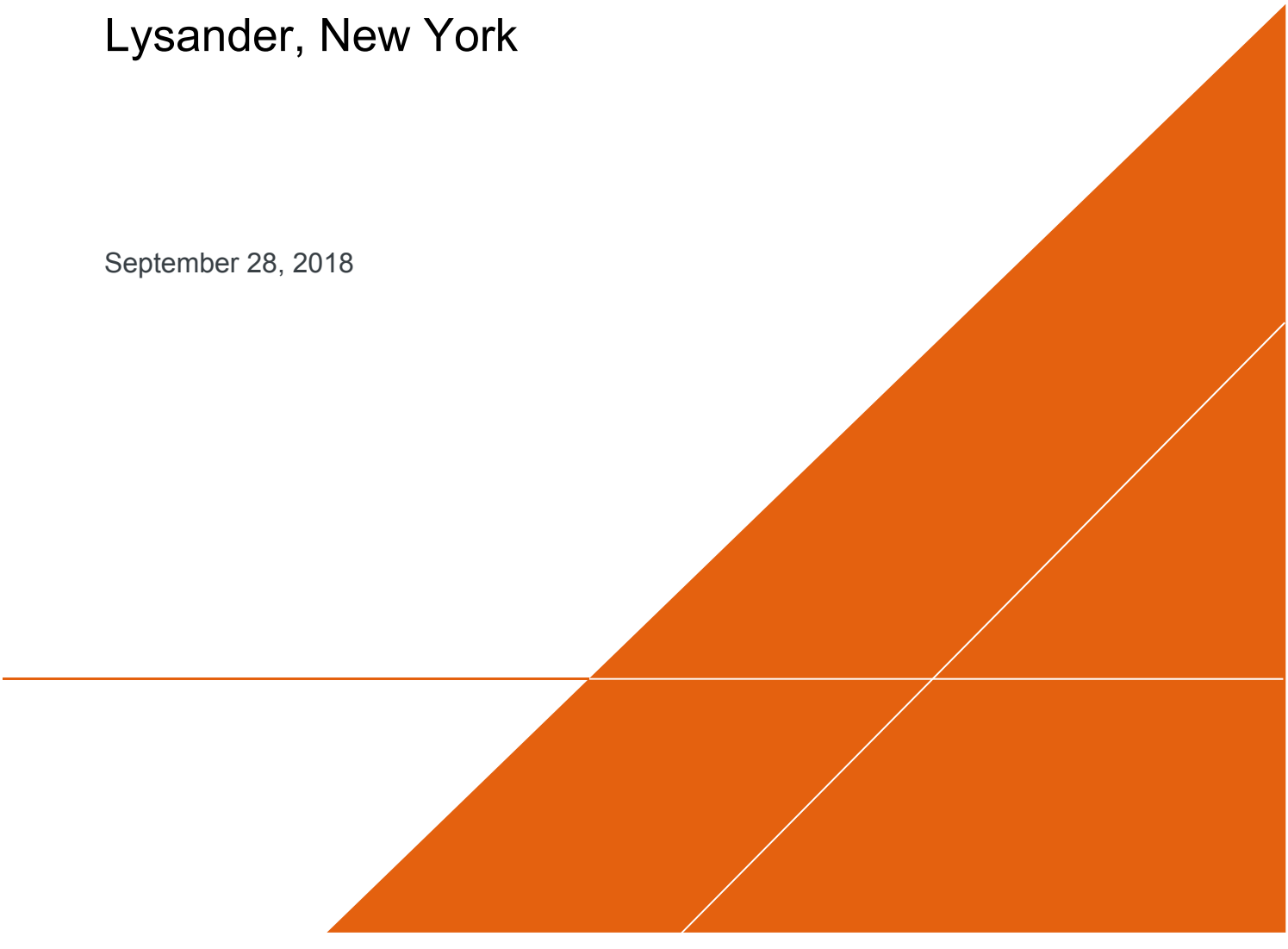
ARCADIS Design & Consultancy for natural and built assets

SOUTHERN TERMINALS INVESTIGATION SUMMARY REPORT

Southern Cold Springs Terminals

Lysander, New York

September 28, 2018



SOUTHERN TERMINAL INVESTIGATION SUMMARY REPORT

Southern Cold Springs Terminals
Lysander, New York

Nicholle R. Griffith
Geologist

Vincent S. Maresco
Project Manager

Prepared for:

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Date:

September 28, 2018

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ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis U.S., Inc.
bgs	below ground surface
LIF	Laser Induced Florescence
NAPL	non-aqueous phase liquid
NYSDEC	New York State Department of Environmental Conservation
PID	photo-ionization detector
ppb	parts per billion
ppmv	parts per million volume
SCGO	standards, criteria, guidance values, or objectives
Southern Terminals	Southern Cold Springs Terminals
SVOCs	semi-volatile organic compounds
TCLP	toxicity characteristic leaching procedure
VOCs	volatile organic compounds

1 INTRODUCTION

This Southern Terminals Investigation Summary Report summarizes the work performed, samples collected, and findings of data with respect to soil from the Southern Cold Springs Terminals (Southern Terminals), located south of Hillside Road. The Southern Terminals are comprised of the Southwestern and Southeastern Terminals. The study area is located on Hillside Road, Hamlet of Cold Springs, Town of Lysander, New York (Figure 1). The Investigation activities described in this document were performed during mobilizations in 2018 by Arcadis U.S., Inc. (Arcadis) and July 2013 by AECOM (2014) as detailed below.

The Investigation consisted of:

- The advancement of a group of 20 Laser Induced Florescence (LIF) probes across the study area (Figure 2);
- As requested by the New York State Department of Environmental Conservation (NYSDEC), the advancement of B122, located near a documented leaking underground storage tank (Figure 2); and
- The advancement of confirmatory borings CB-1 through CB-8 and CB-10 (Figure 2).

The investigation effort was performed in accordance with the Supplemental Characterization and Interim Remedial Action Work Plan (Arcadis 2018a) (Work Plan) and an updated work plan outline in the form of a letter plan. Both the Work Plan (Arcadis 2018a) and the letter plan were submitted to the NYSDEC for input, review, and approval prior to field implementation. The Work Plan (Arcadis 2018a) and the letter plan approvals from the NYSDEC are provided in Appendix 1. The goal of this work scope was to assess previously inaccessible areas of the Southern Terminals which recently became accessible as a result of the removal of former Southern Terminals infrastructure.

1.1 Overview and Summary

This document presents the findings of soil data collected across the former operational area of the Southern Terminals. Investigation methods included LIF, as well as laboratory analysis of soil samples. To evaluate possible spill source areas, the LIF findings and adsorbed-phase data are sorted into sample horizons in the unsaturated zone (above the water table) vs. those samples collected in the saturated zone (within the water table).

The following data observations and conclusions are drawn from this data set:

- Unsaturated Zone LIF: On the Southern Terminals, LIF responses from the 2018 locations are indicative of non-aqueous phase liquid (NAPL) in unsaturated soil (i.e., induced florescence responses > 5%) at all locations, except LIF2 and LIF9, on the Southwestern Terminal, and LIF15 through LIF18 on the Southeastern Terminal. All other 2018 LIF points advanced as part of this study indicated NAPL above the water table in the Southern Terminals historical operational areas. The LIF findings suggest that there are spill sources in various locations across the study area as discussed in detail below.
- Unsaturated Soil Data: Soil data collected from the confirmatory boring set CB-1 through CB-10 indicated unsaturated zone volatile organic compounds (VOCs) in exceedance of CP-51 standards,

criteria, guidance values, or objectives (SCGO) at all locations, except CB-1 and CB-2, on the Southwestern Terminal and at B122 on the Southeastern Terminal. All other CB locations indicated CP-51 VOC SCGO exceedances. These data findings represent a second line of evidence suggesting spill sources across the Southern Terminals study area.

- Saturated Zone Soil Data: Widespread saturated zone soil impacts are found across the Southern Terminals study area. All CB locations, with the exceptions of CB-8 and CB-10, indicated saturated zone CP-51 VOC SCGO exceedances.
- No semi-volatile organic compounds (SVOCs) were found in exceedance of CP-51 SCGO in either the unsaturated or saturated zone across the study area.

2 INVESTIGATION FIELD ACTIVITIES AND METHODS

Key work activities performed as part of this investigation are described under the following subsections:

Subsection 2.1 – Site Reconnaissance and Pre-Investigation Activities

Subsection 2.2 – LIF Probe Advancement Activities

Subsection 2.3 – Soil Boring and Sampling Activities

Subsection 2.4 – Survey

2.1 Site Reconnaissance and Pre-Investigation Activities

Tailgate pre-entry safety meetings and pre-entry site walks (reconnaissance) were conducted for each mobilization. The tailgate meetings were held to discuss the scope of work and coordinate logistics (site access, work hours, health and safety expectations, etc.). In each instance, the meeting was followed by a reconnaissance site walk to observe potential infrastructure locations and assess the location of any utilities, obstructions, or other logistical challenges that would cause scope modifications or delays. In certain instances, some sample locations were adjusted accordingly to site conditions to ensure work was completed in an efficient and safe manner. All adjustments that were made were considered minor or schedule-related, and only field status updates to the NYSDEC were required and provided.

Prior to each ground penetrating mobilization, Parratt-Wolff (drilling subcontractor) provided notification of ground disturbance, as required by law, to the New York Underground Facility Protection Organization (a.k.a. DigSafelyNY) for locating all subsurface utilities. Additionally, a private utility locator, Master Locators, used ground penetrating radar and electromagnetic detection tools to provide additional utility mark-out in the proposed area of B122. Also, for this location, hand-clearing / soft digging methods were used to a minimum of 5 feet below ground surface (bgs) before deploying mechanical soil collection tools.

2.2 LIF Probe Advancement Activities

To advance 20 LIF probe locations across the Southern Terminals study area, Parratt-Wolff, with the subject matter expert subcontractor, Dakota Technologies, drove each LIF probe location and collected LIF response data. To preserve data integrity from the unsaturated zone, the LIF tools were advanced in the subsurface at each location without pre-hand clearing / soft digging. This allowed data to be collected from undisturbed soil from grade to termination depth at each location. LIF response logs for each location are provided in Appendix 2. Each location was abandoned with bentonite chips following tool removal. Table 1 provides locational information for the LIF sample points. Table 2 provides LIF response data.

2.3 Soil Boring and Sampling Activities

Soil borings for locations B122 and CB-1 through CB-10 were advanced using direct-push drilling methods. CB locations were selected in part to confirm the LIF response data. Please note CB-9 was not able to be completed due to field conditions. Table 1 provides the locations for all completed soil borings. Soil samples were continuously collected from grade to terminal depth using 2-inch-diameter, 4-foot long

macro-core liners. All collected soil samples were field screened for VOCs using a field photo-ionization detector (PID). Select soil samples were retained and submitted for laboratory analysis. Table 3 presents PID results for soil samples; Table 4 provides laboratory analytical data results. Soil characteristics were continuously logged by an Arcadis geologist for texture, grainsize, moisture content, and the potential presence of impacts via field PID instrumentation. Each boring termination depth was determined in the field by the on-site Arcadis geologist. Termination depth for B122 was based on the field indication of the absence of impacts. as discussed in the Work Plan (Arcadis 2018a) (Appendix 1). For the purposes of this investigation, field determination of the absence of impact was established at 50 parts per million volume (ppmv) or less on the field PID. Termination depth for the CB series of points was based on water table plus approximately 4 feet additional depth. Total boring depths ranged from approximately 12 feet bgs to 20 feet bgs. All downhole tools were decontaminated by pressure washing between drilling locations on a temporary decontamination containment pad. Appendix 3 includes soil boring logs from B122 and CB-1 through CB-10.

Soil samples collected for laboratory analysis were analyzed by PACE Analytical Services, Inc. of Greensburg, Pennsylvania, for constituents listed in NYSDEC Policy CP-51: Tables 3 and 4 (Soil Cleanup Levels for Gasoline and Fuel Oil Contaminated Soils, respectively). Samples were also analyzed for methyl-tert-butyl-ether and ethanol.

Soil borings were abandoned by backfilling each borehole with pelletized bentonite to above the water table and finished to ground surface with soil cuttings.

2.4 Survey

All LIF and soil boring locations were surveyed by C.T. Male & Associates of North Syracuse, New York, a New York State licensed surveyor (Table 1).

3 SOIL BORING SAMPLING RESULTS

This section discusses the LIF responses and soil analytical data result findings by segregating them into unsaturated and saturated horizons to better understand the different parameters and factors influencing data results. The two vertical zones, unsaturated and saturated, are established based on a vertical evaluation of the location of the water table during data collection. Samples collected above the water table are those in the unsaturated zone, while samples collected within the water table are those in the saturated zone.

Evaluating results in this manner can support and infer the spill history at each sampling location. Samples collected above the water table (in the unsaturated zone) indicating SCGO exceedances are likely to demonstrate impact, which is locally or proximally sourced, while samples collected within the water table (in the saturated zone) generally detect impacts that have migrated with groundwater flow to the sampling location.

As discussed in the Work Plan (Arcadis 2018a), PID field findings were utilized to select which samples were retained for laboratory analysis. Laboratory analytical samples were selected on a positive bias basis, factoring in field water table indication as well as PID field data. Using this process, soil samples above the water table that indicated PID detections less than a 50-ppmv threshold were not universally retained for laboratory analysis. PID data is presented in Table 3.

3.1 Unsaturated LIF Results

LIF reflections indicating the presence of NAPL in the unsaturated zone were found at all of the LIF probe locations, with the exception of the following:

- Southwestern Terminal: LIF2 and LIF9; and
- Southeastern Terminal: LIF15 through 18.

The remaining LIF locations (a total of 14 additional locations) completed on the Southern Terminals all returned unsaturated zone LIF responses, suggesting the presence of NAPL in soil above the water table. Many of these locations were not previously evaluated due to the presence of historical Southern Terminals petroleum handling infrastructure. See Figure 3, which displays the relative 2018 LIF responses above the water table at each point.

In 2013, AECOM, on behalf of a group of Cold Springs settling defendants, collected LIF data in areas that were accessible at that time. This data was reported by AECOM in September 2014 (AECOM 2014). This data is re-presented in this document as the LIF data is of identical type and quality as the data collected in 2018. Figure 4 displays the AECOM-collected LIF data responses in the unsaturated zone. Note that the sample nomenclature of AECOM was UV-x while Arcadis used LIFx. Numerous areas investigated by AECOM indicated above water table LIF responses, suggestive of NAPL in the subsurface. It is worth noting that, in 2016, several soil borings were advanced in areas overlapping with the AECOM completed LIF points along Hillside Road. The results of those boring are presented in the Northern Terminal Focused Investigation Summary Report (Arcadis 2018b). Those samples document limited CP-51 SCGO exceedances in areas where AECOM LIF data suggests the presence of NAPL.

- Specifically, LIF unsaturated zone responses documented in 2013 at UV-01, UV-02, UV-06, UV-10, and UV-30 are not supported by 2018 analytical data results as no CP-51 SCGO exceedances are documented in the unsaturated zone in those areas of the site (see Arcadis 2018b).
- However, in other areas where LIF data overlaps with USEPA Method 8260 and USEPA 8270, there is better alignment to LIF responses and data results.

Conclusions about likely spill sources can be drawn for areas where there is stronger alignment of LIF response and analytical method results. These conclusions are discussed in Section 4 below.

3.2 Saturated LIF Results

Data from LIF points completed across the Southern Terminals Study area suggest that, in areas on both southern terminals, there are indications of NAPL impacts below the water table. This finding is indicated at LIF points LIF2, LIF3, LIF4, LIF10, LIF11, and LIF12 on the Southwestern Terminal and at LIF5, LIF7, LIF8, LIF14, LIF15, and LIF20 on the Southeastern Terminal. The remaining LIF probe locations completed as part of this investigation did not indicate elevated saturated zone LIF responses. See Figure 5, which displays the relative 2018 LIF responses below the water table at each point.

As noted above, the AECOM-collected LIF data has been combined with the data collected as part of this investigation. The saturated zone LIF findings from the AECOM data set are provided on Figure 6. These data indicate there are NAPL impacts at and below the water table in areas along Hillside Road and areas proximal to the former loading rack on the Southeast Terminal. Specifically, saturated zone NAPL was detected at UV-01, UV-02, UV-03, UV-04, UV-08, UV-11, UV-12, UV-15. UV-27D, and UV-29. At these locations, there are analytical laboratory results to support the findings at UV-01, UV-02, UV-03, UV-04, and UV-11 as CP-51 SCGO exceedances were found in saturated zone samples near these locations. There is no alignment of analytical data findings at the UV-6 area, and there are no comparative data for UV-08, UV-12, UV-27D, or UV-29.

In general, both LIF data sets suggest widespread saturated zone NAPL impacts, which is consistent with the project historical data interpretation.

3.3 Unsaturated Zone Adsorbed-Phase Results

As stated above, the unsaturated zone consists of the soil and corresponding samples above the groundwater table. This zone was evaluated by soil borings B122 and CB-1 through CB-10. These borings were sampled for VOCs and SVOCs via USEPA methods 8260 and 8270 respectively. Also, as noted above, the proposed location for CB-9 could not be completed due to site conditions and vegetation growth. See Appendix 4 for the associated laboratory analytical reports. The CB locations were selected to either add data where there was an absence of data or to confirm LIF findings.

3.3.1 Volatile Organic Compound Results

Soil borings completed on the Southern Terminals indicated widespread unsaturated zone CP-51 VOC range SCGO exceedances, which is consistent with the LIF findings from this area.

Specifically, only borings CB-1 and CB-2 had no unsaturated SCGO exceedances. Additionally, B122 did not have an unsaturated zone sample collected as there were no PID based field evidence of impacts above the water table. At locations where, total VOC concentrations were detected above SGCO they ranged from 1 compound exceeding SCGOs at 4.5-6 feet bgs at CB-8, with a total VOC concentration of 5,909 parts per billion (ppb), to 10 compounds exceeding SCGOs at 2-4 feet bgs at CB-6, with a total concentration of 1,256,030 ppb. As noted above, at location B122, there were no above water table PID responses over 50 ppmv, so there was no sample collected. This boring location was executed at the request of the NYSDEC in response to their observations of a failed underground storage tank in this area (Table 4 and Figure 7).

3.3.2 Semi-Volatile Organic Compound Results

Although there are SVOC detections in samples collected, there were no CP-51 SVOC SCGO exceedances detected in the unsaturated zone samples collected in the study area. Data are presented in Table 4 and on Figure 8.

3.3.3 Lead Results Soil Borings

At the request of the NYSDEC, total lead was included in all the borings completed across the study area. At each soil boring, the surface soil sample was retained for total lead. Lead concentration are reported on Table 4 and ranged from 3.6 ppm at CB-5 to 32.3 ppm at B122.

3.4 Saturated Zone Adsorbed-Phase Results

As previously noted, saturated zone samples are those that are collected at or below the water table at any given boring location. For the purposes of this data evaluation, samples that were located immediately above the field indication of depth to water were included in the group of samples that were considered in the saturated zone (capillary fringe). This process was meant to include the samples that were affected by water table fluctuations based on seasonal conditions. See Appendix 4 for all laboratory analytical reports.

3.4.1 Volatile Organic Compound Results

All boring locations indicated VOC range exceedances of SCGO with the exception of locations CB-8 and CB-10. At the soil boring locations where exceedances were found, concentrations ranged from 3 exceedances detected with a total VOC concentration of 16,883 ppb at 6-8 ft bgs at CB-7 to 8 compounds exceeding SCGO at CB-6 at the 4-5 ft bgs sample with a total VOC concentration of 1,476,600 ppb (Table 4 and Figure 9).

3.4.2 Semi-Volatile Organic Compound Results

There were no detections of semi-volatile compounds above the CP-51 SCGOs at any boring locations completed as part of this study. See Table 4 and Figure 10 for a presentation of these data findings.

4 CONCLUSIONS

As noted above, the soil findings have been divided up by compound class (VOC or SVOC) and vertical position with regard to the water table at each sampling location. Soil samples collected above the water table are described as unsaturated zone samples while soil samples collected within the water table are described as saturated zone samples. The reason for segregating the samples vertically with respect to the water table is to facilitate the ability to evaluate the samples with regard to likely spill history. Soils showing impact above the water table would have been impacted from a local or proximal source. This line of evidence of spill history is based on the idea that the major hydraulic transport mechanism for contaminants in the unsaturated soils is gravity and that soils impacted above the water table can only have been affected by a local petroleum spill or discharge event.

However, in the saturated zone there are more complex forces driving contaminant transport and migration, including the groundwater flow patterns and measurable NAPL thicknesses. Assessing the samples in this manner has the potential to allow for the interpretation of where there have been surface or near surface petroleum spills across the study area examined by this investigation.

The data collected as part of this investigation shows evidence of spill history in areas of the Southern Terminals that were not previously assessed. Historically, the presence of Southern Terminals petroleum storage and handling infrastructure had been an obstacle to a more complete site assessment. Following the removal of this infrastructure, including removal of above ground storage tanks, above ground pipe runs, below ground pipe runs, underground oil water separator, and a confirmed failed underground storage tank (at the B122 location), these areas could be investigated.

As discussed in detail above, the data collection methods including using LIF probe technology followed by confirmatory soil borings. Samples from the confirmatory soil borings were analyzed via USEPA methods 8260 and 8270 for CP-51 listed compounds in order to complete an evaluation against SCGOs.

4.1 LIF Responses

Unsaturated zone LIF responses provide information on the occurrence of NAPL in the soil matrix above the water table and thus suggestions on possible local spill sources. However, LIF technology is limited and subject to interference and thus should be confirmed with traditional laboratory USEPA methodology for detecting specific regulated compounds of concern in the environment. In general, the data set generated by the CB-1 through 8 and CB-10 borings and the B101 through 121 series of borings show strong alignment between LIF response for LIF-1 through LIF -20 and UV-01 through UV-32 with the following exceptions: UV-01, UV-02, UV-10, and UV-30. In these specific locations the laboratory data findings do not align with the LIF findings.

In locations where LIF data collected in the unsaturated zone from 2013 or 2018 align with soil boring findings, conclusions can be drawn with regard to likely suggested spill history. The following locations indicate spill history across the study area based on these lines of evidence.

- Southwestern Terminal: The maximum unsaturated LIF responses occur at LIF-3, LIF-4, LIF-10. and UV-20. These findings are interpreted to suggest one or more spill events at the loading rack and or the AST areas. Lower magnitude unsaturated zone LIF responses suggestive of NAPL are also found

at LIF11, LIF12, UV-17, UV-18 and UV-24. These data are interpreted to suggest lesser magnitude spill events in these areas of the site.

- In the buried underground pipeline Right-of-Way: The maximum unsaturated LIF responses occur at UV-15. Lesser magnitude unsaturated zone impacts are documented at UV-14 and UV-16. Collectively this data is interpreted to suggest a spill source in this Right-of-Way. See Arcadis 2018b for a discussion on adsorbed phase data and the limited unsaturated zone exceedances of SCGO in soil samples collected in this area of the site.
- Southeastern Terminal: The above water table LIF maximum responses are more extensive across the Southeastern Terminal than other areas investigated with findings both in the AST secondary containment area as well as the loading rack area. Maximum LIF responses in the AST area include LIF-1, LIF-7, LF-8, LIF-13, LIF-14, LIF-19, and LIF-20. At the loading rack area all LIF points suggest a spill source in this area. UV-3, and UV-26 through UV-29 all indicate LIF responses and are suggestive of NAPL in the above water table soil in this area of the site. This data is interpreted to suggest a spill history in multiple areas of the Southeast Terminal including the former AST area, former loading rack area, and based on visual observations made by the NYSDEC and reported to Arcadis, the area of the failed underground storage tank at B122.

Saturated zone LIF data indicated that the impacted horizons extend below the water table in several locations. As noted above, saturated zone data does not inform spill source conclusions, but must be considered when preparing remedial designs.

These data all support the conclusion that remedial efforts must address areas where these impacts have been documented. Data from these previously uninvestigated areas of the site must be incorporated into a revised Remedial Action Work Plan (GES 2015) for the site based on this updated dataset, and the entire plume area is accessible without the encumbrance of historic petroleum infrastructure.

4.2 Unsaturated Adsorbed Phase Contaminant Distribution

Unsaturated zone soil laboratory data is a second and confirmatory line of evidence for the LIF findings discussed above. In general, the LIF findings and the unsaturated zone laboratory data align well with a few notable exceptions as discussed above. The conclusions drawn about historical spill areas as well as areas that require a revisit of the site Remedial Action Work Plan (GES 2015) and design are supported by the unsaturated absorbed phase data distribution discussed above. Specifically, as noted above, areas previously unassessed on the Southern Terminals have now been confirmed to have impacts requiring remediation located above the water table in historic spill areas of the Site.

4.3 Saturated Zone Adsorbed Phase Soil Contaminant Distribution

Saturated zone absorbed phase impacts are widespread throughout the Southern Terminals area and will need to be considered when adjusting and finalizing the Remedial Action Plan (GES 2015) for the Site. Data provided herein document absorbed phase exceedances suggesting NAPL in soil within the water table at the Site and remedial actions will have to account for these findings. Both the LIF and laboratory data line up to indicate multiple lines of evidence that there are NAPL based impacts in this horizon.

5 REFERENCES

AECOM. 2014. Pilot Test Summary Report. September 2014.

Arcadis. 2018a. Supplemental Characterization and Interim Remedial Action Work Plan. February.

Arcadis. 2018b. Northern Terminal Focused Investigation Summary Report. September.

GES. 2015. Remedial Action Work Plan, October 2015.

TABLES

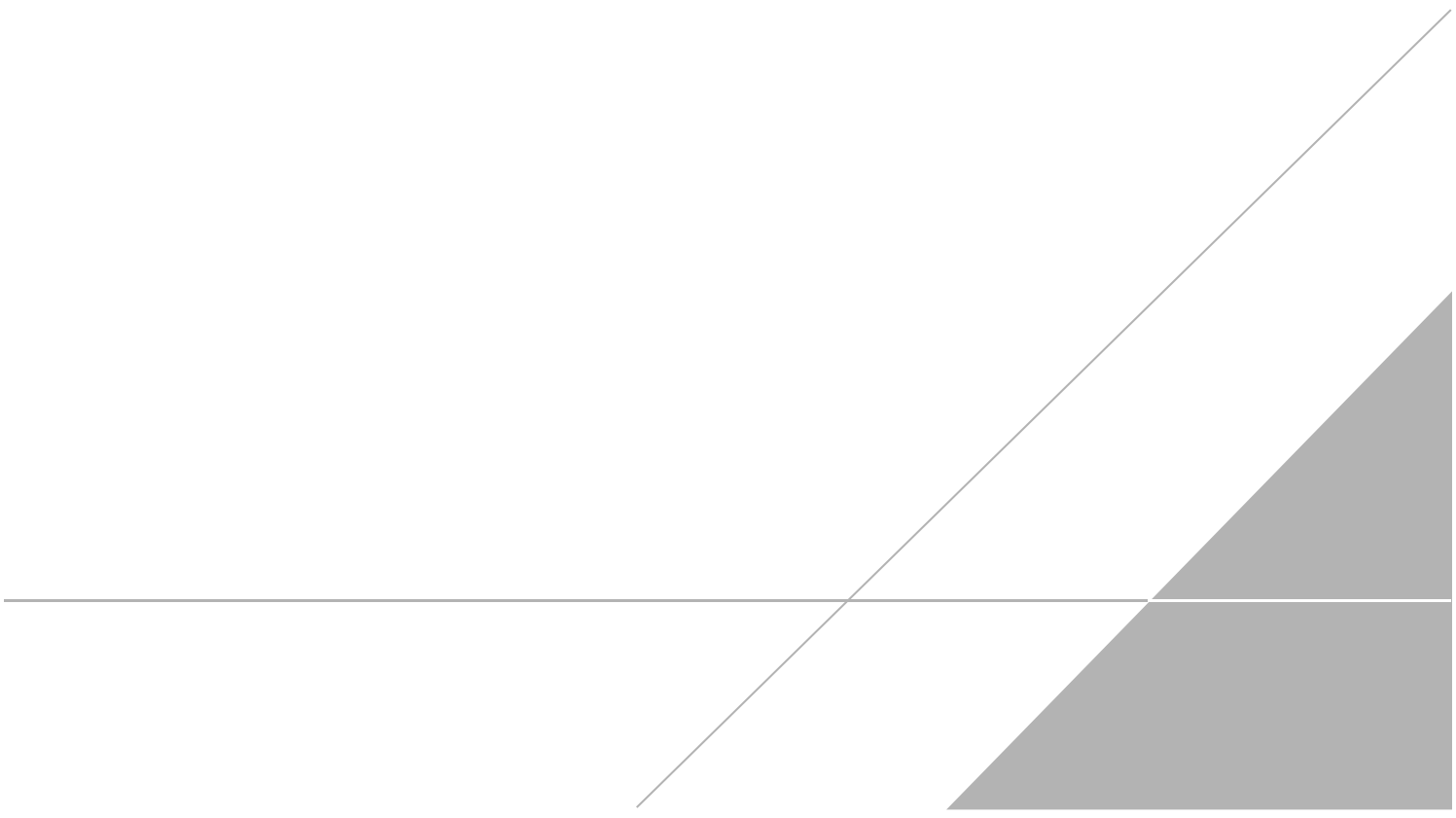

Table 1
Soil Boring Locations

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Northing	Easting	Ground Surface Elevation
B122	1141201.99	909223.09	372.15
CB-1	1141059.961	908830.327	371.45
CB-2	1141098.211	908894.094	370.69
CB-3	1141127.969	908979.789	371.62
CB-4	1141080.850	908982.691	370.79
CB-5	1141066.686	909084.527	368.91
CB-6	1141140.787	909146.656	369.38
CB-7	1141088.872	909179.780	368.83
CB-8	1141016.072	909344.011	368.57
CB-10	1141120.980	909222.061	369.63
LIF-1	1141155.25	909199.28	369.59
LIF-2	1141100.07	908854.42	372.64
LIF-3	1141109.60	908903.60	370.70
LIF-4	1141099.59	908945.47	370.77
LIF-5	1141123.13	909057.56	368.97
LIF-6	1141105.83	909143.34	369.34
LIF-7	1141105.33	909203.11	369.08
LIF-8	1141121.47	909227.09	370.10
LIF-9	1141041.15	908784.27	371.67
LIF-10	1141050.30	908842.83	371.88
LIF-11	1141048.10	908901.36	370.94
LIF-12	1141042.12	908963.11	370.51
LIF-13	1141046.86	909082.15	368.59
LIF-14	1141028.72	909139.26	368.82
LIF-15	1141037.61	909199.61	368.85
LIF-16	1141043.82	909262.85	369.20
LIF-17	1141003.77	909223.49	368.71
LIF-18	1141015.65	909301.23	368.89
LIF-19	1141082.55	909085.12	368.81
LIF-20	1141143.06	909133.40	369.49

Notes:
1. The coordinates are based on the New York State Plane Coordinate System, NAD 83 (North American Datum of 1983).
2. LIF and B122 Surveyed 6-7-18.
3. CB Surveyed 8-8-18.

Table 2
UVOST® DTW Field Summary Log

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

File Log ID	Date / Time	Max Depth (ft)	Max Signal (%RE)	Max Signal Depth (ft)	DTW (ft)	Closest Confirmatory Boring	Fluorescence Top - Bottom
LIF-1	5/30/2018 13:22	20.2	17	4.1	5.5	CB-6	0.1-2.9, 3.5-4.5, 5.5-5.8, 6.5-10.4, 11.8
LIF-2	5/31/2018 10:49	22.1	17	6.8	5.5	CB-2	0.3-0.6, 1.1-1.9, 5.2-8.2
LIF-3	5/31/2018 10:19	20.1	124	1.4	5.5	CB-2	0.4-6.9
LIF-4	5/31/2018 9:51	20.1	38	4.5	5.5	CB-2	2.0-7.5
LIF-5	5/31/2018 7:58	20.0	10	2.5	5.5	CB-3	2.0-4.7, 5.2-5.8, 6.9-7.7
LIF-6	5/30/2018 14:29	20.1	9	3.2	6.0	CB-7	0.0-1.2, 1.6-5.0, 6.1-6.4, 6.6-7.1, 8.0-8.1, 9.5-9.7
LIF-7	5/30/2018 13:55	20.1	22	5.0	6.0	CB-7	0.0-5.9, 6.3-7.0, 7.8-8.9, 11.1-11.4
LIF-8	5/30/2018 12:45	22.0	5	5.7	6.0	CB-7	5.2-6.4, 7.0-8.1, 9.4, 10.2
LIF-8 duplicate	5/31/2018 15:12	20.0	23	4.0	6.0	CB-7	3.4-6.1, 7.0-9.9
LIF-9	5/31/2018 13:21	20.5	1	0.0	6.0	CB-1	----
LIF-10	5/31/2018 12:53	18.4	21	6.6	6.0	CB-1	3.9, 4.5-9.5
LIF-11	5/31/2018 9:14	20.6	38	6.3	6.0	CB-1	2.3-3.0, 3.6-3.7, 4.2-7.7
LIF-12	5/31/2018 8:44	22.1	24	7.2	6.0	CB-1	1.3-2.8, 5.1-6.5, 7.0-9.1, 9.6, 10.0
LIF-13	5/30/2018 16:04	24.4	25	2.2	6.0	CB-5	0.0-0.3, 1.3-4.3
LIF-14	5/30/2018 15:32	25.8	14	2.1	6.0	CB-5	1.6-3.5, 4.7-5.1, 7.2-7.5, 14.3-14.4, 19.7
LIF-15	5/30/2018 11:09	28.9	5	7.0	6.0	CB-5	2.8-3.8, 6.7-7.8
LIF-16	5/30/2018 9:47	22.0	1	7.0	6.5	CB-8	7.0, 7.6, 8.1
LIF-17	5/30/2018 10:30	28.0	2	6.9	6.5	CB-8	6.8-7.0, 7.4
LIF-18	5/30/2018 8:53	30.3	1	6.0	6.5	CB-8	----
LIF-19	5/31/2018 14:05	20.1	76	3.6	6.0	CB-5	0.0-0.1, 0.7-1.2, 1.6-8.9, 10.0-10.2
LIF-20	5/31/2018 14:38	20.1	75	4.0	5.5	CB-6	0.9, 1.2-1.9, 2.2-7.9, 8.6-9.1

Notes:

DTW depth to water in feet below ground surface during drilling at closest CB location

%RE percent reference emitter

Table 3
Soil Boring PID Field Results

Southern Terminal Investigation Summary Report
Northern Cold Springs Terminal
Lysander, New York

Location ID	Depth (ft bgs)	PID (ppm)
B122	0-5	0.0
	5-7	31.4
	7-9	26.2
	9-11	90.4
	11-13	400.5
	13-15	85.3
	15-17	405.2
	17-19	286.4
	19-20	26.9
CB-1	0-2	294
	2-4	197
	4-6	296
	6-8	618
	8-12	38.7
CB-2	0-2	14
	2-4	567
	4-6	626
	6-8	143
	8-12	196
CB-3	0-2	11.4
	2-4	1218
	4-6	754.2
	6-8	542.6
	8-12	106.2
CB-4	0-2	167.2
	2-4	934.6
	4-6	835.2
	6-8	1334
	8-12	442.3
CB-5	0-2	134
	2-4	850
	4-6	1325
	6-8	132.7
	8-12	140.8
CB-6	0-2	93.6
	2-4	1354
	4-6	1032
	6-8	460
	8-12	67
CB-7	0-2	24.2
	2-4	1255
	4-6	962
	6-8	1540
	8-12	42.0
CB-8	0-4	18.2
	4-6.5	161.2
	6.5-8	50.6
	8-12	9.2
CB-10	0-2	31.2
	2-4	111.5
	4-6	511.7
	6-8	937.2
	8-12	426.1

Notes:
ft bgs feet below ground surface
NA not applicable
ppm parts per million

Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	VOCs (EPA 8260C)										
			1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene	n-Propyl-benzene
B122	0 - 2	06/05/18	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
B122	7 - 9	06/05/18	5.3 U1c	5.3 U1c	5.3 U1c	212 U1c	5.3 U1c	5.3 U1c	10.6 U1c	5.3 U1c	5.3 U1c	6.6 1c	9.8 1c
B122	11 - 13	06/05/18	1,750 1c	561 1c	275 U1c	11,000 U1c	**1,120 1c**	275 U1c	3,430 1c	275 U1c	514 1c	275 U1c	304 1c
B122	15 - 17	06/05/18	**17,500 1c**	7,070 1c	265 U1c	10,600 U1c	**5,000 1c**	1,000 1c	15,800 1c	265 U1c	2,470 1c	1,520 1c	**3,910 1c**

Location ID	Sample Depth (ft)	Date Collected	VOCs (EPA 8260C)							SVOCs (EPA 8270D by SIM)	Total SVOCs	Metals (EPA 6010B)	General Chemistry
			o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs			Lead	Percent Moisture
B122	0 - 2	06/05/18	NA**	NA**	NA**	NA**	NA**	NA**	NA**	No Exceedances	NA**	32.3 ML	16.5
B122	7 - 9	06/05/18	5.3 U1c	5.3 U1c	6 1c	5.3 U1c	5.3 U1c	10.6 U	22.4		9.3 U	NA	28.7
B122	11 - 13	06/05/18	355 1c	275 U1c	275 U1c	275 U1c	275 U1c	**3,785**	4,249		8.1 U	NA	18.4
B122	15 - 17	06/05/18	1,130 1c	352 1c	507 1c	265 U1c	365 1c	**16,930**	39,694		8 U	NA	17.9

See Notes on Page 11.

Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-1	0 - 2	08/02/18	6.0	4.8 U1c	4.8 U1c	4.8 U1c	193 U1c	4.8 U1c	4.8 U1c	9.6 U1c	4.8 UL21c	4.8 U1c	4.8 U1c
CB-1	4 - 6	08/02/18	6.0	**5,700 1c**	4,470 1c	257 U1c	10,300 U1c	**1,670 1c**	1,010 1c	1,340 1c	257 UL21c	736 1c	2,760 1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-1	0 - 2	08/02/18	6.0	4.8 U1c	4.8 U1c	4.8 U1c	4.8 U1c	4.8 U1c	4.8 U1c	9.6 U	193 U	No Exceedances	193.1
CB-1	4 - 6	08/02/18	6.0	3,470 1c	561 1c	1,670 1c	1,360 1c	257 U1c	257 U1c	**1,901**	22,846		9

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-1	0 - 2	08/02/18	6.0	6.3	9.2
CB-1	4 - 6	08/02/18	6.0	NA	18

See Notes on Page 11.

Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-2	0 - 2	08/02/18	5.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
CB-2	2 - 4	08/02/18	5.5	1,970 1c	1,550 1c	225 U1c	8,990 U1c	225 U1c	225 U1c	450 U1c	225 UL21c	1,160 1c	947 1c
CB-2	4 - 5	08/02/18	5.5	**20,500 1c**	**12,600 1c**	257 U1c	10,300 U1c	**6,370 1c**	2,120 1c	21,500 1c	257 U1c	5,910 1c	2,980 1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-2	0 - 2	08/02/18	5.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	No Exceedances	NA**
CB-2	2 - 4	08/02/18	5.5	886 1c	225 U1c	509 1c	449 1c	225 U1c	225 U1c	450 U	7,471		311.6
CB-2	4 - 5	08/02/18	5.5	**6,550 1c**	2,800 1c	1,240 1c	1,270 1c	257 U1c	257 U1c	**24,300**	59,540		809

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-2	0 - 2	08/02/18	5.5	3.9	15.4
CB-2	2 - 4	08/02/18	5.5	NA	17.6
CB-2	4 - 5	08/02/18	5.5	NA	15.4

See Notes on Page 11.

Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-3	0 - 2	08/02/18	5.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
CB-3	2 - 4	08/02/18	5.5	**16,000 1c**	8,240 1c	**2,040 1c**	10,000 U1c	**6,310 1c**	970 1c	20,700 1c	251 U1c	4,140 1c	1,600 1c
CB-3	4 - 5	08/02/18	5.5	**136,000**	**50,200**	**7,220 1c**	11,000 U1c	**53,300**	**7,850 1c**	200,000	276 U1c	**14,400 1c**	9,640 1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-3	0 - 2	08/02/18	5.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	No Exceedances	NA**
CB-3	2 - 4	08/02/18	5.5	2,830 1c	6,670 1c	766 1c	657 1c	251 U1c	**8,110 1c**	**27,370**	51,663		1,040.5
CB-3	4 - 5	08/02/18	5.5	**15,100 1c**	64,600	4,010 1c	4,440 1c	536 1c	**121,000**	**264,600**	423,696		797.8

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-3	0 - 2	08/02/18	5.5	6	17.4
CB-3	2 - 4	08/02/18	5.5	NA	17.3
CB-3	4 - 5	08/02/18	5.5	NA	17.1

See Notes on Page 11.

Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-4	0 - 2	08/02/18	6.0	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
CB-4	2 - 4	08/02/18	6.0	**106,000**	**36,700**	**10,500 1c**	9,950 U1c	**42,100**	**7,020 1c**	152,000	249 U1c	**17,200 1c**	8,290 1c
CB-4	5.5 - 7.5	08/02/18	6.0	**18,200 1c**	**8,680 1c**	**9,290 1c**	10,100 U1c	**11,100 1c**	1,460 1c	34,000 1c	253 U1c	6,290 1c	1,930 1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-4	0 - 2	08/02/18	6.0	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	No Exceedances	NA**
CB-4	2 - 4	08/02/18	6.0	**14,500 1c**	55,200	4,760 1c	4,140 1c	430 1c	**52,700**	**207,200**	304,340		3,163.5
CB-4	5.5 - 7.5	08/02/18	6.0	**4,430 1c**	14,100 1c	762 1c	931 1c	253 U1c	**19,800 1c**	**48,100**	82,873		2,122.6

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-4	0 - 2	08/02/18	6.0	9.6	15.6
CB-4	2 - 4	08/02/18	6.0	NA	17.9
CB-4	5.5 - 7.5	08/02/18	6.0	NA	19.4

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Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-5	0 - 2	08/01/18	6.0	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
CB-5	2 - 4	08/01/18	6.0	**120,000 1c**	**43,900 1c**	**22,900 1c**	89,900 U1c	**55,000 1c**	**6,710 1c**	194,000 1c	2,250 UL21c	**26,200 1c**	8,110 1c
CB-5	4 - 6	08/01/18	6.0	**27,900**	**10,100 1c**	**8,770 1c**	10,400 U1c	**13,200 1c**	1,600 1c	39,900 1c	261 UL21c	6,830 1c	1,960 1c
CB-5	6 - 8	08/01/18	6.0	**17,000 1c**	6,540 1c	**8,870 1c**	10,000 U1c	**8,690 1c**	1,000 1c	27,900 1c	250 UL21c	4,510 1c	1,250 1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-5	0 - 2	08/01/18	6.0	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	No Exceedances	NA**
CB-5	2 - 4	08/01/18	6.0	**21,900 1c**	74,100 1c	2,950 1c	3,640 1c	2,250 U1c	**145,000 1c**	**268,100**	456,310		166
CB-5	4 - 6	08/01/18	6.0	**5,180 1c**	17,500 1c	706 1c	877 1c	261 U1c	**38,000**	**57,400**	115,123		403.4
CB-5	6 - 8	08/01/18	6.0	3,240 1c	10,700 1c	489 1c	538 1c	250 U1c	**13,000 1c**	**38,600**	65,127		9.1

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-5	0 - 2	08/01/18	6.0	3.6	17.7
CB-5	2 - 4	08/01/18	6.0	NA	15.2
CB-5	4 - 6	08/01/18	6.0	NA	22
CB-5	6 - 8	08/01/18	6.0	NA	17.5

See Notes on Page 11.

Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-6	0 - 2	08/01/18	5.5	2,430 1c	926 1c	224 U1c	8,970 U1c	432 1c	224 U1c	1,700 1c	224 UL21c	1,850 1c	261 1c
CB-6	2 - 4	08/01/18	5.5	**281,000**	**95,700 1c**	**102,000 1c**	109,000 U1c	**138,000 1c**	**14,400 1c**	417,000 1c	2,730 UL21c	**63,500 1c**	**17,500 1c**
CB-6	4 - 5	08/01/18	5.5	**322,000 1c**	**104,000 1c**	**145,000 1c**	1,060,000 U1c	**145,000 1c**	26,600 U1c	570,000 1c	26,600 UL21c	**86,800 1c**	26,600 U1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-6	0 - 2	08/01/18	5.5	328 1c	596 1c	224 U1c	224 U1c	224 U1c	493 1c	**2,296**	6,720	No Exceedances	782.4
CB-6	2 - 4	08/01/18	5.5	**48,700 1c**	186,000 1c	5,860 1c	7,370 1c	2,730 U1c	**482,000**	**603,000**	1,256,030		6,548
CB-6	4 - 5	08/01/18	5.5	**52,800 1c**	205,000 1c	26,600 U1c	26,600 U1c	26,600 U1c	**621,000 1c**	**775,000**	1,476,600		3,823

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-6	0 - 2	08/01/18	5.5	6.7	14.7
CB-6	2 - 4	08/01/18	5.5	NA	17
CB-6	4 - 5	08/01/18	5.5	NA	17.2

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Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-7	0 - 2	08/01/18	6.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CB-7	2 - 4	08/01/18	6.0	**128,000 1c**	**47,800 1c**	**61,900 1c**	78,600 U1c	**66,700 1c**	**6,450 1c**	224,000 1c	1,960 UL21c	**26,300 1c**	7,790 1c
CB-7	6 - 8	08/01/18	6.0	1,100 1c	301 1c	**6,820 1c**	10,000 U1c	691 1c	250 U1c	2,720 1c	250 UL21c	911 1c	250 U1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-7	0 - 2	08/01/18	6.0	NA	NA	NA	NA	NA	NA	NA	NA	No Exceedances	NA
CB-7	2 - 4	08/01/18	6.0	**23,400 1c**	90,600 1c	2,110 1c	2,650 1c	1,960 U1c	**324,000**	**314,600**	697,100		212.8
CB-7	6 - 8	08/01/18	6.0	250 U1c	1,060 1c	250 U1c	250 U1c	250 U1c	**7,060 1c**	**3,780**	16,883		12.9

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-7	0 - 2	08/01/18	6.0	10	14.3
CB-7	2 - 4	08/01/18	6.0	NA	11.7
CB-7	6 - 8	08/01/18	6.0	NA	22.5

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Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-8	0 - 2	08/01/18	6.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
CB-8	4 - 6.5	08/01/18	6.5	2,920 1c	245 U1c	245 U1c	9,790 U1c	245 U1c	245 U1c	557 1c	245 UL21c	1,390 1c	406 1c
CB-8	6.5 - 8	08/01/18	6.5	663 1c	240 U1c	240 U1c	9,600 U1c	240 U1c	240 U1c	480 U1c	240 U1c	240 U1c	240 U1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-8	0 - 2	08/01/18	6.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	No Exceedances	NA**
CB-8	4 - 6.5	08/01/18	6.5	461 1c	245 U1c	245 U1c	427 1c	245 U1c	305 1c	**557**	5,909		2,184.1
CB-8	6.5 - 8	08/01/18	6.5	240 U1c	240 U1c	240 U1c	240 U1c	240 U1c	240 U1c	480 U	663		129.9

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-8	0 - 2	08/01/18	6.5	7.7	14.7
CB-8	4 - 6.5	08/01/18	6.5	NA	17.1
CB-8	6.5 - 8	08/01/18	6.5	NA	16.4

See Notes on Page 11.

Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)									
				1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Benzene	Ethanol	Ethylbenzene	Isopropyl-benzene	m&p-Xylene	Methyl-Tert-Butyl-Ether	Naphthalene	n-Butyl-benzene
CB-10	0 - 2	08/01/18	5.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**
CB-10	4 - 6	08/01/18	5.5	2,360 U1c	8,210 1c	2,360 U1c	94,300 U1c	**10,200 1c**	**3,840 1c**	4,710 U1c	2,360 UL21c	2,360 U1c	5,430 1c
CB-10	6 - 8	08/01/18	5.5	255 1c	342 1c	224 U1c	8,950 U1c	224 U1c	415 1c	448 U1c	224 U1c	224 U1c	522 1c

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	VOCs (EPA 8260C)								SVOCs (EPA 8270D by SIM)	Total SVOCs
				n-Propyl-benzene	o-Xylene	p-Isopropyl-toluene	sec-Butylbenzene	Tert-Butylbenzene	Toluene	Xylene (Total)	Total VOCs		
CB-10	0 - 2	08/01/18	5.5	NA**	NA**	NA**	NA**	NA**	NA**	NA**	NA**	No Exceedances	NA**
CB-10	4 - 6	08/01/18	5.5	**14,300 1c**	2,360 U1c	2,360 U1c	2,480 1c	2,360 U1c	2,360 U1c	4,710 U	44,460		401
CB-10	6 - 8	08/01/18	5.5	1,500 1c	224 U1c	224 U1c	269 1c	224 U1c	224 U1c	448 U	3,303		20.8

Location ID	Sample Depth (ft)	Date Collected	Depth to Water (ft)	Metals (EPA 6010B)	General Chemistry
				Lead	Percent Moisture
CB-10	0 - 2	08/01/18	5.5	12.3	22.9
CB-10	4 - 6	08/01/18	5.5	NA	15.3
CB-10	6 - 8	08/01/18	5.5	NA	16

See Notes on Page 11.

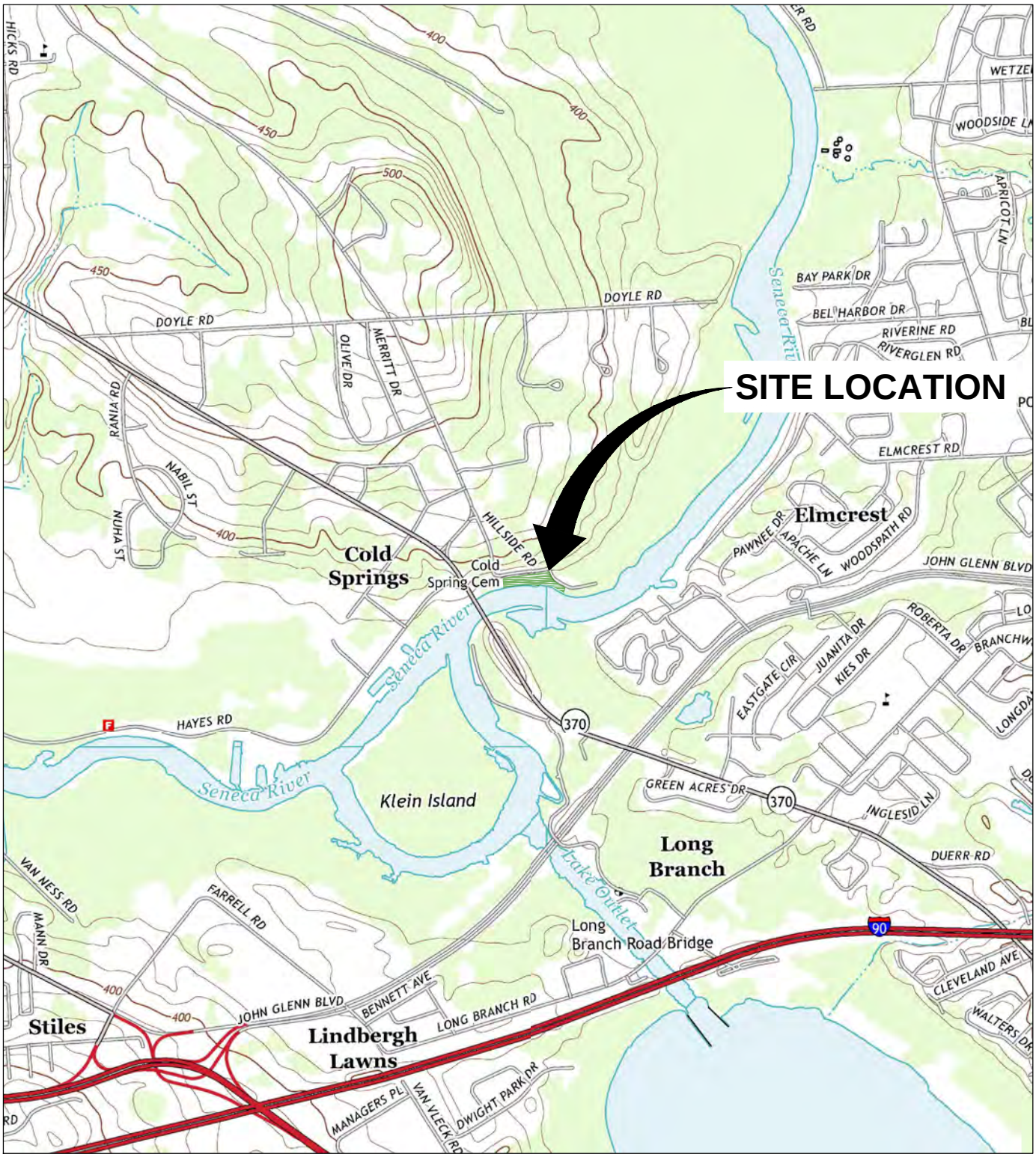
Table 4
Summary of Soil Sample Analytical Results

Southern Terminal Investigation Summary Report
Southern Cold Springs Terminal
Lysander, New York

Notes:
1. Concentrations are presented in micrograms per kilogram, which is equivalent to part per billion except where otherwise noted.
2. Shaded and bold values indicate a criteria exceedance.
3. Field duplicate sample results are presented in brackets.

Lab Qualifiers	Definition
1c	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
ip	Benzo(b)fluoranthene and benzo(k)fluoranthene were separated in the check standard but did not meet the resolution criteria in SW846 Method 8270D. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.
ML	Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.
U	Indicates the compound was analyzed for, but not detected.
U1c	Indicates the compound was analyzed for, but not detected. A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
U2c	Indicates the compound was analyzed for, but not detected. The analyte did not meet the method recommended minimum RF.
Uip	Indicates the compound was analyzed for, but not detected. Benzo(b)fluoranthene and benzo(k)fluoranthene were separated in the check standard but did not meet the resolution criteria in SW846 Method 8270D. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.
UL21c	Indicates the compound was analyzed for, but not detected. Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low. A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
UM6	Indicates the compound was analyzed for, but not detected. Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
NA	Not analyzed.
NA**	Sample was analyzed for total lead only.
VOC	Volatile organic compounds.
SVOC	Semivolatile organic compounds.
ug/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.

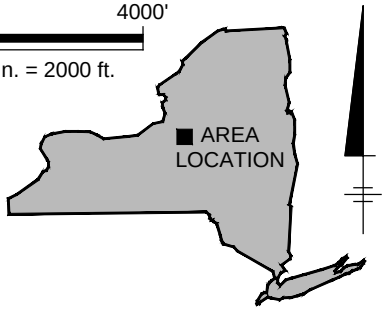
FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., BALDWINSVILLE, BREWERTON, CAMILLUS & SYRACUSE WEST, NY, 2013.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.



SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

LEGEND:

- LASER INDUCED FLUORESCENT (LIF) LOCATION
- UVOST/CPT
- CONFIRMATORY SOIL BORING
- SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTES:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF LIF (1-20), AND SOIL BORING (B122) WERE SURVEYED ON JUNE 7, 2018.
3. AST = ABOVE GROUND STORAGE TANK.

0 80' 160'

GRAPHIC SCALE

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK
SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

SITE MAP WITH LIF AND UVOST LOCATIONS, B122, AND CONFIRMATORY SOIL BORINGS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(On)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWG\S-FIGR_Fig2_Site Map.dwg LAYOUT: 2 SAVED: 9/10/2018 9:07 AM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
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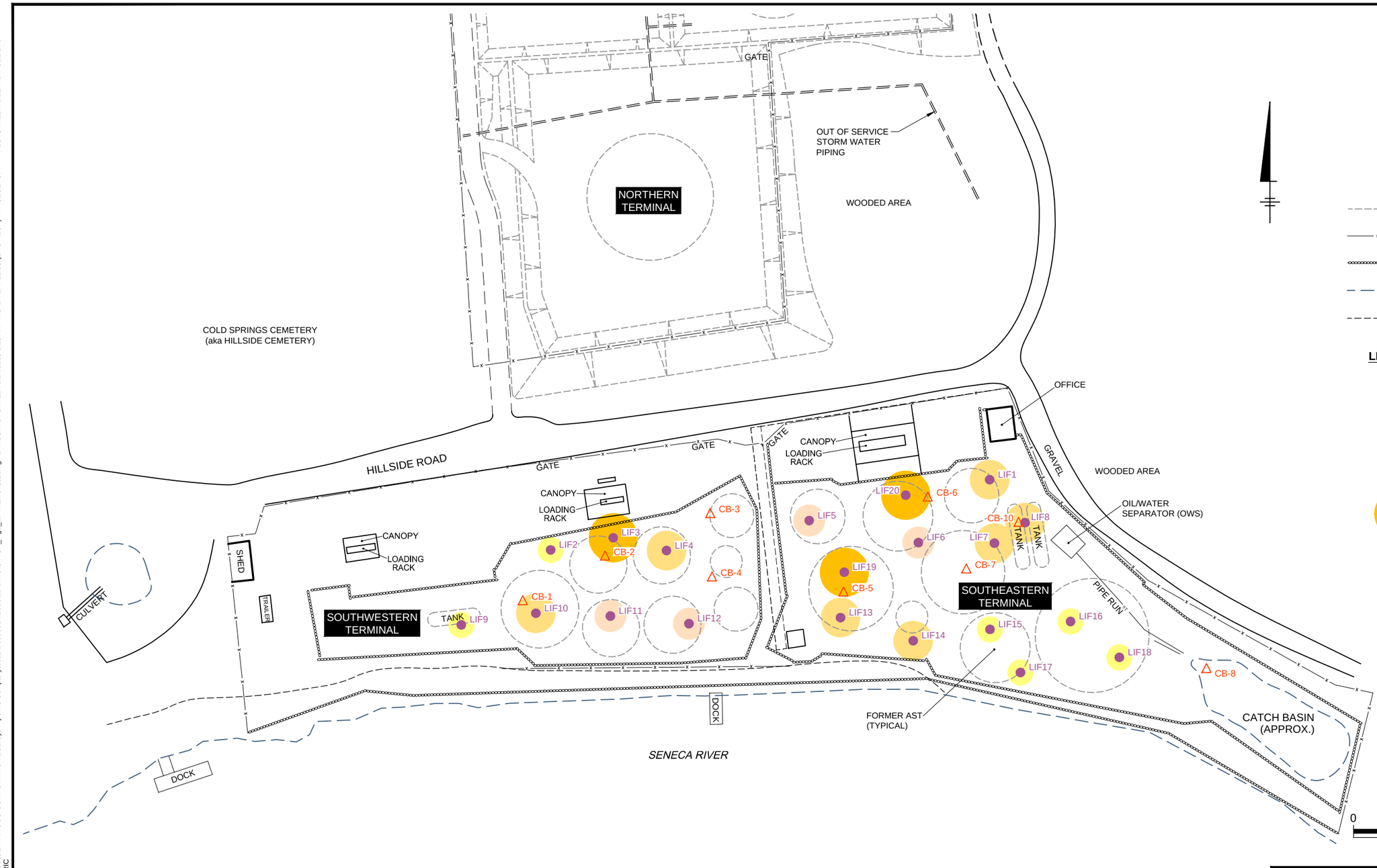
XREFS: IMAGES: PROJECTNAME: ----
S-Title Block
X-Base Map



LEGEND:

- LASER INDUCED FLUORESCENT (LIF) LOCATION
- CONFIRMATORY SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

LIF % RESPONSE KEY:

- < 5%
- 5%-10%
- 10%-50%
- > 50%

NOTES:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF LIF (1-20) WERE SURVEYED ON JUNE 7, 2018.
3. AST = ABOVE GROUND STORAGE TANK.

0 80' 160'

GRAPHIC SCALE

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

LIF MAXIMUM RESPONSE - UNSATURATED ZONE (2018 DATA)

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(On)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWGS-FISR_Fig3_LIF Max Unsat.dwg LAYOUT: 3 SAVED: 9/24/2018 8:28 AM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
PLOTTED: 9/24/2018 8:29 AM BY: KRAHMER, ERIC
XREFS: IMAGES: PROJECTNAME: ----
S-Title Block
X-Base Map
C-LEGEND

NORTHERN TERMINAL

GATE

OUT OF SERVICE STORM WATER PIPING

WOODED AREA

COLD SPRINGS CEMETERY (aka HILLSIDE CEMETERY)

HILLSIDE ROAD

OFFICE

GRAVEL

WOODED AREA

OIL/WATER SEPARATOR (OWS)

CANOPY

LOADING RACK

SHED

CULVERT

TRAILER

SOUTHWESTERN TERMINAL

SOUTHEASTERN TERMINAL

TANK

PIPE RUN

DOCK

FORMER AST (TYPICAL)

CATCH BASIN (APPROX.)

SENECA RIVER

UV-01 UV-02 UV-03 UV-04 UV-05 UV-06 UV-07 UV-08 UV-09 UV-10 UV-11 UV-12 UV-13 UV-14 UV-15 UV-16 UV-17 UV-18 UV-19 UV-20 UV-21 UV-22 UV-23 UV-24 UV-25 UV-26 UV-27 UV-27D UV-28 UV-29 UV-30 & 30D UV-31 UV-32 UV-33

LIF1 LIF2 LIF3 LIF4 LIF5 LIF6 LIF7 LIF8 LIF9 LIF10 LIF11 LIF12 LIF13 LIF14 LIF15 LIF16 LIF17 LIF18 LIF19 LIF20

CB-1 CB-2 CB-3 CB-4 CB-5 CB-6 CB-7 CB-8 CB-10

LEGEND:

- LASER INDUCED FLUORESCENT (LIF) LOCATION
- UVOST/CPT LOCATION
- CONFIRMATORY SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

LIF % RESPONSE KEY:

- < 5%
- 5%-10%
- 10%-50%
- > 50%

NOTES:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF LIF (1-20) WERE SURVEYED ON JUNE 7, 2018.
3. AST = ABOVE GROUND STORAGE TANK.

0 80' 160'

GRAPHIC SCALE

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

LIF & UVOST MAXIMUM RESPONSE - UNSATURATED ZONE (2013 & 2018 DATA)

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWG\S-FISR_Fig4_LIF Max Sat.dwg LAYOUT: 4 SAVED: 9/24/2018 9:00 AM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
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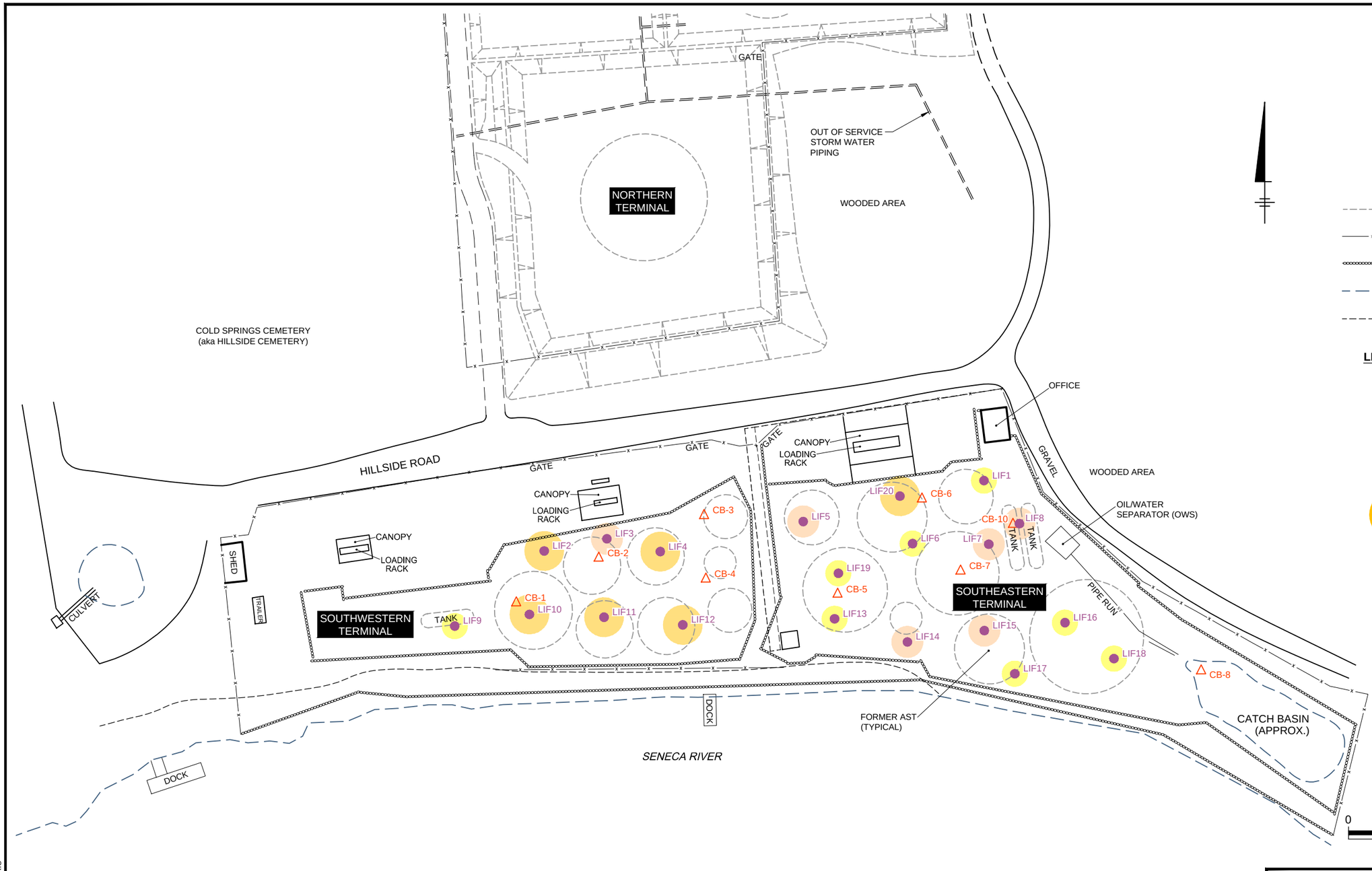
S-Title Block
X-Base Map
C-LEGEND



LEGEND:

- LASER INDUCED FLUORESCENT (LIF) LOCATION
- CONFIRMATORY SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

LIF % RESPONSE KEY:

- < 5%
- 5%-10%
- 10%-50%
- > 50%

NOTES:

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2. LOCATION OF LIF (1-20) WERE SURVEYED ON JUNE 7, 2018.
3. AST = ABOVE GROUND STORAGE TANK.

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

LIF MAXIMUM RESPONSE - SATURATED ZONE (2018 DATA)

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWG\S-FISR_Fig5_LIF UV Max Unsat.dwg LAYOUT: 5 SAVED: 9/24/2018 9:05 AM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
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XREFS: IMAGES: PROJECTNAME: ----
S-Title Block
X-Base Map
C-LEGEND

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

LIF & UVOST MAXIMUM RESPONSE - SATURATED ZONE (2013 & 2018 DATA)

ARCADIS Design & Consultancy for natural and built assets

FIGURE **6**

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWG\S-FISR_Fig6_LIF UV Max Sat.dwg LAYOUT: 6 SAVED: 9/12/2018 2:56 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
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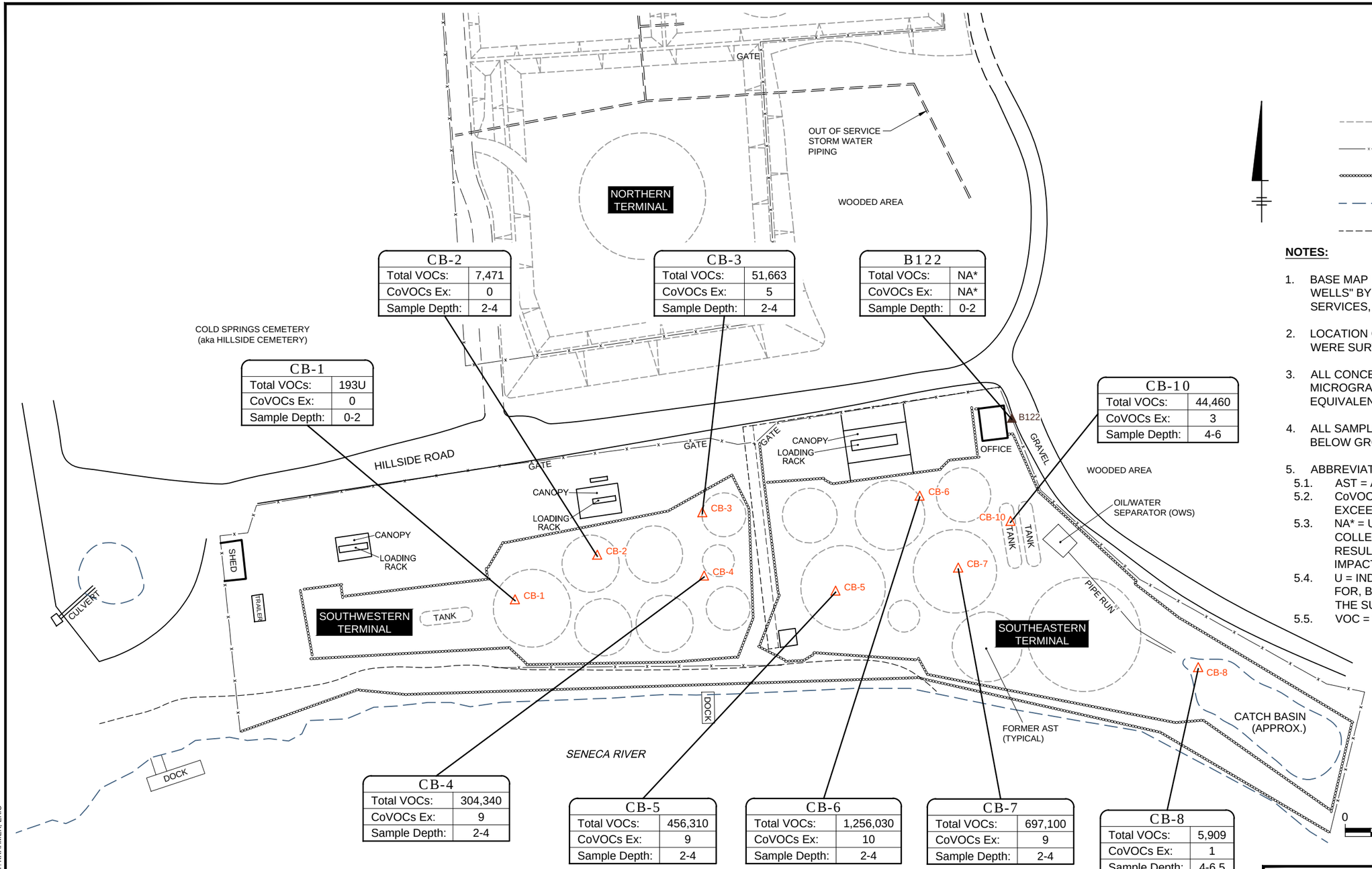
S-Title Block
X-Base Map
C-LEGEND



LEGEND:

- CONFIRMATORY SOIL BORING
- SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTES:

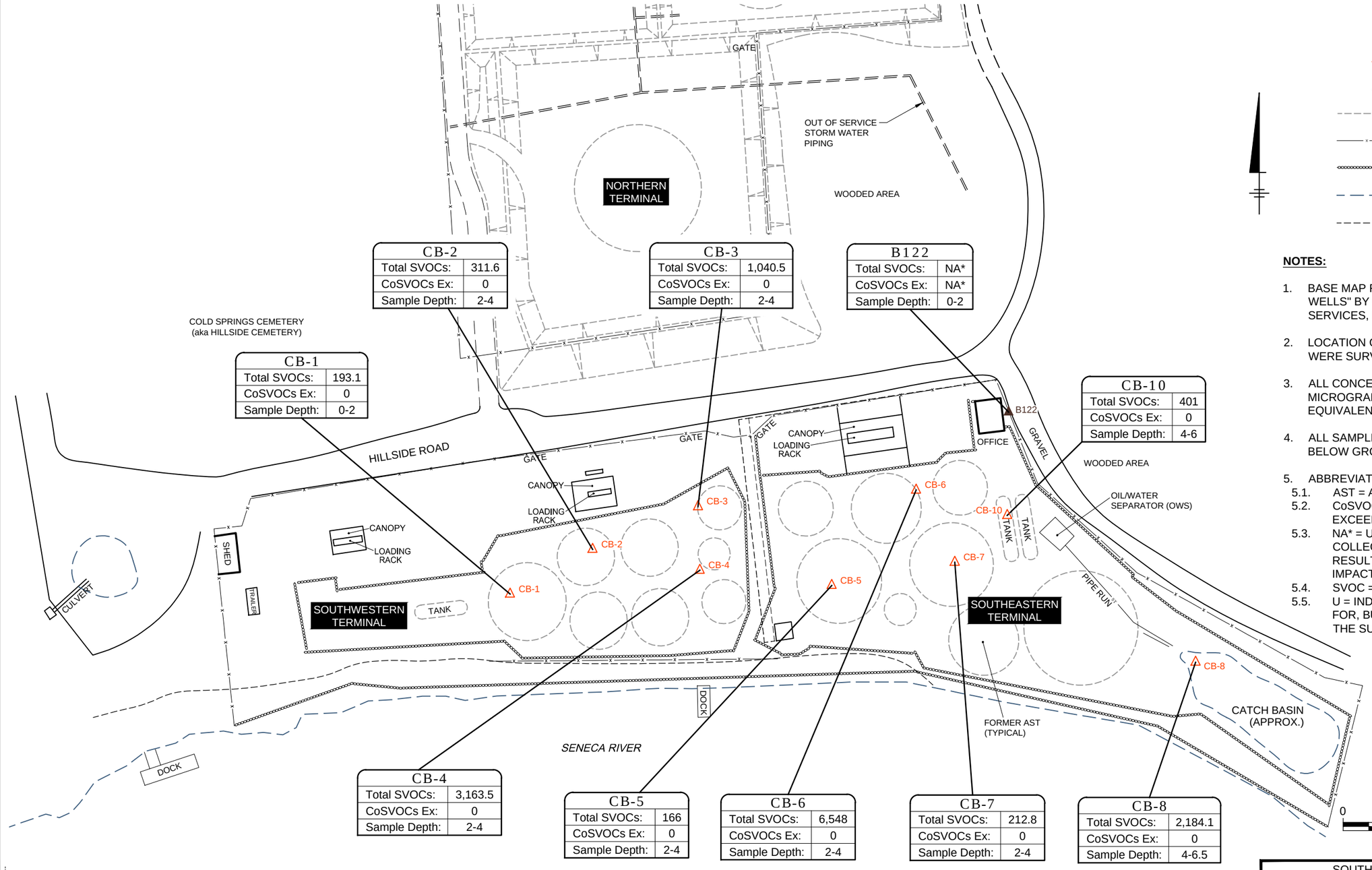
1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF LIF (1-20), AND SOIL BORING (B122) WERE SURVEYED ON JUNE 7, 2018.
3. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER KILOGRAM (µg/kg), WHICH IS EQUIVALENT TO PARTS PER BILLION (ppb).
4. ALL SAMPLE DEPTHS ARE PRESENTED IN FEET BELOW GROUND SURFACE.
5. ABBREVIATIONS:
   - 5.1. AST = ABOVE GROUND STORAGE TANK
   - 5.2. CoVOCs Ex: = COUNT OF VOCs EXCEEDANCES
   - 5.3. NA* = UNSATURATED ZONE SAMPLE NOT COLLECTED BASED ON FIELD PID SCREENING RESULTS INDICATING NO EVIDENCE OF IMPACTS ABOVE 50 ppmv.
   - 5.4. U = INDICATES COMPOUND WAS ANALYZED FOR, BUT NOT DETECTED. VALUE SHOWN IS THE SUM OF THE REPORTING LIMIT.
   - 5.5. VOC = VOLATILE ORGANIC COMPOUND

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK
SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

CB AND B122 VOLATILE ORGANIC COMPOUNDS (VOCs) - UNSATURATED ZONE

ARCADIS Design & Consultancy for natural and built assets

FIGURE
7



LEGEND:

- CONFIRMATORY SOIL BORING
- SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTES:

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3. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER KILOGRAM (µg/kg), WHICH IS EQUIVALENT TO PARTS PER BILLION (ppb).
4. ALL SAMPLE DEPTHS ARE PRESENTED IN FEET BELOW GROUND SURFACE.
5. ABBREVIATIONS:
   - 5.1. AST = ABOVE GROUND STORAGE TANK
   - 5.2. CoSVOCs Ex: = COUNT OF SVOCs EXCEEDANCES
   - 5.3. NA* = UNSATURATED ZONE SAMPLE NOT COLLECTED BASED ON FIELD PID SCREENING RESULTS INDICATING NO EVIDENCE OF IMPACTS ABOVE 50 ppmv.
   - 5.4. SVOC = SEMI-VOLATILE ORGANIC COMPOUND
   - 5.5. U = INDICATES COMPOUND WAS ANALYZED FOR, BUT NOT DETECTED. VALUE SHOWN IS THE SUM OF THE REPORTING LIMIT.

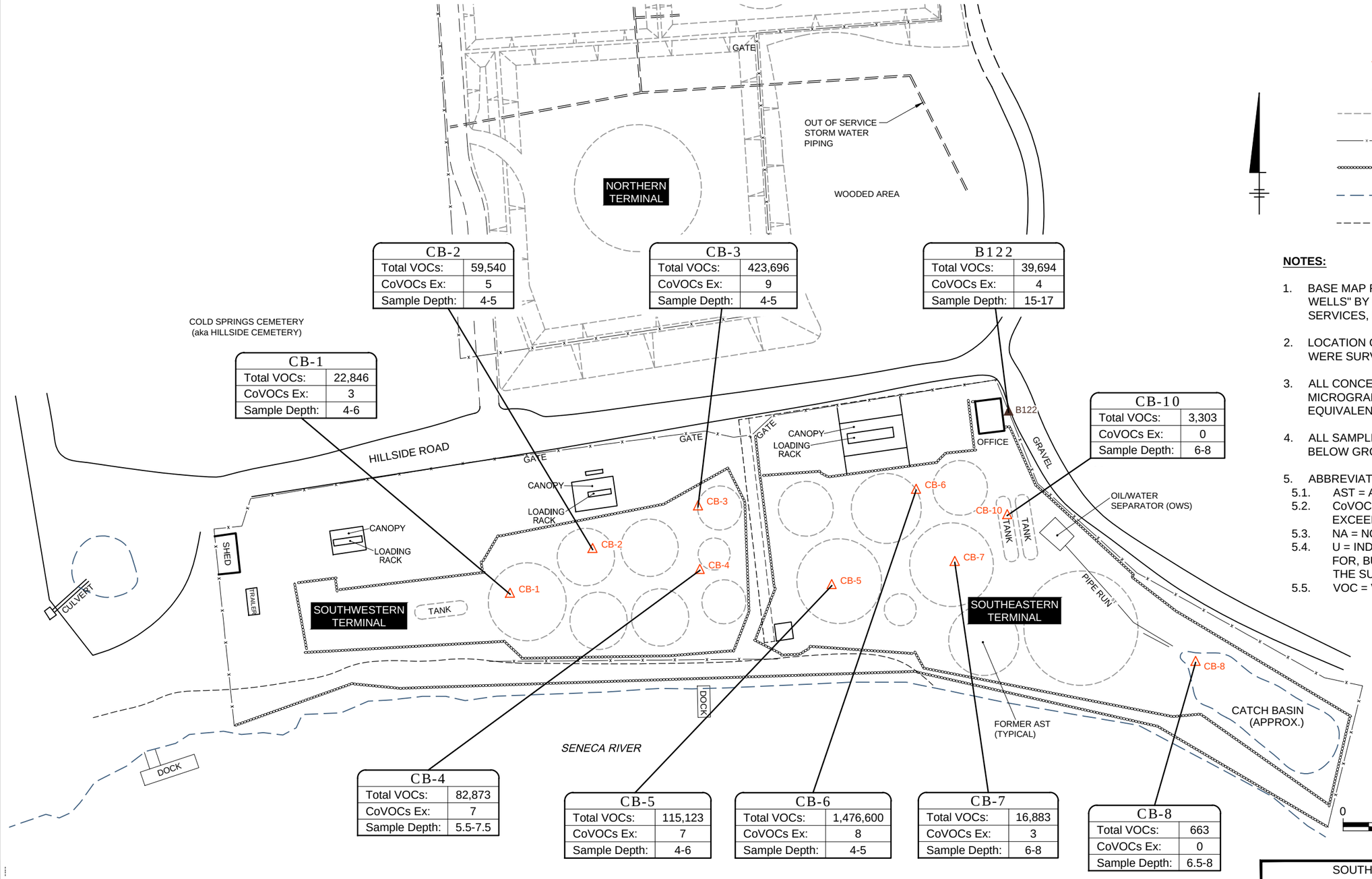
SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

CB AND B122 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) - UNSATURATED ZONE

ARCADIS Design & Consultancy for natural and built assets

FIGURE 8



LEGEND:

- CONFIRMATORY SOIL BORING
- SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTES:

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3. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER KILOGRAM (µg/kg), WHICH IS EQUIVALENT TO PARTS PER BILLION (ppb).
4. ALL SAMPLE DEPTHS ARE PRESENTED IN FEET BELOW GROUND SURFACE.
5. ABBREVIATIONS:
   - 5.1. AST = ABOVE GROUND STORAGE TANK
   - 5.2. CoVOCs Ex: = COUNT OF VOCs EXCEEDANCES
   - 5.3. NA = NOT ANALYZED/NOT APPLICABLE
   - 5.4. U = INDICATES COMPOUND WAS ANALYZED FOR, BUT NOT DETECTED. VALUE SHOWN IS THE SUM OF THE REPORTING LIMIT.
   - 5.5. VOC = VOLATILE ORGANIC COMPOUND

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

CB AND B122 VOLATILE ORGANIC COMPOUNDS (VOCs) - SATURATED ZONE

ARCADIS Design & Consultancy for natural and built assets

FIGURE 9

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWG\S-FIGR_Fig9_CB B122 VOC Sat DB.dwg LAYOUT: 9 SAVED: 9/10/2018 8:58 AM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE:
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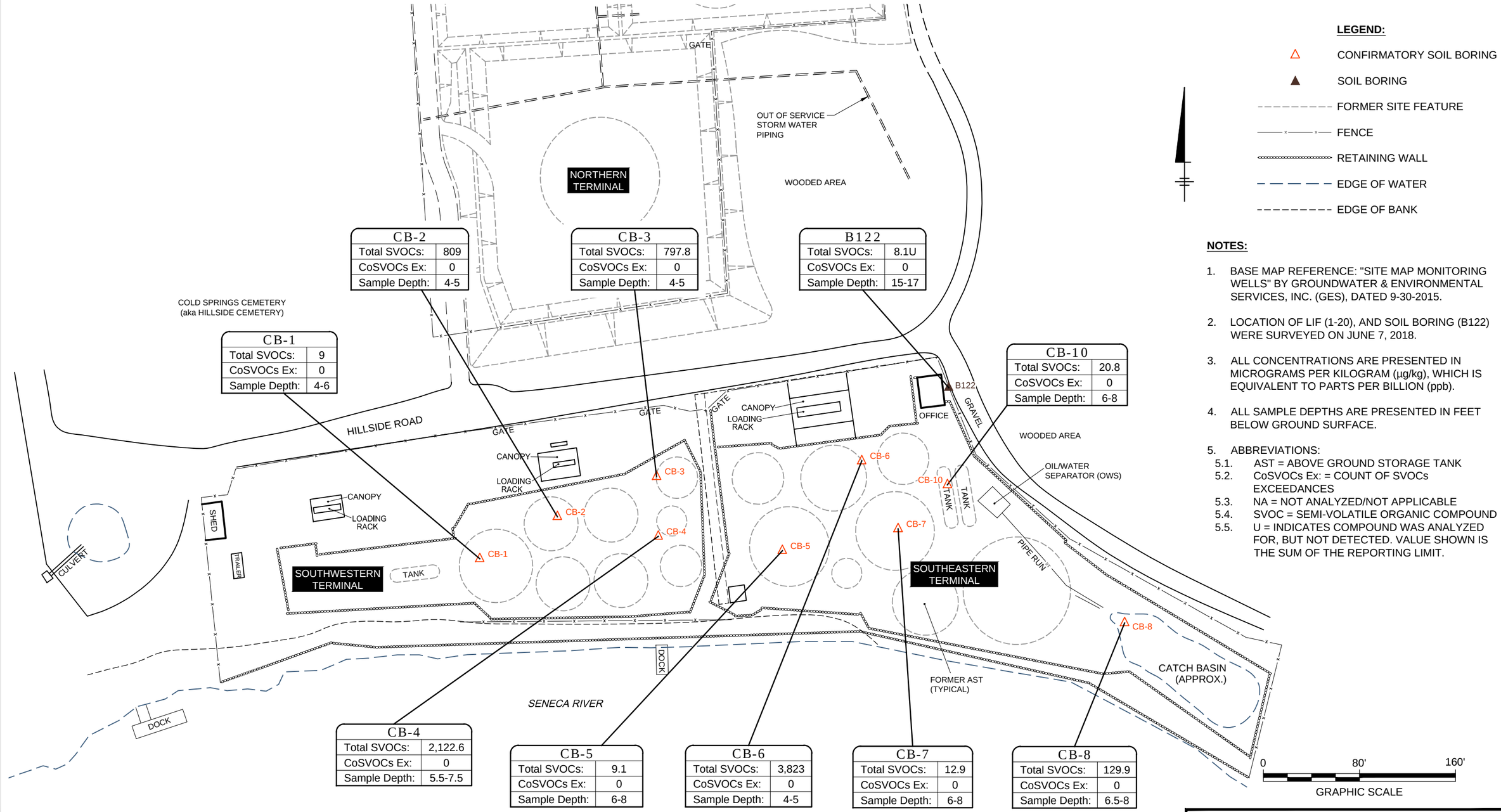
S-Title Block
X-Base Map



LEGEND:

- CONFIRMATORY SOIL BORING
- SOIL BORING
- FORMER SITE FEATURE
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTES:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF LIF (1-20), AND SOIL BORING (B122) WERE SURVEYED ON JUNE 7, 2018.
3. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER KILOGRAM (µg/kg), WHICH IS EQUIVALENT TO PARTS PER BILLION (ppb).
4. ALL SAMPLE DEPTHS ARE PRESENTED IN FEET BELOW GROUND SURFACE.
5. ABBREVIATIONS:
   - 5.1. AST = ABOVE GROUND STORAGE TANK
   - 5.2. CoSVOCs Ex: = COUNT OF SVOCs EXCEEDANCES
   - 5.3. NA = NOT ANALYZED/NOT APPLICABLE
   - 5.4. SVOC = SEMI-VOLATILE ORGANIC COMPOUND
   - 5.5. U = INDICATES COMPOUND WAS ANALYZED FOR, BUT NOT DETECTED. VALUE SHOWN IS THE SUM OF THE REPORTING LIMIT.

SOUTHERN COLD SPRINGS TERMINAL
LYSANDER, NEW YORK

SOUTHERN TERMINAL FOCUSED INVESTIGATION SUMMARY REPORT

CB AND B122 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) - SATURATED ZONE

ARCADIS Design & Consultancy for natural and built assets

FIGURE 10

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWG\S-FISR_Fig10_CB B122 SVOC Sat DB.dwg LAYOUT: 10 SAVED: 9/13/2018 2:49 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE:
PLTFULL.CTB PLOTTED: 9/13/2018 2:50 PM BY: KRAHMER, ERIC
XREFS: IMAGES: PROJECTNAME: ----
S-Title Block
X-Base Map

APPENDIX 1

February 2016 Focused Investigation Work Plan, February 2018 Supplemental Characterization and Interim Remedial Action Work Plan, NYSDEC Approval of February 2018 Work Plan, June 2018 Proposed Confirmatory Soil Borings Work Plan, and NYSDEC Approval of June 2018 Proposed Confirmatory Soil Borings Work Plan

February 2016 Focused Investigation Work Plan

Richard Brazell, PE
Region 7 Regional Spill Engineer
New York State Department of Environmental Conservation
615 Erie Blvd. West
Syracuse, New York 13204

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Subject:
Focused Investigation Work Plan
Hillside Road, Northern Terminal Study Area,
Lysander, New York

ENVIRONMENT

Date:
February 22, 2016

Contact:
Vin Maresco

Phone:
315 671 9256

Email:
vin.maresco@arcadis.com

Our ref:
B0090004.0001

Dear Mr. Brazell:

Arcadis U.S., Inc. (Arcadis) has prepared this Focused Investigation Work Plan (Work Plan) for the Northern Cold Springs Terminal (the Northern Terminal) on behalf of Buckeye and BP. The purpose of this Work Plan is to collect and evaluate data to assist in determining remedial options and strategies for the Northern Terminal. The specific objective of the work described in this Work Plan is to better define subsurface stratigraphy, assess the nature and extent subsurface impacts within these focus areas, and study the groundwater-surface water interaction at the Site. This work plan proposes drilling soil borings and collecting soil samples for analytical testing, installing nested discretely-screened piezometers, and water-level monitoring. A detailed description of these activities is provided below. The activities will be conducted in accordance with New York State Department of Environmental Conservation (NYSDEC) Department of Environmental Remediation DER-10 (May 2010).

Areas of Investigation

To facilitate a focused remedial effort, the Work Plan has been broken into four distinctive study areas based on the location of known spills and the results of previous investigations (see Figure 1). These areas are as follows:

- Area 1 – Area proximal to monitoring well BMW5
- Area 2 – Former transfer pump area
- Area 3 – Delivery line right of way (ROW) between the two southern terminals
- Area 4 – Area proximal to monitoring well B18

1. Pre-Investigation Activities

Prior to initiating drilling activities public utilities will be marked out by contacting Dig Safely New York to locate and mark all utilities near the areas of investigation. A private utility locator will be also be contracted to provide additional utility mark out in the proposed areas of investigation. In accordance with Arcadis subsurface clearance policy, each drilling location will also be hand-cleared to a minimum of 5 feet below ground surface (bgs) before drilling.

Based on information learned from previous site investigations and available historic facility maps, there are three suspected distributions lines that run north-south though Area 3. These distribution lines will be uncovered by hand or soft digging methods at three separate points (northern, middle and southern regions) to visually verify their location, orientation, and direction. Proposed sample locations may be adjusted in an east/west direction based on proximity to utilities.

2. Soil Boring and Sampling Activities

This Work Plan proposes a total of 18 soil borings and installation of 6 nested piezometer pairs (B-101 through B-118 and PZ-101S/D though PZ-106S/D) throughout the four areas proposed for investigation (see Figure 2). Soil borings will be advanced using direct-push drilling methods. Soil samples will be continuously collected from grade to terminal depth using 2-inch diameter 4 or 5-foot long macrocores liners. Representative soils samples will be collected approximately every 2-feet and screened for volatile organic compounds (VOC) using a photo-ionization detector (PID). Soil characteristics will be logged continuously by a geologist for texture, grains size, moisture content, geologic origin, and the potential presence of impacts via field instrumentation. Each boring termination depth will be determined in the field by the on-site geologist and will be based on field indication of absence of impacts or 10 feet below first detection of the water table, whichever is shallower. For the purposes of this investigation field determination of absence of impact will be a detection of 50ppm on a field PID or less. Based on a review of historical data the anticipated terminal depth of each boring is estimated as follows:

Area 1 – Seven total soil borings, four in the northern portion to approximately 30 feet bgs and three in the southern portion to approximately 20 feet bgs

Area 2 – Six soil borings to approximately 18 to 20 feet bgs

Area 3 – Five soil borings to approximately 18 to 20 feet bgs

Area 4 – Six soil borings to approximately 22 feet bgs

Soil samples will be collected from each interval and analyzed by PACE Analytical Services, Inc. in Pittsburgh PA for constituents listed in NYSDEC Policy CP-51: Tables 2 and 3 (Soil Cleanup Levels for Gasoline and Fuel Oil Contaminated Soils, respectively). Samples will also be analyzed for methyl-tert-butyl-ether (MTBE) and ethanol.

Soil borings will be abandoned by backfilling each borehole with pelletized bentonite while removing the drilling tools. Soil cuttings generated during soil sampling activities will be temporally contained in 55-gallon drums on site in the northern portion of investigation Area 4. Composite samples of generated waste material will be collected for waste characterization analysis in accordance with applicable laws and regulations. All waste will be disposed of at an off-site location based on the results of laboratory analytical testing.

3. Groundwater/Surface water Interaction Activities

Six pairs of nested piezometers (PZ-101S/D through PZ-106S/D, 12 total piezometers) will be installed starting on the north side of Hillside Drive (Area 1, Area 2 and Area 4) and progressing into the ROW (Area 3), towards the Seneca River. These proposed locations are shown on Figure 3. Water-levels will be measured in the piezometers to better understand the groundwater-to-surface water interaction.

The soil borings for each of the piezometers will be drilled using the direct-push drilling procedure described above or a hollow stem auger rotary method. Piezometers will be constructed using 2-inch inside diameter (ID) schedule 40 polyvinyl chloride (PVC) material. Shallow piezometers (PZ-101S though PZ-106S) will extend to approximately 20 feet bgs and will be constructed with a 15 foot screen intended to straddle the water table (i.e., 10 feet below the average water table elevation and 5 feet above the average water table elevation). Deeper piezometers (PZ-101D though PZ-106D) will extend to the top of the glacial till or an elevation of 345 feet above mean sea level (amsl) (whichever is shallower). The deeper piezometers will be constructed using 2-foot long screens utilizing standard well construction methods with appropriately sized clean sand pack. An approximate 5-foot bentonite seal will be placed starting at approximately 1 foot above the piezometer screen.

Automatic pressure transducers will be installed inside each piezometer and in the two staff gauges installed in the Seneca River. One staff gauge will be installed along the nearby boat dock and the other along the bulk head near Area 3. Pressure transducers will allow collection of relatively continuous water levels over a several month period. Water levels will be evaluated to assess the magnitude and direction of hydraulic gradients (i.e., groundwater flow direction) in the horizontal and vertical direction. Measure groundwater levels at the same time as the surface water level in Seneca River will enable an evaluation of groundwater interaction with the river. Transducers will be installed in the piezometers and river gauges approximately one month prior to the opening of the NYS Barge Canal system and will collect data over the course of approximately three months.

Manual water-level measurements will be obtained at piezometers and river gauges once at the beginning of the study every week thereafter. All transducers will be inspected and data will be downloaded during the manual gauging events.

4. Survey

All soil borings, piezometers, and surface water measurement locations will be surveyed by a NYS licensed surveyor relative to the datum that has been established for the site. Survey information will be used to convert depths to elevations at each boring location and to establish reference elevations for each piezometer.

5. Reporting

The results of the activities described in this Work Plan will be presented in one final report which will summarize soil boring, sampling activities, and the groundwater-surface water interaction study. The report is anticipated to include, at a minimum, the following:

- Brief narrative describing the field activities, observations, and results
- Updated site plan showing the actual locations of all soil borings and/or piezometer locations
- Soil boring and piezometer logs
- Copies of laboratory testing reports
- Hydrographs of the transducer and manual water-level measurements (groundwater-surface water interaction report, only)

6. Schedule

Ideally field activities described herein will be initiated no later than March 2016, approximately one month prior to the target NYS Canal system opening in April 2016. The installation of piezometers, transducers and initiation of the groundwater-surface water interaction study will immediately follow the completion of the drilling activities. Groundwater and surface water monitoring activities will continue for a minimum of two months after the transducers are installed. The report discussed in Section 5 above will be submitted within approximately 60 days after completion of all field activities.

If you have any questions or require additional information, please call me at 315.671.9256.

Sincerely,

Arcadis of New York, Inc.

Vincent S. Maresco
Principal Geologist

Richard Brazell, PE
February 22, 2016

Enclosures:

Figures

1 Northern Terminal Areas of Investigation
2 Proposed Soil Boring Locations
3 Proposed Piezometer Locations

LEGEND:

- MONITORING WELL
- FORMER AST
- FENCE
- TOP OF WALL
- EDGE OF WATER
- INVESTIGATION AREA

NOTE:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. AST = ABOVE GROUND STORAGE TANK.

COLD SPRINGS TERMINAL
HILLSIDE ROAD, LYSANDER, NEW YORK
FOCUSED INVESTIGATION WORK PLAN

NORTHERN TERMINAL AREAS OF INVESTIGATION

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
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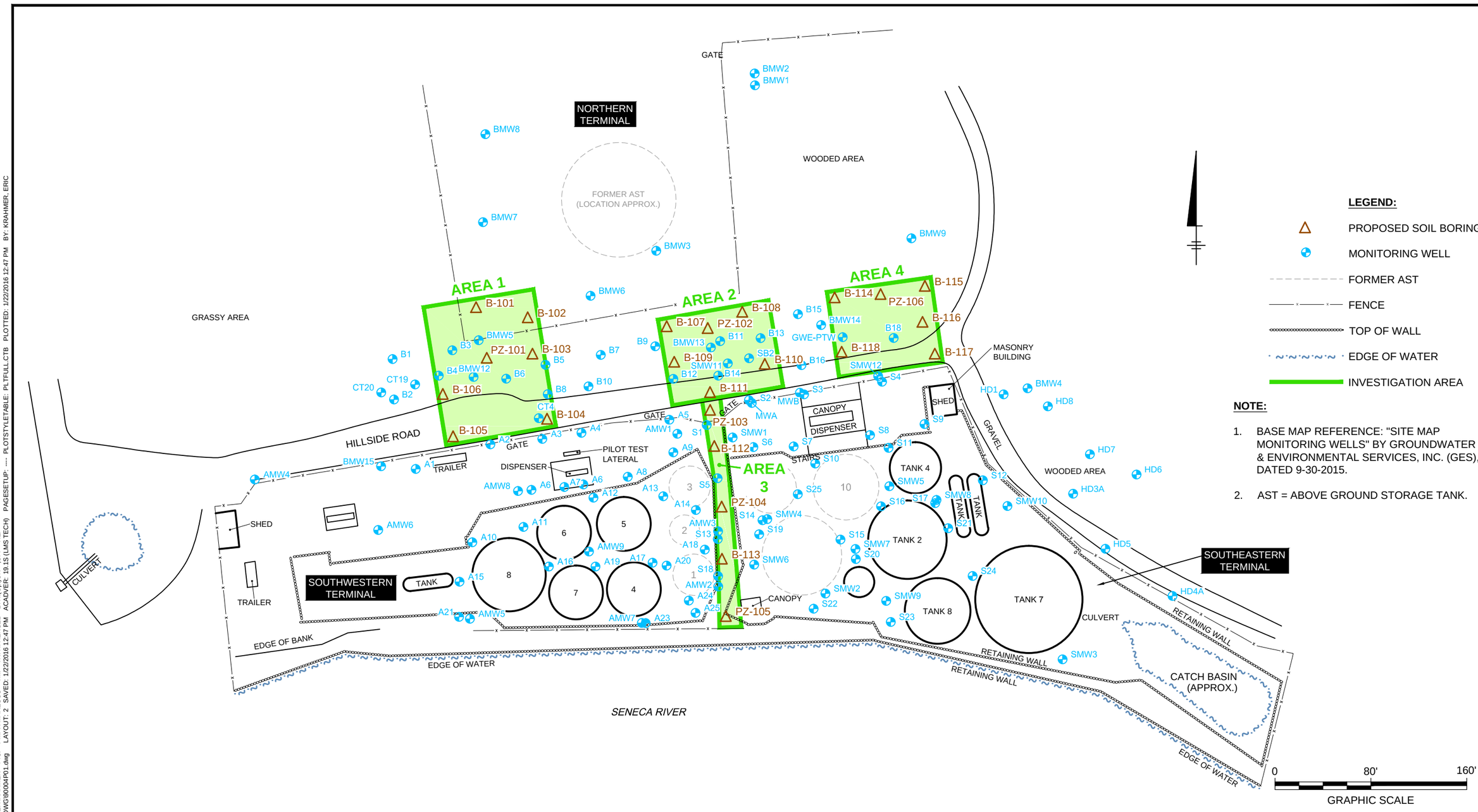

LEGEND:

△	PROPOSED SOIL BORING
●	MONITORING WELL
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—x—x—	FENCE
▭	TOP OF WALL
～	EDGE OF WATER
🟩	INVESTIGATION AREA

NOTE:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. AST = ABOVE GROUND STORAGE TANK.

0 80' 160'

GRAPHIC SCALE

COLD SPRINGS TERMINAL
HILLSIDE ROAD, LYSANDER, NEW YORK
FOCUSED INVESTIGATION WORK PLAN

PROPOSED SOIL BORING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
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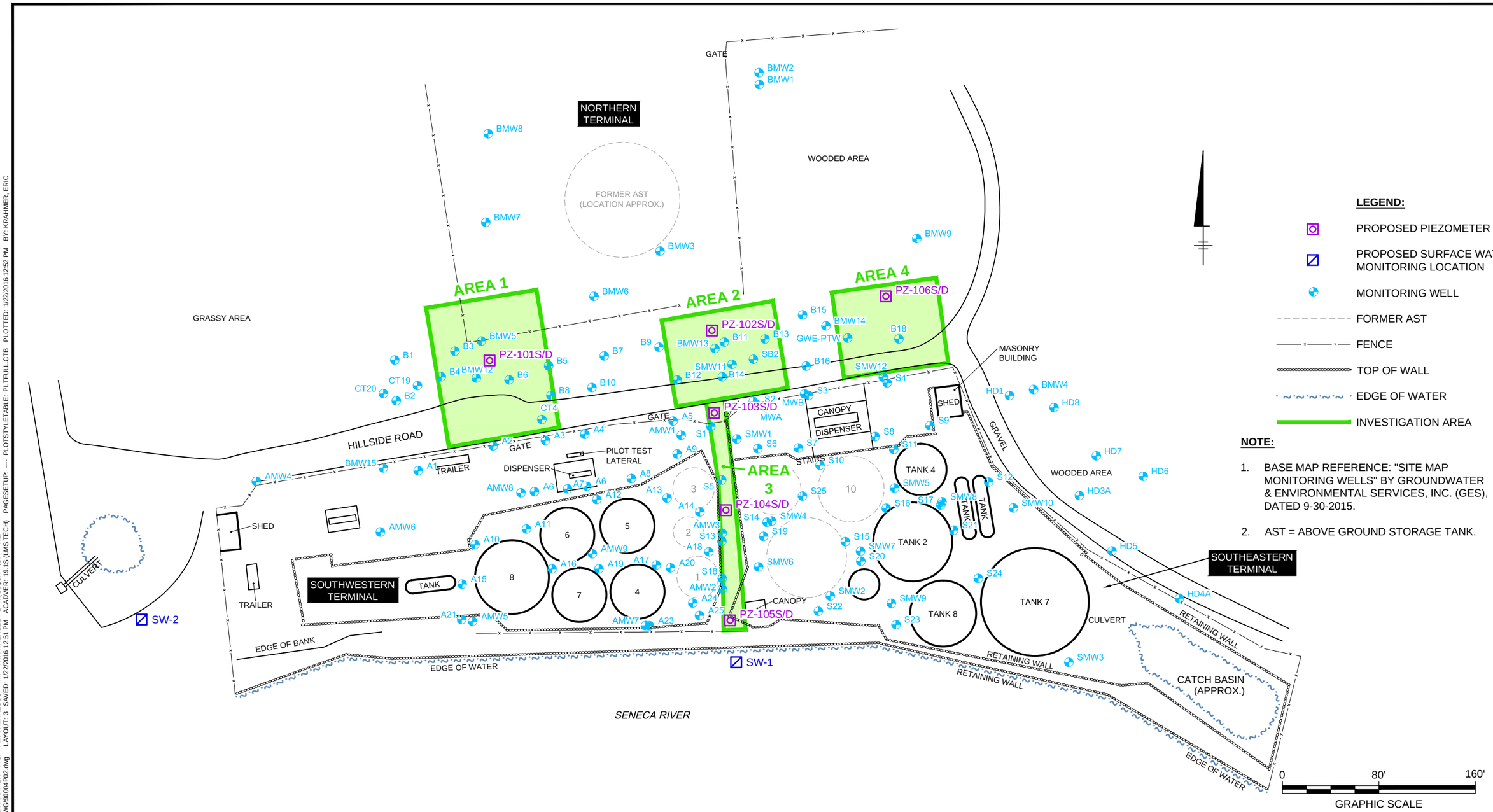

LEGEND:

- PROPOSED PIEZOMETER
- PROPOSED SURFACE WATER MONITORING LOCATION
- MONITORING WELL
- FORMER AST
- FENCE
- TOP OF WALL
- EDGE OF WATER
- INVESTIGATION AREA

NOTE:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. AST = ABOVE GROUND STORAGE TANK.

COLD SPRINGS TERMINAL
HILLSIDE ROAD, LYSANDER, NEW YORK
FOCUSED INVESTIGATION WORK PLAN

PROPOSED PIEZOMETER LOCATIONS

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FIGURE 3

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: TR: R. HENSEL LYR:(Opt)ON=*;OFF=*REF*
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February 2018 Supplemental Characterization and Interim Remedial Action Work Plan

ARCADIS Design & Consultancy for natural and built assets

Northern Terminal Group

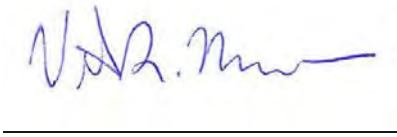
SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

Hillside Road, Cold Springs Terminals
Lysander, New York

February 21, 2018

SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

Hillside Road, Cold Springs Terminals, Lysander, New York



Vincent S. Maresco, PG
Principal Geologist

Prepared for:

Northern Terminal Group

Prepared by:

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Our Ref.:

B0090004.0006

Date:

February 21, 2018

CONTENTS

TABLES

FIGURES

ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis U.S., Inc.
DER-10	Department of Environmental Remediation, Technical Guidance for Site Investigation and Remediation
fbgs	feet below ground surface
LIF	Laser Induced Florescence
LNAPL	light non-aqueous phase liquid
MNA	Monitored Natural Attenuation
NAPL	non-aqueous phase liquid
NYSDEC	New York State Department of Environmental Conservation
PACE	PACE Analytical Services, Inc., Greensburg, Pennsylvania
PID	photo-ionization detector
QAPP	Quality Assurance Project Plan
VOCs	volatile organic compounds
Work Plan	Groundwater and Soil Impact Investigation Work Plan
NYS DOH	New York State Department of Health
ELAP	Environmental Laboratory Accreditation Program
TCLP	toxicity characteristic leaching procedure

1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) has prepared this Supplemental Characterization and Interim Remedial Action Work Plan (Work Plan) for the Cold Springs Terminals Site (Figure 1), on behalf of the Northern Terminal Group, in accordance with the Order on Consent effective October 19, 2017. The Work Plan also accounts for the recent demolition activities on the Southern Terminals, including the removal of aboveground tanks and piping, which now allows for further assessment of the surface and subsurface conditions in previously inaccessible areas.

The specific objectives of the work scope detailed in this Work Plan are as follows:

- Evaluate soil in areas previously unassessed.
- Provide the additional data to allow for the refining and updating of the scope of the October 1, 2015 Cold Springs Terminal Mutual Defense Group Remedial Action Work Plan (October 2015 RAWP).
- Conduct a site assessment of the Northern Terminal

To accomplish these goals, this Work Plan proposes the following tasks across both the Northern and the Southern Terminals:

Northern Terminal:

- Perform a monitoring well integrity survey on existing wells that are being used as part of the proposed site investigation activities and make repairs as needed based on findings;
- Conduct a groundwater sampling event using the existing wells;
- Installation of additional groundwater monitoring wells as proposed below;
- Completing an elevation survey of new wells;
- Conduct a comprehensive groundwater sampling event on the Northern Terminal; and,
- Data compilation, interpretation, and presentation.

Southern Terminals:

- Collect soil quality data via Laser Induced Fluorescence (LIF);
- Advance soil borings to correlate LIF findings to direct laboratory analytical samples;
- After the STG re-establishment of the performance monitoring well network, commence groundwater sampling in accordance with the October 2015 RAWP; and,
- Data compilation, interpretation, and presentation.

A detailed description of these activities is provided below. The activities will be conducted in accordance with New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation-10 (DER-10, Technical Guidance for Site Investigation and Remediation) (NYSDEC, 2010a) and, in the case of the Southern Terminal area groundwater monitoring program, per the October 2015 RAWP (Cold Springs Terminal Mutual Defense Group, 2015).

2 NORTHERN TERMINAL INVESTIGATION ACTIVITIES

2.1 Monitoring Well Integrity Assessment

A group of 11 wells currently existing on the Northern Terminal will be useful in understanding the current groundwater conditions of the Northern Terminal. These wells are listed on Table 1 and are depicted on Figure 2.

The first field action will be a monitoring well integrity survey of all existing Northern Terminal wells. This will be performed to assess the need for monitoring well repair, development, or replacement. The integrity survey will include the following:

- The overall condition of the well (labeled; condition of the well protective casing or well head and well pad; integrity of the surface seals; presence of the bolting or locking well cap, J-plug inner lockable cap, inner well riser casing, and survey mark)
- The comparison of measurable quantities (e.g., riser stickup relative to grade and well total depth)
- An assessment of the bottom sediment condition via probe feel and or bailer inspection
- Confirmation that each well listed in Table 1 is part of a survey data set and has known survey coordinates and elevation
- An initial measurement of the depth to liquid in each well

A monitoring well integrity assessment form, provided as Attachment 1, will be completed for each of the existing monitoring wells in this group.

2.2 Northern Terminal Existing Wells Groundwater Gauging and Sampling Event

The Table 1-listed wells are existing wells that have been selected to assist in assessing groundwater conditions on the Northern Terminal. Following integrity inspection and any needed repairs these wells will be gauged with an interface probe. The depth to water and, if detected, non-aqueous phase liquid (NAPL) thickness will be recorded and reported. Monitoring wells that are part of the sampling program and are free of NAPL will be purged of three well volumes and subsequently sampled using disposable bailers. The groundwater quality in each well will be evaluated using a multi-parameter water quality meter for temperature (degrees Celsius), pH (Standard Units), conductivity (milli-Siemens per centimeter), DO (milligrams per liter), and ORP (milli-Volts) and will be recorded to evaluate Monitored Natural Attenuation (MNA) indicators on site.

Groundwater samples will be collected from each of the well locations in accordance with DER-10 guidelines. Samples will be analyzed for NYSDEC STARS-listed volatile organic compounds (VOCs) via EPA Method Number 8260 including oxygenates, and ethanol and for semi-volatile organic compounds (SVOC) via EPA Method 8270. In addition, collected samples will be analyzed for selected MNA indicators, including nitrate/nitrite, sulfate, dissolved methane, alkalinity, dissolved ferrous iron, dissolved manganese, and carbon dioxide. Chain-of-custody documentation will be maintained for all collected samples. Collected groundwater samples will be analyzed by PACE Analytical Services, Inc., in

Greensburg, Pennsylvania (PACE), a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program-certified (ELAP) laboratory.

One set of quality assurance/quality control samples, including a blind duplicate, matrix spike, matrix spike duplicate, and trip blanks, will be collected at a frequency of one per 20 and submitted for laboratory analysis. Purge water and any NAPL generated by the monitoring activities will be containerized in properly labeled steel 55-gallon drums for off-site disposal.

2.3 Northern Terminal Utility Mark Out

Prior to initiating subsurface disturbance activities, public utilities will be marked out by contacting Dig Safely New York to locate and mark all utilities near the areas of investigation. A private utility locator will also be contracted to provide additional utility mark out in the proposed areas of investigation. In accordance with Arcadis' subsurface clearance policy, unless variances are agreed to between various parties, each drilling location will also be hand cleared to a minimum of 5 feet below ground surface before drilling.

2.4 Northern Terminal Soil Boring and Soil Sampling Activities

Areas of the Northern Terminal will be assessed via a direct-push or hollow stem auger soil boring program followed by installation of groundwater monitoring wells, as discussed in Section 2.5 below. The locations for these proposed boring locations coincide with the proposed 11 groundwater monitoring wells proposed for the Northern Terminal, as discussed below and shown on Figure 3.

Soil borings will be advanced using direct-push or hollow stem auger sample collection methods (either macro core or split spoon methods). Soil samples will be continuously collected from grade to terminal depth using 2-inch-diameter sampling tools. Representative soils samples will be collected approximately every 2 feet and screened for VOCs using a properly calibrated photo-ionization detector (PID). Soil characteristics will be logged continuously by an Arcadis geologist for texture, grain size, moisture content, geologic description, and the potential presence of impacts as detected via field PID instrumentation. Each boring termination depth will be determined in the field by the on-site geologist and will be based on the field indication of absence of impacts or 10 feet below the first detection of the water table, whichever is shallower. For the purposes of this investigation, field determination of absence of impact will be a detection of 50 parts per million (PPM) on a field PID or less. Based on a review of historical data, the anticipated terminal depth of each boring is estimated to be less than 25 feet.

Soil samples will be collected, at a minimum, from the interval with the highest PID reading above the water table and at the water table. Additionally, depending on field conditions and observations, samples may also be collected from additional intervals at each boring. All retained samples will be analyzed by PACE for constituents listed in NYSDEC Policy CP-51: Tables 2 and 3 (Soil Cleanup Levels for Gasoline and Fuel Oil Contaminated Soils, respectively) (NYSDEC, 2010b). Samples will also be analyzed for oxygenates and ethanol. Additionally, samples from the ground surface to 2 feet below ground surface will be analyzed for total lead.

Soil cuttings generated during soil sampling activities will be temporarily contained on and covered with plastic sheeting. Composite samples of the material will be collected for characterization analysis in

accordance with applicable laws and regulations. All materials will be disposed of at an off-site location based on the results of laboratory analytical testing.

2.5 Northern Terminal Monitoring Well Installation

As discussed above, additional groundwater monitoring wells are proposed for the Northern Terminal. There are 11 monitoring wells proposed throughout the Northern Terminal study area at the locations shown on Figure 3 and coincide with the locations for the soil borings discussed in Section 2.4 above. The soil borings for each of the monitoring wells will be advanced using a hollow stem auger rotary method. Wells will be constructed using 2-inch inside-diameter, Schedule 40, polyvinyl chloride (PVC) material. Monitoring wells will be constructed with a 15-foot screen intended to straddle the water table (i.e., 10 feet below the estimated average water table elevation and 5 feet above the estimated average water table elevation).

2.6 Northern Terminal Comprehensive Groundwater Sampling Event

Once the Northern Terminal monitoring wells have been installed and developed, they will be surveyed for horizontal coordinate and vertical (elevation) control. These newly installed 11 wells, along with the wells listed in Table 1, will be gauged with an interface probe and sampled in accordance with Section 2.2 above. It is estimated that the comprehensive northern terminal sampling event will take place approximately one quarter after the initial northern terminal sampling event.

Once a minimum of two and a maximum of four events of quarterly groundwater sampling have been completed, the data set will be evaluated. This evaluation will be used to generate a groundwater monitoring program for the Northern Terminal, as Northern Terminal groundwater monitoring was not contemplated in the October 2015 RAWP document. Following this initial set of up to four comprehensive groundwater data collection events and data evaluation, an updated and revised groundwater monitoring program will be proposed to NYSDEC for their review and consideration. This updated program will include a revised list of monitoring wells and analytical parameters for future proposed monitoring.

2.7 Northern Terminal Reporting

A report of findings summarizing the initial groundwater sampling event of the existing wells, the soil data collection, and the first comprehensive groundwater sampling event will be issued. This report will contain all relevant data noted above along with supporting attachments such as boring logs, well construction details, liquid level data, laboratory analytical reports. Additionally, data collected at the site in 2016 will be presented in this report of findings.

3 SOUTHERN TERMINALS INVESTIGATION ACTIVITIES

3.1 Southern Terminal Utility Mark Out

Prior to initiating subsurface disturbance activities, public utilities will be marked out by contacting Dig Safely New York to locate and mark all utilities near the areas of investigation. A private utility locator will also be contracted to provide additional utility mark out in the proposed areas of investigation. In accordance with Arcadis' subsurface clearance policy, unless variances are agreed to between various parties, each drilling location will also be hand cleared to a minimum of 5 feet below ground surface before drilling.

3.2 Southern Terminal Data Gap Area Assessment

This Work Plan proposes installing direct push soil penetrations across the Southern Terminals where data gaps exist. These borings will be conducted via LIF-type technology akin to the impact assessment work completed by AECOM in 2013 at the site. This data will allow for a three-dimensional understanding of the locations, and relative magnitude, of impacts across the data gap areas. The proposed locations of the LIF points are shown on Figure 5. Based on input and comments from NYSDEC, proposed LIF location #8 has been adjusted to line up with the former oil water separator structure that the NYSDEC removed from site during December 2017 – January 2018.

3.3 Soil Boring and Sampling Activities

Following collection and interpretation of the LIF data a brief summary memo will be prepared that would include a proposal for confirmation sampling. The LIF locations would be confirmed by approximately five (5) borings via traditional direct push or hollow stem auger advanced locations and collection of soil samples. This would allow for a calibration from the relative impact mapping provided by the LIF technology and actual compound-specific detections relative to Standards, Criteria, or Guidance values per NYSDEC Guidance Document CP-51. The final soil boring correlation sampling frequency determination will be made based on the results of the LIF data in conjunction with input from the NYSDEC.

Soil samples will be collected, at a minimum, from the interval with the highest PID reading above the water table and at the water table. Additionally, depending on field conditions and observations, samples may also be collected from additional intervals at each boring. All collected samples will be analyzed by PACE for constituents listed in NYSDEC Policy CP-51: Tables 2 and 3 (Soil Cleanup Levels for Gasoline and Fuel Oil Contaminated Soils, respectively) (NYSDEC, 2010b). Samples will also be analyzed for oxygenates and ethanol. Additionally, samples from the ground surface to 2 feet below ground surface will be analyzed for total lead.

In addition to the confirmatory boring set proposed here, four additional soil borings will be executed at the request of the NYSDEC as follows (Figure 5):

A boring will be added east of the small building located on the South East terminal (Figure 5) to characterize the impacts observed by the NYSDEC in this area during their removal of a 500-gallon consumptive use underground heating oil tank. The removal of the tank was conducted in

January 2018. Data collected from this boring will be analyzed via the same methods as all confirmatory borings being proposed.

Three shallow soil borings will be installed in the pipeline right of way located between the eastern and western southern terminals to collect shallow TCLP lead soil data quality. The most northerly of these samples will have two samples collected as follows: 0-2 feet below ground surface (fbgs) and 2-4 fbgs. The remaining two locations will have only the 0-2 fbgs sample collected.

A NYS licensed surveyor will be used to locate the LIF points as well as the soil borings installed on the southern terminal.

The results of the follow up, confirmation soil sampling plan may also suggest the installation of additional groundwater monitoring wells. Furthermore, the extended characterization of these areas should also support reevaluating the existing system design and layout especially with respect to the recent and substantial changes to the site access caused by the removal of the historic terminal above-ground infrastructure.

3.4 Southern Terminal Monitoring Well Network

Of the historic wells previously installed across the Cold Springs Terminals Site, 29 were listed in the October 2015 RAWP as wells required for system performance monitoring by the Southern Terminals Group (STG). This group of wells is listed on Table 2 and shown on Figure 4. 22 of these wells were located on the Southern Terminal properties and, as a result of recent demolition activities, have likely been compromised or lost. The remaining 7 wells are also of unknown condition. As such, baseline sampling and subsequent groundwater monitoring, as outlined in the October 2015 RAWP, will be conducted once the STG has re-established the system performance well monitoring network.

3.5 Southern Terminal Reporting

All the results of the activities described in this Work Plan will be presented in two reports as follows:

The first deliverable will be a memo summary of the LIF findings and will include a proposal for the confirmatory sampling program.

The second and final report will summarize LIF soil confirmation sampling activities. The report is anticipated to include, at a minimum, the following:

- A brief narrative describing the field activities, observations, and results
- An updated Site Plan showing the actual locations of all new surveyed soil borings
- Soil boring logs
- Copies of laboratory testing reports

4 REFERENCES

Cold Springs Terminal Mutual Defense Group. 2015. Remedial Action Work Plan. October 1, 2015.

New York State Department of Environmental Conservation (NYSDEC). 2010a. Department of Environmental Remediation-10 (DER-10), Technical Guidance for Site Investigation and Remediation. May 2010.

NYSDEC. 2010b. Guidance Document CP-51. October 21, 2010.

TABLES

Table 1
Northern Terminal Area Monitoring Wells

Cold Springs Terminals
Hillside Road
Lysander, New York

Well ID	Diameter (inches)	DTB (ft bgs)	TOS (ft bgs)
BMW1	2	15.0	5.3
BMW2	2	34.8	15.3
BMW3	2	29.7	3.5
BMW5	2	30.0	10.0
BMW6	2	30.0	10.0
BMW7	2	15.0	5.0
BMW8	2	20.0	5.0
BMW9	2	15.0	5.0
BMW13	2	UK	UK
BWM14	2	UK	UK
PZ106S	2	15.5	5.5

Notes:
DTB = depth to bottom
ft bgs = feet below ground surface TOS = top of screen
UK = Unknown

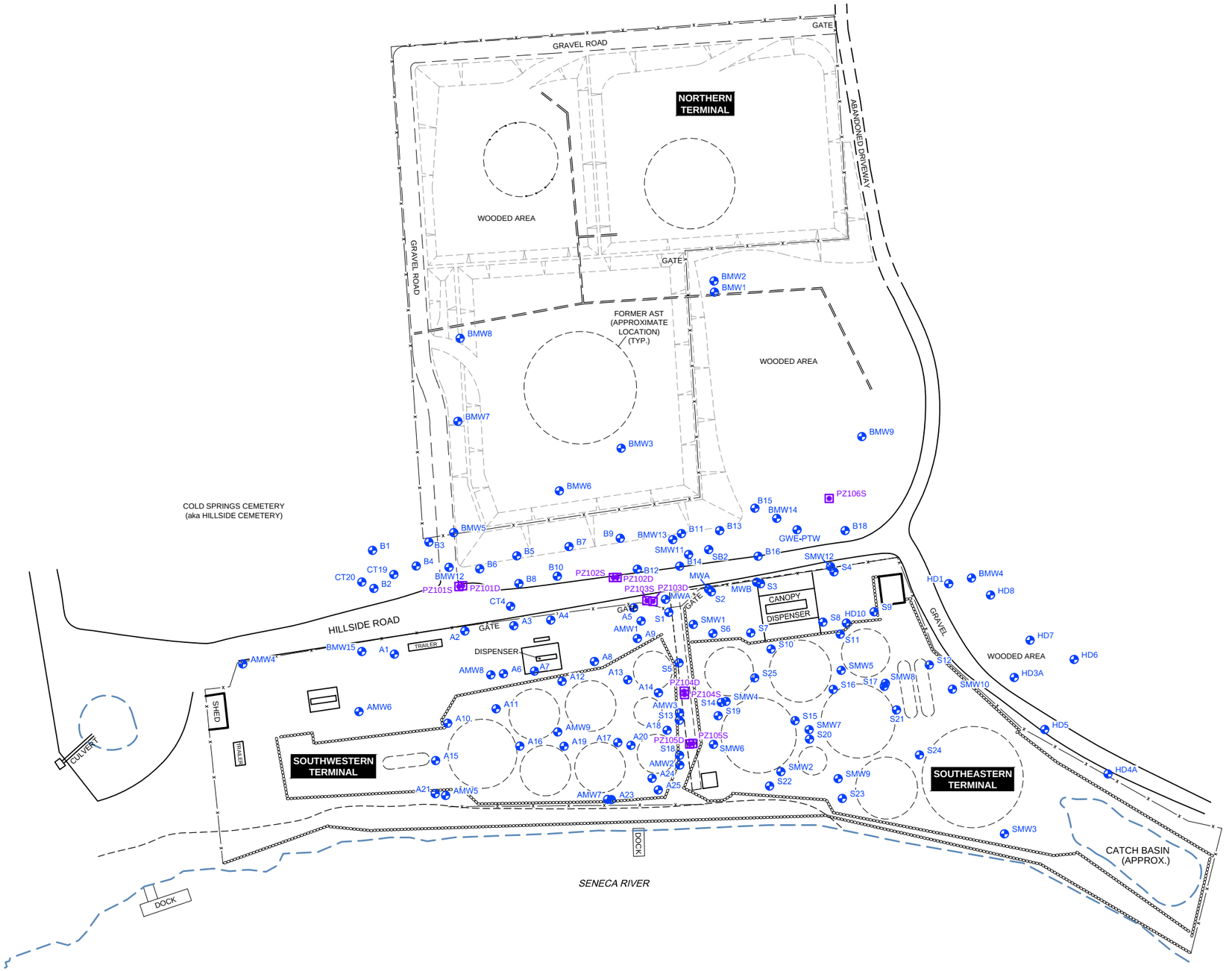
Table 2
Sitewide Remedial Performance Monitoring Wells

Cold Springs Terminals
Hillside Road
Lysander, New York

Well ID*	Diameter (inches)	DTB (ft bgs)	TOS (ft bgs)
A1	2	12	7
A4	2	23	8
A6	2	12	7
A10	2	14	4
A13	4	19	4
A16	4	19	4
A20	4	15	5
A21	2	14	4
A23	2	12	7
A25	2	14	4
B4	4	24.5	9.5
B9	2	22	12
B15	2	17	7
BMW3	2	29.7	3.5
BMW4	2	12.5	2.75
BMW9	2	15	5
HD4A	2	12	2
S2	4	20	5
S4	4	20	5
S5	4	15.5	5.5
S10	4	19	4
S12	2	18	3
S13	4	20	5
S15	4	19	4
S21	2	18.5	3.5
S22	2	8	3
S23	2	8	3
S24	2	8	3
SMW3	2	15	5

Notes:
DTB = depth to bottom
ft bgs = feet below ground surface TOS = top of screen
*These monitoring wells are part of the monitoring program, per the October 2015 RAWP.

FIGURES



LEGEND:

- MONITORING WELL
- PIEZOMETER
- FORMER AST
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTE:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF SOIL BORINGS (B101-B110 AND B112-B118) AND PIEZOMETERS (PZ101-PZ106) WERE SURVEYED ON APRIL 26, 2016 AND SOIL BORINGS (B119-B121) WERE SURVEYED ON AUGUST 29, 2016 BY C.T. MALE.
3. AST = ABOVE GROUND STORAGE TANK.

0 100' 200'

GRAPHIC SCALE

HILLSIDE ROAD, COLD SPRINGS TERMINALS
LYSANDER, NEW YORK

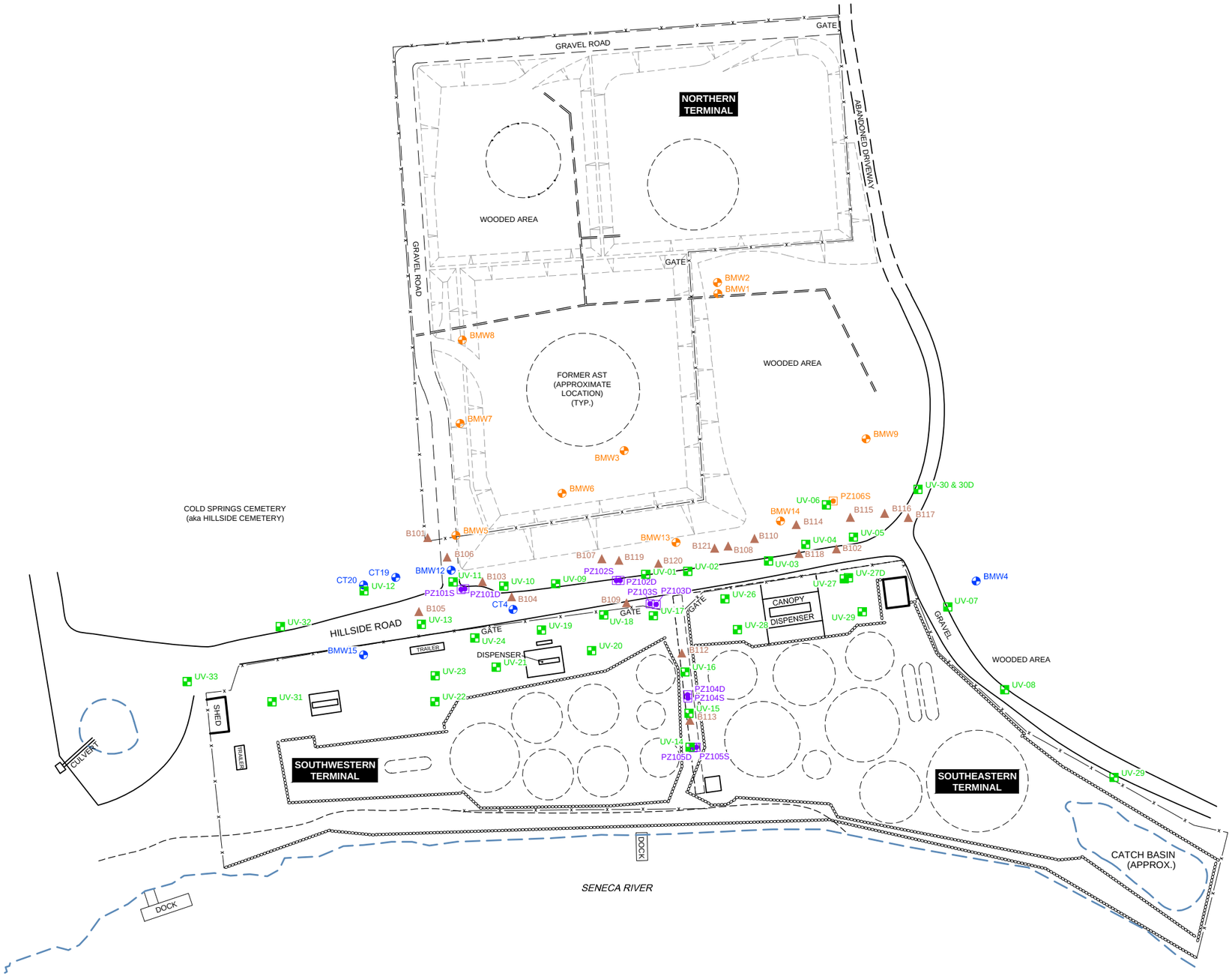
SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

SITE LAYOUT AND HISTORICALLY EXISTING MONITORING WELLS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: R. HENSEL TR: K. ROSKOFF LYR:(Opt)ON=*;OFF=*REF*
C:\Users\roberlander\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Comany\2018\B0090000\4.0005\01-DWG\WP-Fig1-Site Layout.dwg LAYOUT: 1 SAVED: 1/3/2018 11:02 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/4/2018 1:34 PM BY: OBERLANDER, ROSEANNE
XREFS: IMAGES: PROJECTNAME: ----
X-WP-Title Block
X-Base Map



LEGEND:

- MONITORING WELL
- NORTHERN TERMINAL EXISTING MONITORING LOCATIONS
- PIEZOMETER
- UVOST/CPT
- SOIL BORING
- FORMER AST
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTE:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF SOIL BORINGS (B101-B110 AND B112-B118) AND PIEZOMETERS (PZ101-PZ106) WERE SURVEYED ON APRIL 26, 2016 AND SOIL BORINGS (B119-B121) WERE SURVEYED ON AUGUST 29, 2016 BY C.T. MALE.
3. AST = ABOVE GROUND STORAGE TANK.

0 100' 200'

GRAPHIC SCALE

HILLSIDE ROAD, COLD SPRINGS TERMINALS
LYSANDER, NEW YORK

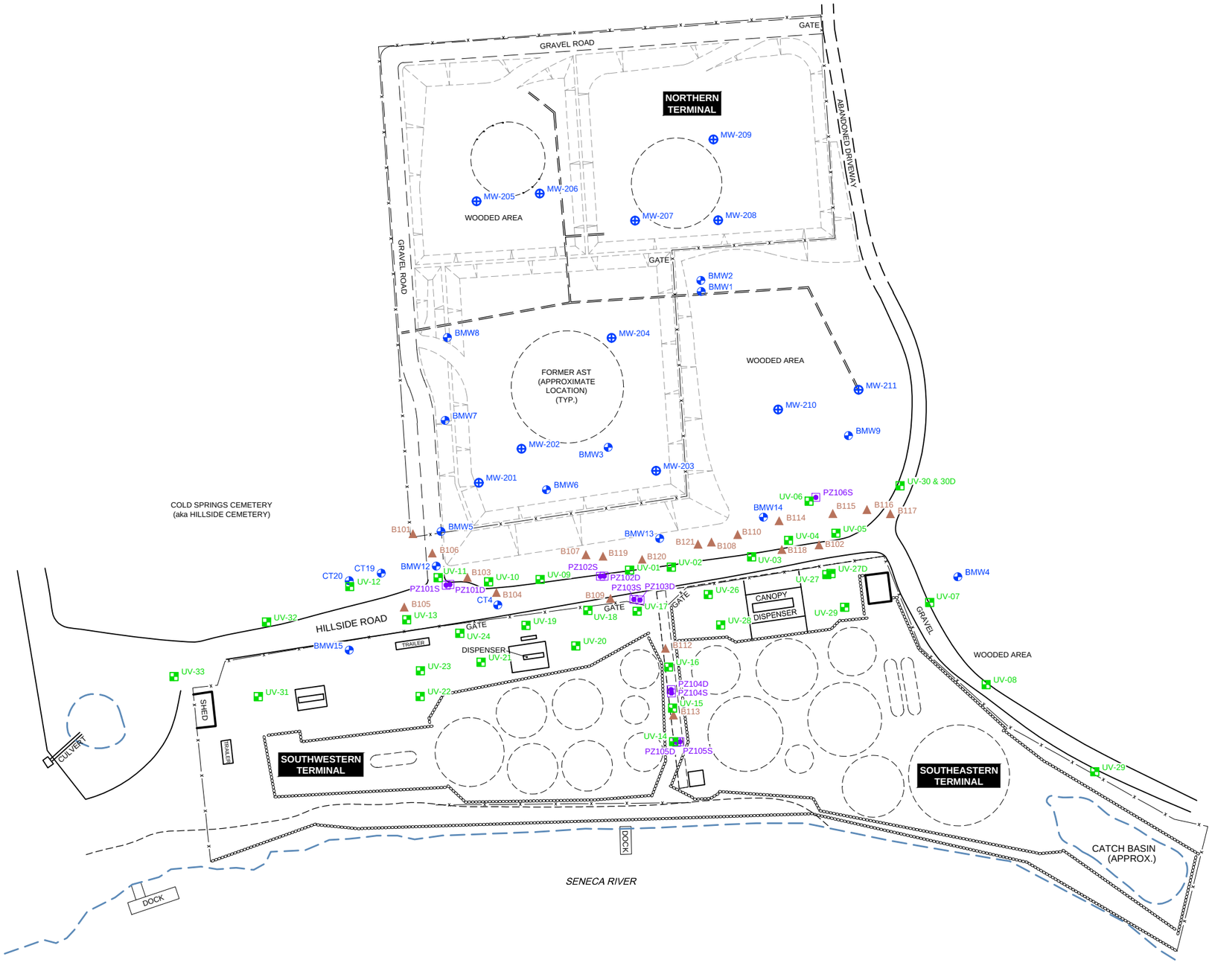
SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

NORTHERN TERMINAL EXISTING MONITORING WELLS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: R. HENSEL TR: K. ROSKOFF LYR:(On)ON=*;OFF=*REF*
C:\Users\roberlander\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B00900004.0005\01-DWG\WP-Fig2-Exst N MW.dwg LAYOUT: 2 SAVED: 1/3/2018 11:04 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/4/2018 1:33 PM BY: OBERLANDER, ROSEANNE
XREFS: IMAGES: PROJECTNAME: ----
X-WP-Title Block
X-Base Map



LEGEND:

- PROPOSED MONITORING WELL
- MONITORING WELL
- PIEZOMETER
- UVOST/CPT
- SOIL BORING
- FORMER AST
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTE:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF SOIL BORINGS (B101-B110 AND B112-B118) AND PIEZOMETERS (PZ101-PZ106) WERE SURVEYED ON APRIL 26, 2016 AND SOIL BORINGS (B119-B121) WERE SURVEYED ON AUGUST 29, 2016 BY C.T. MALE.
3. AST = ABOVE GROUND STORAGE TANK.

0 100' 200'

GRAPHIC SCALE

HILLSIDE ROAD, COLD SPRINGS TERMINALS
LYSANDER, NEW YORK

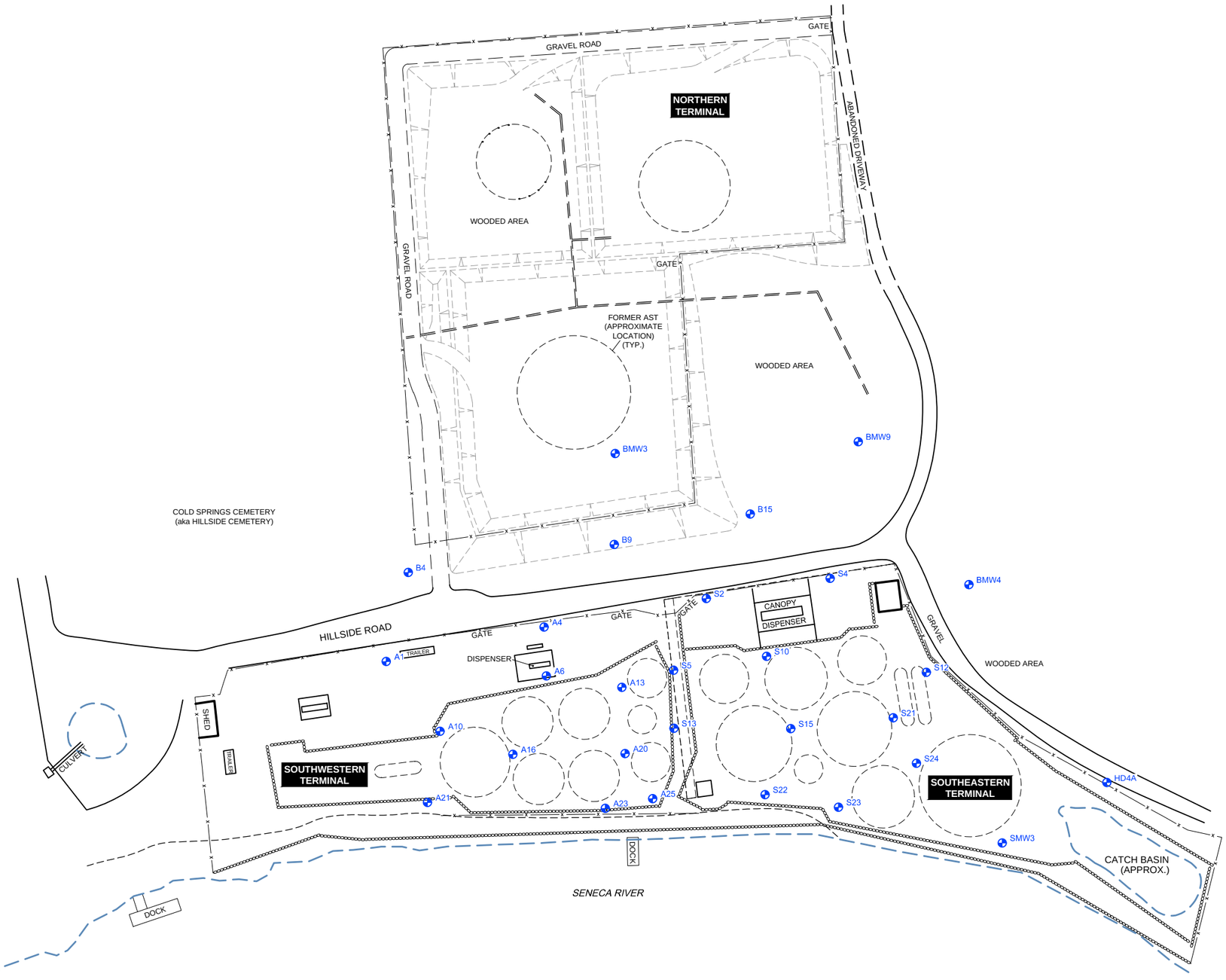
SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

PROPOSED NORTHERN AREA ADDITIONAL WELLS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: R. HENSEL TR: K. ROSKOFF LYR:(On)ON=*;OFF=*REF*
C:\Users\oberlander\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Comany\2018\B00900004.0005\01-DWG\WP-Fig3-Prop N MW.dwg LAYOUT: 3 SAVED: 1/3/2018 11:05 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/4/2018 1:33 PM BY: OBERLANDER, ROSEANNE
XREFS: IMAGES: PROJECTNAME: ----
X-WP-Title Block
X-Base Map



LEGEND:

- REMEDIATION MONITORING WELL
- FORMER AST
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTE:

1. BASE MAP REFERENCE: "SITE MAP SYSTEM PERFORMANCE WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. AST = ABOVE GROUND STORAGE TANK.

0 100' 200'

GRAPHIC SCALE

HILLSIDE ROAD, COLD SPRINGS TERMINALS
LYSANDER, NEW YORK

SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

REMEDIAL PERFORMANCE MONITORING WELLS (PER OCTOBER 2015 RAWP)

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: R. HENSEL TR: K. ROSKOFF LYR:(Opt)ON=*;OFF=*REF*
C:\Users\oberlander\OneDrive - ARCADIS\BIM 360 Docs\bP AMOCO CORPORATION\Buckeye Pipeline Comany\2018\B0090004.0005\01-DWG\WP-Fig4-Rem Perf MW.dwg LAYOUT: 4 SAVED: 1/3/2018 11:06 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB
PLOTTED: 1/4/2018 1:33 PM BY: OBERLANDER, ROSEANNE PROJECTNAME: ----
XREFS: IMAGES:
X-WP-Title Block
X-Base Map

LEGEND:

- PROPOSED MONITORING WELL
- PROPOSED LASER INDUCED FLUORESCENT (LIF) LOCATION
- MONITORING WELL
- PIEZOMETER
- UVOST/CPT
- SOIL BORING
- PROPOSED SOIL BORING
- FORMER AST
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK

NOTES:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. LOCATION OF SOIL BORINGS (B101-B110 AND B112-B118) AND PIEZOMETERS (PZ101-PZ106) WERE SURVEYED ON APRIL 26, 2016 AND SOIL BORINGS (B119-B121) WERE SURVEYED ON AUGUST 29, 2016 BY C.T. MALE.
3. AST = ABOVE GROUND STORAGE TANK.

0 100' 200'

GRAPHIC SCALE

HILLSIDE ROAD, COLD SPRINGS TERMINALS
LYSANDER, NEW YORK
SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

PROPOSED MONITORING WELL, SOIL BORING, AND LIF LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

CITY: SYRACUSE NY DIV/GROUP: ENV/CAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: R. HENSEL TR: K. ROSKOFF LYR:(Off)ON=*OFF=*REF*
C:\Users\tdeclercq\OneDrive - ARCADIS\BIM 360 Docs\B\Buckeye Pipeline Company\2018\B00900004.0005\01-DWG\WP-Fig5-Prop NW SB & LIF.dwg LAYOUT: 5 SAVED: 2/8/2018 9:12 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/8/2018 9:12 AM
BY: DECLERCQ, BRIAN PROJECTNAME: ----
XREFS: IMAGES:
X-WP-Title Block
X-Base Map

ATTACHMENT 1

Monitoring Well Integrity Assessment Form

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date _____

Well ID _____ ID Clearly Marked? _____ Project Name _____

Photo filename _____ Project Number _____

Weather _____ Field Personnel _____

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

NYSDEC Approval of 2018 Work Plan

From: Brazell, Richard J (DEC) <richard.brazell@dec.ny.gov>
Sent: Friday, February 23, 2018 9:43 AM
To: Hensel, Rebecca <Rebecca.Hensel@arcadis.com>
Cc: Maresco, Vin <Vin.Maresco@arcadis.com>; Conlon, Benjamin (DEC) <benjamin.conlon@dec.ny.gov>; Greg Boltus <gboltus@action-technical.com>
Subject: RE: Report Submission on Behalf of Vin Maresco

Rebecca and Vin

I approve the Supplemental Characterization Interim Remedial Action Work Plan for the Cold Springs Terminal.

Currently the DEC, as part of the removal of the oil water separator on the southern terminal, continues to remove free product from the site. Two riser pipes have been installed that Action Technical is utilizing to remove the free product. I anticipate this activity to continue until there is no free product present or the Southern Terminal submits a revised work plan and commences work.

If you have any questions do not hesitate to contact me.

Richard J. Brazell P.E.
Regional Spill Engineer, NYS DEC Spill Response

New York State Department of Environmental Conservation
615 Erie Boulevard West, Syracuse, NY 13204-2400
P: 315-426-7523 | M: 315-447-8516 | richard.brazell@dec.ny.gov
www.dec.ny.gov |

From: Hensel, Rebecca [mailto:Rebecca.Hensel@arcadis.com]
Sent: Thursday, February 22, 2018 10:49 PM
To: Brazell, Richard J (DEC) <richard.brazell@dec.ny.gov>
Cc: Maresco, Vin <Vin.Maresco@arcadis.com>
Subject: Report Submission on Behalf of Vin Maresco

Good Evening Richard,

On behalf of Vin Maresco, attached is the Supplemental Characterization Interim Remedial Action Work Plan for the Cold Springs Terminals. Additionally, a hard copy of the report is scheduled to arrive at your office Monday. Vin is on vacation and will be returning Monday morning, until then please feel free to reach out to me with any questions.

Thank you,
Rebecca

Rebecca Hensel, EIT | Environmental Engineer | rebecca.hensel@arcadis.com
Arcadis | U.S., Inc.
110 West Fayette Street Suite 300, Syracuse, NY | 13202 | USA
T. +1 315.671.9296 C. +1 315.751.3069

June 2018 Proposed Confirmatory Soil Borings Work Plan

ARCADIS Design & Consultancy for natural and built assets

Harry Warner, PE
Region 7 Regional Remediation Engineer
New York State Department of Environmental Conservation
615 Erie Boulevard West
Syracuse, New York 13204

Arcadis of New York, Inc.
One Lincoln Center
110 West Fayette Street
Suite 300
Syracuse
New York 13202
Tel 315 446 9120
Fax 315 449 0017
www.arcadis.com

ENVIRONMENT

Subject:
Proposed Confirmatory Soil Borings
Cold Springs Terminals
Hillside Road, Lysander, New York

Date:
June 29, 2018

Contact:
Vin Maresco

Phone:
315 671 9256

Email:
vin.maresco@arcadis.com

Our ref:
B0090004.0008

Dear Mr. Warner:

Following up on our conversation from June 22, 2018, the attached Figure 1 proposes nine soil borings across the Southern Terminals. The purpose of these borings is to confirm the Laser Induced Fluorescence (LIF) findings in this area of the site and also to enhance the understanding of impacts in these areas. For your reference, the LIF findings are also summarized on the attached Figure 1.

Additional detailed findings from the May 2018 LIF data collection, including LIF boring logs, will be provided to the New York State Department of Environmental Conservation in the future. The May 2018 LIF data are summarized on Figure 1 so that you may evaluate the proposed nine boring locations.

This set of confirmatory borings are proposed, and will be sampled in accordance with the February 21, 2018 work plan. Pending your input on these proposed locations, the field work will be scheduled. Field execution timing will also be based on contractor availability.

If you have any questions or require additional information, please call me at 315.671.9256.

Sincerely,

Arcadis NA.

Vincent S. Maresco, PG
Principal Geologist/Project Manager

Harry Warner, PE
New York State Department of Environmental Conservation
June 29, 2018

Copies:
Michael Belveg, NYSDEC
Krista Manley, Buckeye
John Frankenthal, BP
Michale Teeling, Woodard Curren

Attachment:
Figure 1 – 2018 LIF based NAPL Detections with Proposed Confirmatory Borings

LEGEND:

- LASER INDUCED FLUORESCENT (LIF) LOCATION
- MONITORING WELL
- PIEZOMETER
- UVOST/CPT
- SOIL BORING
- FORMER AST
- FENCE
- RETAINING WALL
- EDGE OF WATER
- EDGE OF BANK
- PROPOSED CONFIRMATORY SOIL BORING
- NO NAPL DETECTED
- TRACE NAPL DETECTED
- NAPL DETECTED
- HIGHEST INDICATION OF NAPL DETECTED

NOTES:

1. BASE MAP REFERENCE: "SITE MAP MONITORING WELLS" BY GROUNDWATER & ENVIRONMENTAL SERVICES, INC. (GES), DATED 9-30-2015.
2. SURVEY INFORMATION:
   - 2.1. LOCATION OF SOIL BORINGS (B101-B110 AND B112-B118) AND PIEZOMETERS (PZ101-PZ106) WERE SURVEYED ON APRIL 26, 2016 AND SOIL BORINGS (B119-B121) WERE SURVEYED ON AUGUST 29, 2016 BY C.T. MALE.
   - 2.2. LOCATION OF MONITORING WELLS (MW-201-MW-210), LIF (1-20), AND SOIL BORINGS (B122-B125) WERE SURVEYED ON JUNE 7, 2018.
3. AST = ABOVE GROUND STORAGE TANK.
4. THE NAPL RESPONSES FOR EACH LIF LOCATION ARE BASED ON MAY 2018 GROUNDWATER DATA.

0 100' 200'

GRAPHIC SCALE

HILLSIDE ROAD, COLD SPRINGS TERMINALS
LYSANDER, NEW YORK

SUPPLEMENTAL CHARACTERIZATION AND INTERIM REMEDIAL ACTION WORK PLAN

2018 LIF BASED NAPL DETECTIONS WITH PROPOSED CONFIRMATORY BORINGS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: V. MARESCO TM: R. HENSEL TR: K. ROSKOFF LYR:(On)ON=*;OFF=*REF*
C:\Users\EKrahmer\OneDrive - ARCADIS\BIM 360 Docs\BP AMOCO CORPORATION\Buckeye Pipeline Company\2018\B0090004.0006\01-DWG\NYSDEC-Fig1 LIF NAPL PROP CONF.dwg LAYOUT: 1 SAVED: 6/28/2018 2:48 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE:
PLTFULL.CTB PLOTTED: 6/28/2018 2:56 PM BY: KRAHMER, ERIC PROJECTNAME: ----
XREFS: IMAGES:
X-WP-Title Block
X-Base Map

NYSDEC Approval of June 2018 Proposed Confirmatory Soil Borings Work Plan

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 7
615 Erie Boulevard West, Syracuse, NY 13204-2400
P: (315) 426-7519, (315) 426-7551 | F: (315) 426-2653
www.dec.ny.gov

July 2, 2018

Vin Maresco
Arcadis of New York, Inc.
110 West Fayette St. Suite 300
Syracuse, NY 13202

RE: Cold Springs Terminals, Lysander, NY
NYSDEC Spill# 1705856
Proposed Confirmatory Soil Borings Workplan

Dear Mr. Maresco:

Thank you for providing the above referenced Confirmatory Soil Borings Workplan dated June 29, 2018 for the Cold Springs Terminals site in Lysander, New York.

The Department has determined that the workplan is satisfactory. Please notify the Department in advance before any field work begins to allow Department personnel the opportunity to be present during the activities outlined.

Should you have any questions, please contact me at (315) 426-7446 and thanks again for your efforts in continuing to move this project forward.

Sincerely,

Michael Belveg
Assistant Engineer (Environmental), Division of Environmental Remediation

Ec: Harry Warner, NYSDEC

APPENDIX 2

UVOST® CP and LIF Logs

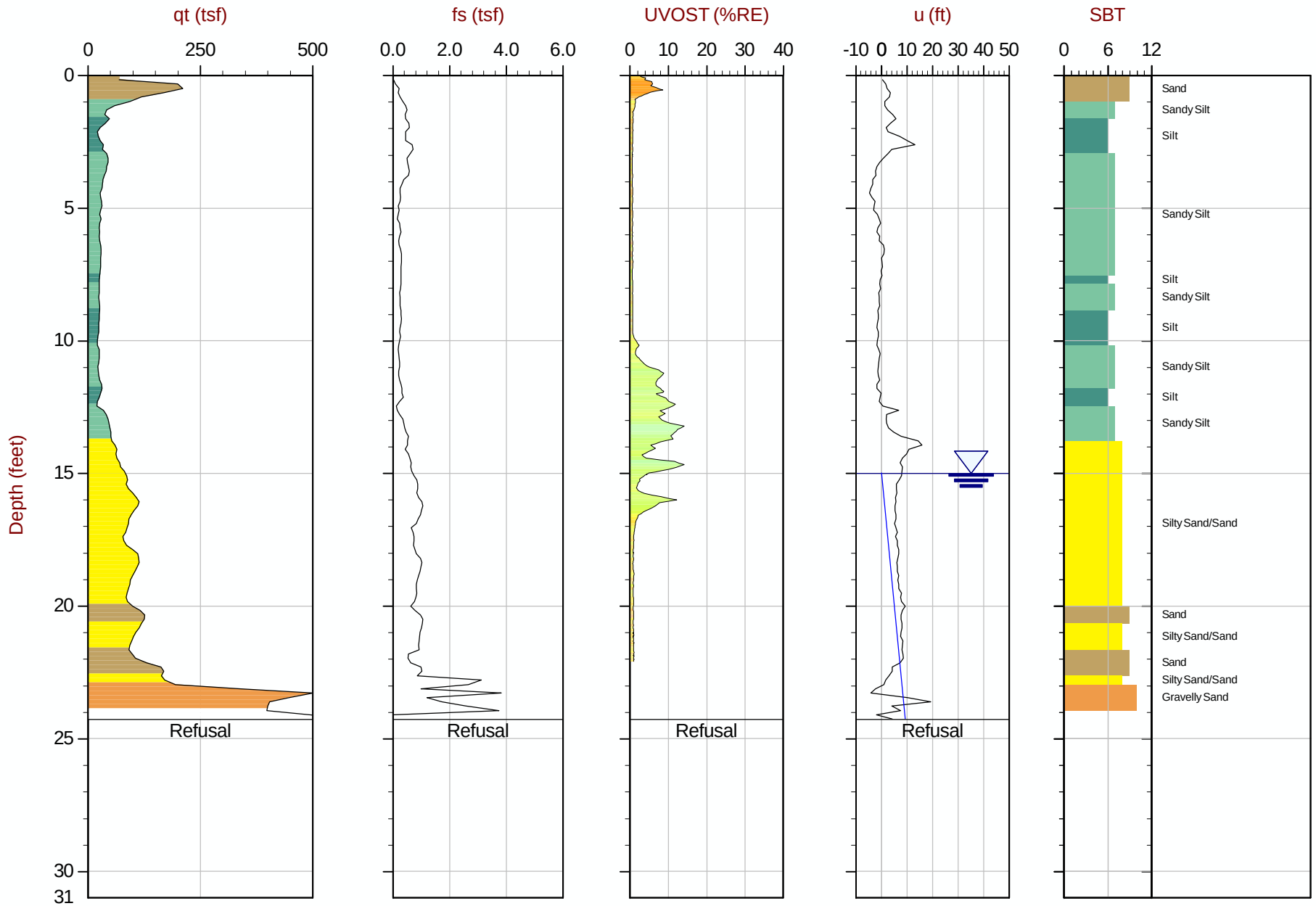
UVOST® CP Logs

CONETEC

AECOM

Job No: 13-53045
Date: 07:22:13 14:25
Site: Cold Springs Terminals

Sounding: UV-01
Cone: 226:T1500F15U500



Max Depth: 7.400 m / 24.28 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP01.COR

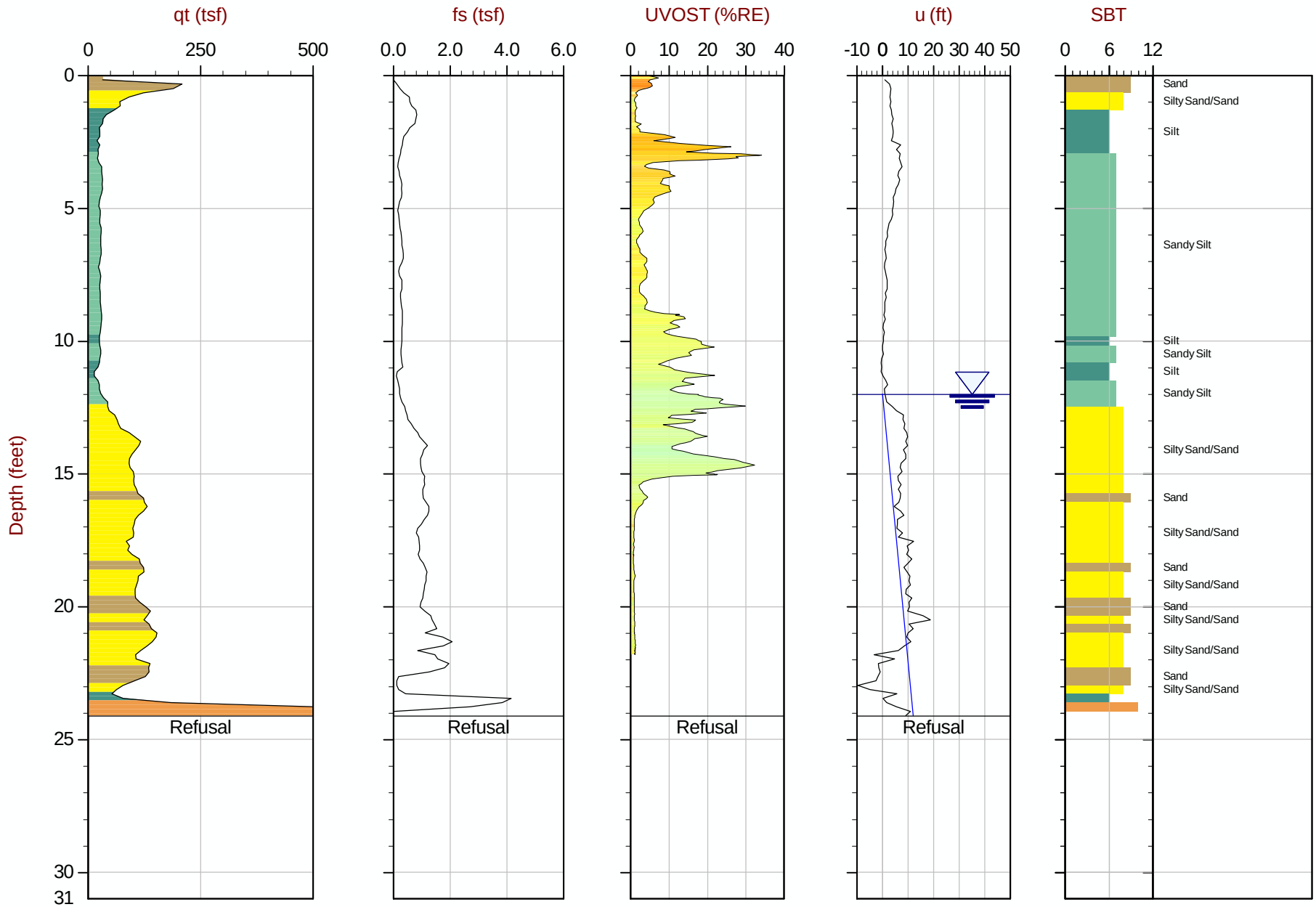
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776185 E: 398271

CONETEC

AECOM

Job No: 13-53045
Date: 07:22:13 15:17
Site: Cold Springs Terminals

Sounding: UV-02
Cone: 226:T1500F15U500



Max Depth: 7.350 m / 24.11 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP02.COR

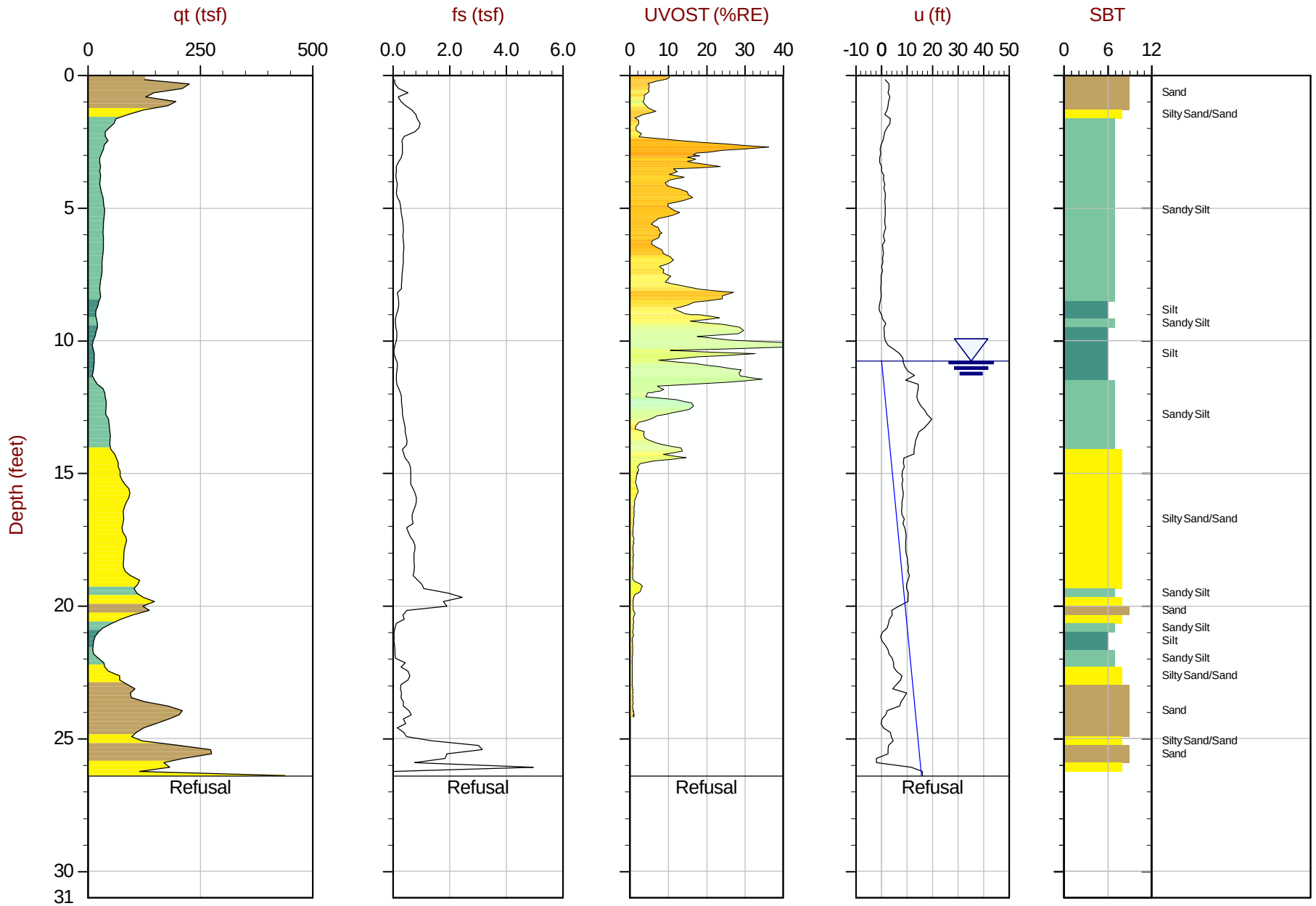
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776188 E: 398286

CONETEC

AECOM

Job No: 13-53045
Date: 07:22:13 16:05
Site: Cold Springs Terminals

Sounding: UV-03
Cone: 226:T1500F15U500



Max Depth: 8.050 m / 26.41 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP03.COR

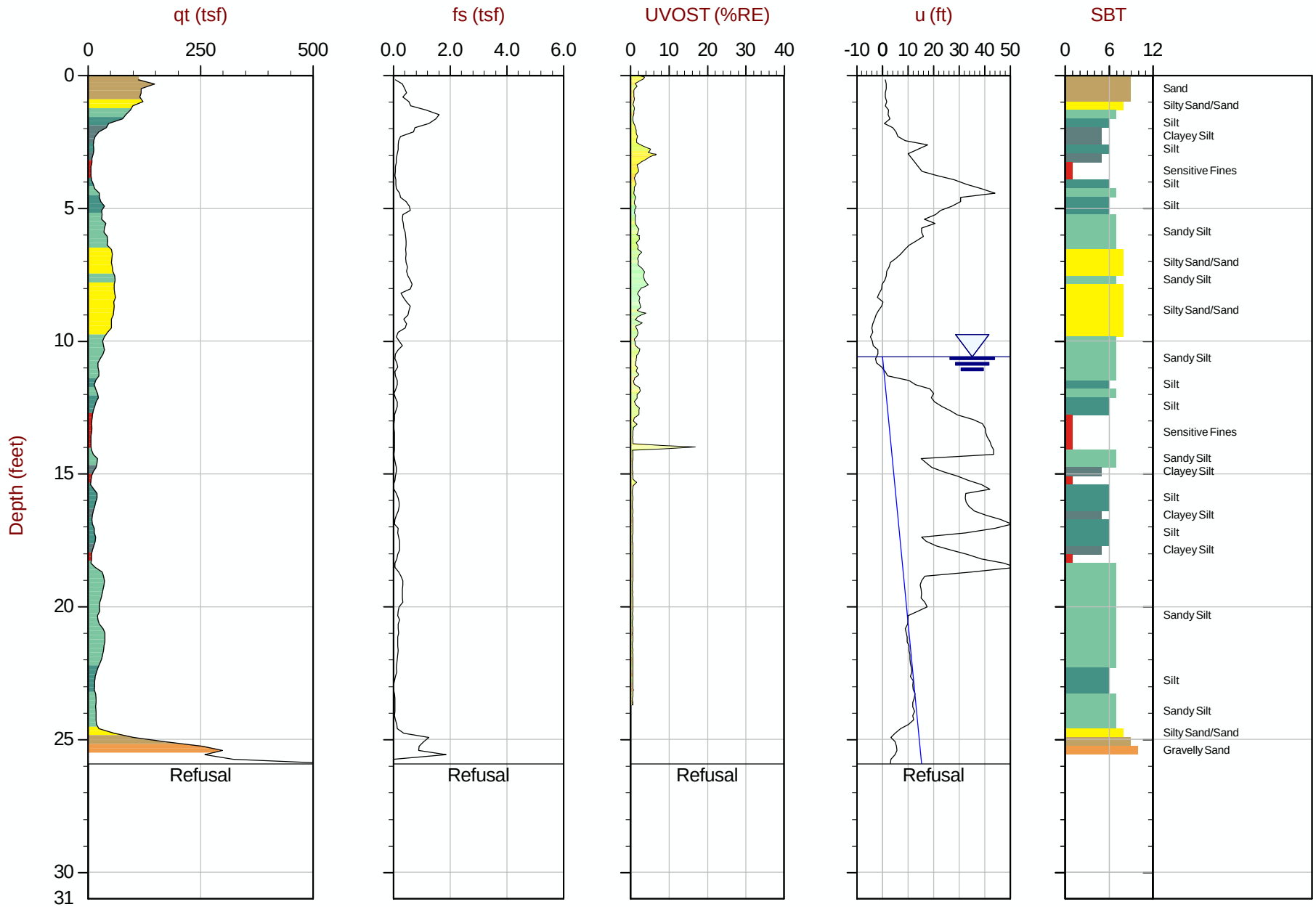
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776184 E: 398312
Page No: 1 of 1

CONETEC

AECOM

Job No: 13-53045
Date: 07:22:13 16:49
Site: Cold Springs Terminals

Sounding: UV-04
Cone: 226:T1500F15U500



Max Depth: 7.900 m / 25.92 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP04.COR

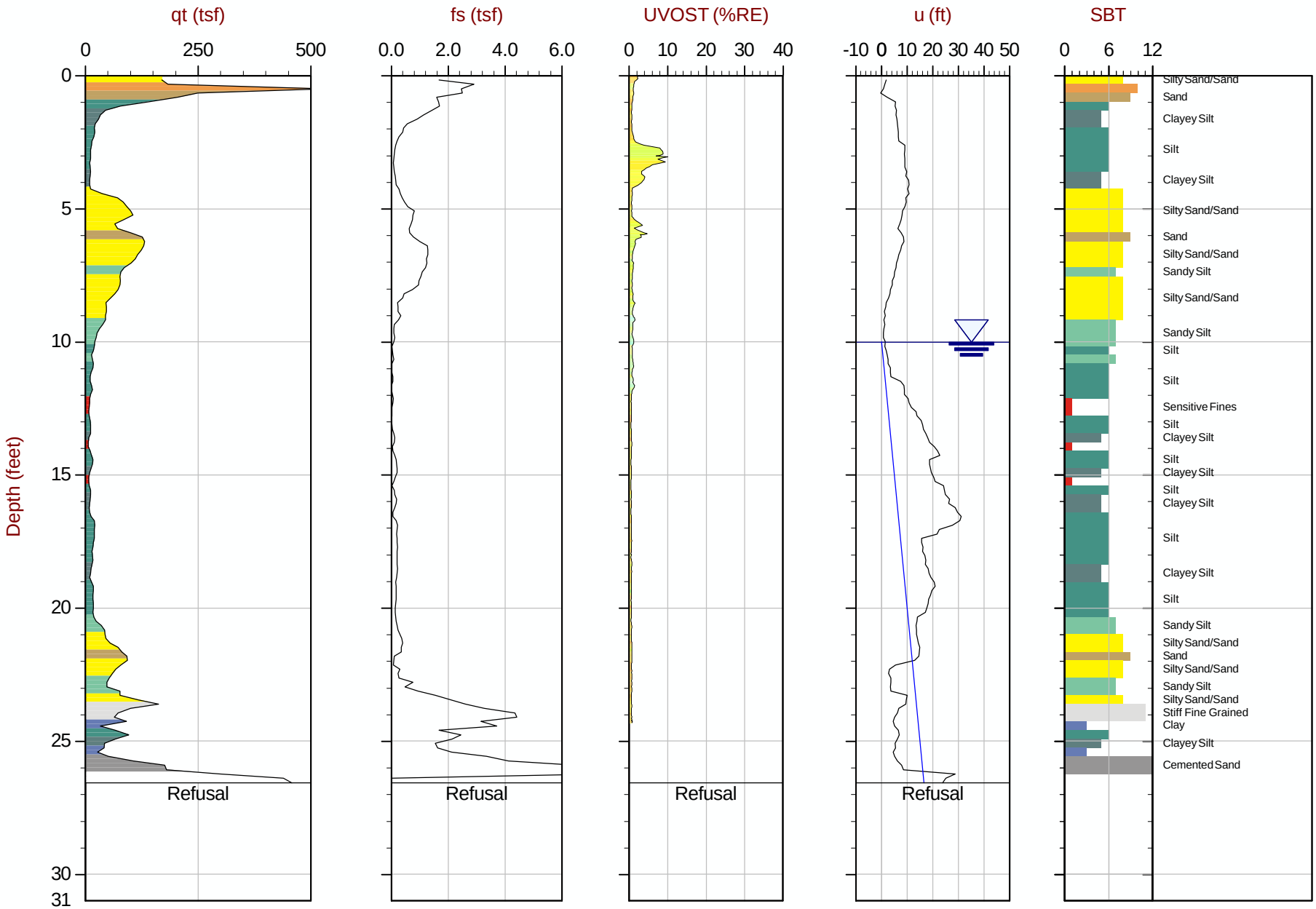
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776195 E: 398316
Page No: 1 of 1

CONETEC

AECOM

Job No: 13-53045
Date: 07:22:13 17:21
Site: Cold Springs Terminals

Sounding: UV-05
Cone: 226:T1500F15U500



Max Depth: 8.100 m / 26.57 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP05.COR

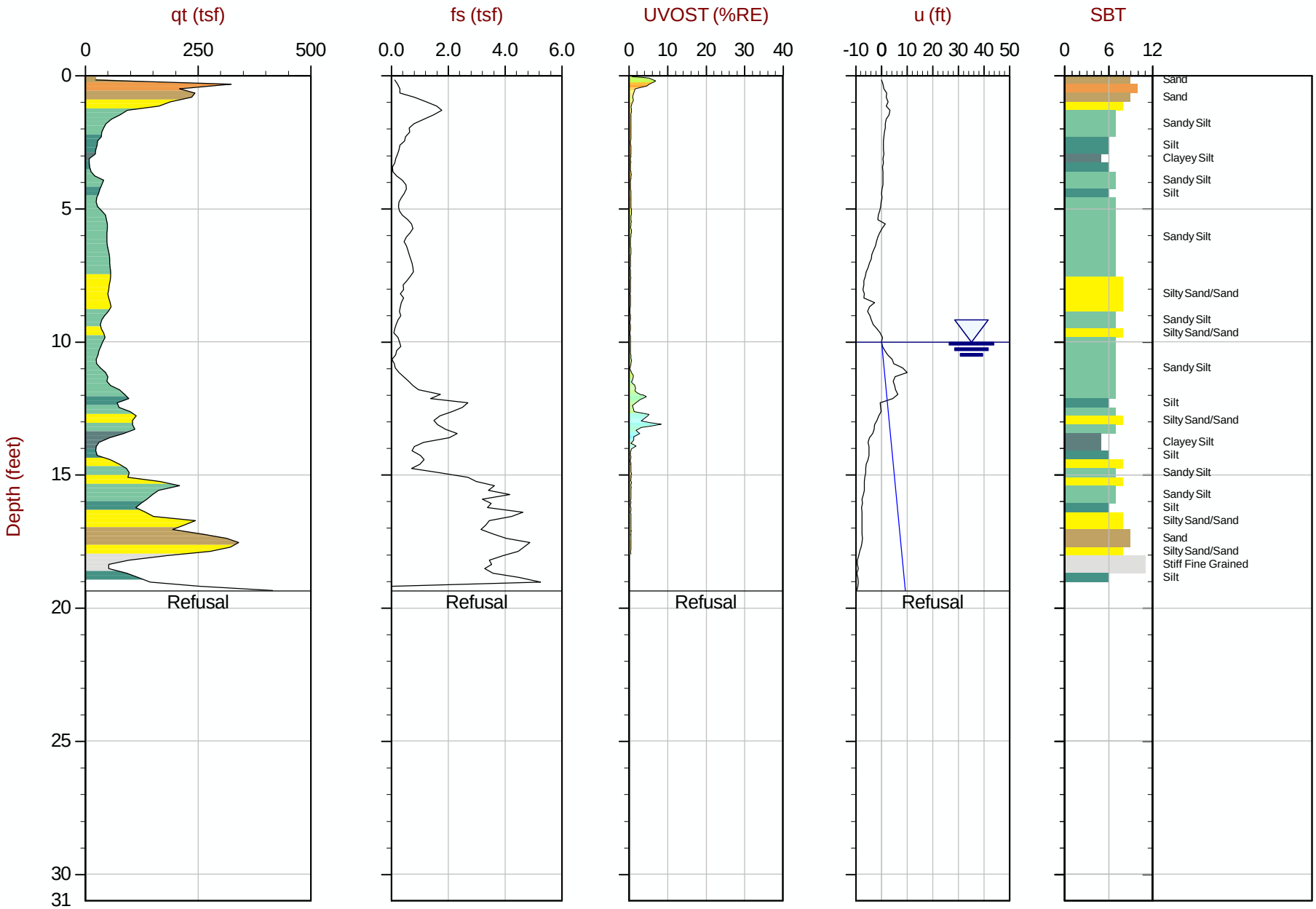
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776186 E: 398334

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 09:51
Site: Cold Springs Terminals

Sounding: UV-06
Cone: 243:T1500F15U500



Max Depth: 5.900 m / 19.36 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP06.COR

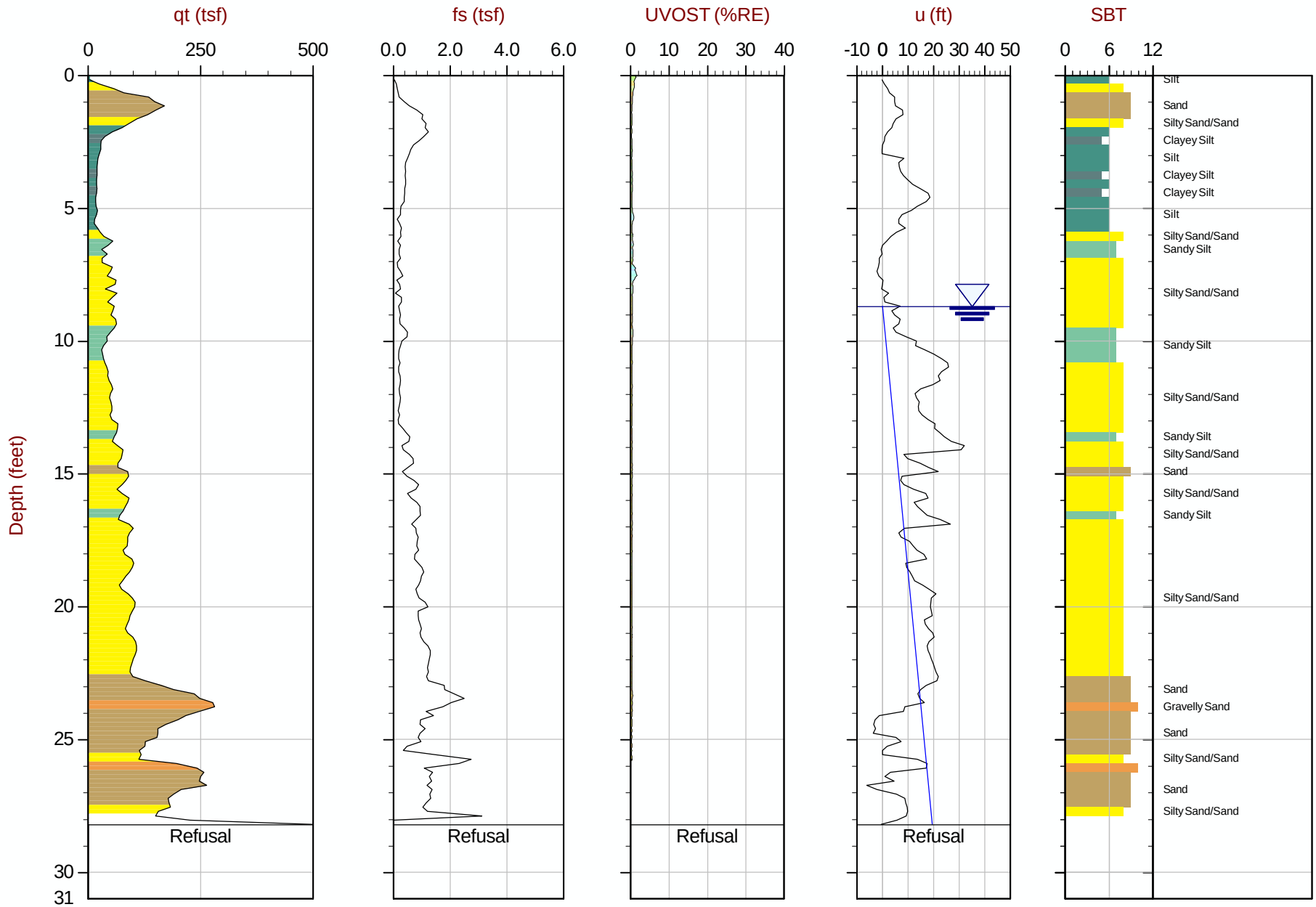
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776204 E: 398328

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 10:34
Site: Cold Springs Terminals

Sounding: UV-07
Cone: 243:T1500F15U500



Max Depth: 8.600 m / 28.21 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP07.COR

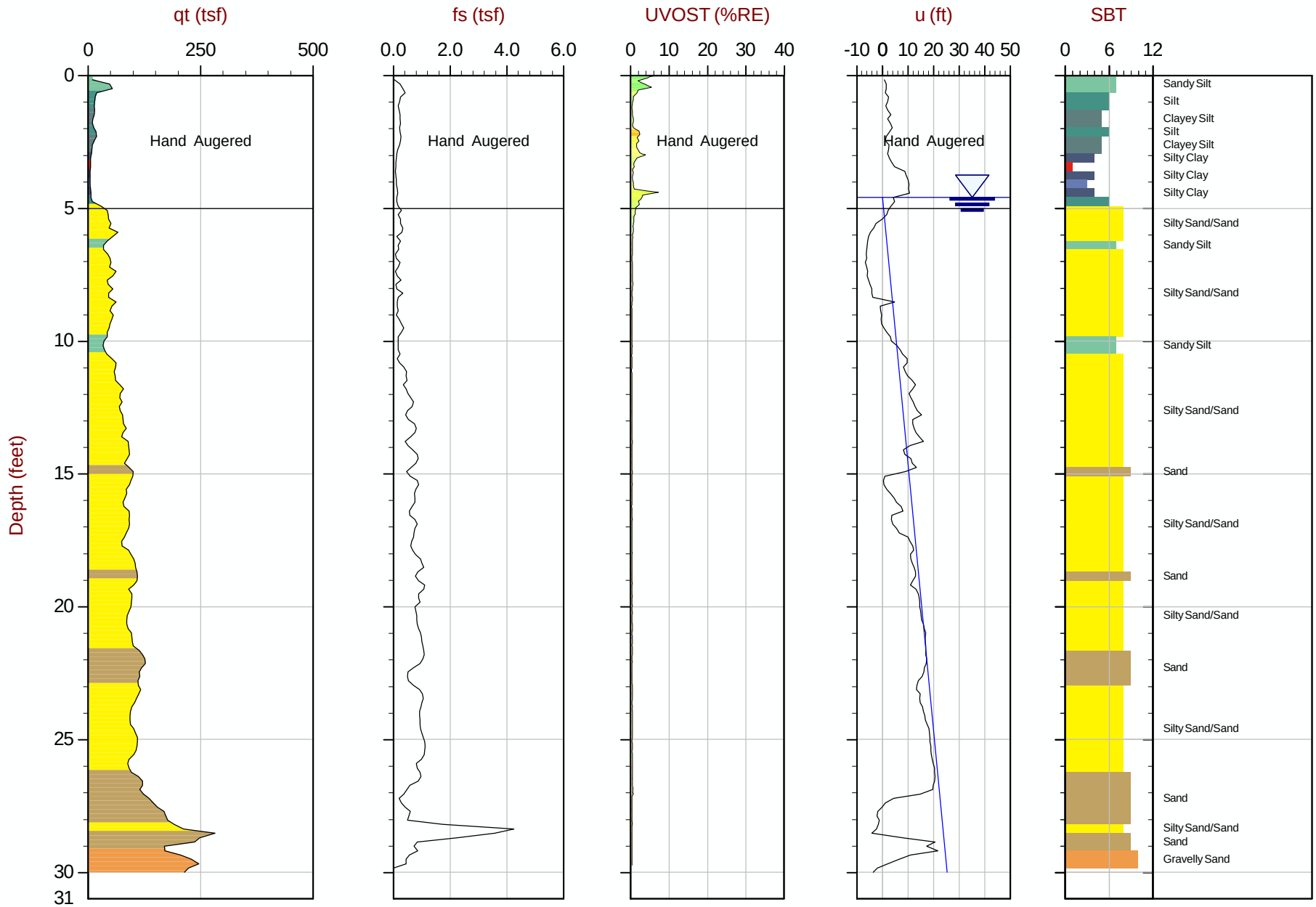
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776171 E: 398340

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 12:12
Site: Cold Springs Terminals

Sounding: UV-08
Cone: 243:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP08.COR

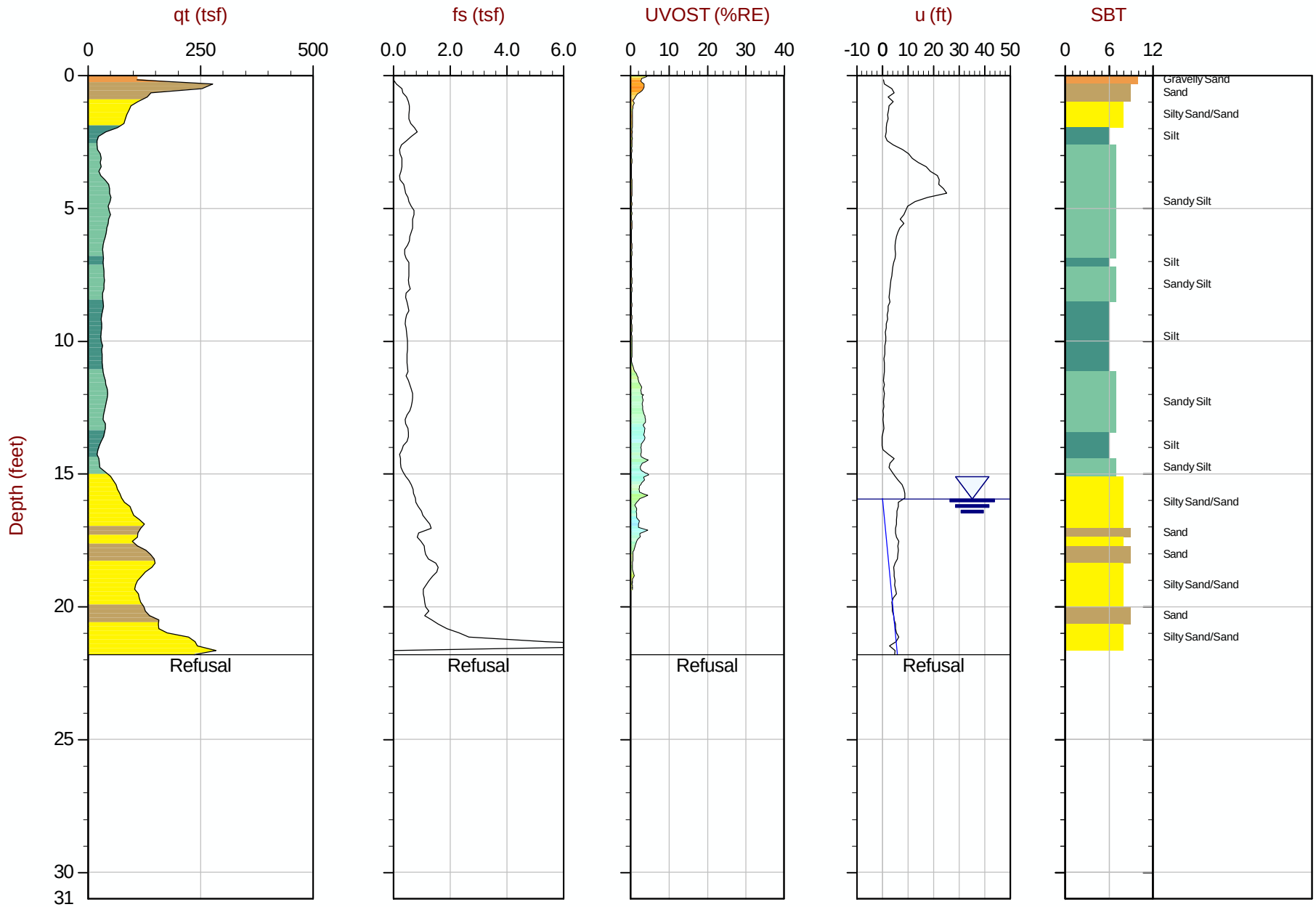
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776156 E: 398364

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 12:57
Site: Cold Springs Terminals

Sounding: UV-09
Cone: 243:T1500F15U500



Max Depth: 6.650 m / 21.82 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP09.COR

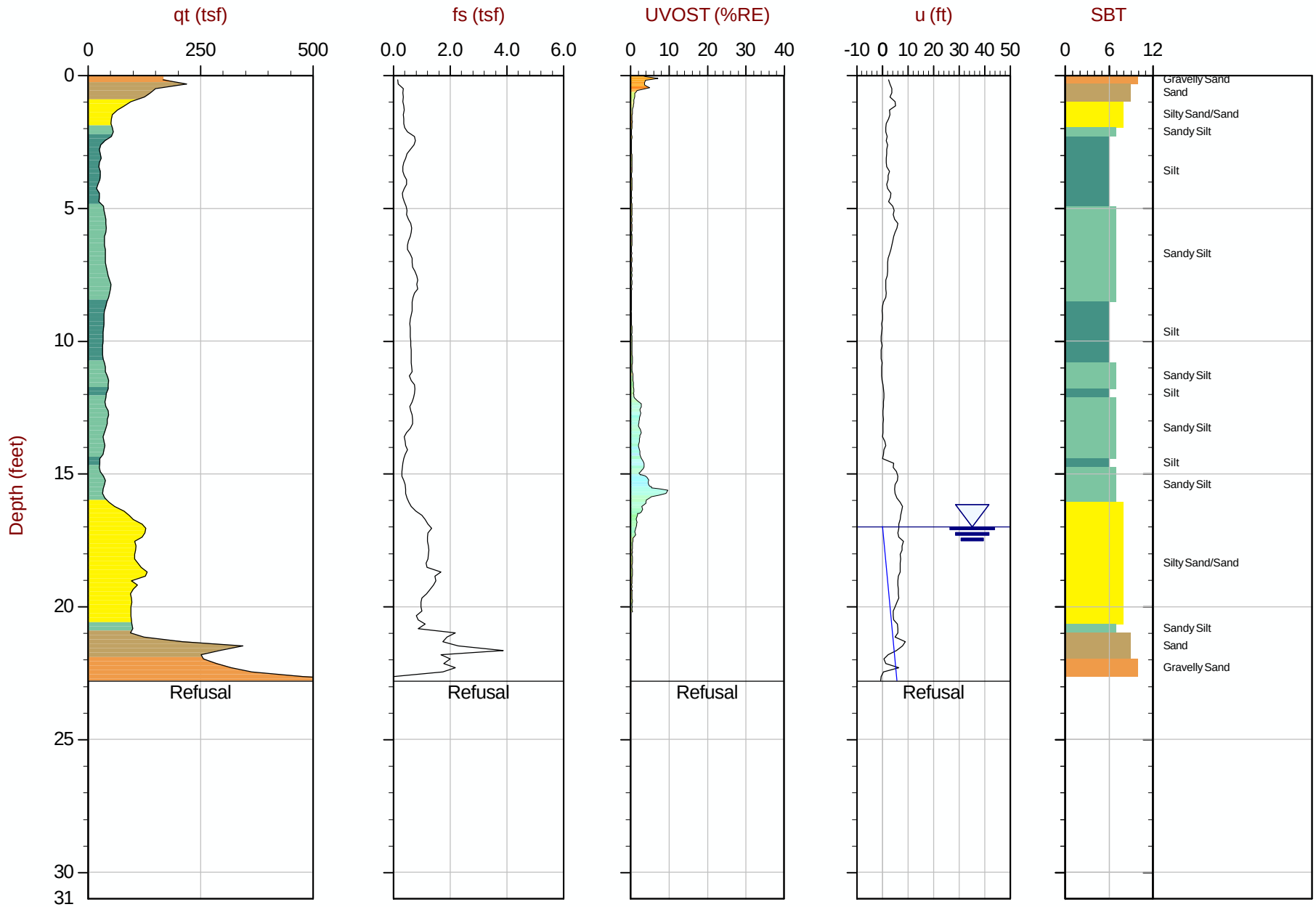
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776174 E: 398259
Page No: 1 of 1

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 13:36
Site: Cold Springs Terminals

Sounding: UV-10
Cone: 243:T1500F15U500



Max Depth: 6.950 m / 22.80 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP10.COR

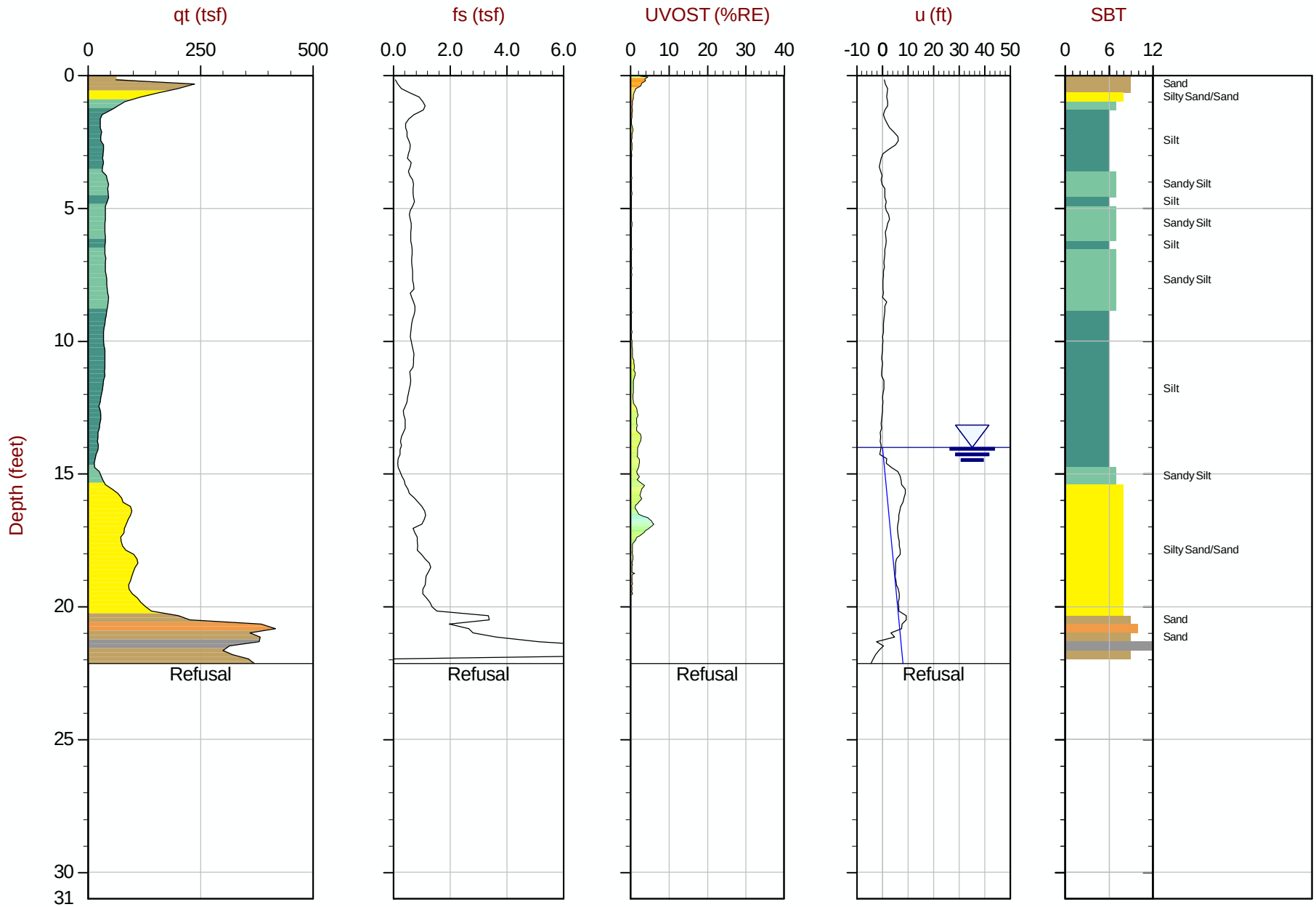
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776185 E: 398233

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 14:11
Site: Cold Springs Terminals

Sounding: UV-11
Cone: 243:T1500F15U500



Max Depth: 6.750 m / 22.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP11.COR

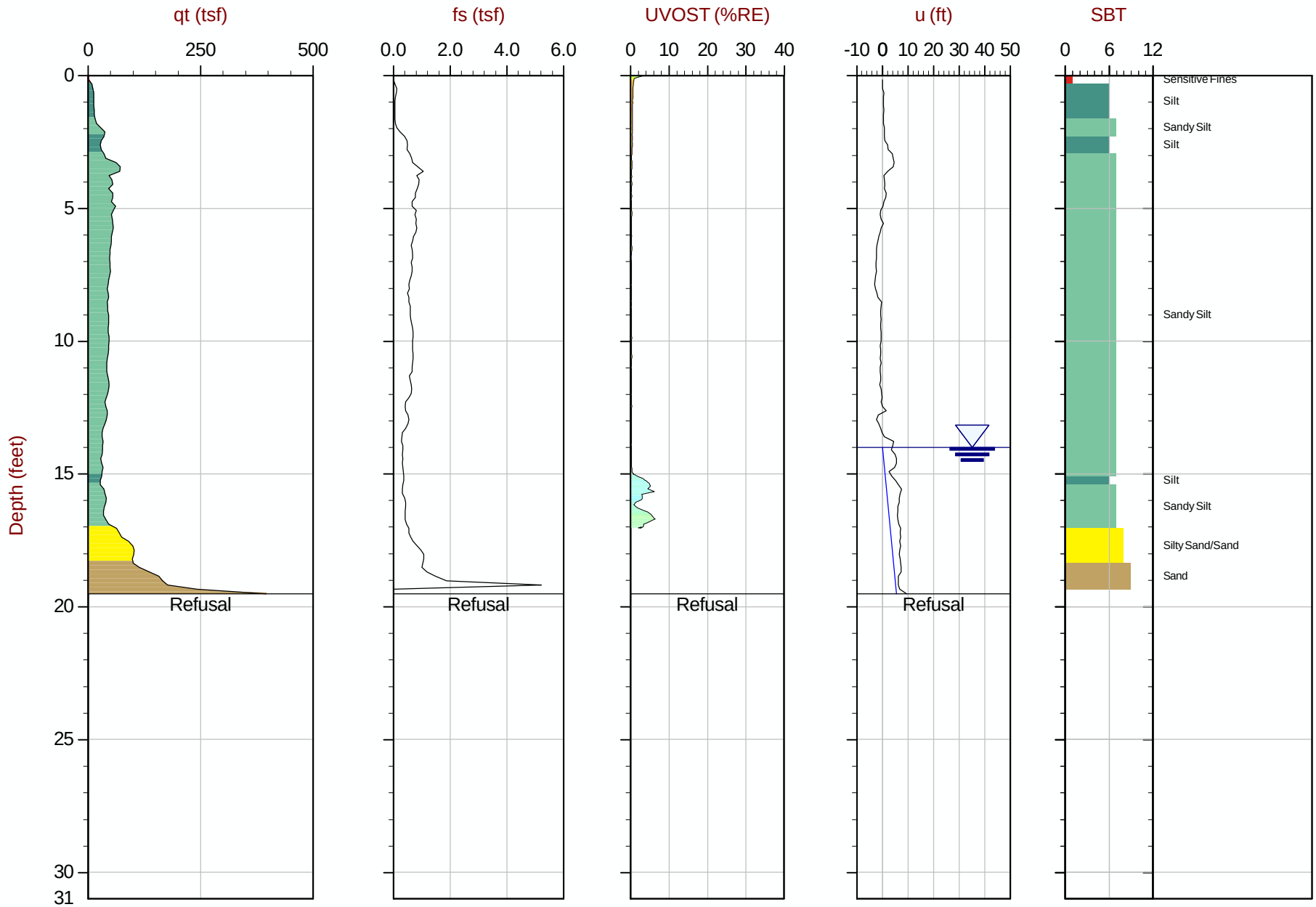
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776184 E: 398220

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 14:48
Site: Cold Springs Terminals

Sounding: UV-12
Cone: 243:T1500F15U500



Max Depth: 5.950 m / 19.52 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP12.COR

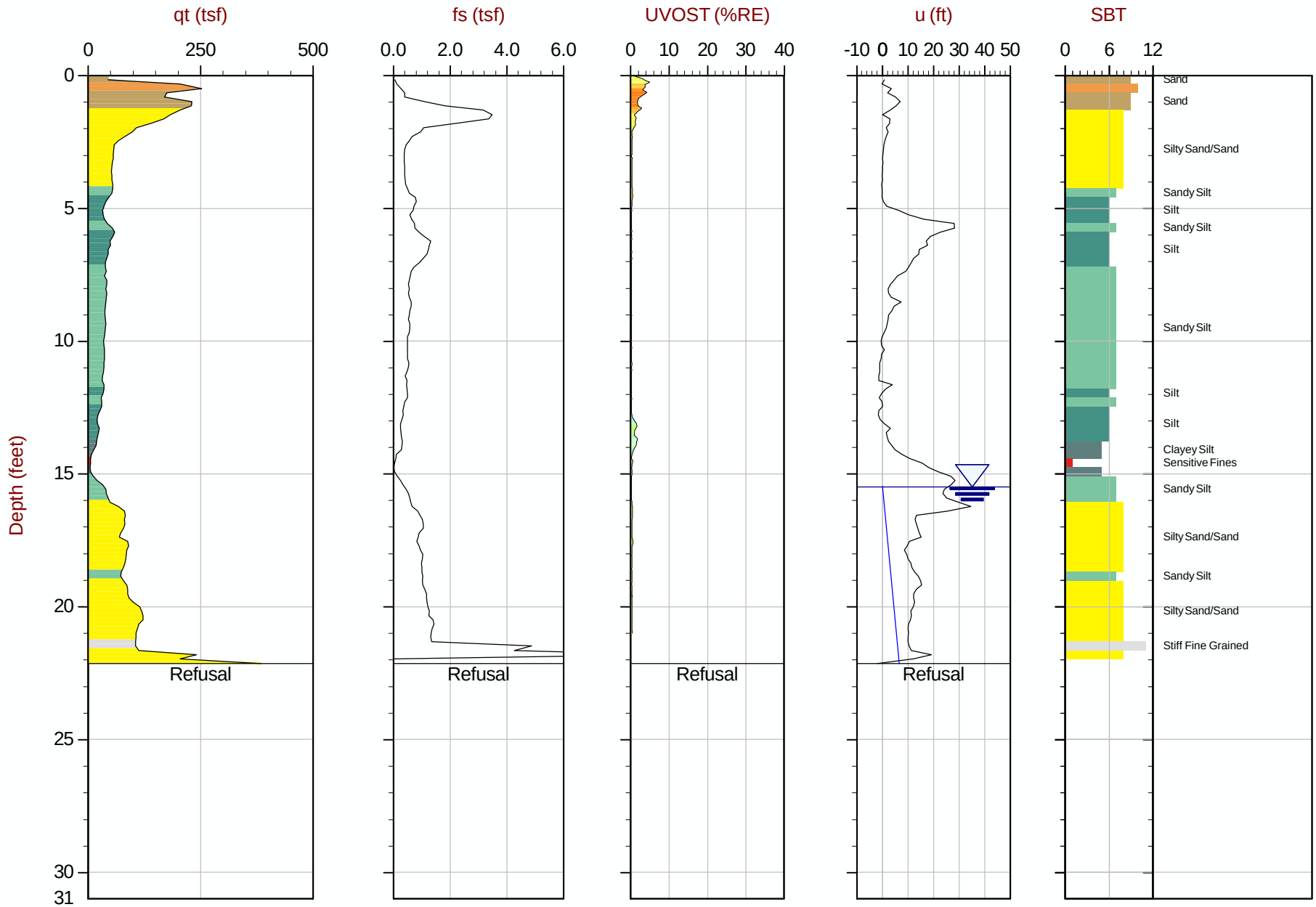
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776186 E: 398198

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 15:20
Site: Cold Springs Terminals

Sounding: UV-13
Cone: 243:T1500F15U500



Max Depth: 6.750 m / 22.15 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP13.COR

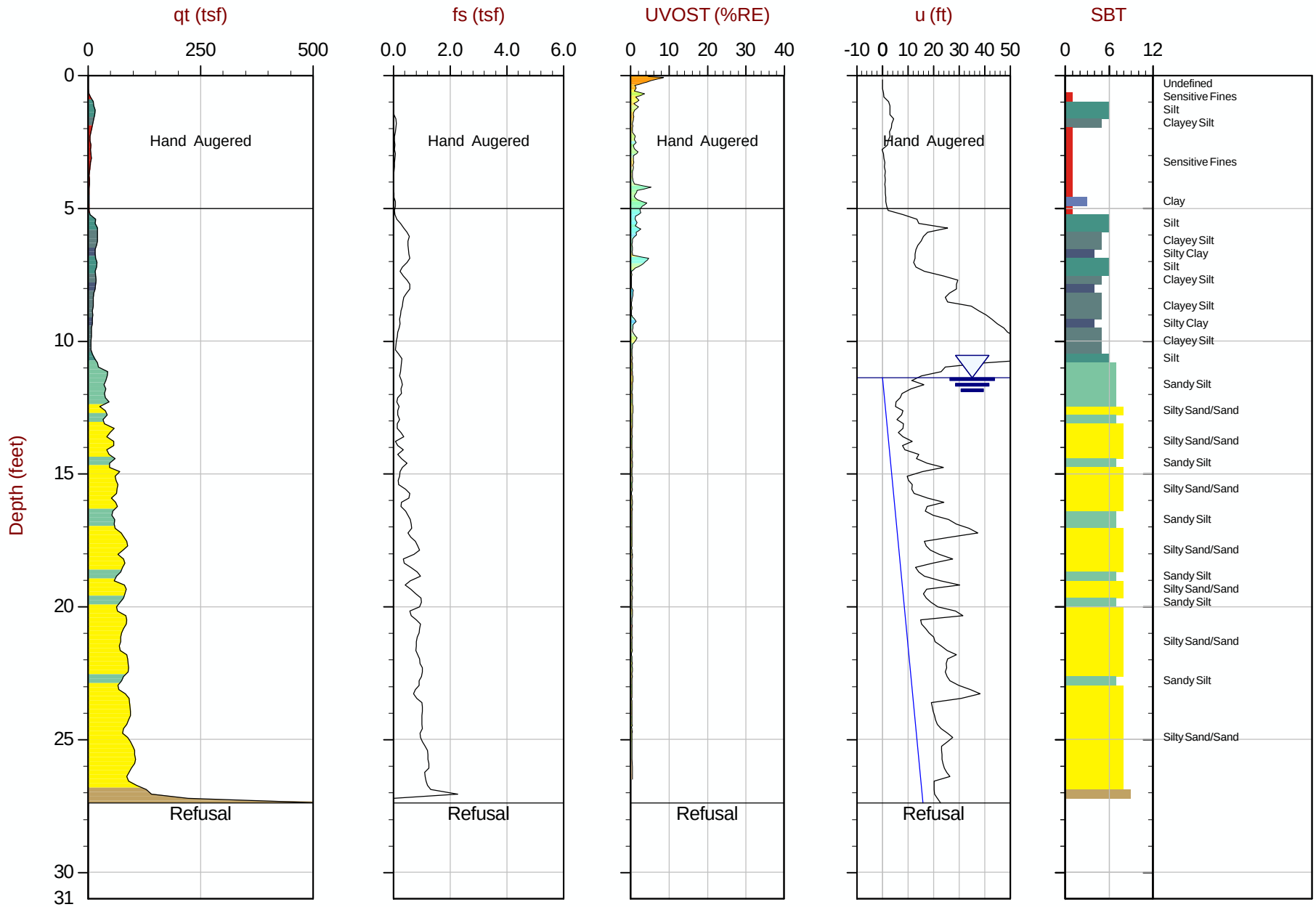
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776175 E: 398215

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 16:03
Site: Cold Springs Terminals

Sounding: UV-14
Cone: 243:T1500F15U500



Max Depth: 8.350 m / 27.39 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP14.COR

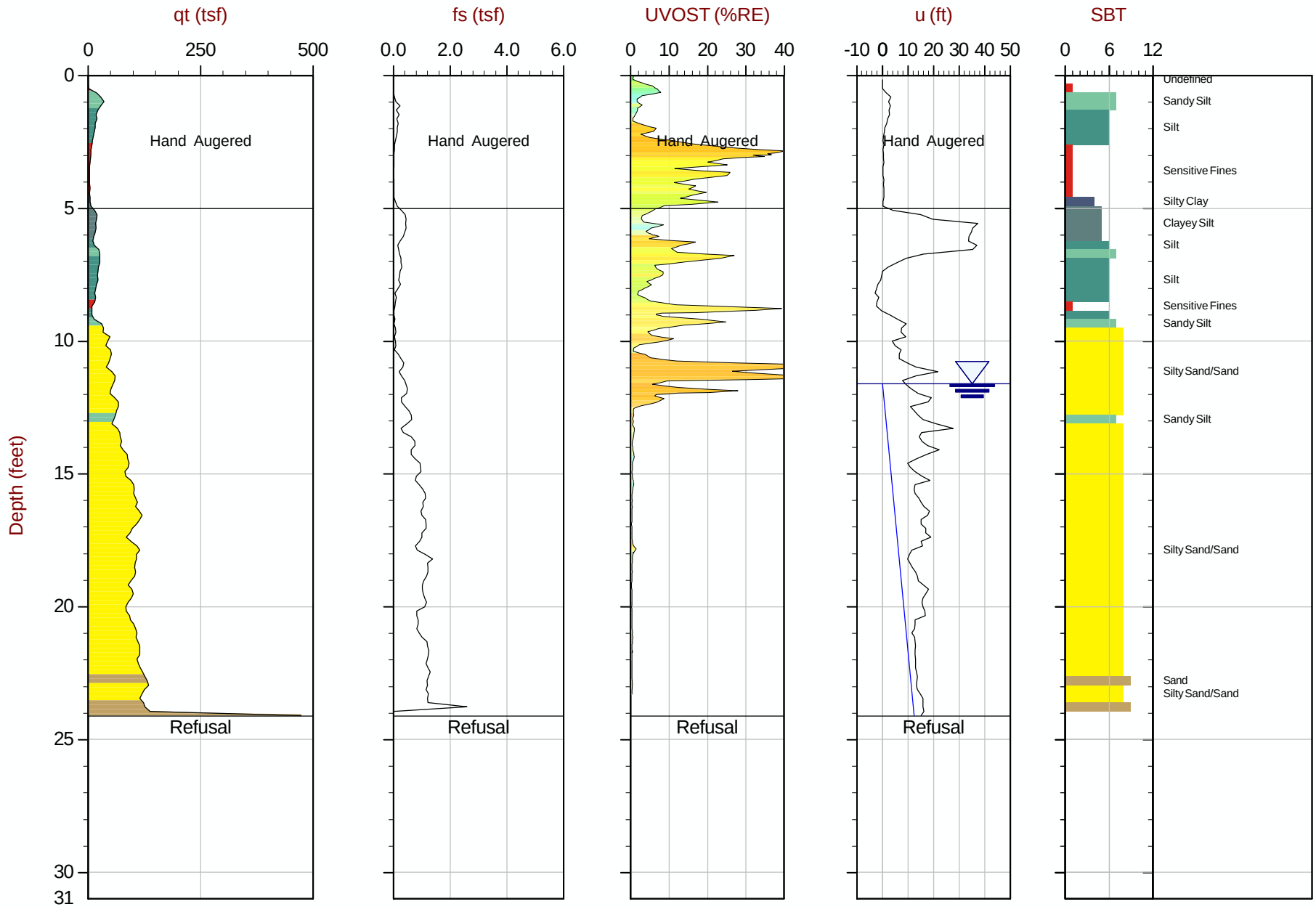
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776133 E: 398288

CONETEC

AECOM

Job No: 13-53045
Date: 07:23:13 16:41
Site: Cold Springs Terminals

Sounding: UV-15
Cone: 243:T1500F15U500



Max Depth: 7.350 m / 24.11 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP15.COR

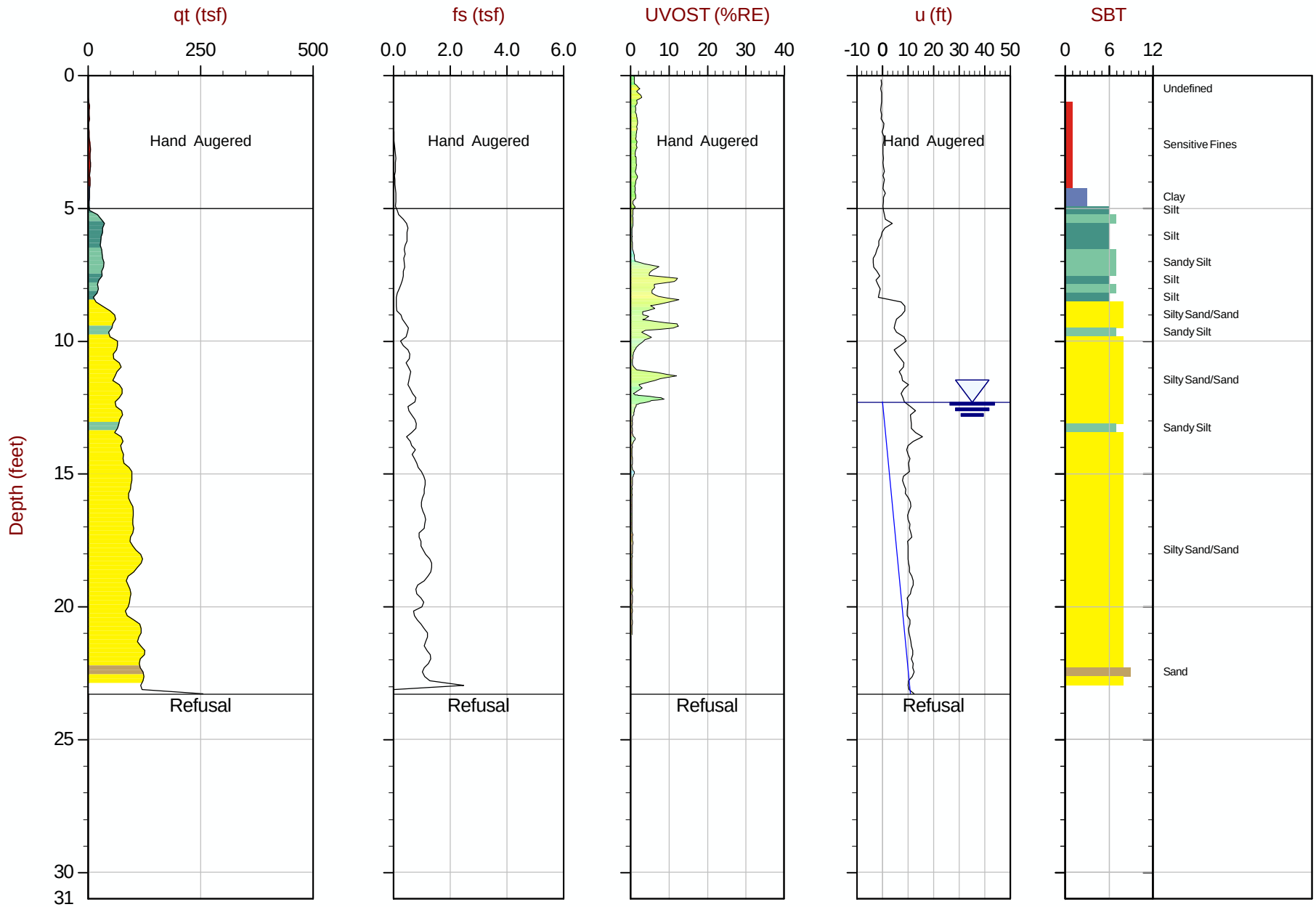
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776150 E: 398286

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 09:04
Site: Cold Springs Terminals

Sounding: UV-16
Cone: 243:T1500F15U500



Max Depth: 7.100 m / 23.29 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP16.COR

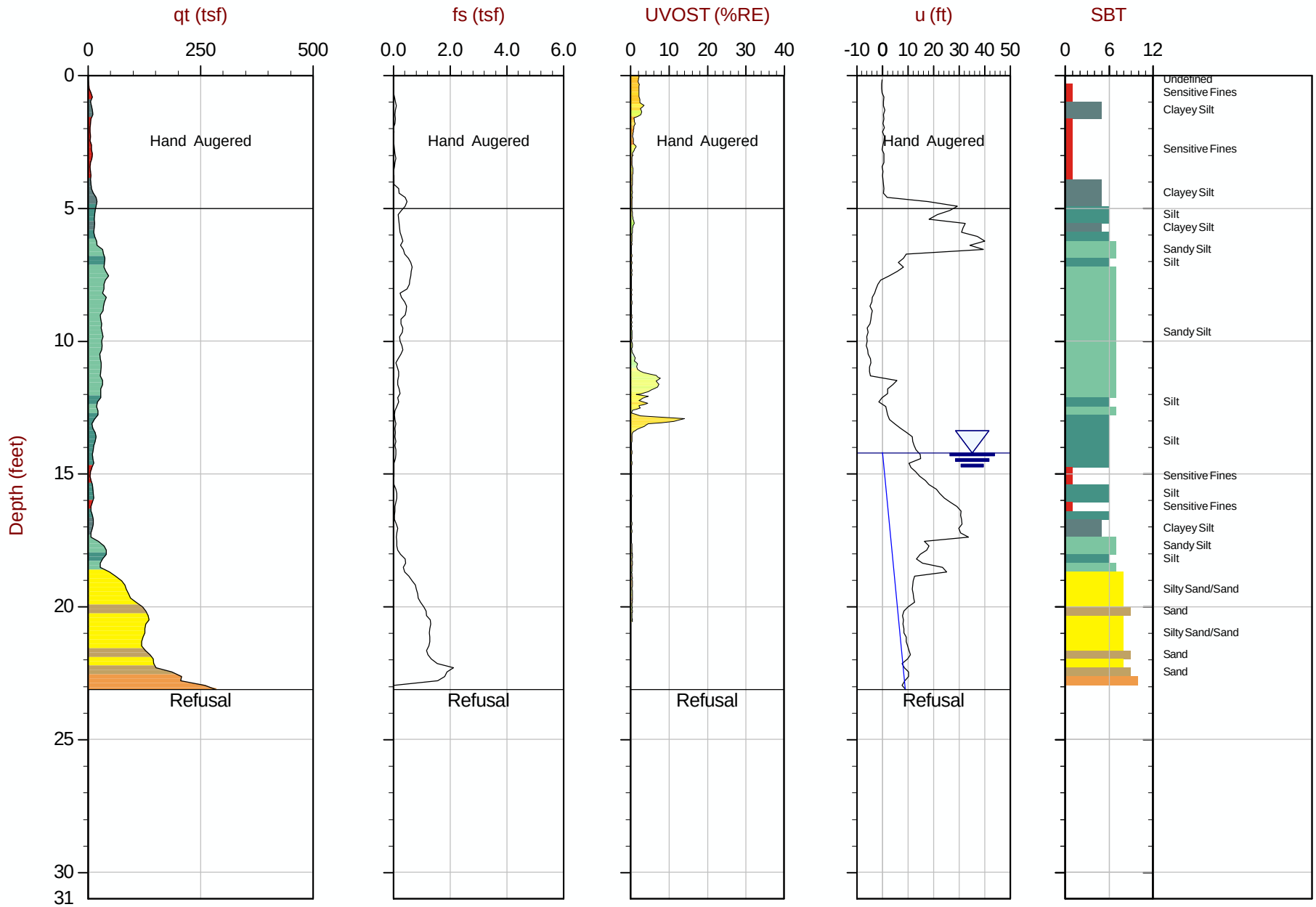
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776163 E: 398283

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 09:42
Site: Cold Springs Terminals

Sounding: UV-17
Cone: 243:T1500F15U500



Max Depth: 7.050 m / 23.13 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP17.COR

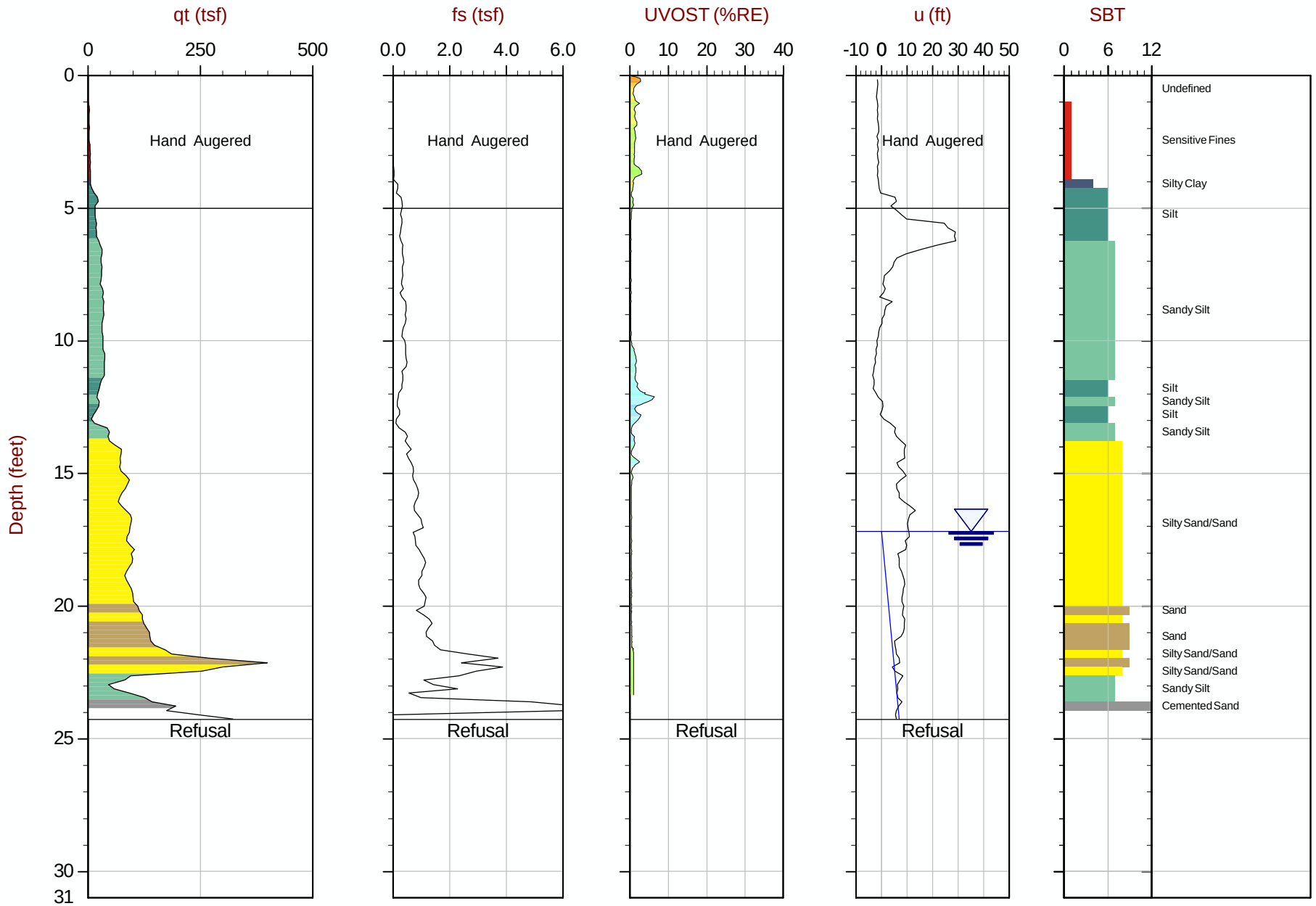
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776179 E: 398275

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 10:15
Site: Cold Springs Terminals

Sounding: UV-18
Cone: 243:T1500F15U500



Max Depth: 7.400 m / 24.28 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP18.COR

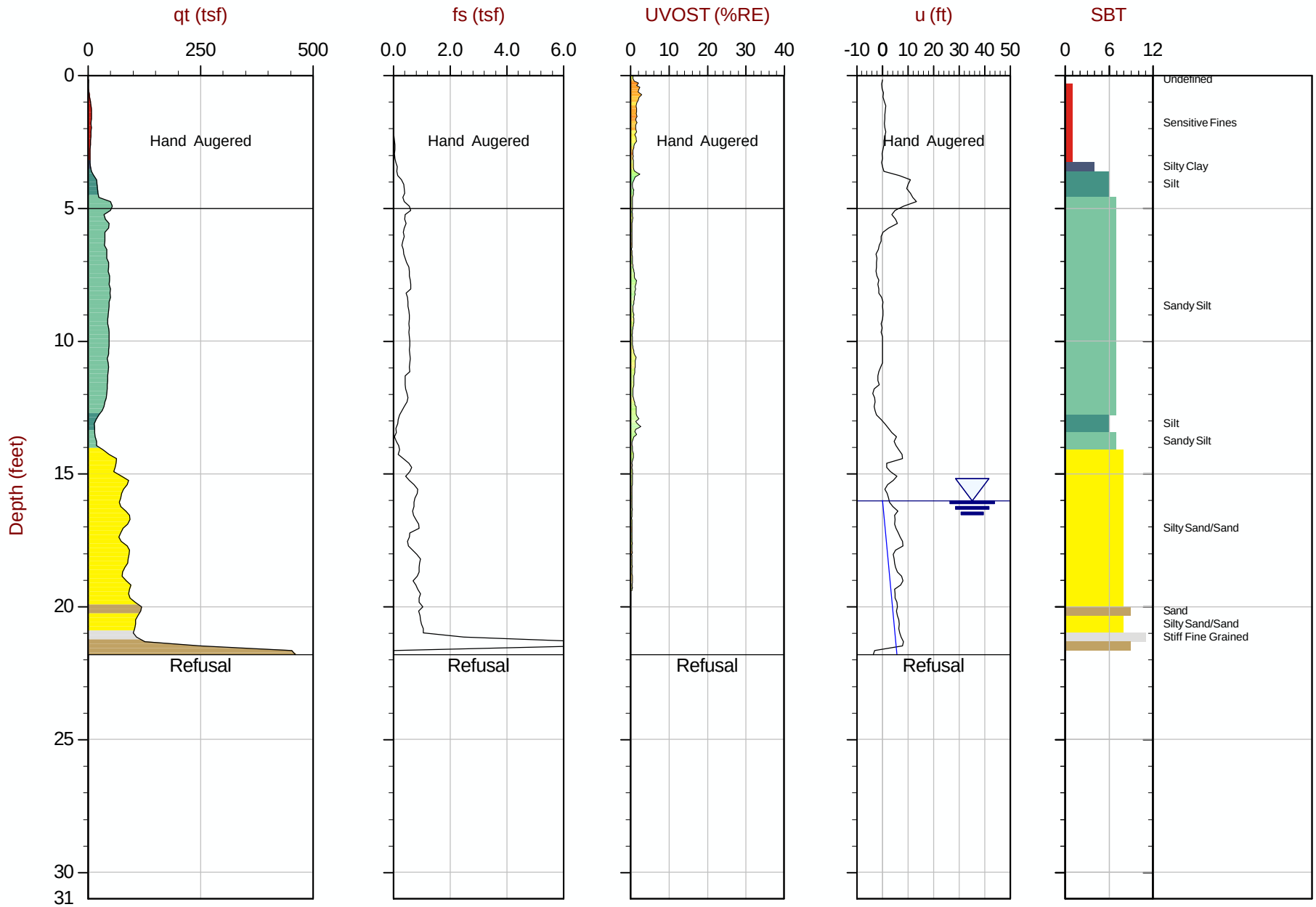
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776180 E: 398259

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 11:24
Site: Cold Springs Terminals

Sounding: UV-19
Cone: 243:T1500F15U500



Max Depth: 6.650 m / 21.82 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP19.COR

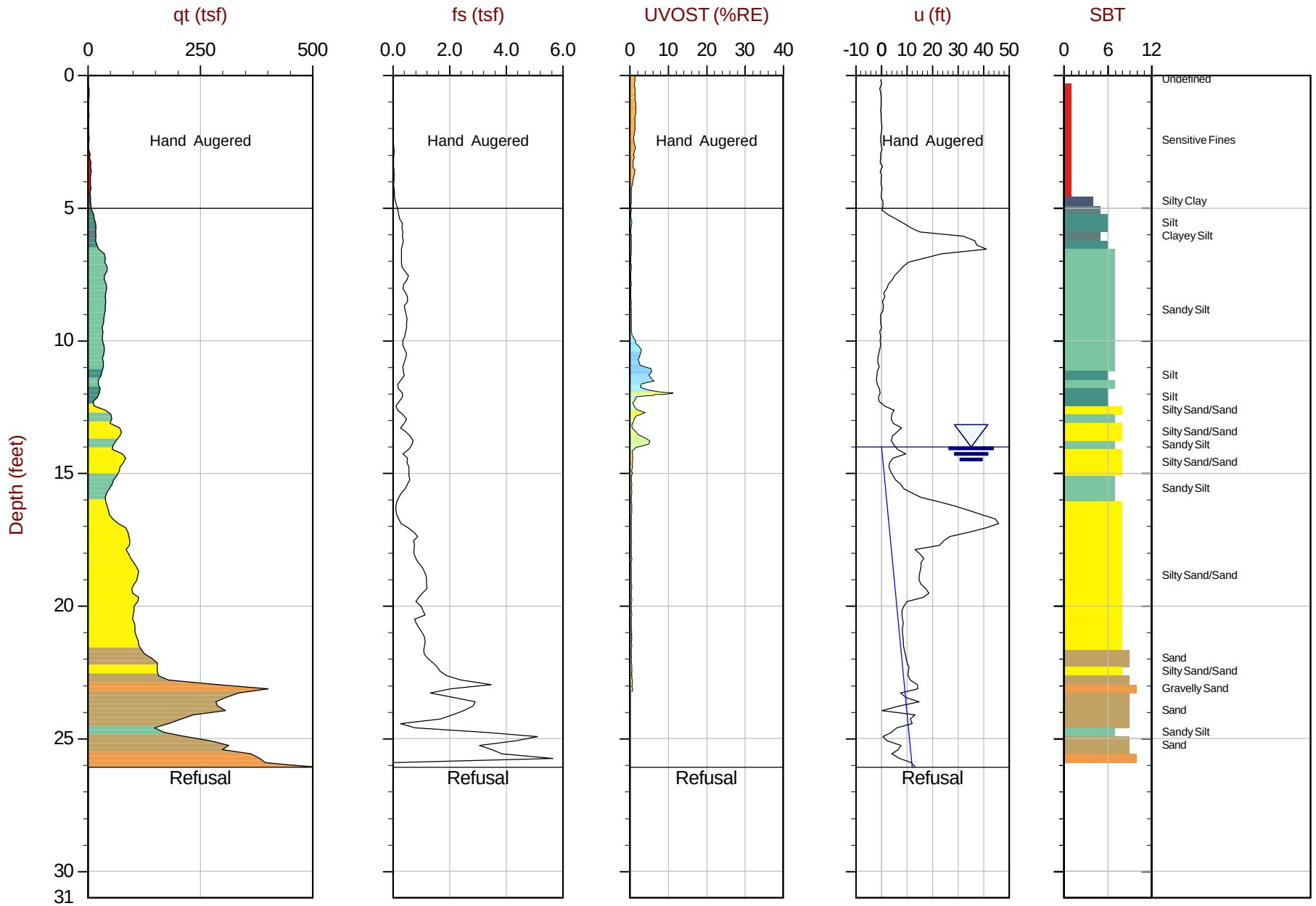
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776178 E: 398245

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 12:10
Site: Cold Springs Terminals

Sounding: UV-20
Cone: 243:T1500F15U500



Max Depth: 7.950 m / 26.08 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP20.COR

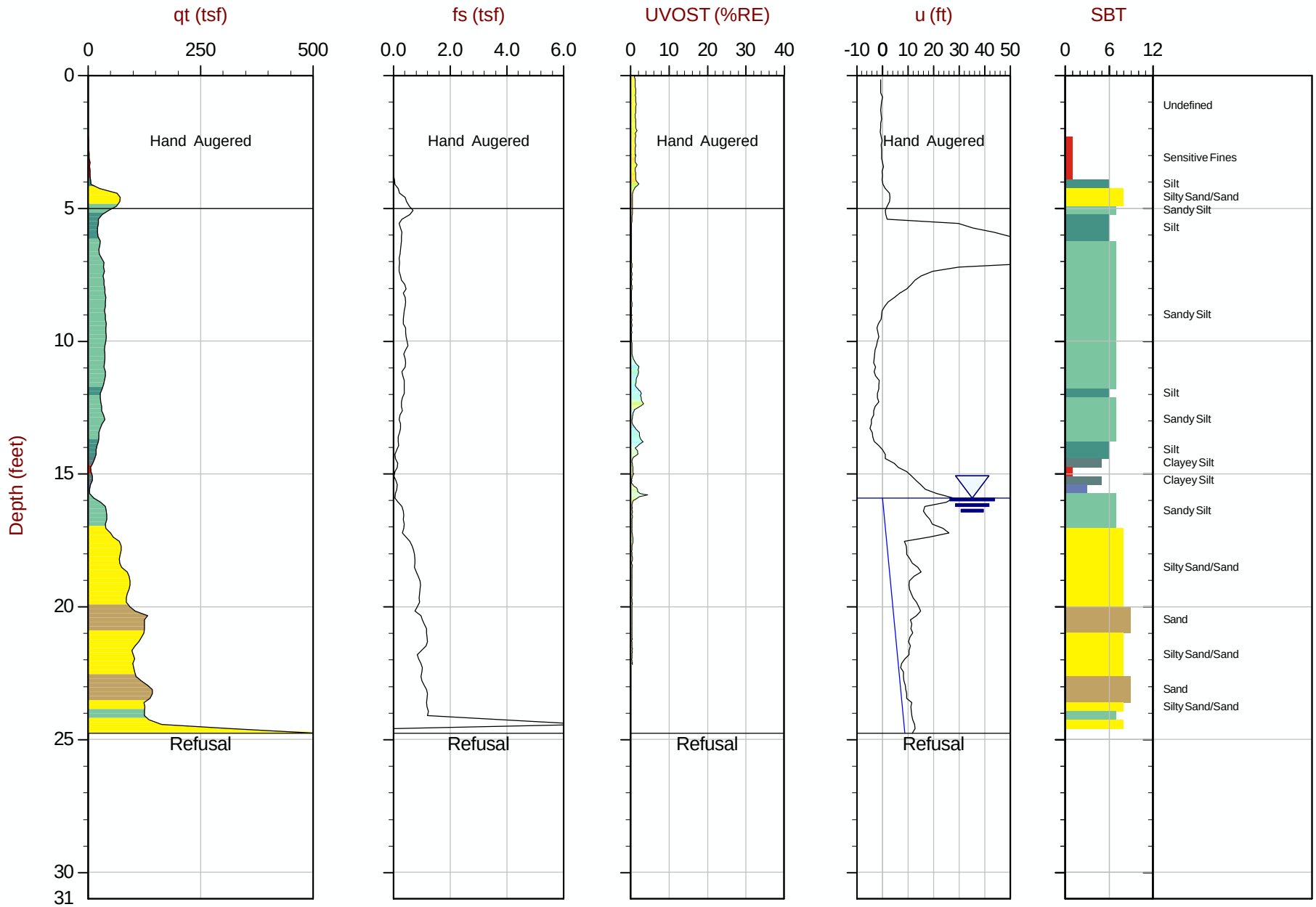
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776172 E: 398256

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 13:02
Site: Cold Springs Terminals

Sounding: UV-21
Cone: 243:T1500F15U500



Max Depth: 7.550 m / 24.77 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP21.COR

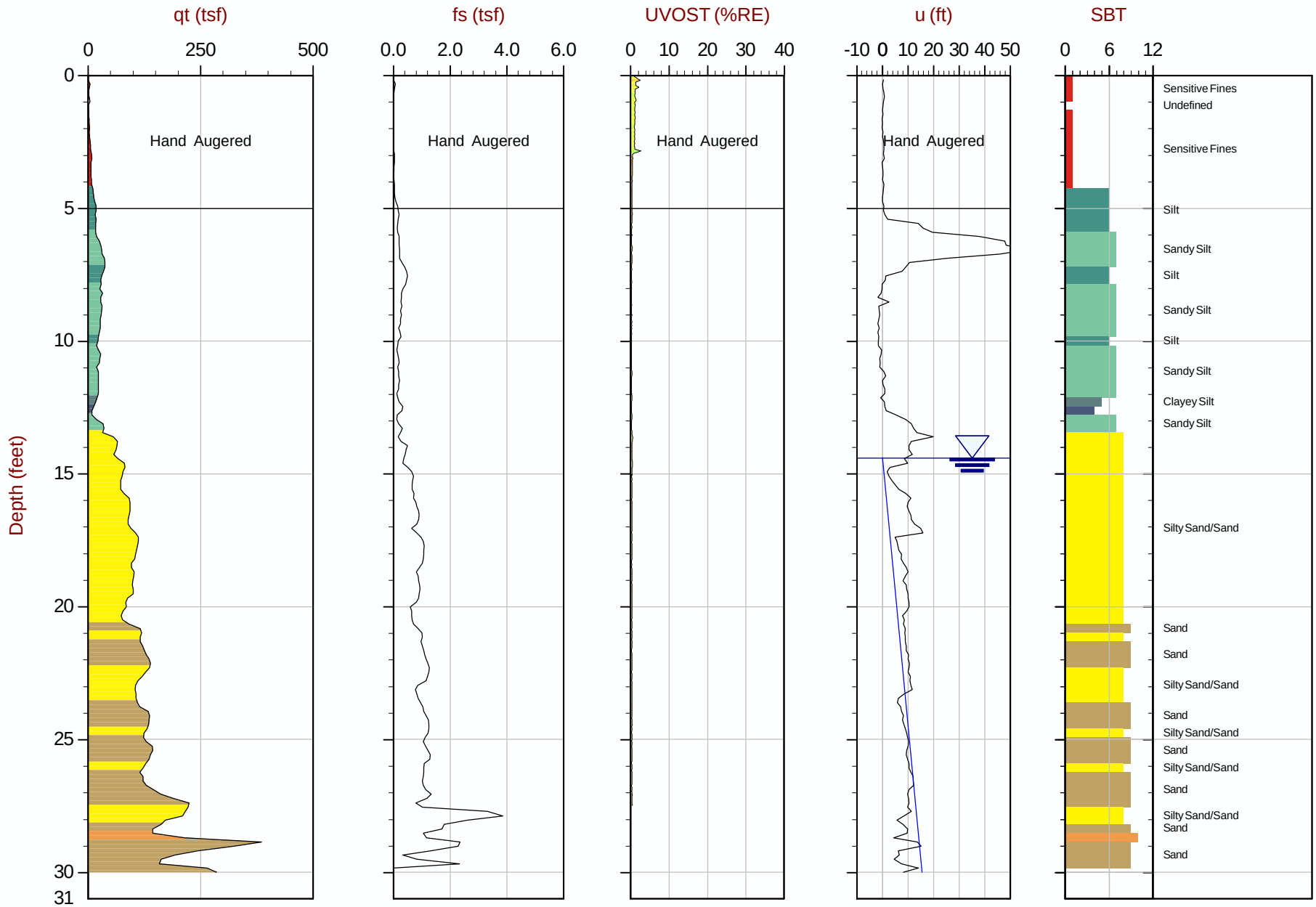
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776169 E: 398233

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 13:43
Site: Cold Springs Terminals

Sounding: UV-22
Cone: 243:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP22.COR

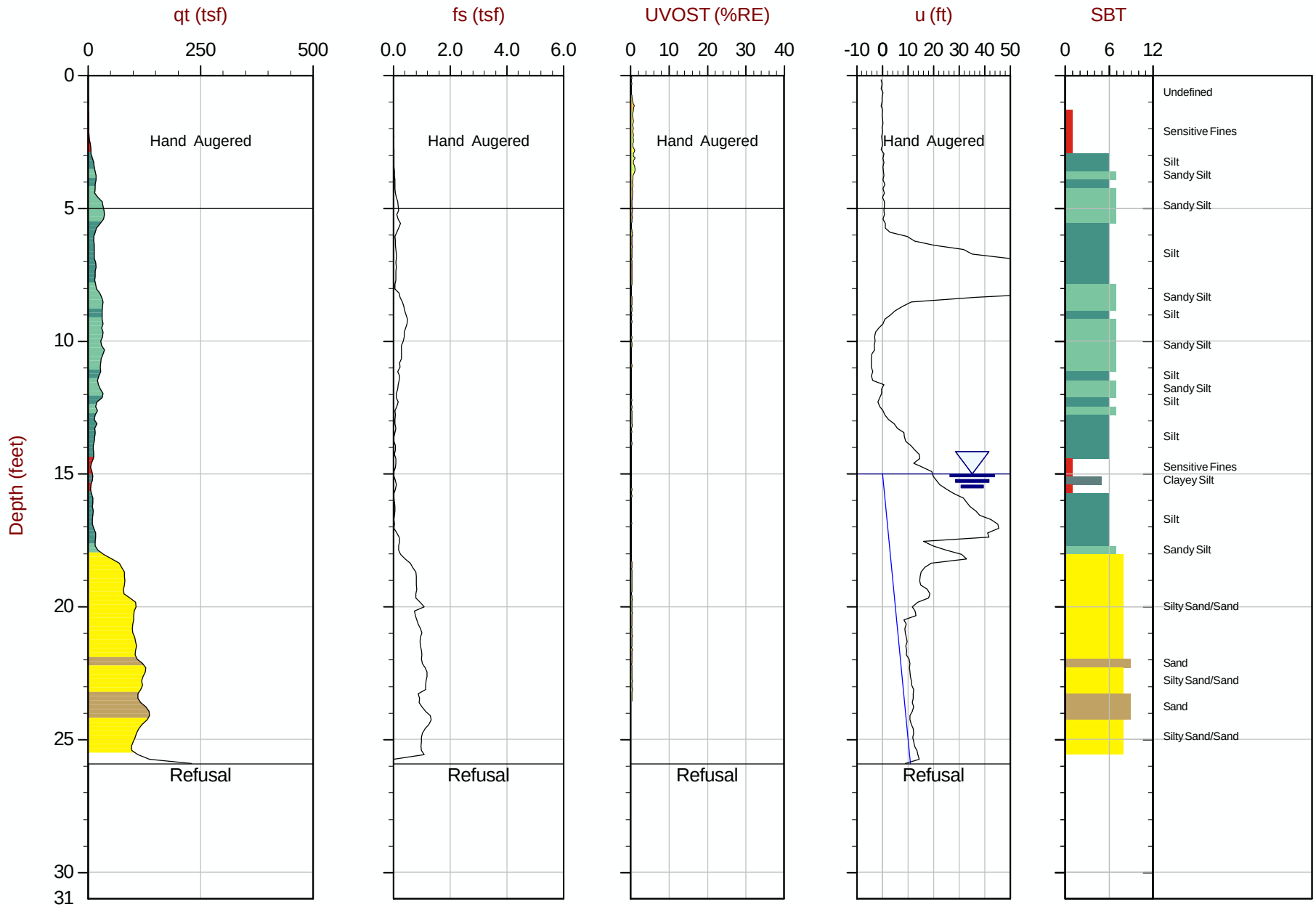
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776158 E: 398219

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 14:22
Site: Cold Springs Terminals

Sounding: UV-23
Cone: 243:T1500F15U500



Max Depth: 7.900 m / 25.92 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP23.COR

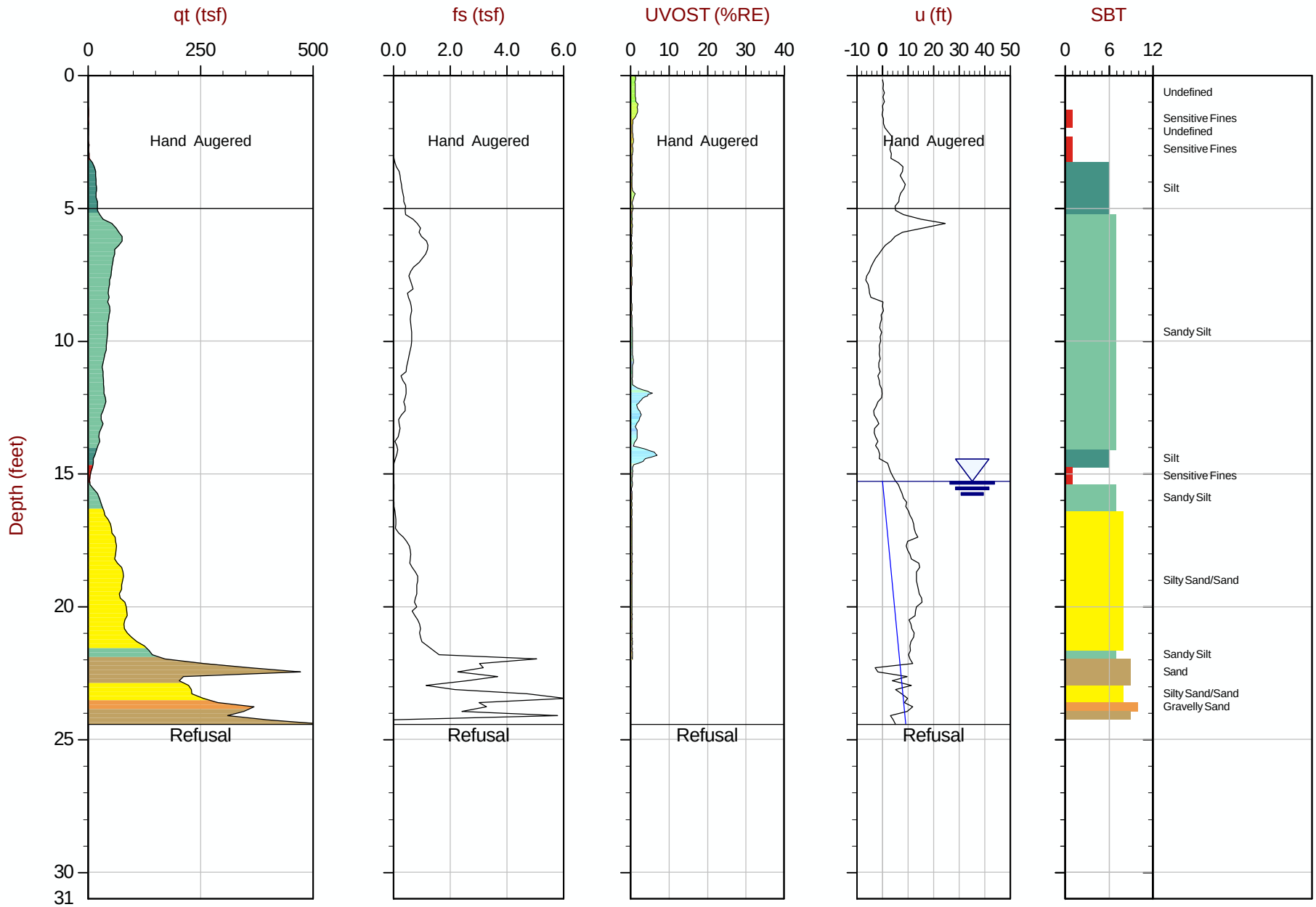
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776165 E: 398222

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 15:10
Site: Cold Springs Terminals

Sounding: UV-24
Cone: 243:T1500F15U500



Max Depth: 7.450 m / 24.44 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP24.COR

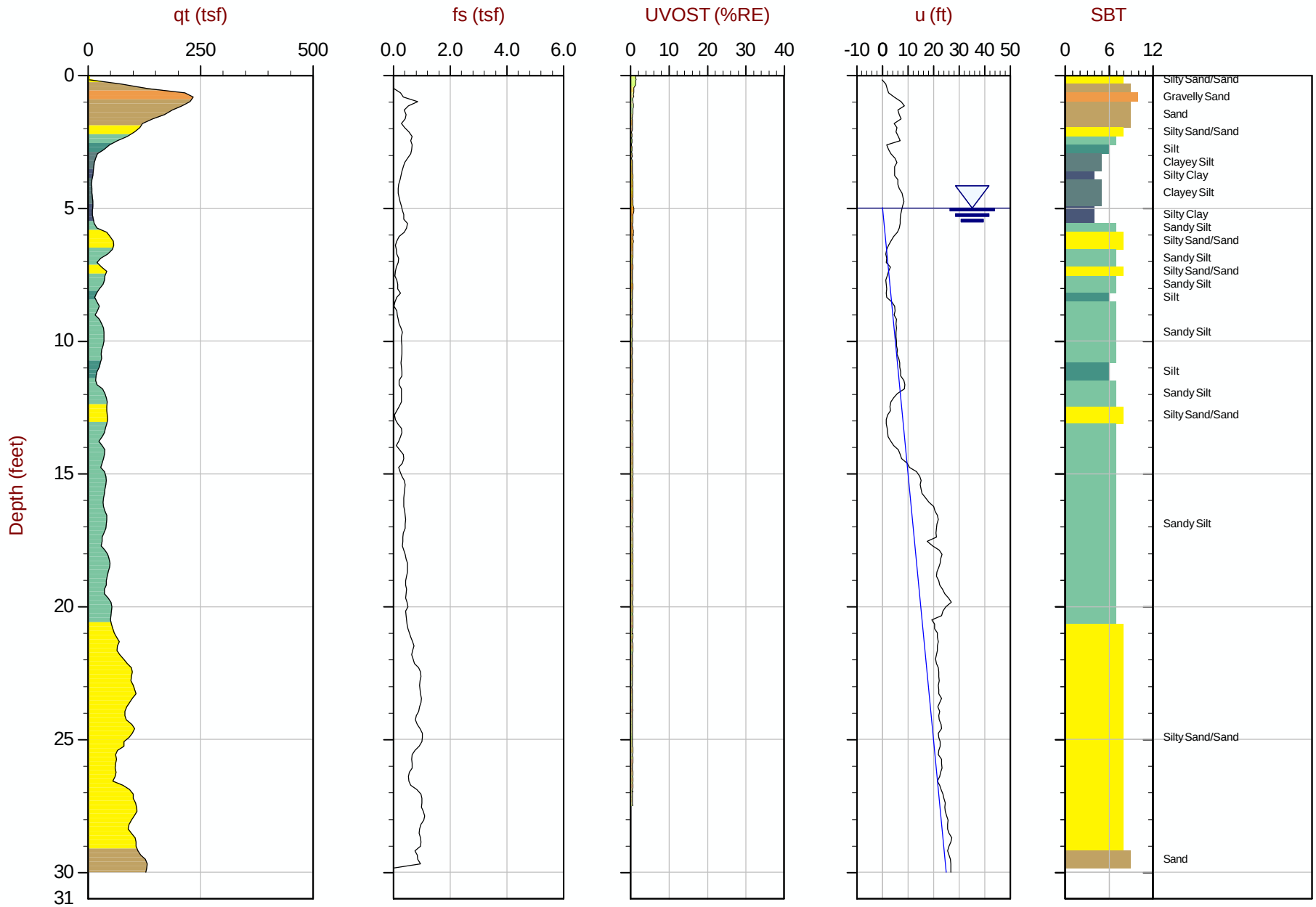
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776174 E: 398228

CONETEC

AECOM

Job No: 13-53045
Date: 07:24:13 15:50
Site: Cold Springs Terminals

Sounding: UV-25
Cone: 243:T1500F15U500



Max Depth: 9.150 m / 30.02 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP25.COR

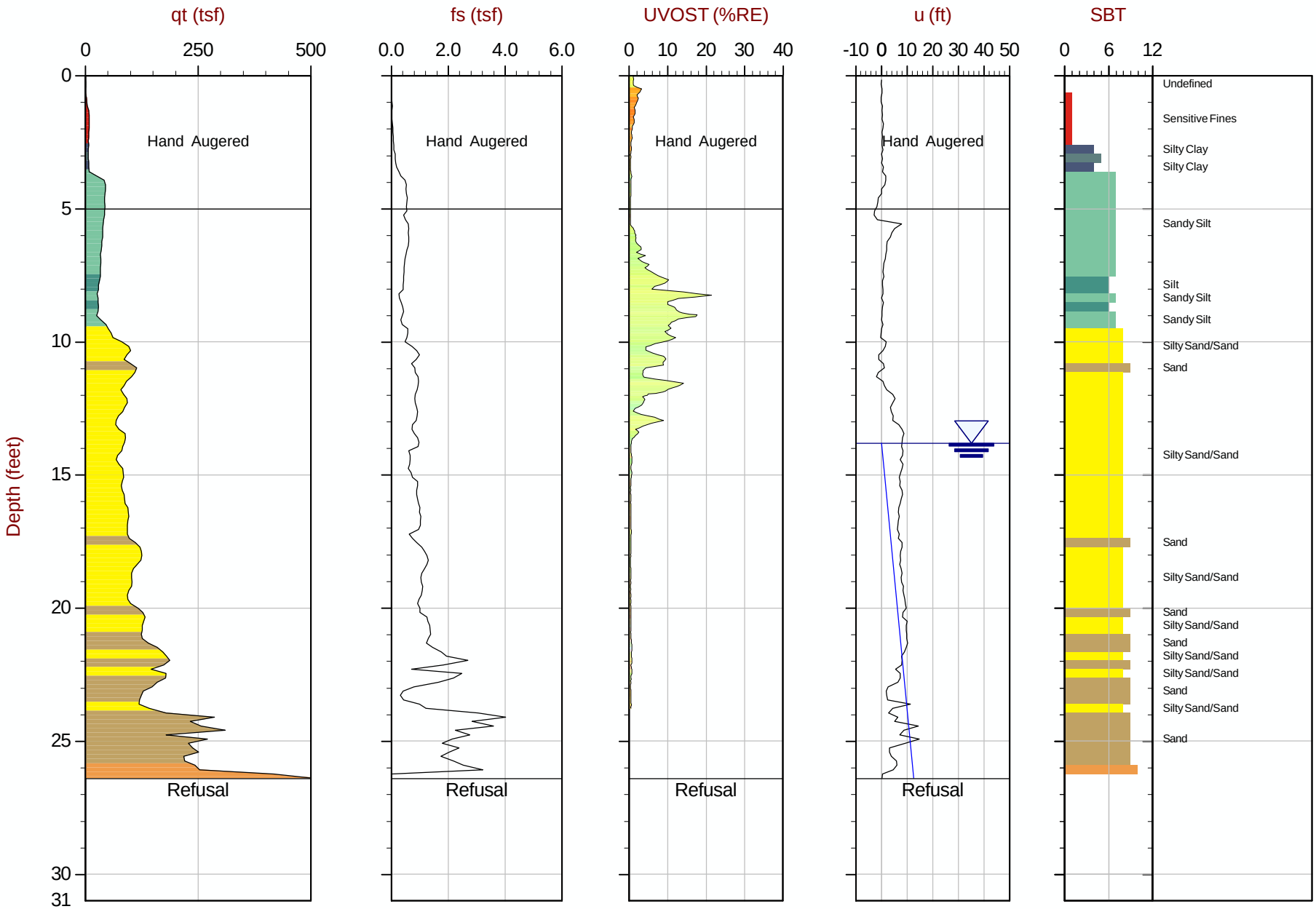
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776120 E: 398415

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 09:05
Site: Cold Springs Terminals

Sounding: UV-26
Cone: 243:T1500F15U500



Max Depth: 8.050 m / 26.41 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP26.COR

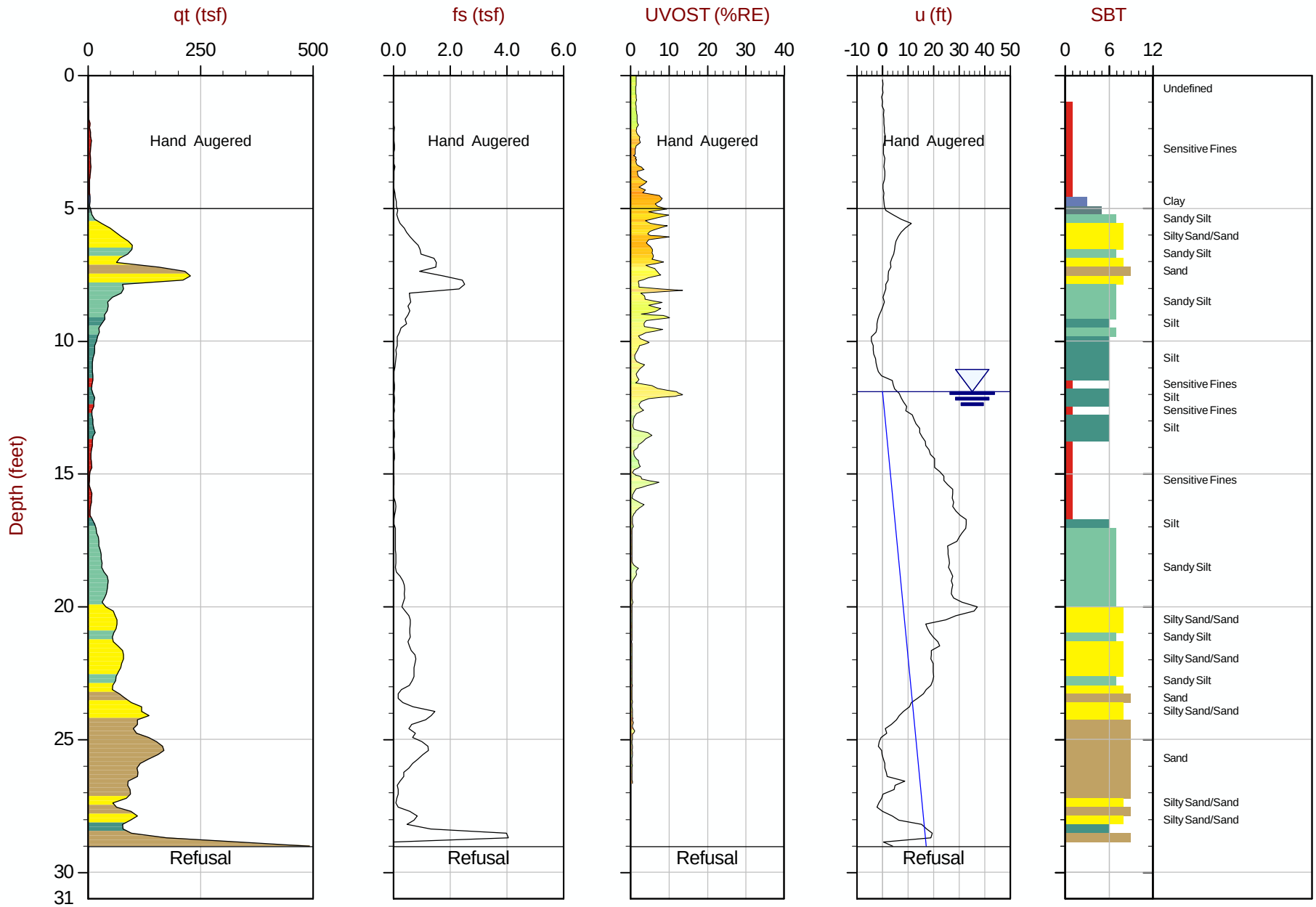
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776179 E: 398293

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 09:42
Site: Cold Springs Terminals

Sounding: UV-27
Cone: 243:T1500F15U500



Max Depth: 8.850 m / 29.04 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP27.COR

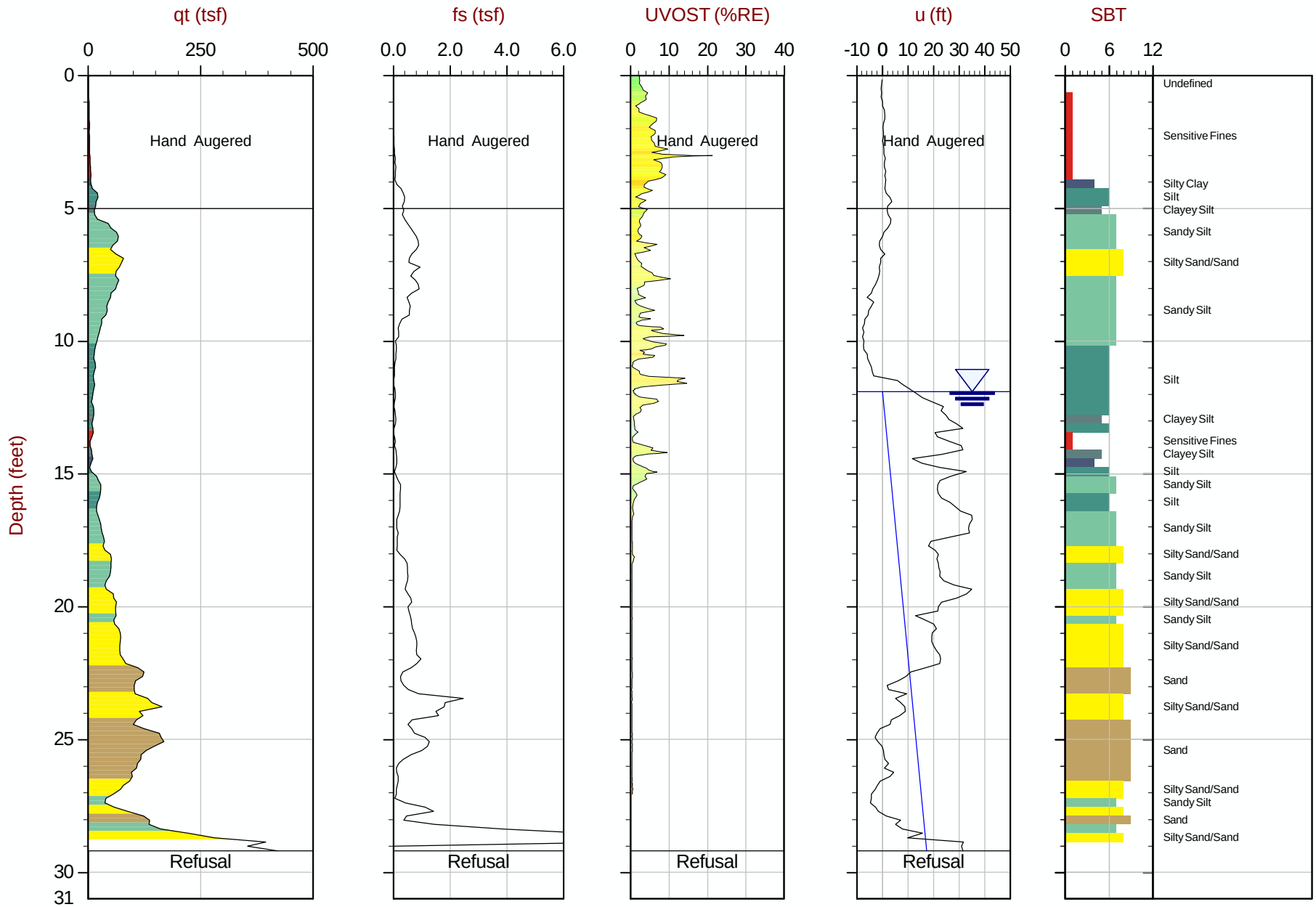
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776188 E: 398321

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 10:16
Site: Cold Springs Terminals

Sounding: UV-27D
Cone: 243:T1500F15U500



Max Depth: 8.900 m / 29.20 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP27D.COR

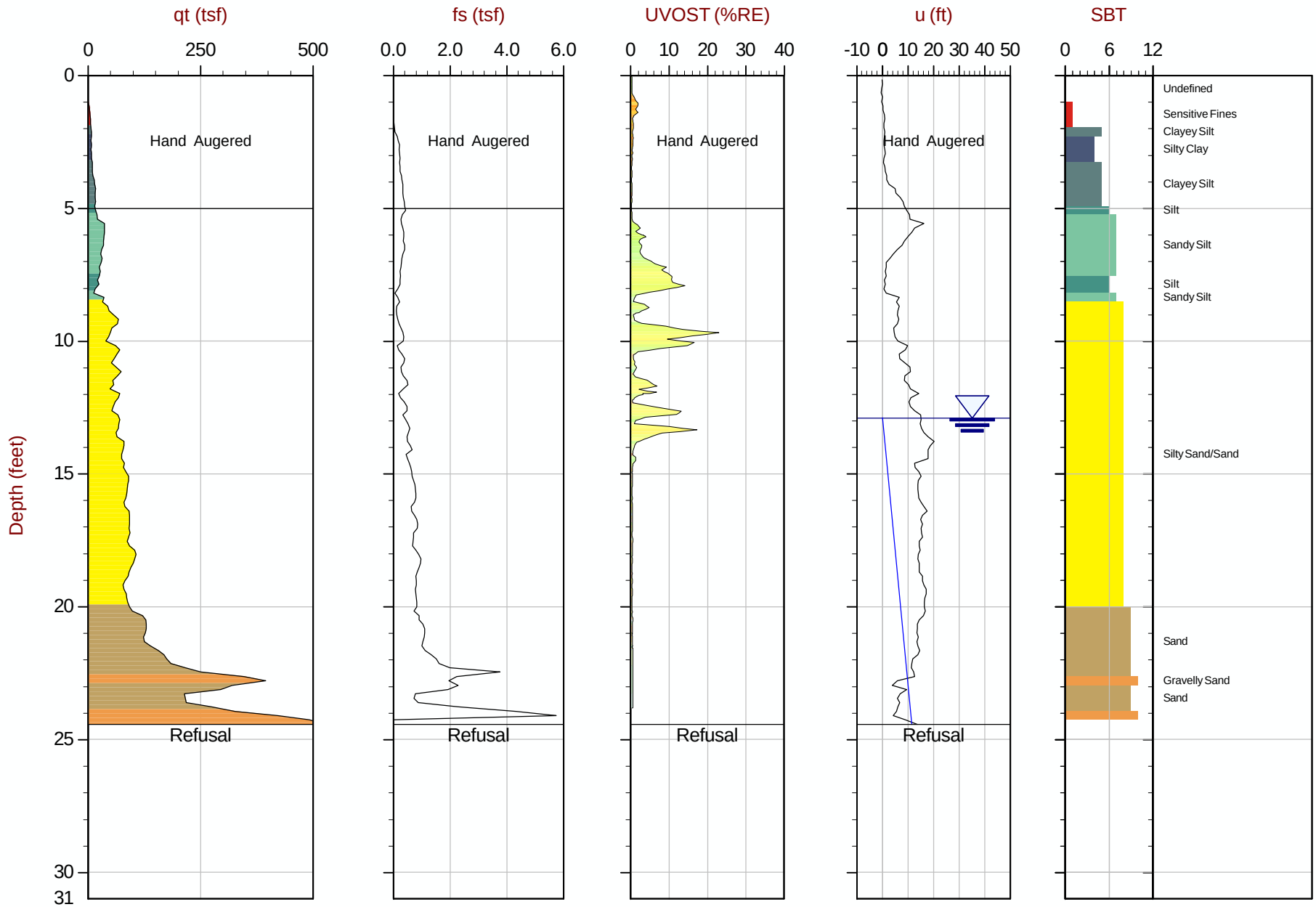
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776182 E: 398329

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 10:58
Site: Cold Springs Terminals

Sounding: UV-28
Cone: 243:T1500F15U500



Max Depth: 7.450 m / 24.44 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP28.COR

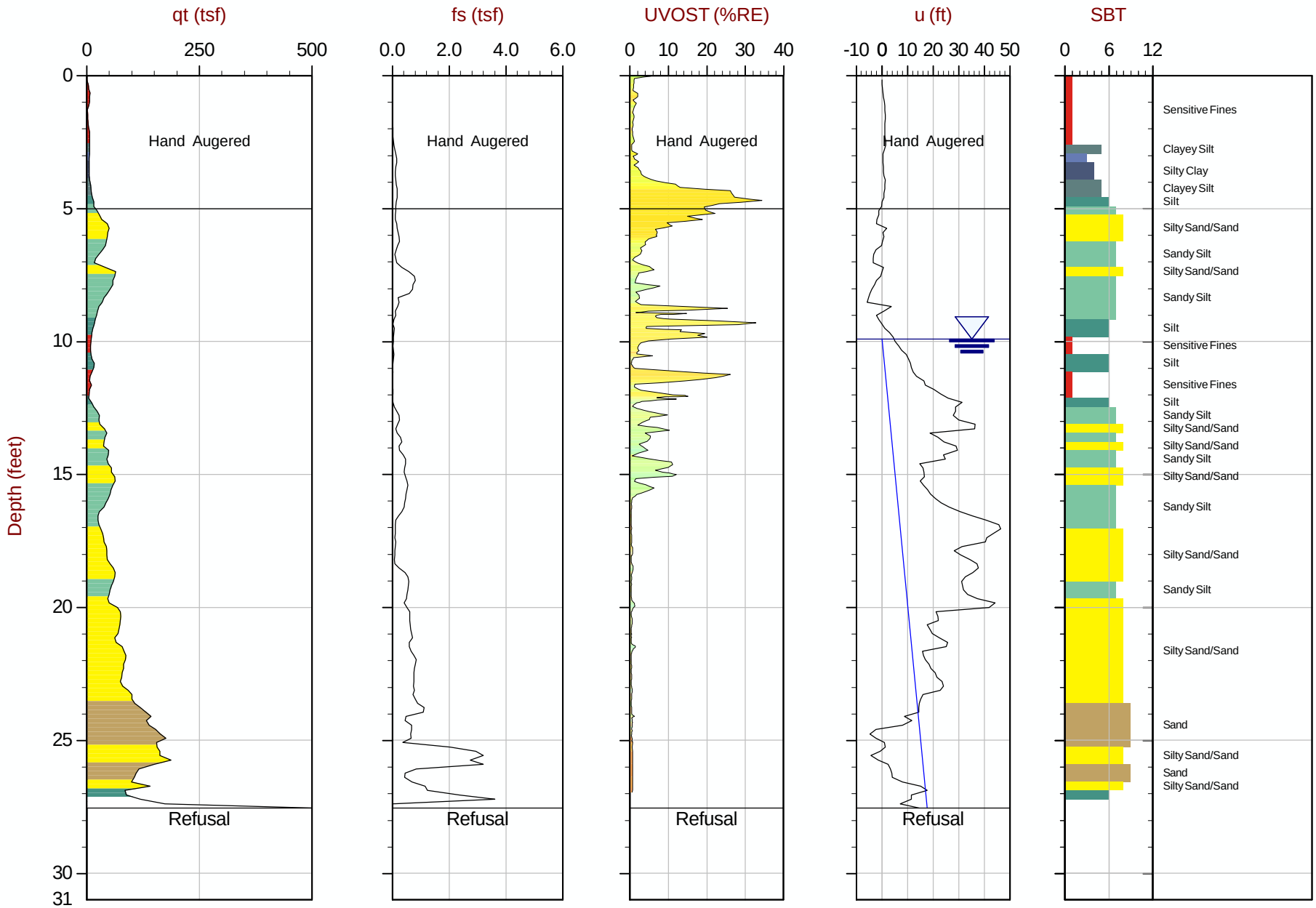
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776171 E: 398304

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 11:30
Site: Cold Springs Terminals

Sounding: UV-29
Cone: 243:T1500F15U500



Max Depth: 8.400 m / 27.56 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP29.COR

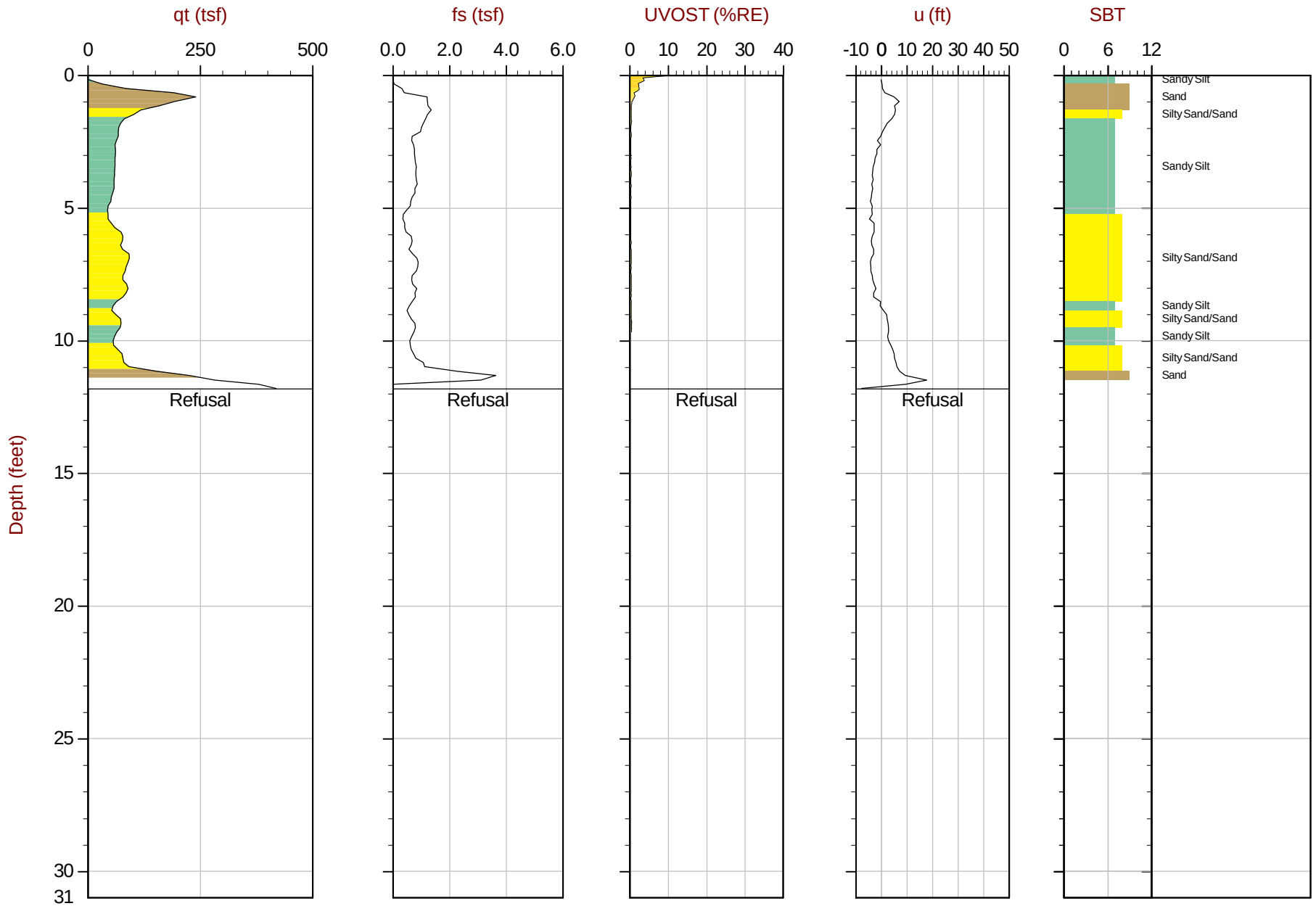
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776182 E: 398323

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 12:12
Site: Cold Springs Terminals

Sounding: UV-30
Cone: 243:T1500F15U500



Max Depth: 3.600 m / 11.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP30.COR

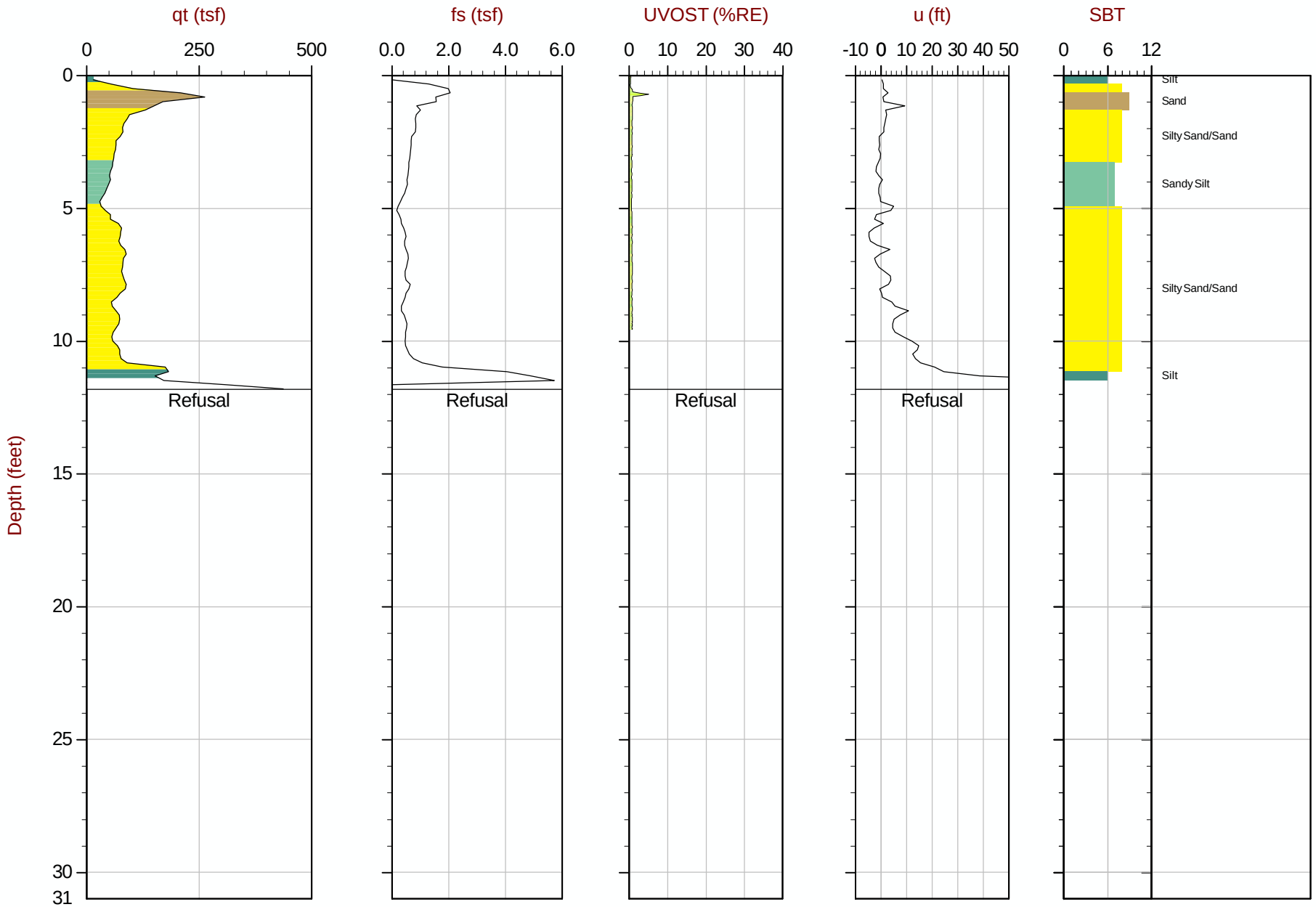
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776210 E: 398343

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 13:22
Site: Cold Springs Terminals

Sounding: UV-30B
Cone: 243:T1500F15U500



Max Depth: 3.600 m / 11.81 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP30B.COR

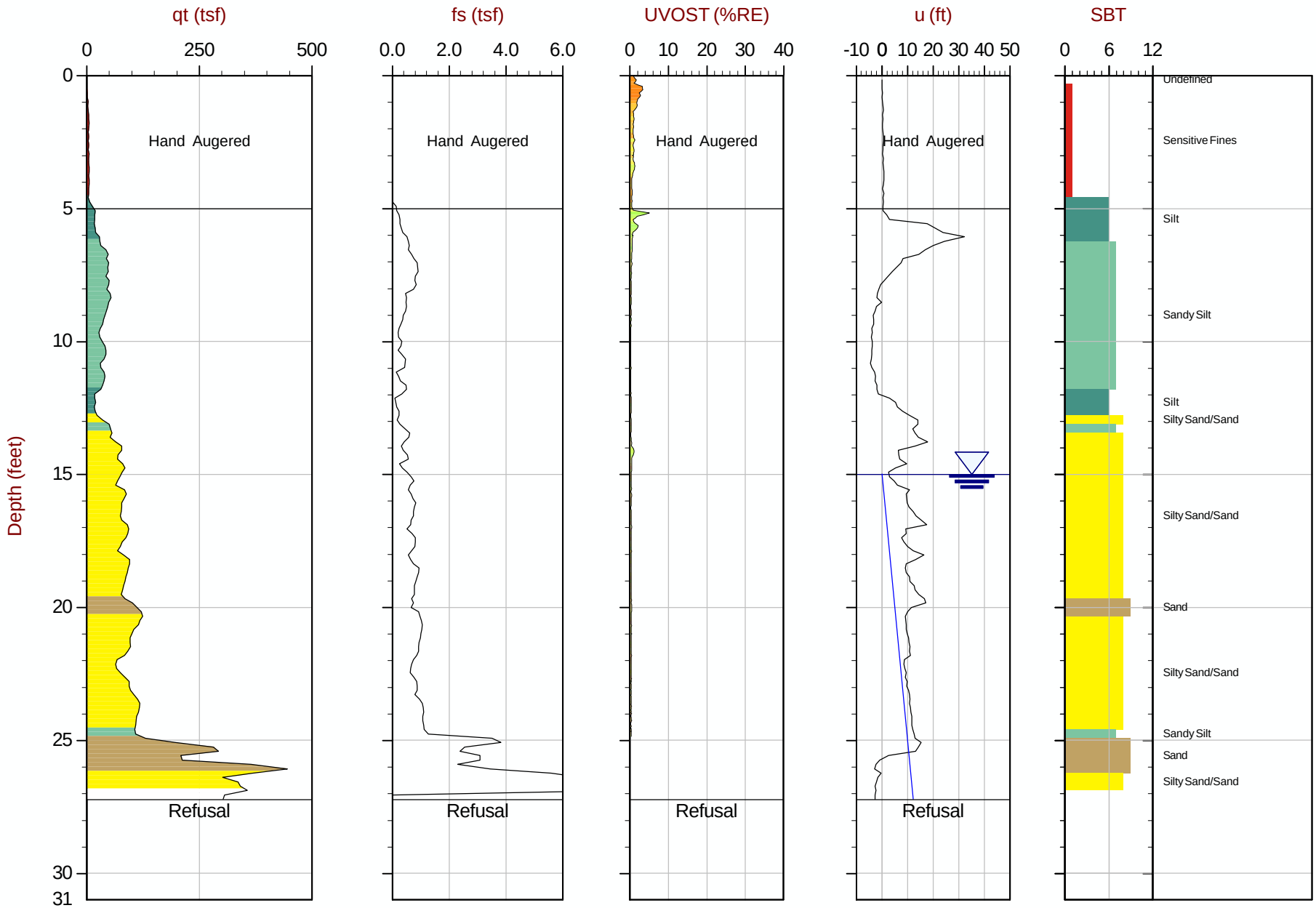
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776206 E: 398343
Page No: 1 of 1

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 14:10
Site: Cold Springs Terminals

Sounding: UV-31
Cone: 243:T1500F15U500



Max Depth: 8.300 m / 27.23 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP31.COR

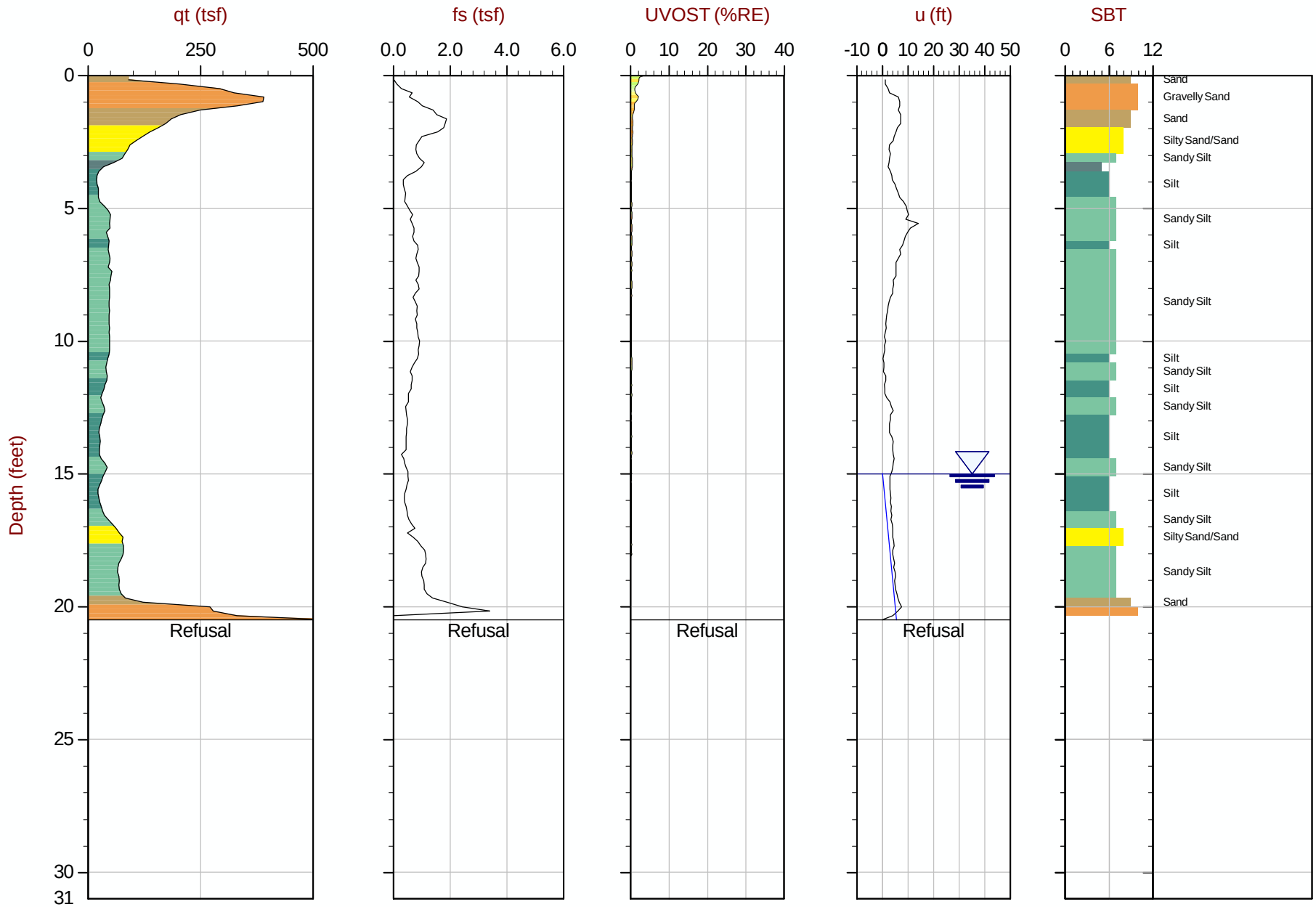
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776159 E: 398176

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 14:49
Site: Cold Springs Terminals

Sounding: UV-32
Cone: 243:T1500F15U500



Max Depth: 6.250 m / 20.51 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP32.COR

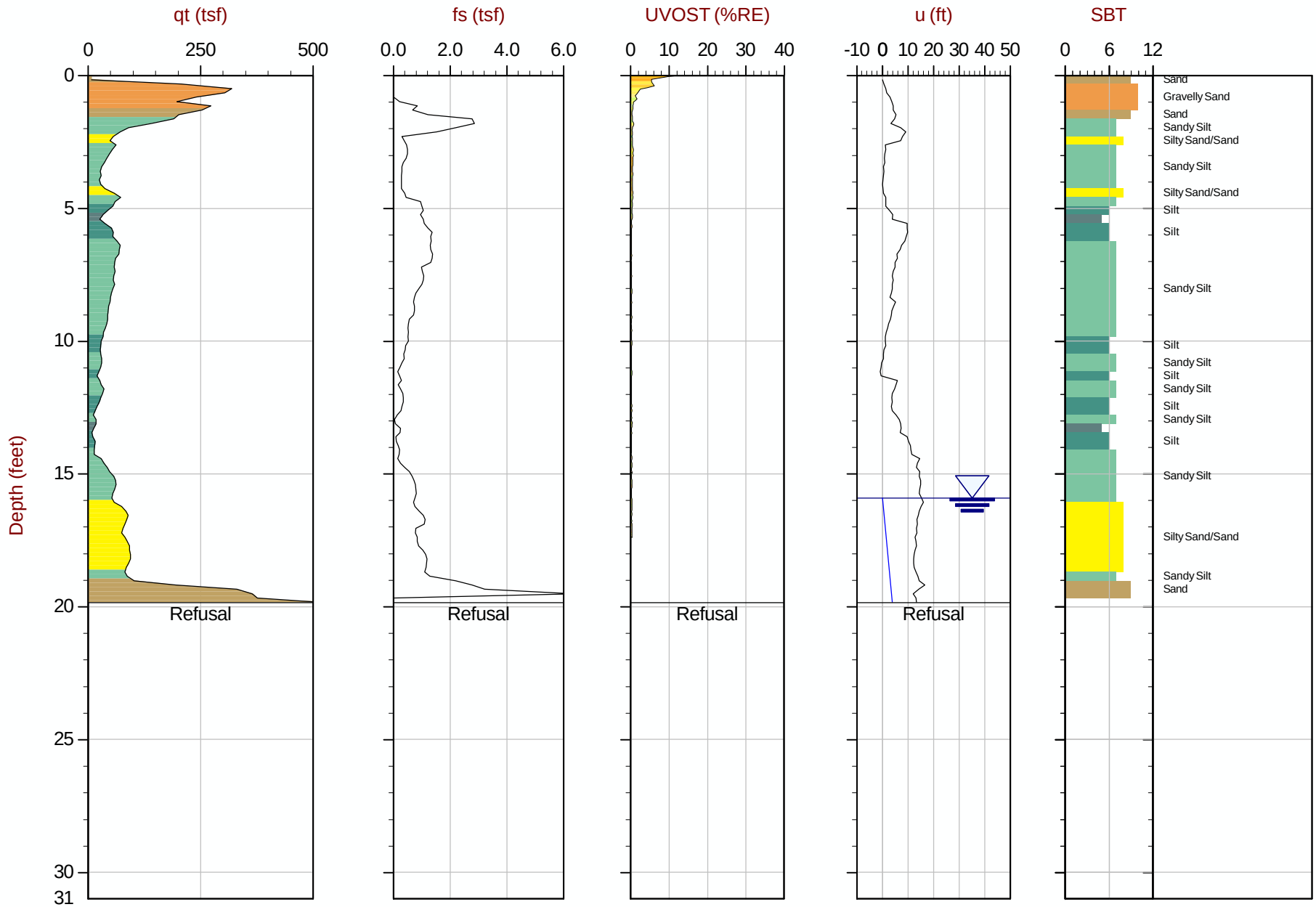
SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776175 E: 398175

CONETEC

AECOM

Job No: 13-53045
Date: 07:25:13 15:20
Site: Cold Springs Terminals

Sounding: UV-33
Cone: 243:T1500F15U500

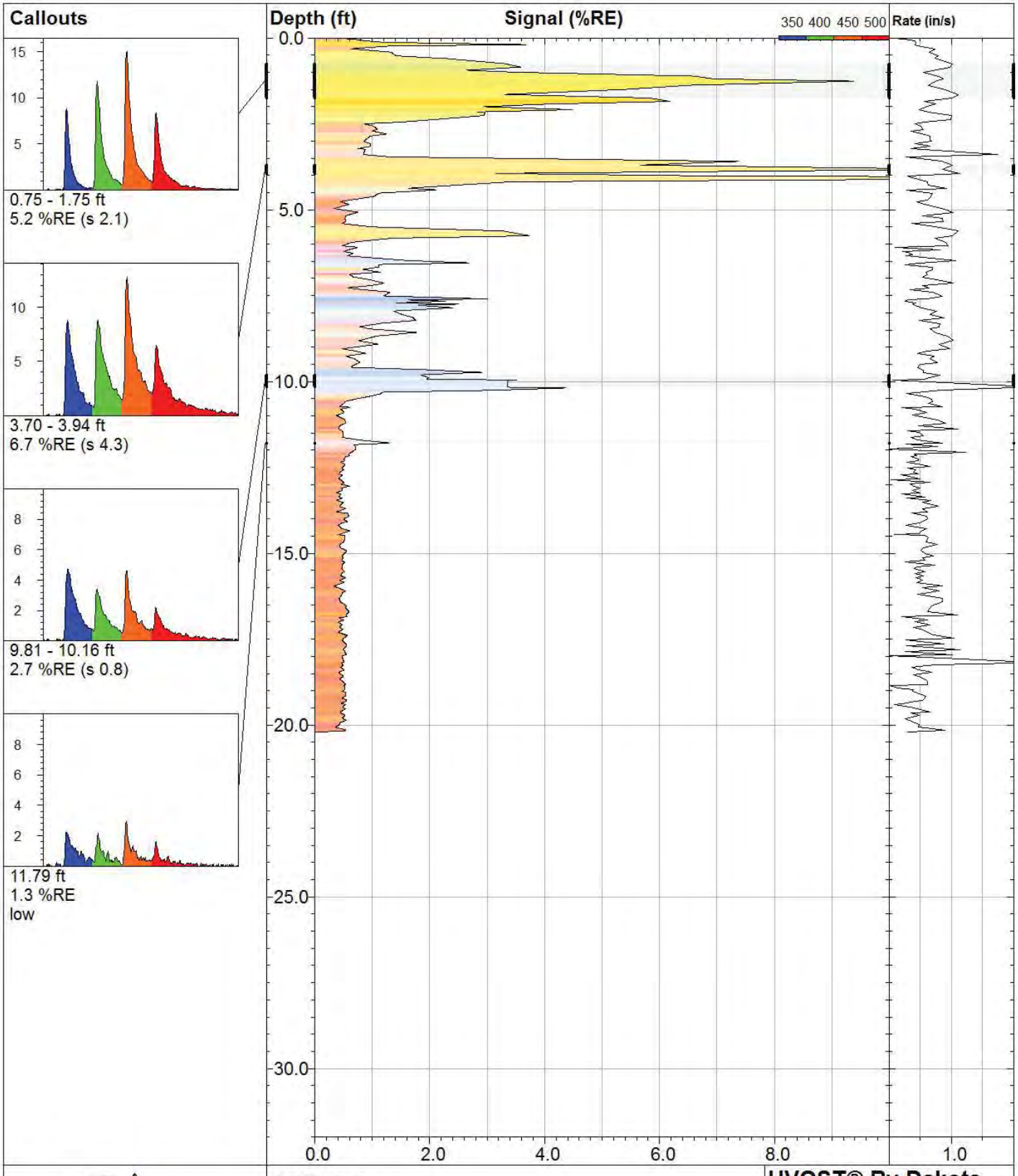


Max Depth: 6.050 m / 19.85 ft
Depth Inc: 0.050 m / 0.164 ft
Avg Int: 0.100 m

File: 13-53045_CP33.COR

SBT: Lunne, Robertson and Powell, 1997
Coords: UTM Zone 18 N: 4776161 E: 398150
Page No: 1 of 1

UVOST® LIF Logs at 10% RE



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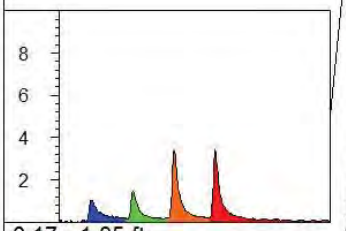
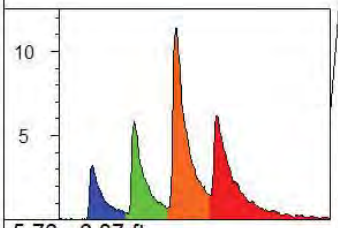
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909199.28 /**	*Final depth:* **20.19 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141155.25 /**	*Max signal:* **16.8 %RE @ 4.05 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.6 ft**	*Date & Time:* **2018-05-30 13:22 EDT**

Callouts

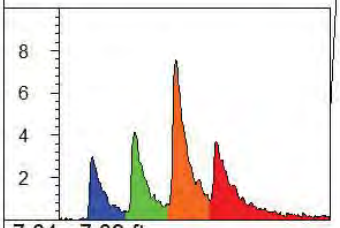
+ 2.5' in elevation vs. LIF-03
Probe sitting on a pad to drill.



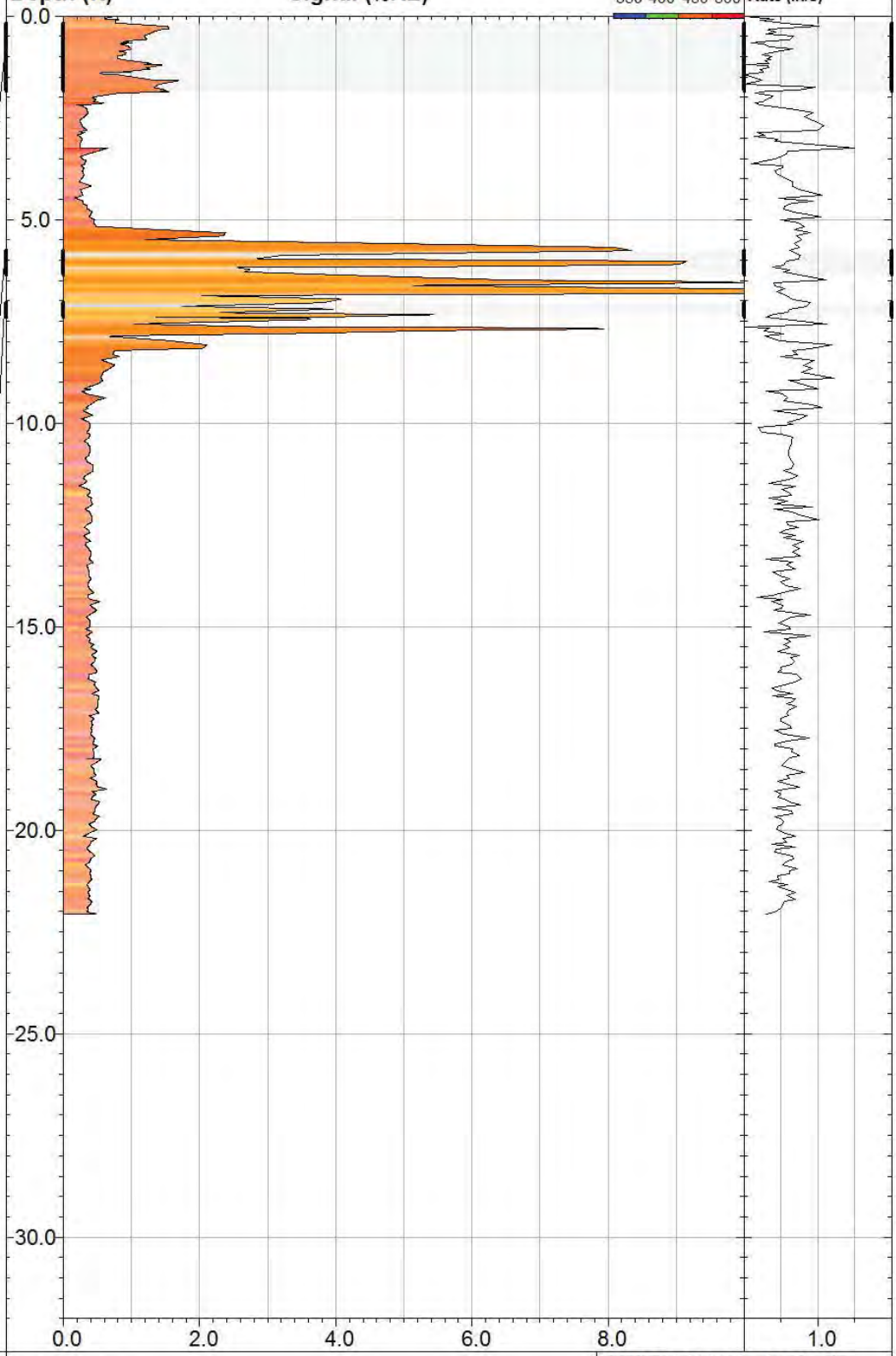
0.17 - 1.85 ft
1.1 %RE (s 0.3)



5.76 - 6.37 ft
5.0 %RE (s 2.8)



7.04 - 7.39 ft
3.5 %RE (s 1.4)



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LIF-02

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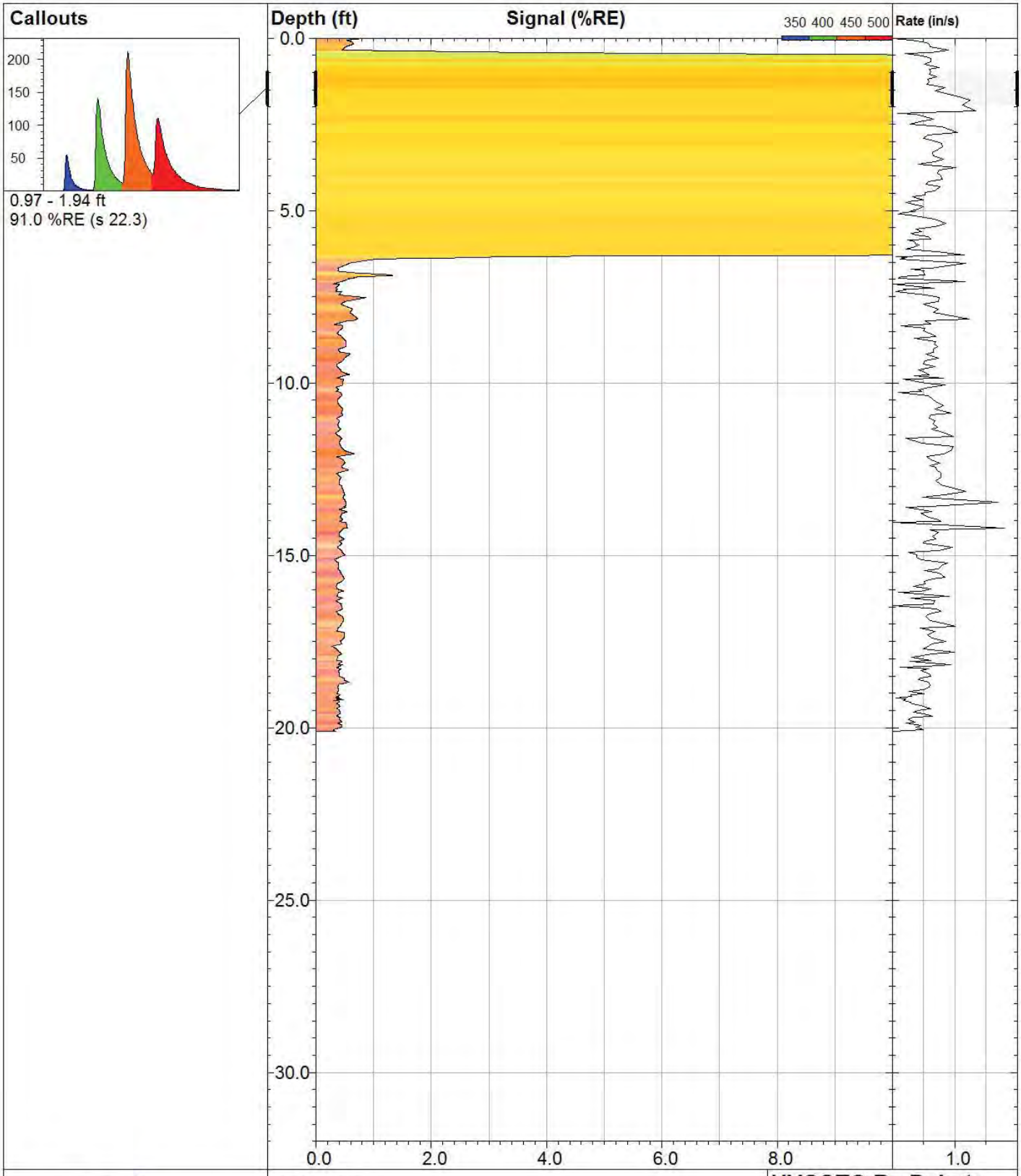
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908854.42 /**	*Final depth:* **22.06 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141100.07 /**	*Max signal:* **17.1 %RE @ 6.77 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **372.6 ft**	*Date & Time:* **2018-05-31 10:49 EDT**



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LIF-03

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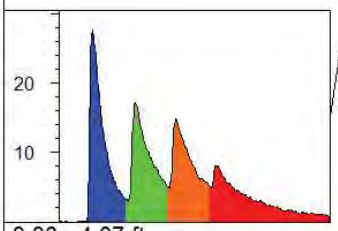
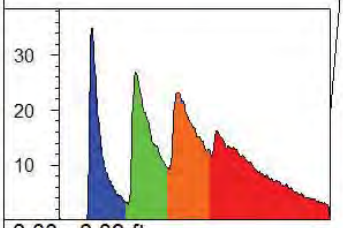
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908903.60 /**	*Final depth:* **20.11 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141109.60 /**	*Max signal:* **123.8 %RE @ 1.44 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.7 ft**	*Date & Time:* **2018-05-31 10:19 EDT**

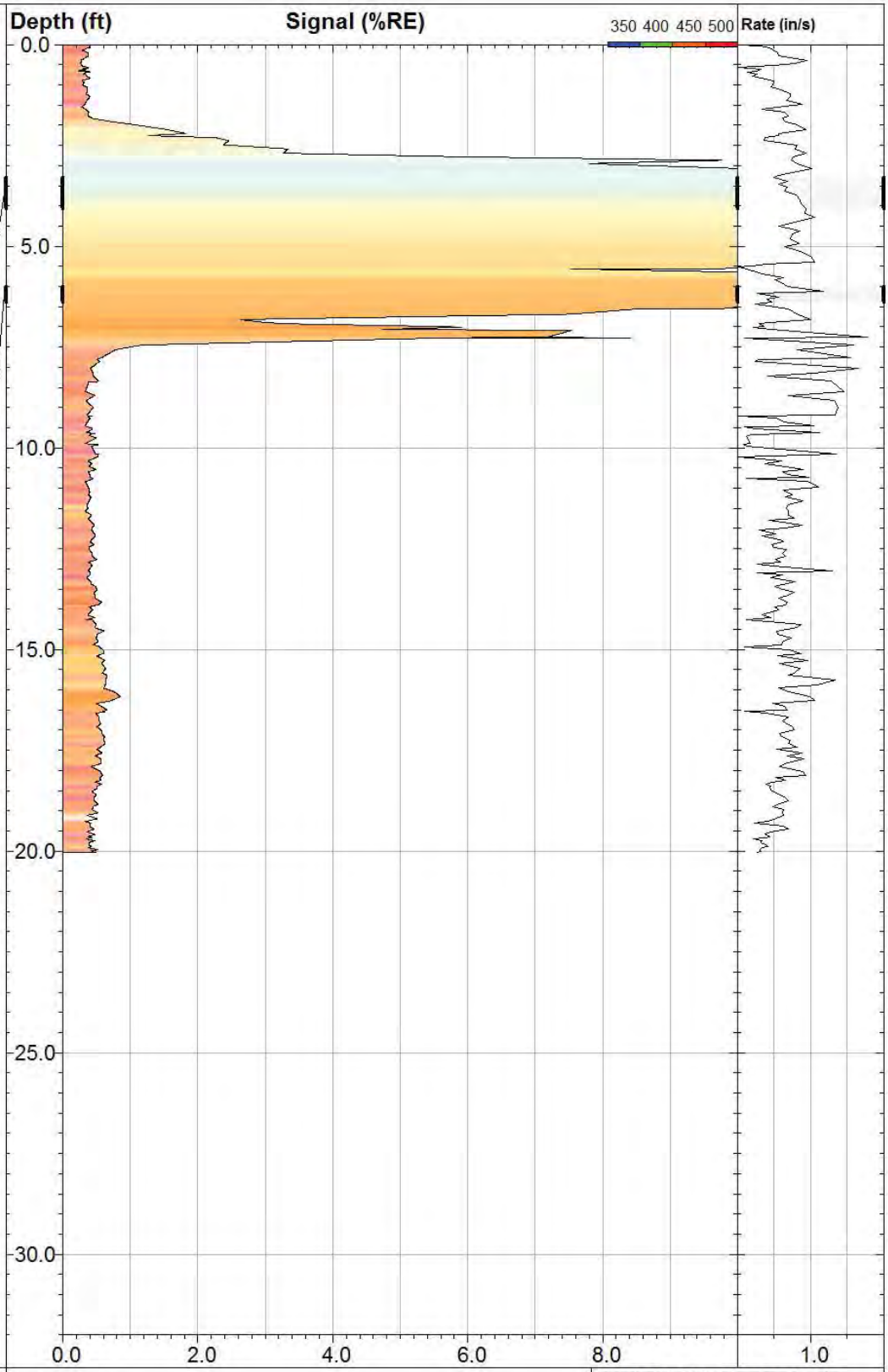
Callouts



3.30 - 4.07 ft
15.5 %RE (s 2.6)



6.00 - 6.39 ft
27.7 %RE (s 7.0)



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LIF-04

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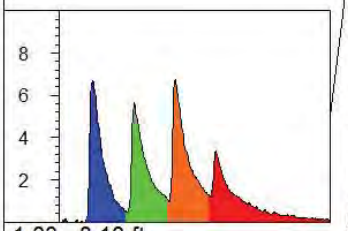
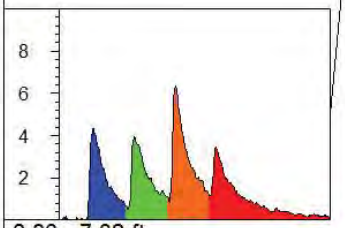
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908945.47 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141099.59 /**	*Max signal:* **38.4 %RE @ 4.50 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.8 ft**	*Date & Time:* **2018-05-31 09:51 EDT**

Callouts

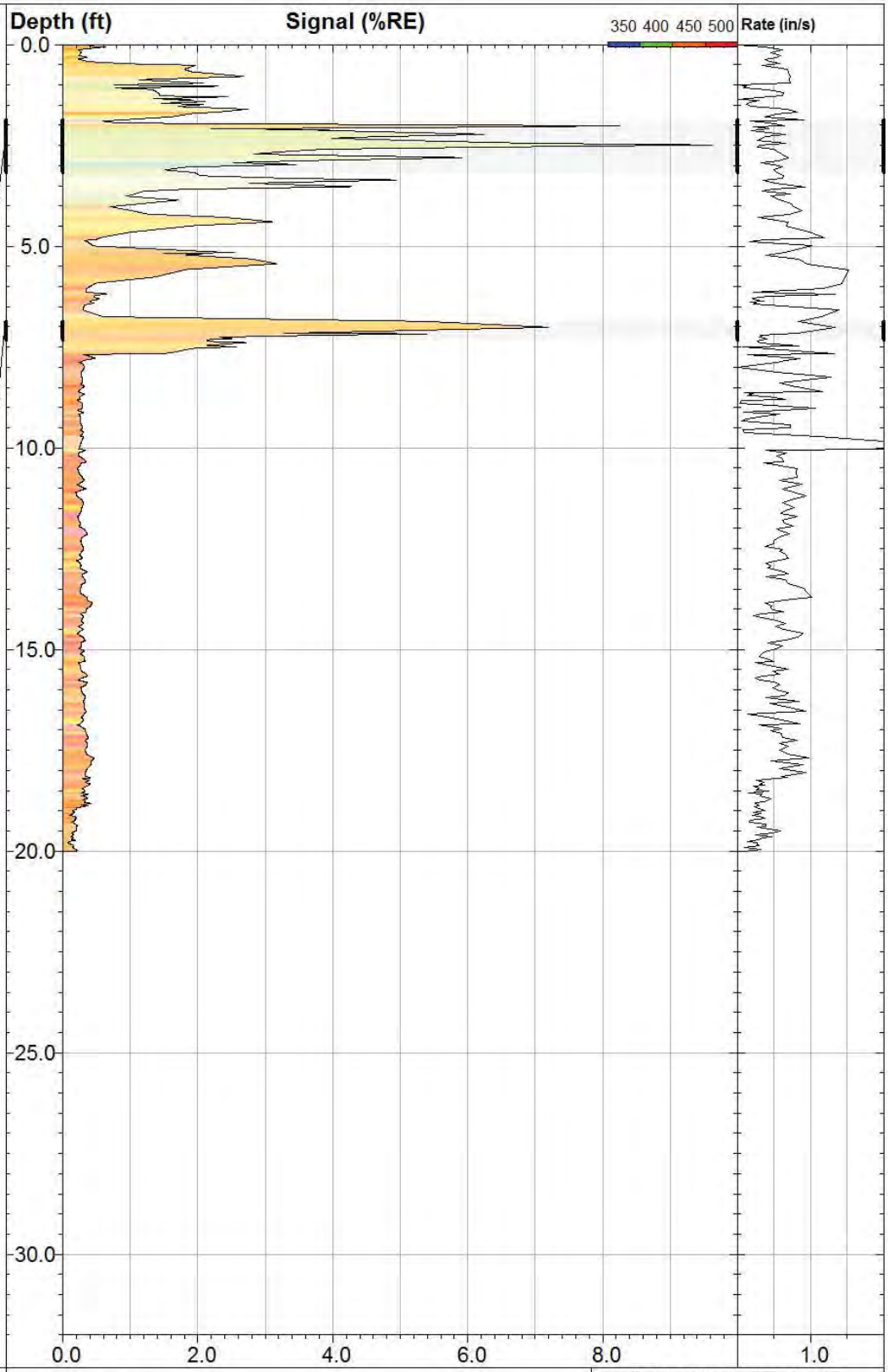
preprobe to 2'



1.88 - 3.18 ft
4.3 %RE (s 2.5)



6.86 - 7.32 ft
3.9 %RE (s 1.7)



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LIF-05

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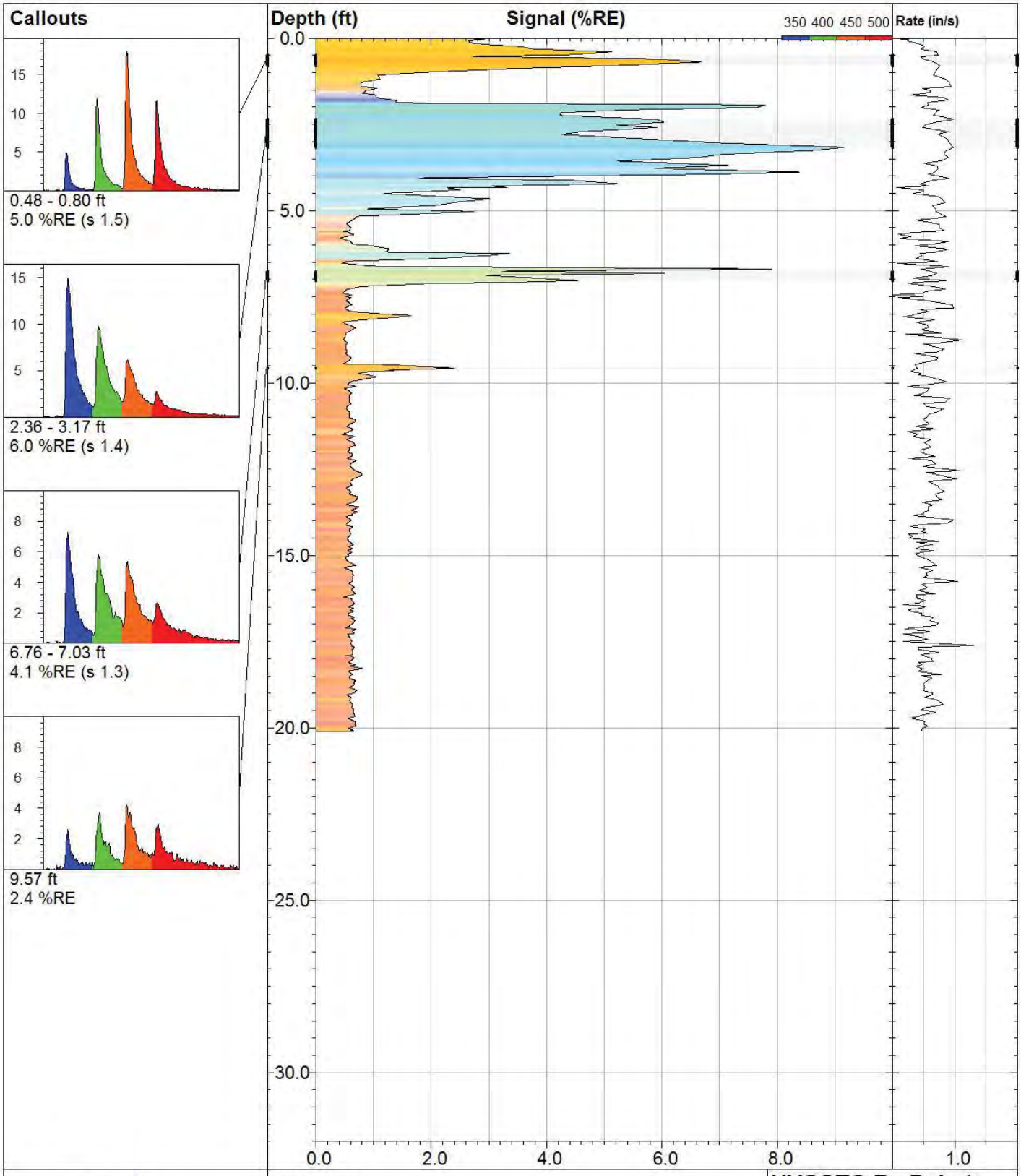
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909057.56 /**	*Final depth:* **20.00 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141123.13 /**	*Max signal:* **9.7 %RE @ 2.49 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.0 ft**	*Date & Time:* **2018-05-31 07:58 EDT**



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LIF-06

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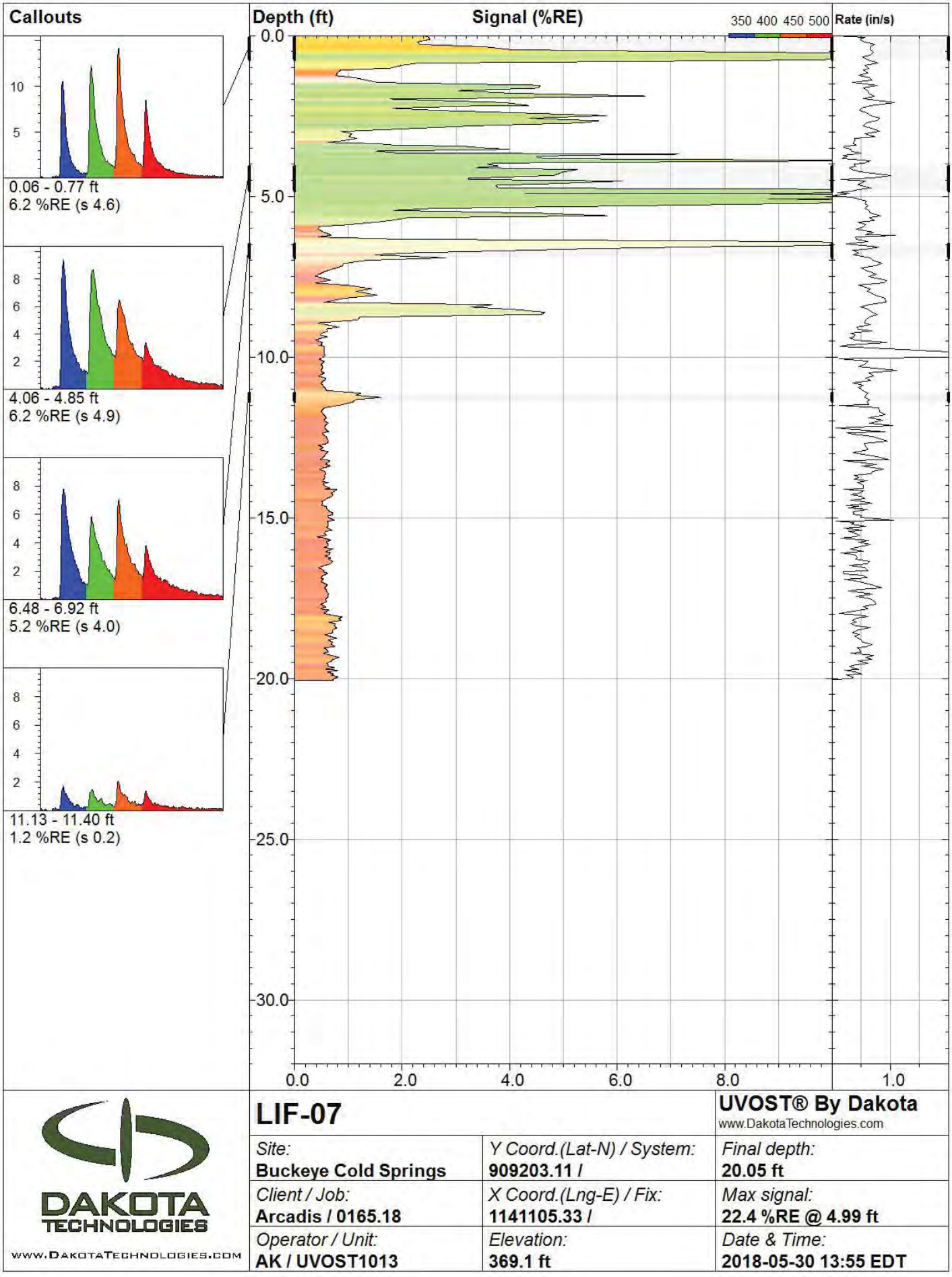
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909143.34 /**	*Final depth:* **20.10 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141105.83 /**	*Max signal:* **9.2 %RE @ 3.17 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.3 ft**	*Date & Time:* **2018-05-30 14:29 EDT**



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LIF-07

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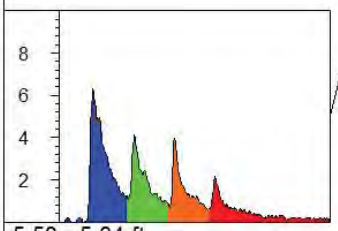
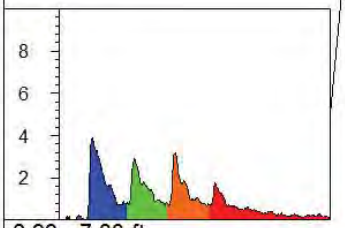
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909203.11 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141105.33 /**	*Max signal:* **22.4 %RE @ 4.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.1 ft**	*Date & Time:* **2018-05-30 13:55 EDT**

Callouts

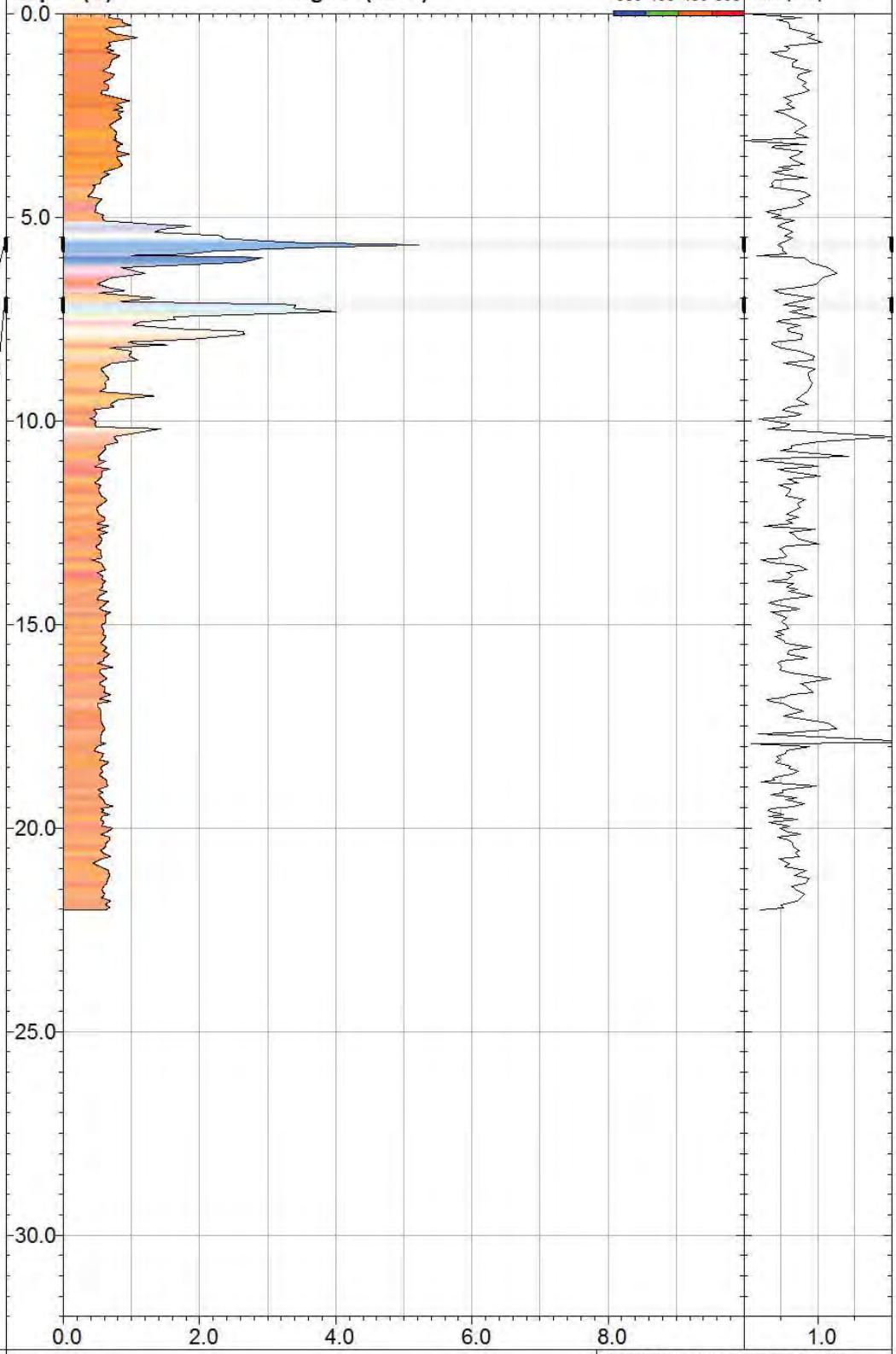
preprobe to 1'



5.53 - 5.84 ft
3.3 %RE (s 1.2)



6.99 - 7.33 ft
2.6 %RE (s 1.4)



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LIF-08

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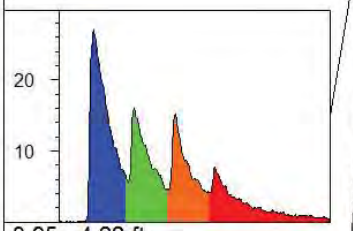
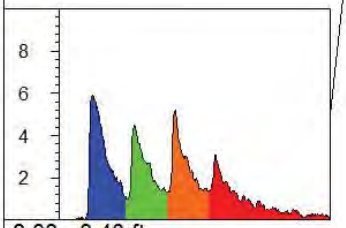
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909227.09 /**	*Final depth:* **22.02 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141121.47 /**	*Max signal:* **5.2 %RE @ 5.68 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.1 ft**	*Date & Time:* **2018-05-30 12:45 EDT**

Callouts

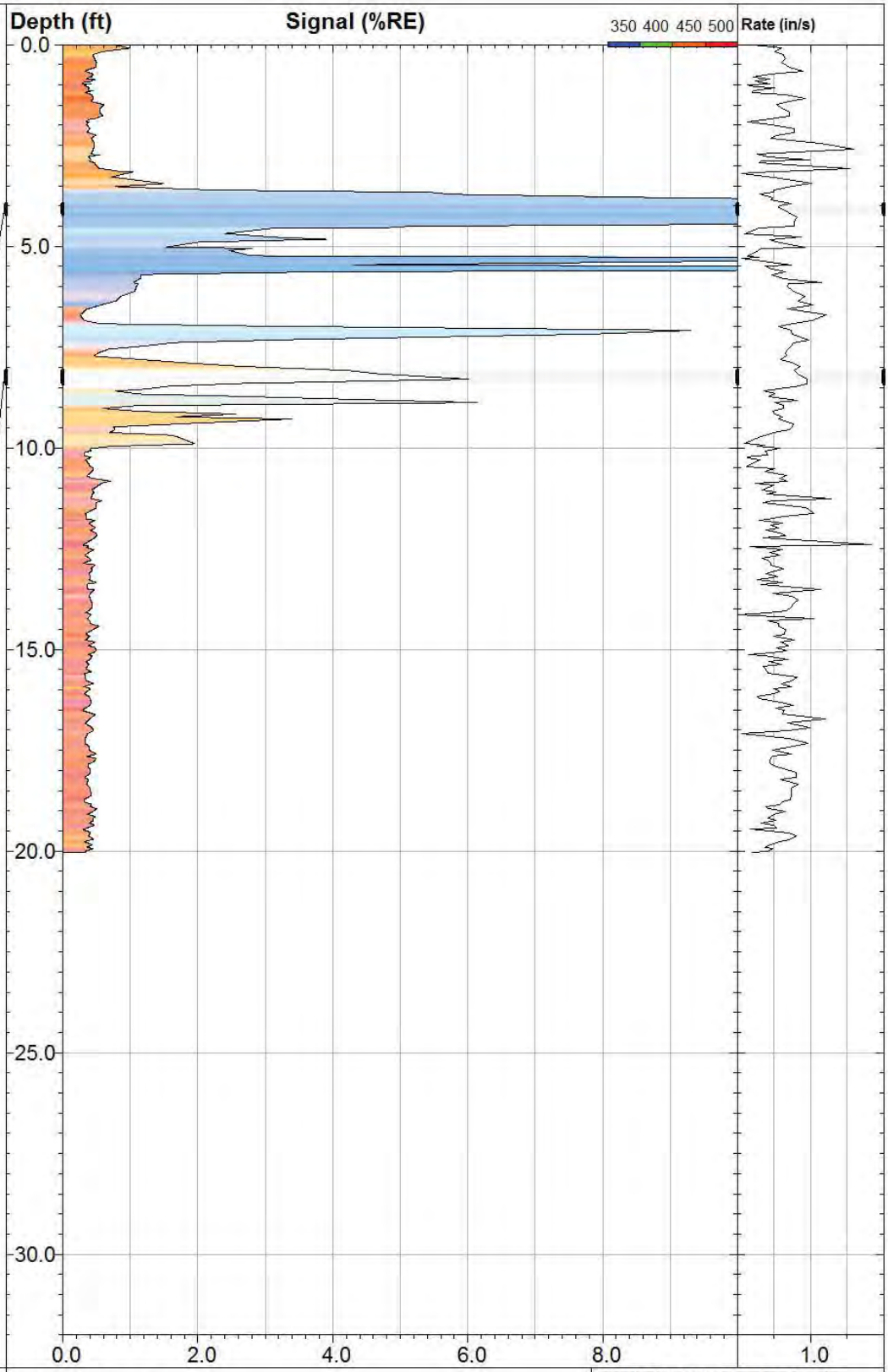
preprobe 2'



3.95 - 4.22 ft
16.2 %RE (s 6.3)



8.08 - 8.40 ft
4.4 %RE (s 1.4)



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LIF-08 dup

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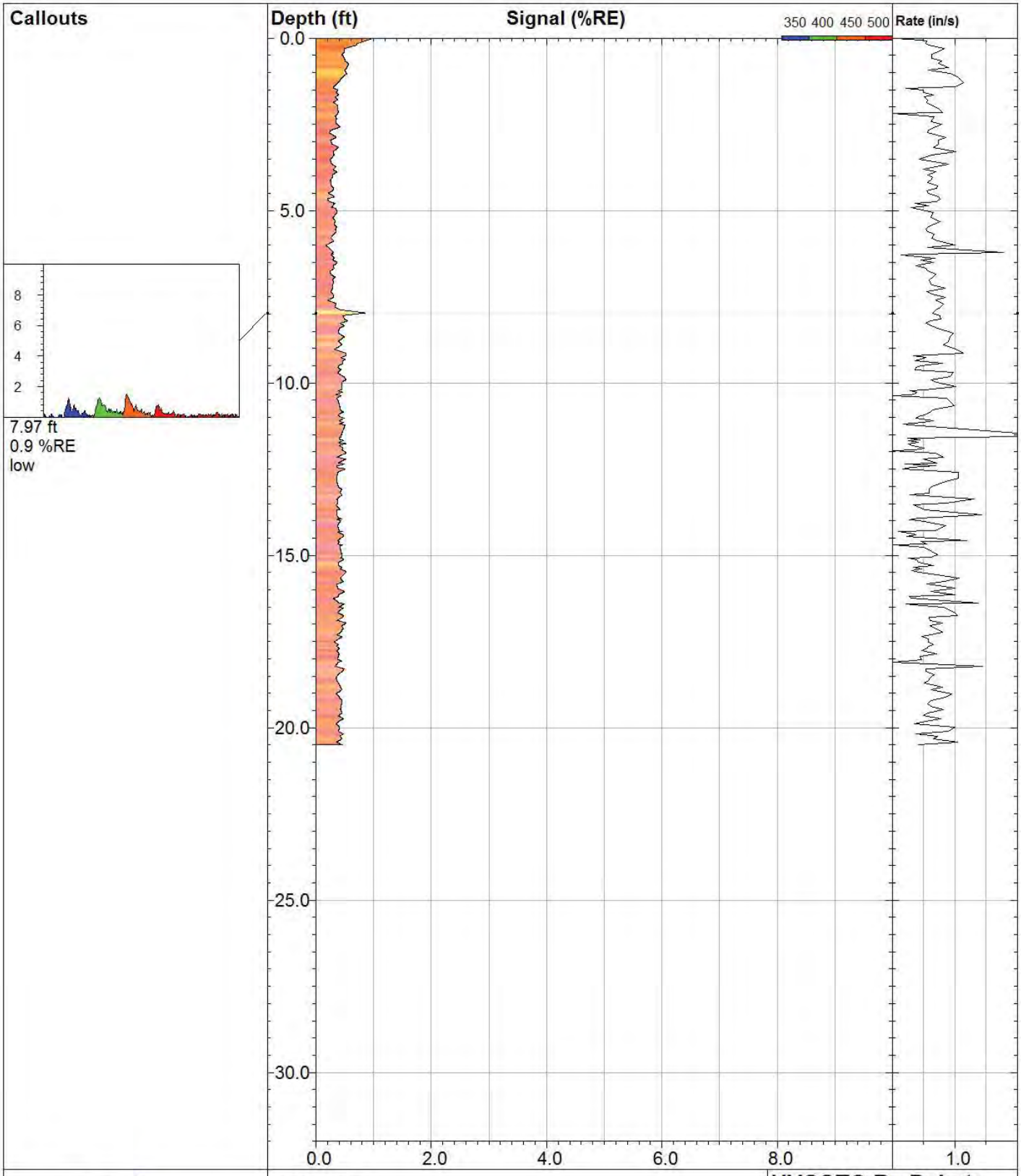
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **22.9 %RE @ 3.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **Unavailable**	*Date & Time:* **2018-05-31 15:12 EDT**



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LIF-09

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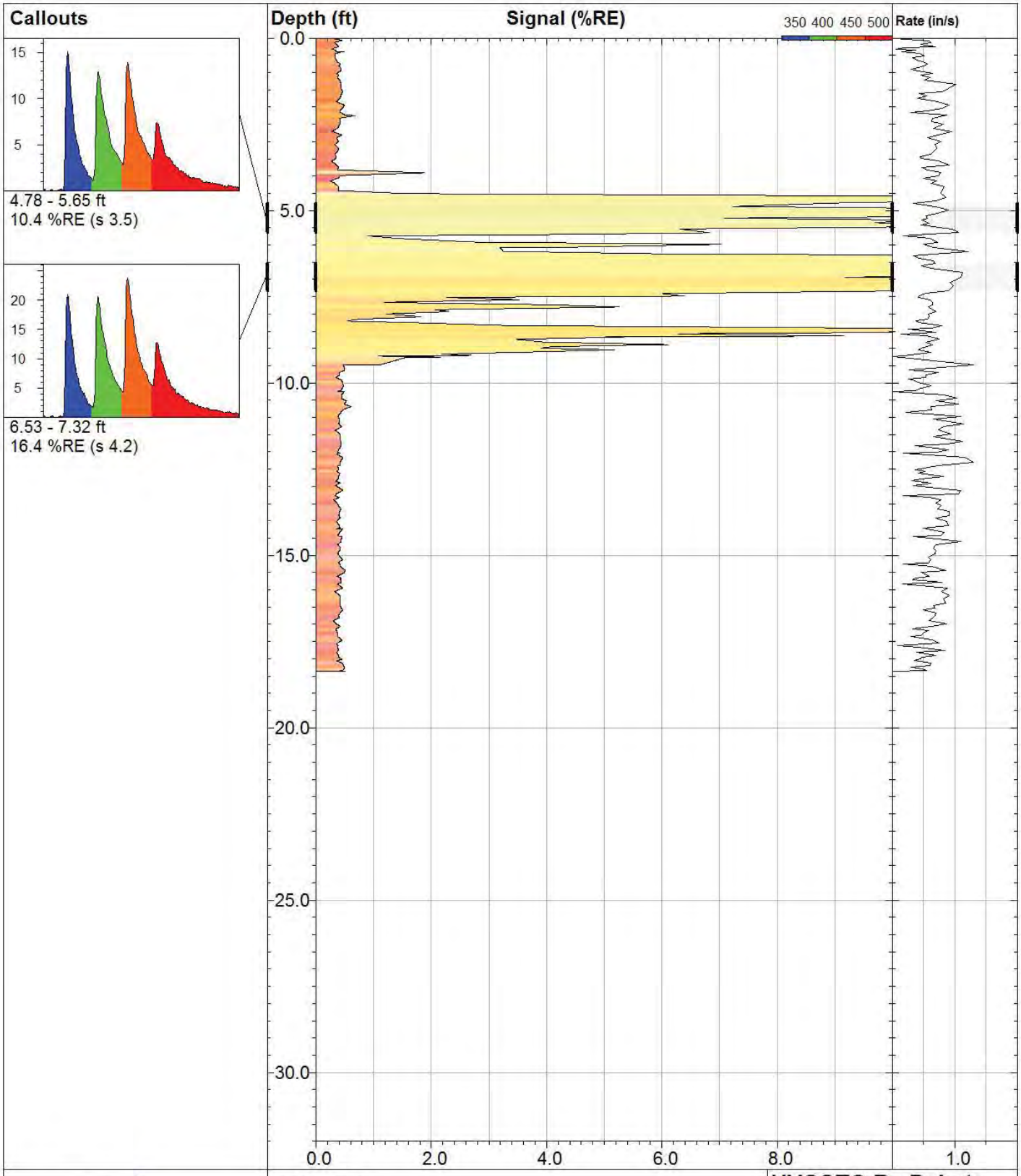
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908784.27 /**	*Final depth:* **20.50 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141041.15 /**	*Max signal:* **1.0 %RE @ 0.03 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **371.7 ft**	*Date & Time:* **2018-05-31 13:21 EDT**



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LIF-10

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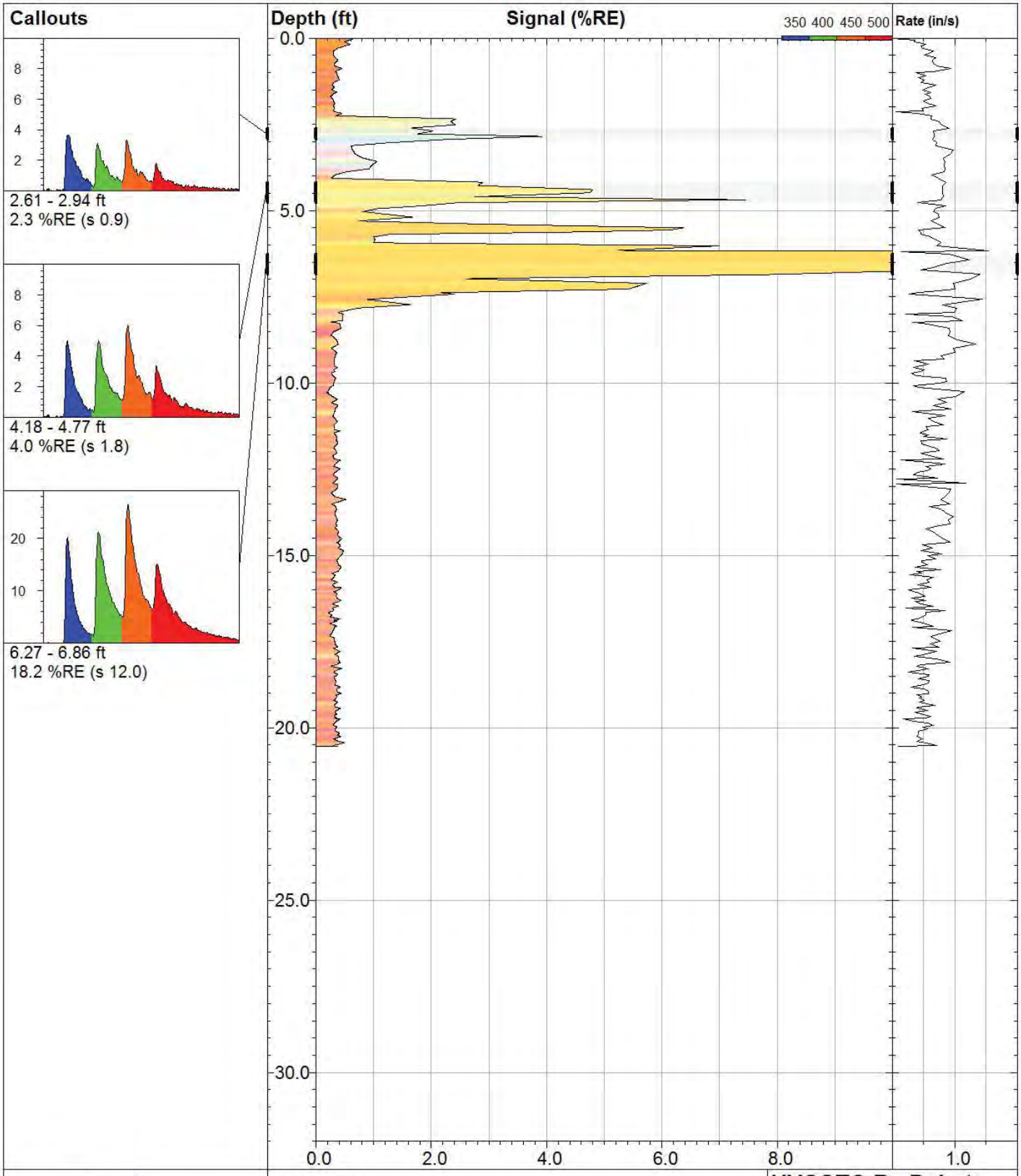
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908842.83 /**	*Final depth:* **18.37 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141050.30 /**	*Max signal:* **20.8 %RE @ 6.60 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **371.9 ft**	*Date & Time:* **2018-05-31 12:53 EDT**



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LIF-11

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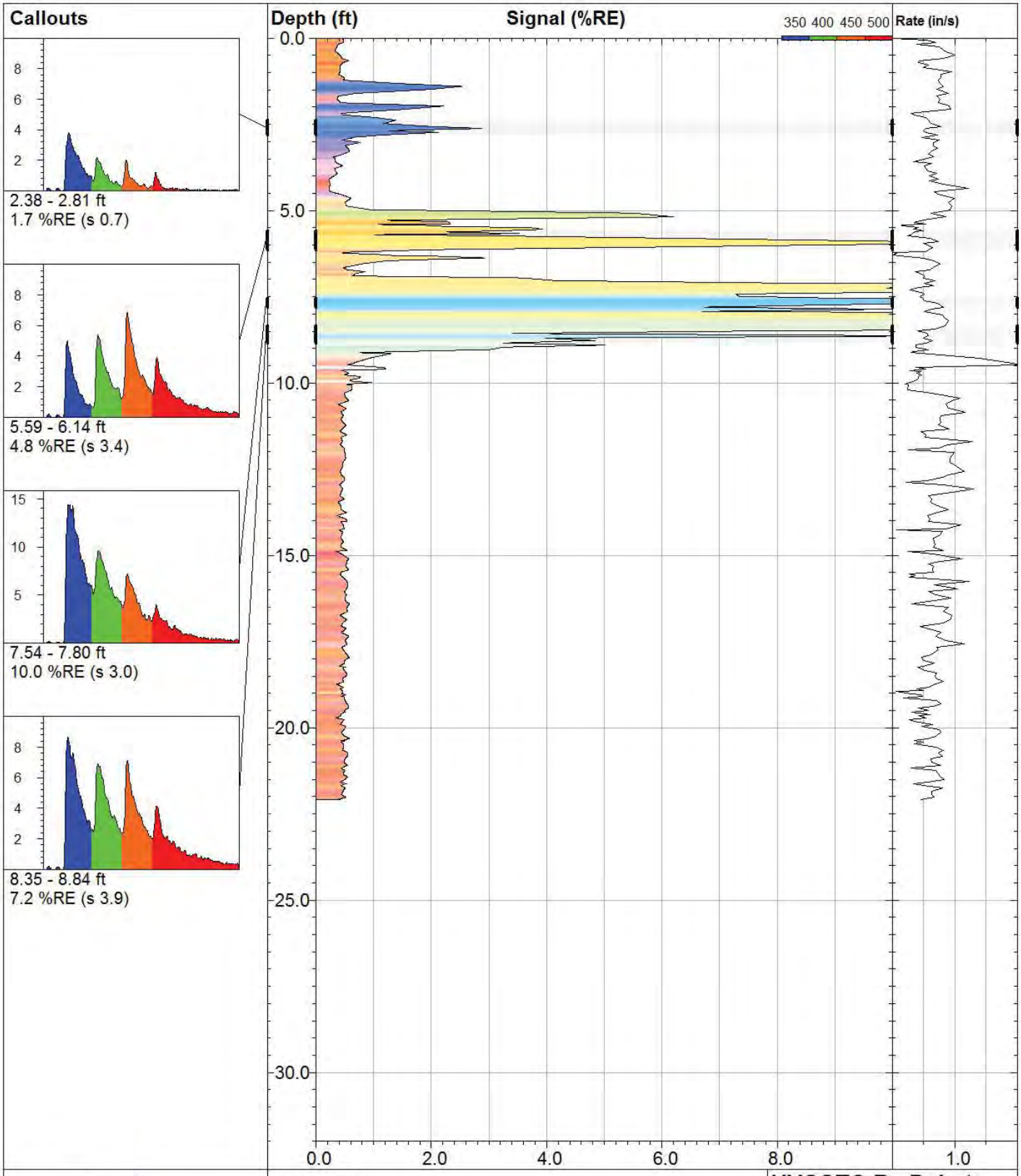
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908901.36 /**	*Final depth:* **20.55 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141048.10 /**	*Max signal:* **37.5 %RE @ 6.27 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.9 ft**	*Date & Time:* **2018-05-31 09:14 EDT**



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LIF-12

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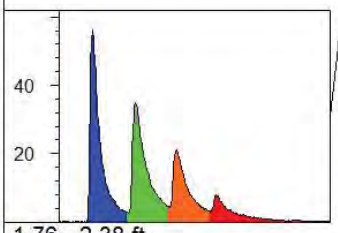
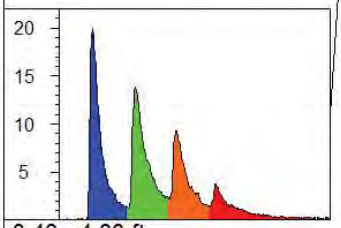
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908963.11 /**	*Final depth:* **22.09 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141042.12 /**	*Max signal:* **23.7 %RE @ 7.18 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.5 ft**	*Date & Time:* **2018-05-31 08:44 EDT**

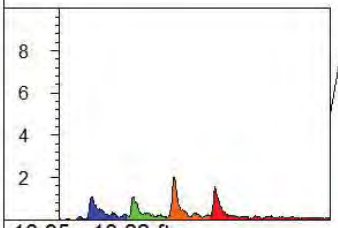
Callouts



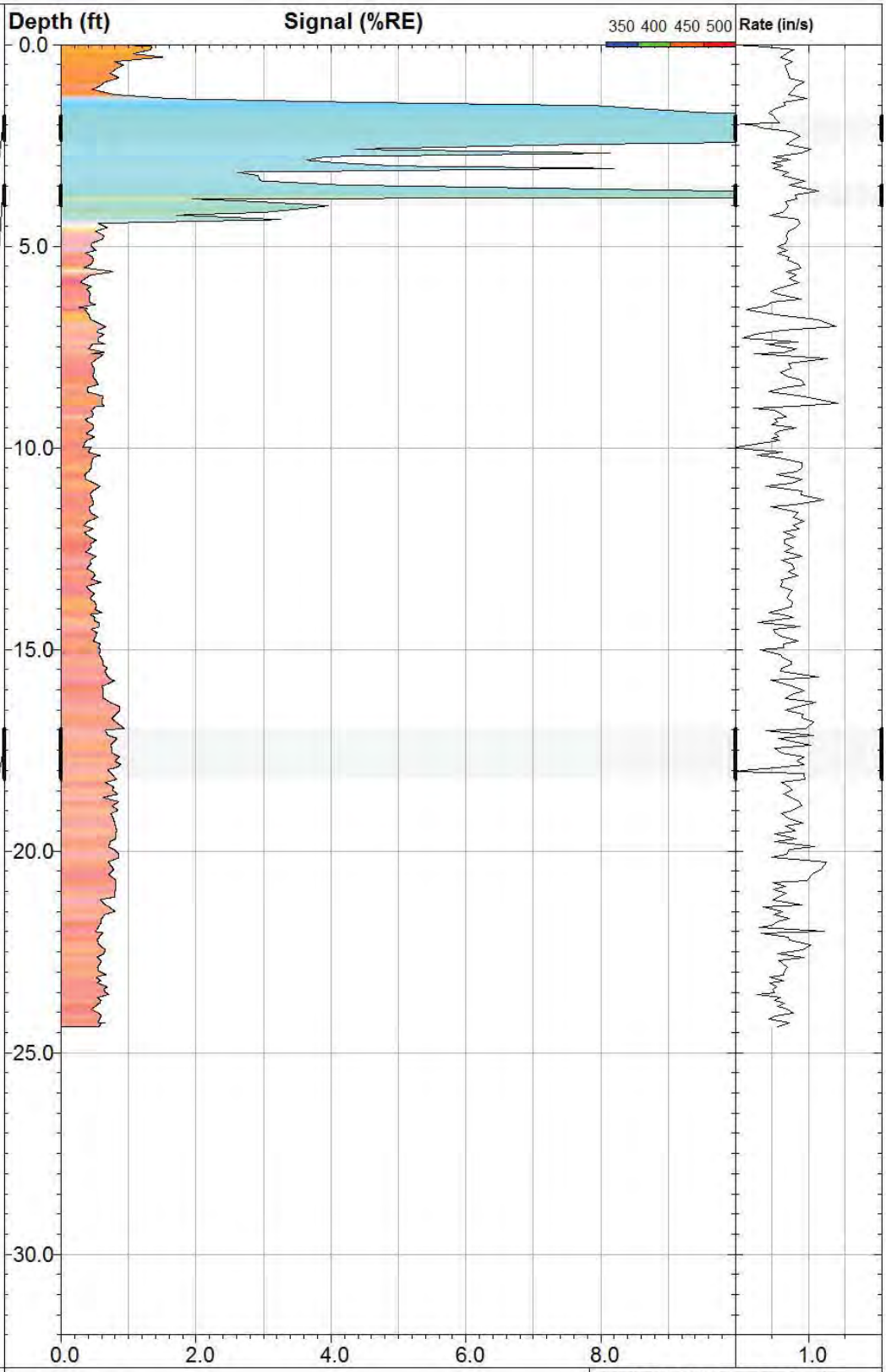
1.76 - 2.38 ft
19.0 %RE (s 4.6)



3.48 - 4.00 ft
7.9 %RE (s 8.6)



16.95 - 18.22 ft
0.8 %RE (s 0.1)
low



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LIF-13

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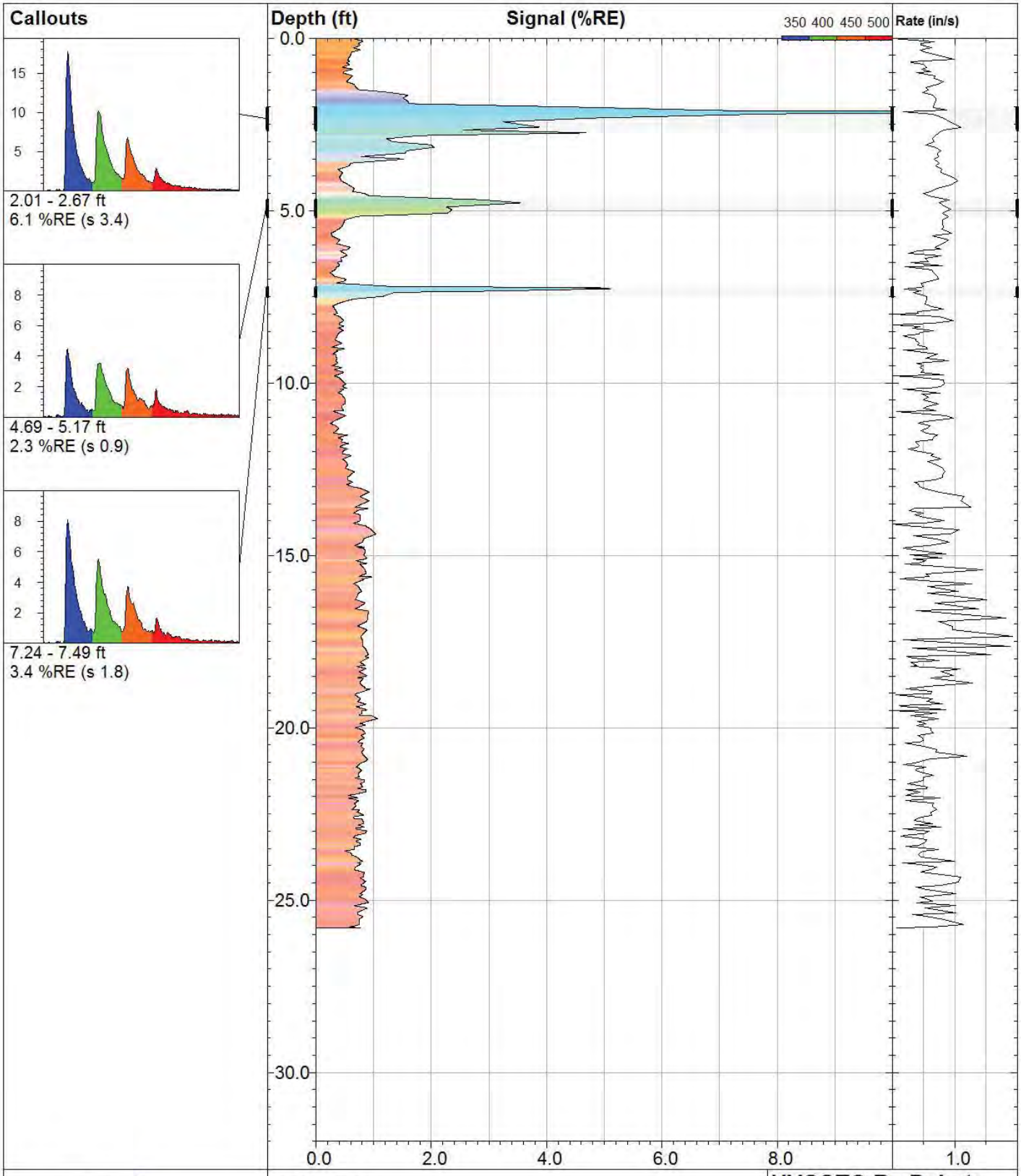
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909082.15 /**	*Final depth:* **24.36 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141046.86 /**	*Max signal:* **24.9 %RE @ 2.17 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.6 ft**	*Date & Time:* **2018-05-30 16:04 EDT**



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LIF-14

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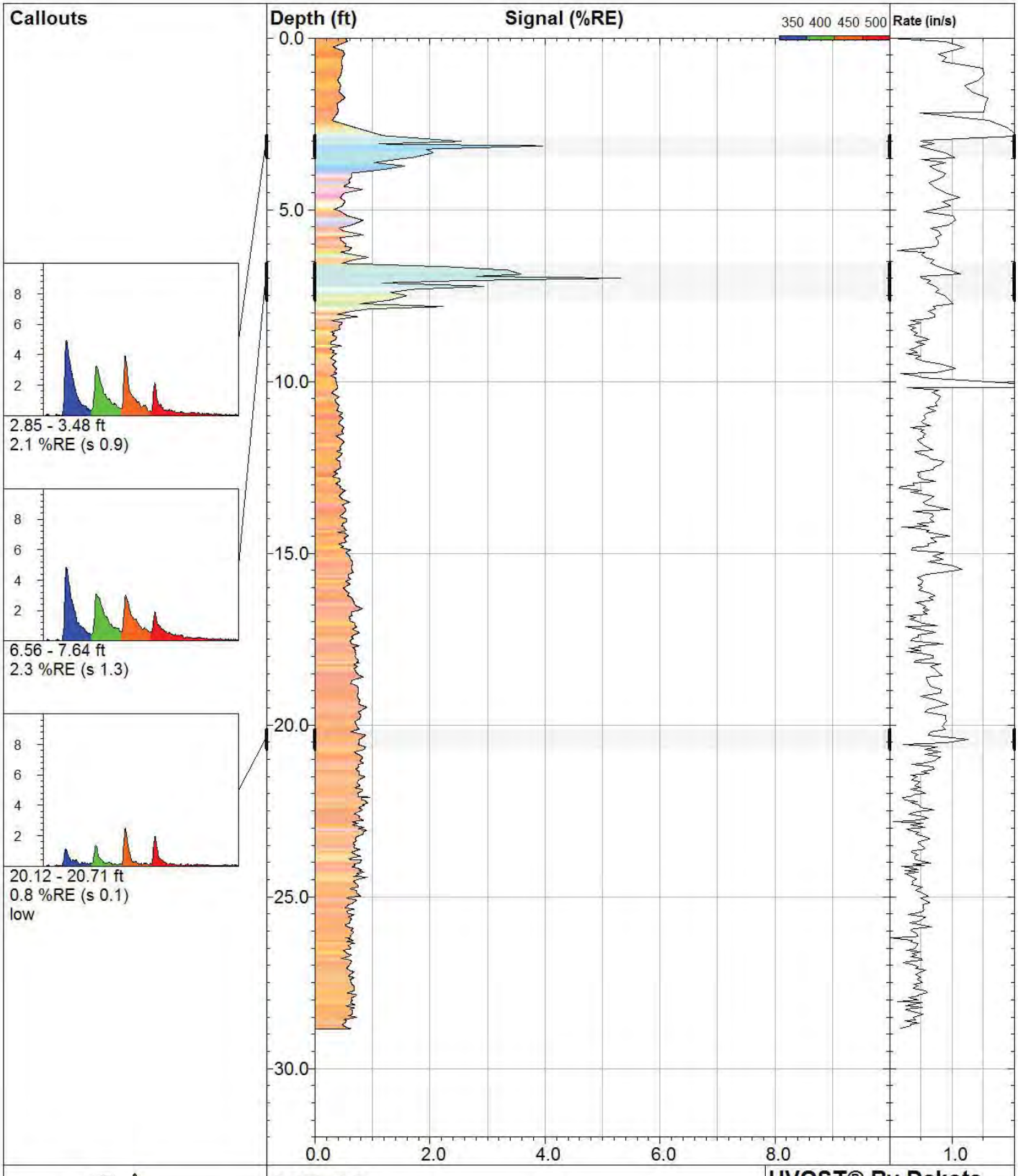
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909139.26 /**	*Final depth:* **25.82 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141028.72 /**	*Max signal:* **13.8 %RE @ 2.13 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.8 ft**	*Date & Time:* **2018-05-30 15:32 EDT**



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LIF-15

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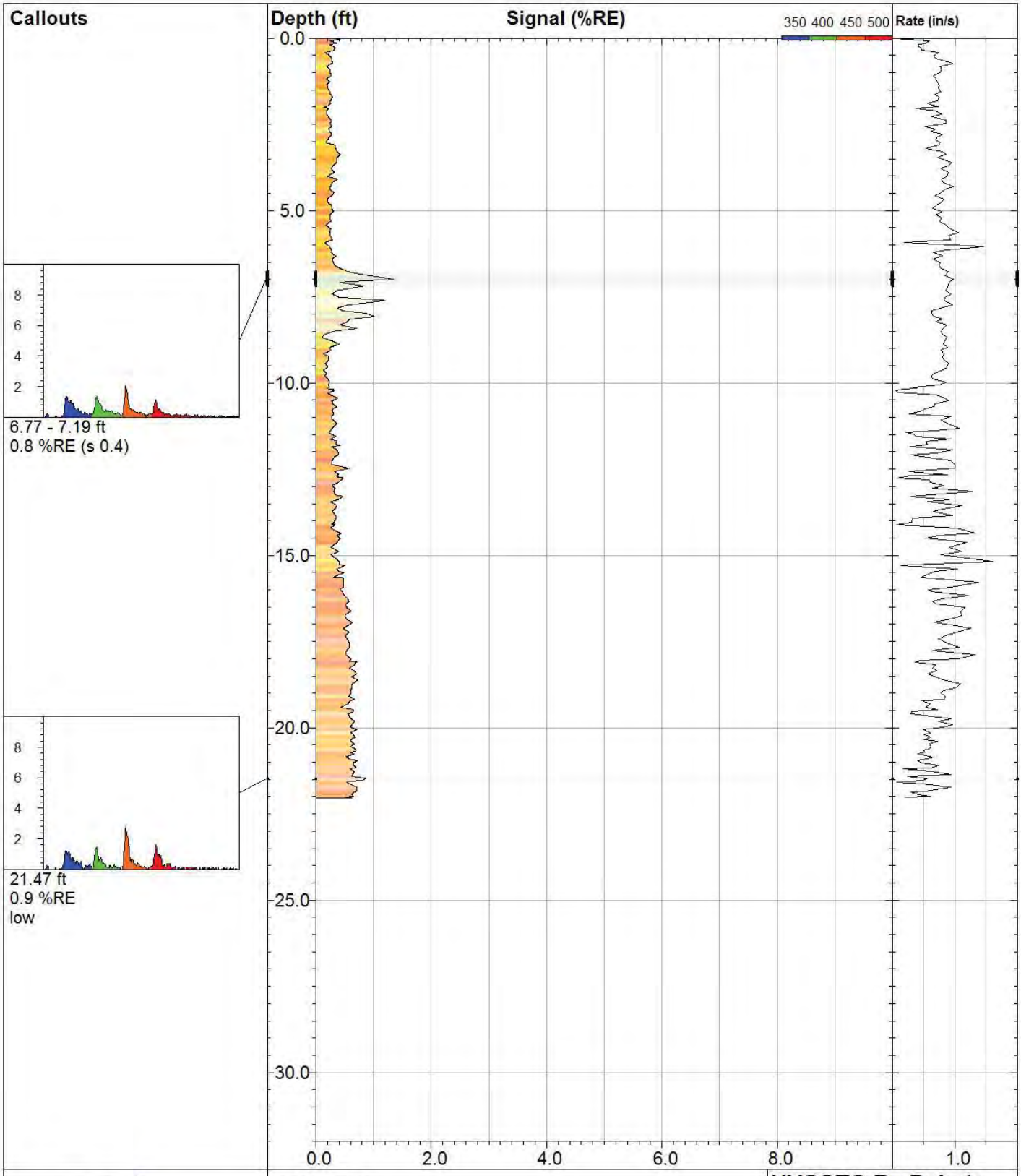
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909199.61 /**	*Final depth:* **28.85 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141037.61 /**	*Max signal:* **5.3 %RE @ 6.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.9 ft**	*Date & Time:* **2018-05-30 11:09 EDT**



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LIF-16

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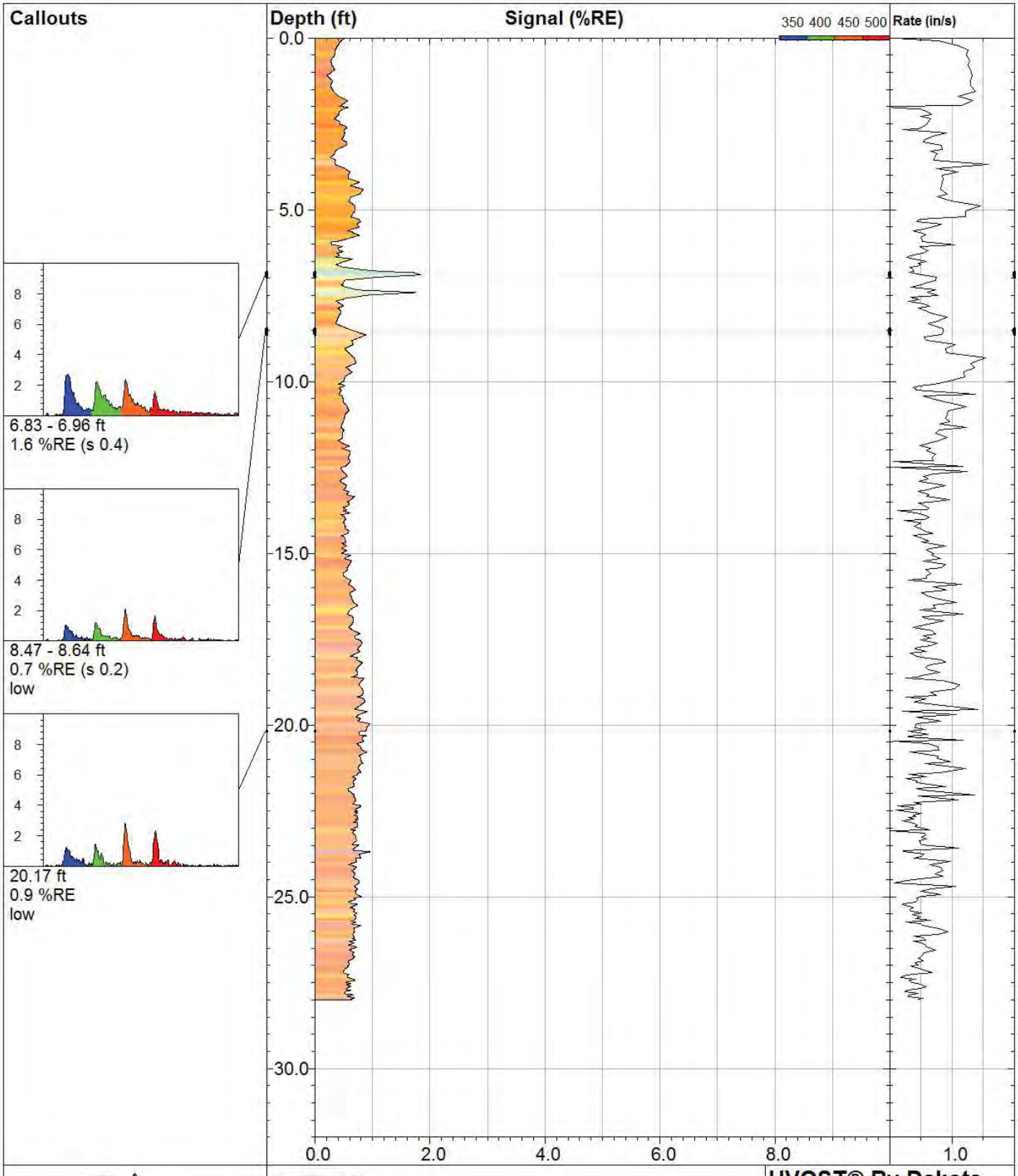
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909262.85 /**	*Final depth:* **22.03 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141043.82 /**	*Max signal:* **1.4 %RE @ 6.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.2 ft**	*Date & Time:* **2018-05-30 09:47 EDT**



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LIF-17

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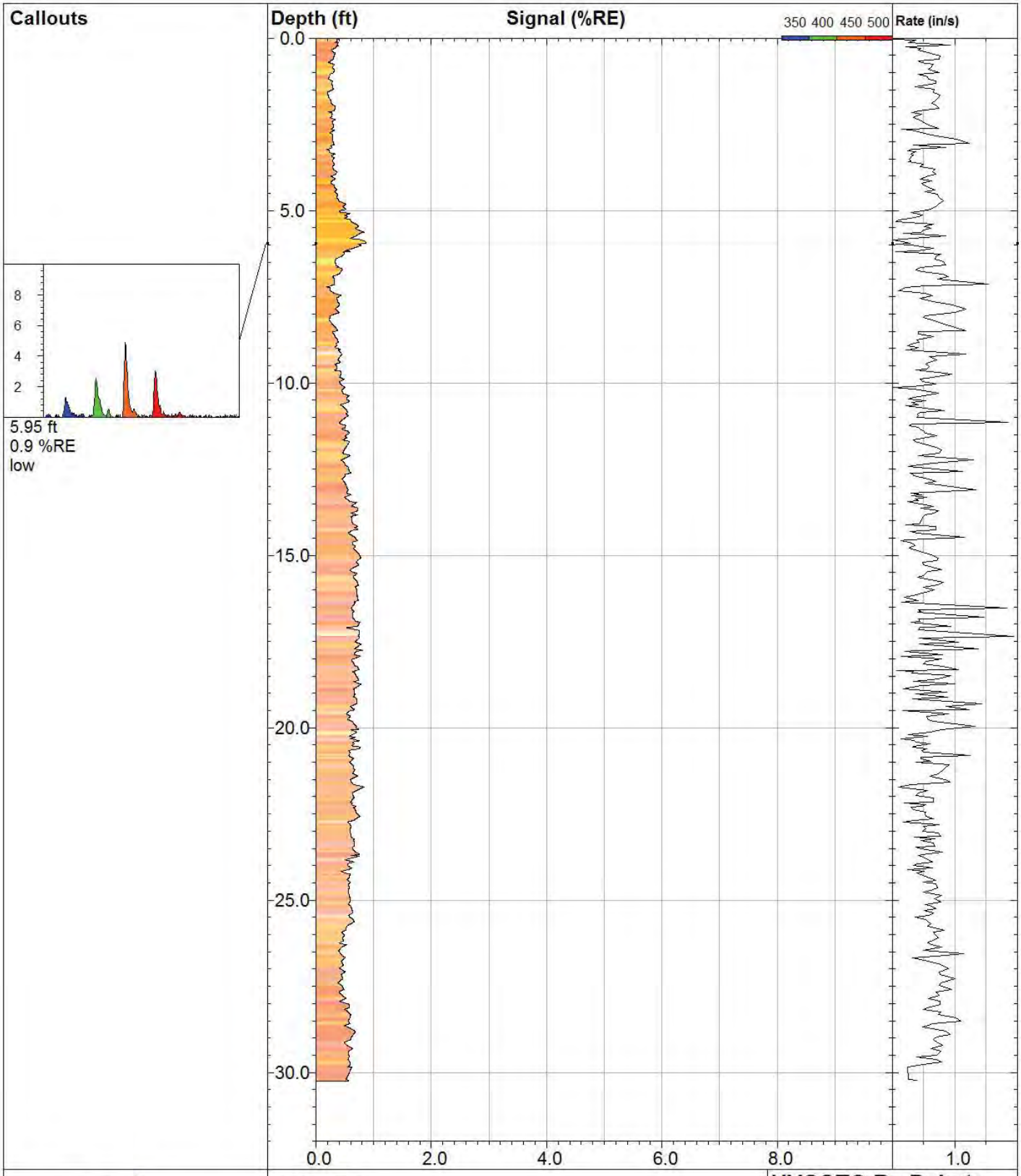
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909223.49 /**	*Final depth:* **28.00 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141003.77 /**	*Max signal:* **1.8 %RE @ 6.90 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.7 ft**	*Date & Time:* **2018-05-30 10:30 EDT**



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LIF-18

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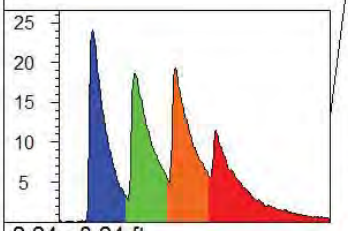
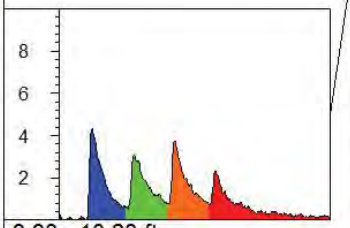
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909301.23 /**	*Final depth:* **30.25 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141015.65 /**	*Max signal:* **0.9 %RE @ 5.95 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.9 ft**	*Date & Time:* **2018-05-30 08:53 EDT**

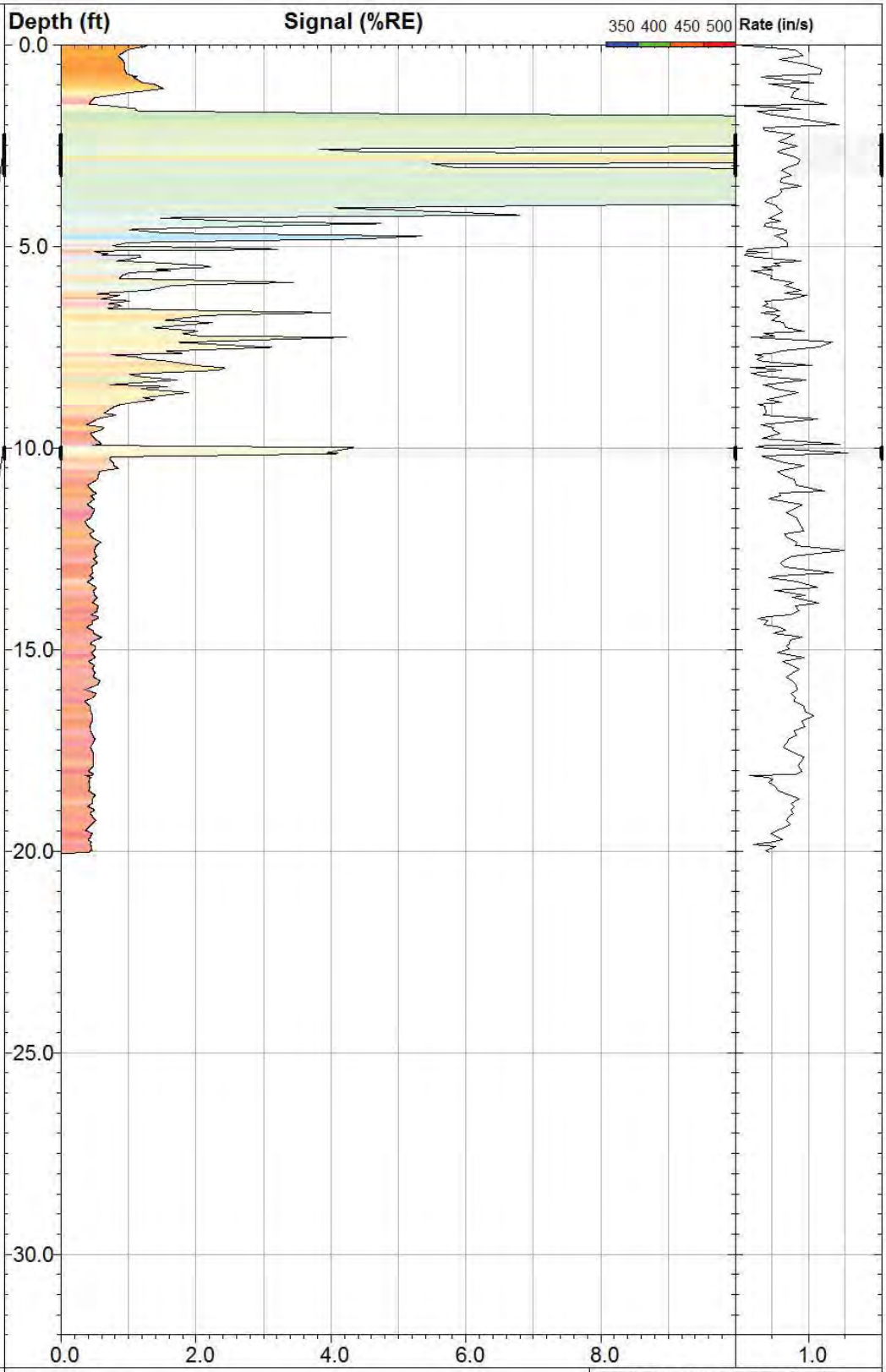
Callouts



2.24 - 3.24 ft
17.4 %RE (s 10.8)
low



9.98 - 10.28 ft
2.8 %RE (s 1.6)



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LIF-19

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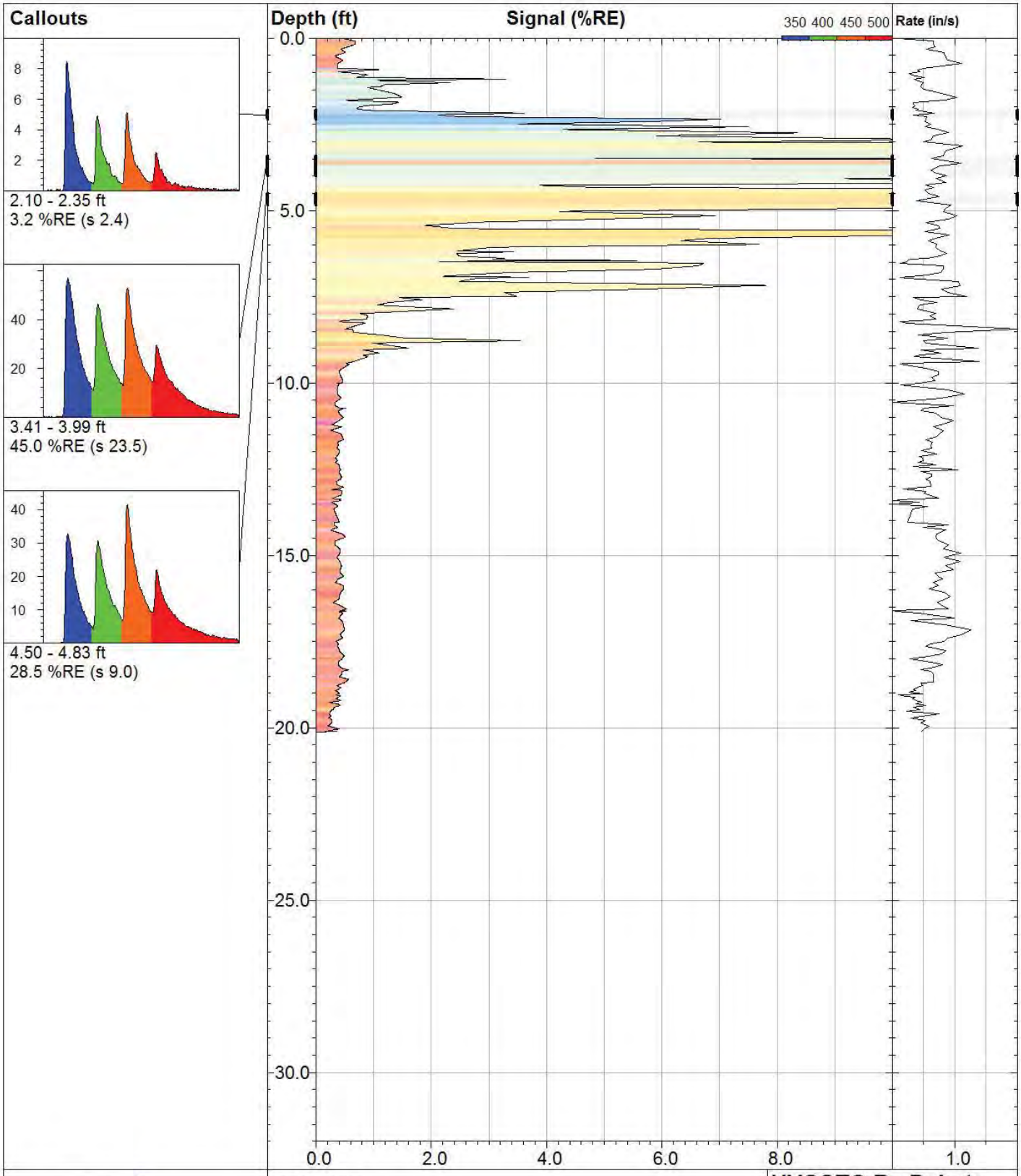
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909085.12 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141082.55 /**	*Max signal:* **75.8 %RE @ 3.58 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.8 ft**	*Date & Time:* **2018-05-31 14:05 EDT**



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LIF-20

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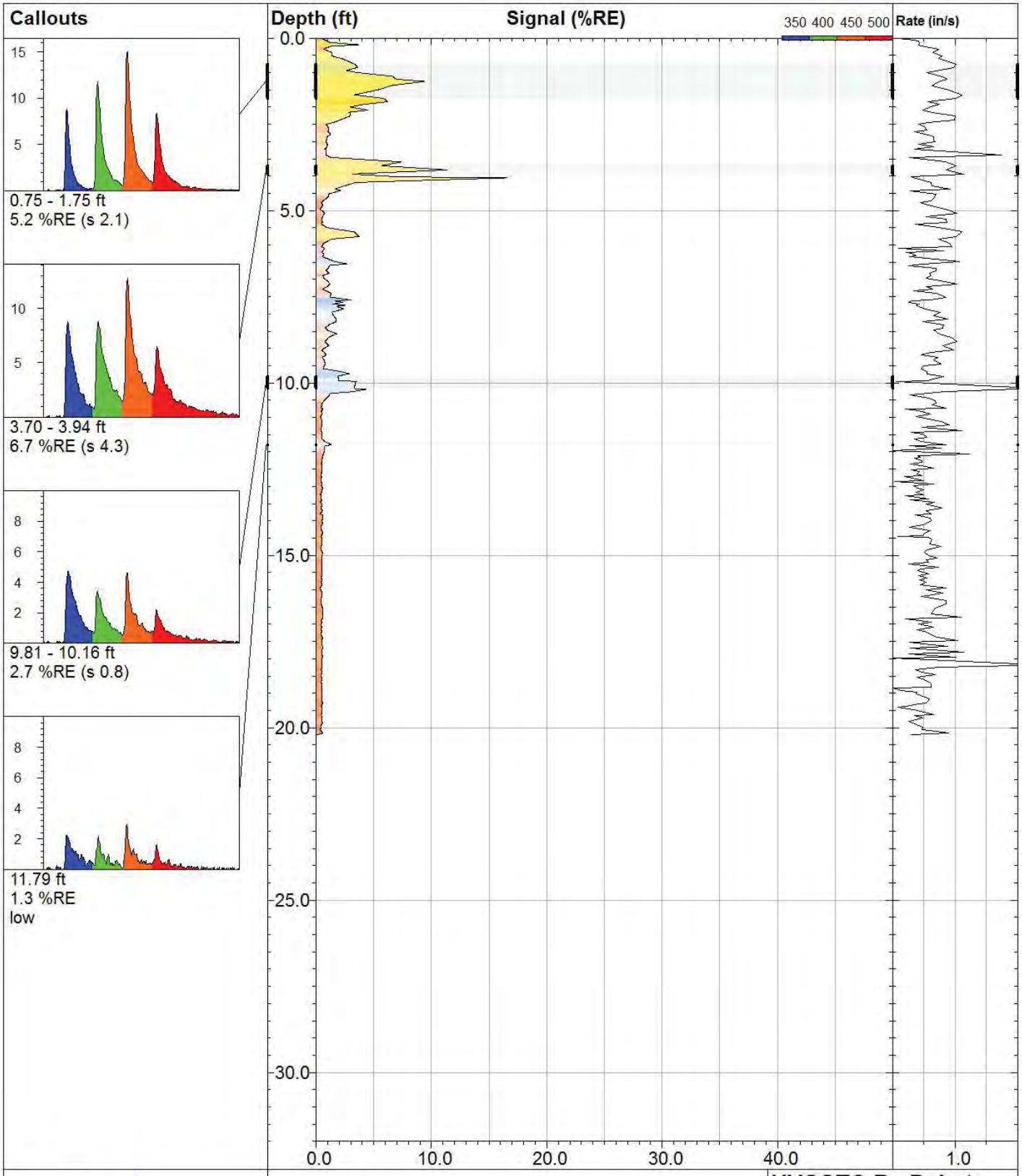
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909133.40 /**	*Final depth:* **20.12 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141143.06 /**	*Max signal:* **74.9 %RE @ 3.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.5 ft**	*Date & Time:* **2018-05-31 14:38 EDT**

UVOST® LIF Logs at 50% RE



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LIF-01

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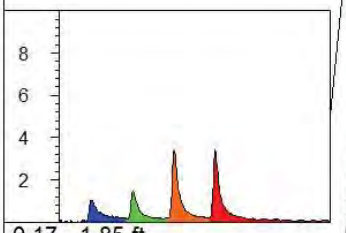
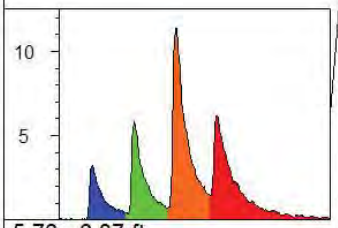
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909199.28 /**	*Final depth:* **20.19 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141155.25 /**	*Max signal:* **16.8 %RE @ 4.05 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.6 ft**	*Date & Time:* **2018-05-30 13:22 EDT**

Callouts

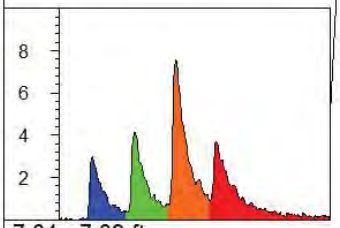
+ 2.5' in elevation vs. LIF-03
Probe sitting on a pad to drill.



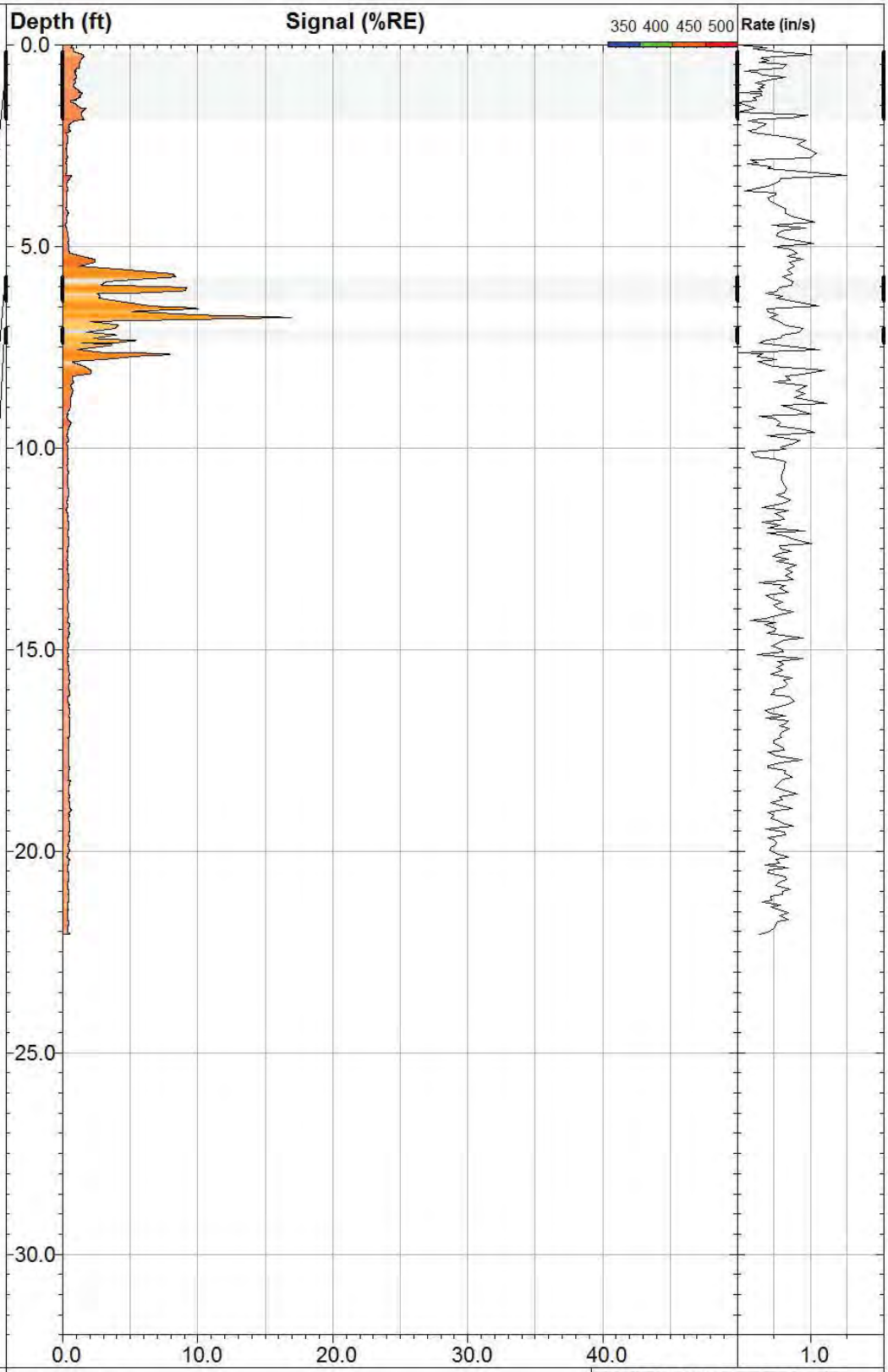
0.17 - 1.85 ft
1.1 %RE (s 0.3)



5.76 - 6.37 ft
5.0 %RE (s 2.8)



7.04 - 7.39 ft
3.5 %RE (s 1.4)



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LIF-02

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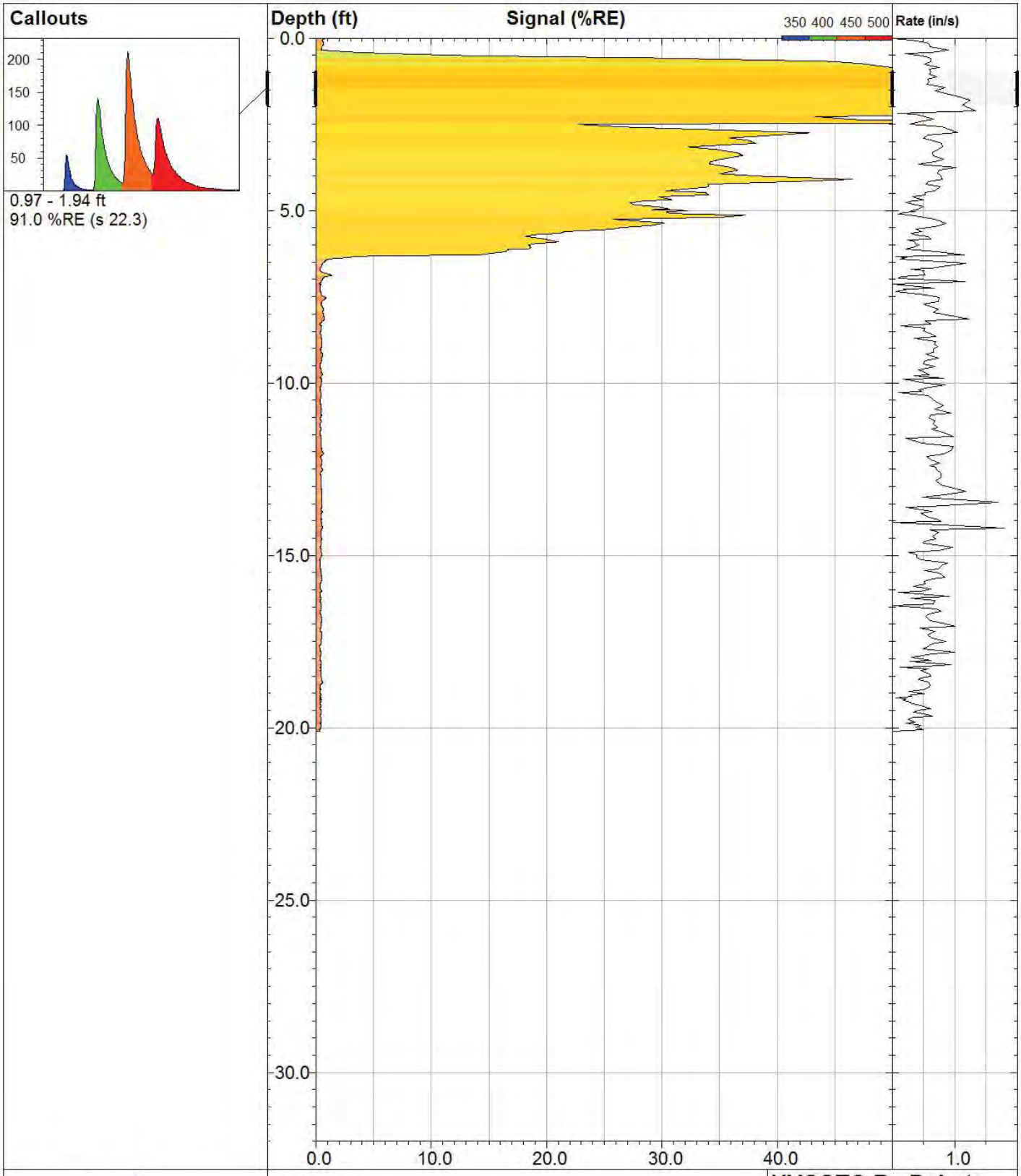
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908854.42 /**	*Final depth:* **22.06 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141100.07 /**	*Max signal:* **17.1 %RE @ 6.77 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **372.6 ft**	*Date & Time:* **2018-05-31 10:49 EDT**



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LIF-03

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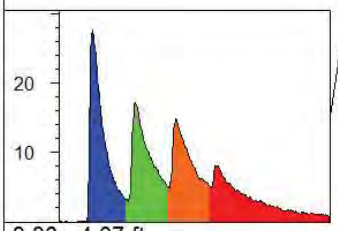
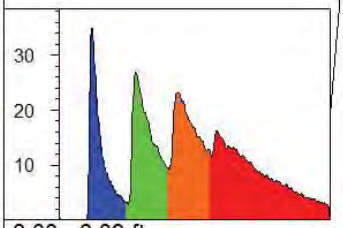
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908903.60 /**	*Final depth:* **20.11 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141109.60 /**	*Max signal:* **123.8 %RE @ 1.44 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.7 ft**	*Date & Time:* **2018-05-31 10:19 EDT**

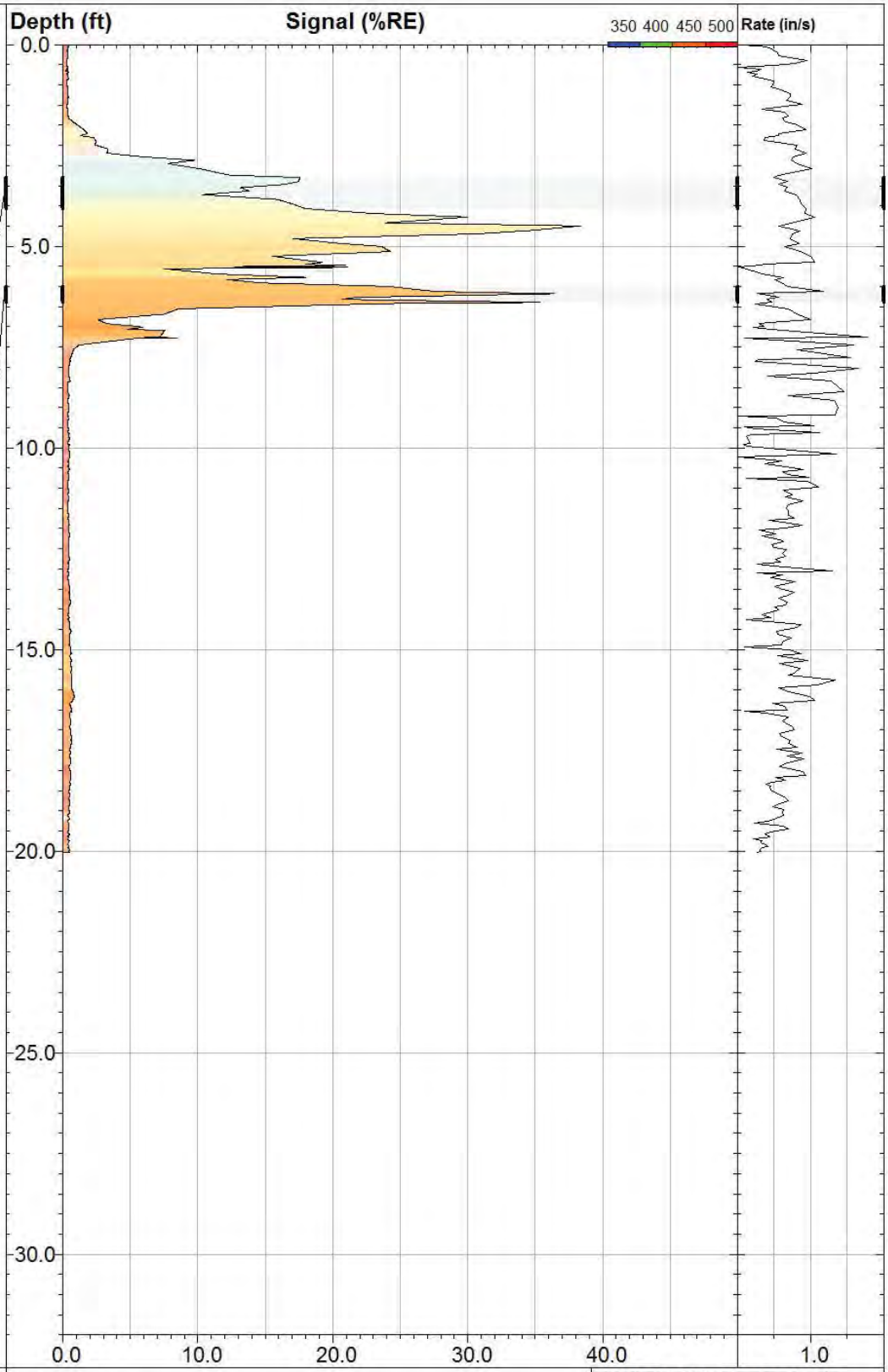
Callouts



3.30 - 4.07 ft
15.5 %RE (s 2.6)



6.00 - 6.39 ft
27.7 %RE (s 7.0)



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LIF-04

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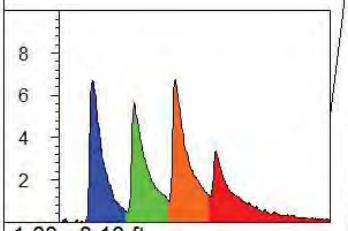
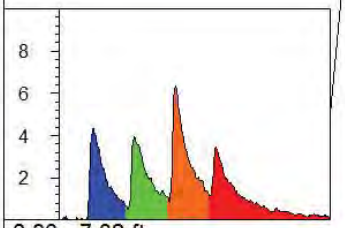
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908945.47 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141099.59 /**	*Max signal:* **38.4 %RE @ 4.50 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.8 ft**	*Date & Time:* **2018-05-31 09:51 EDT**

Callouts

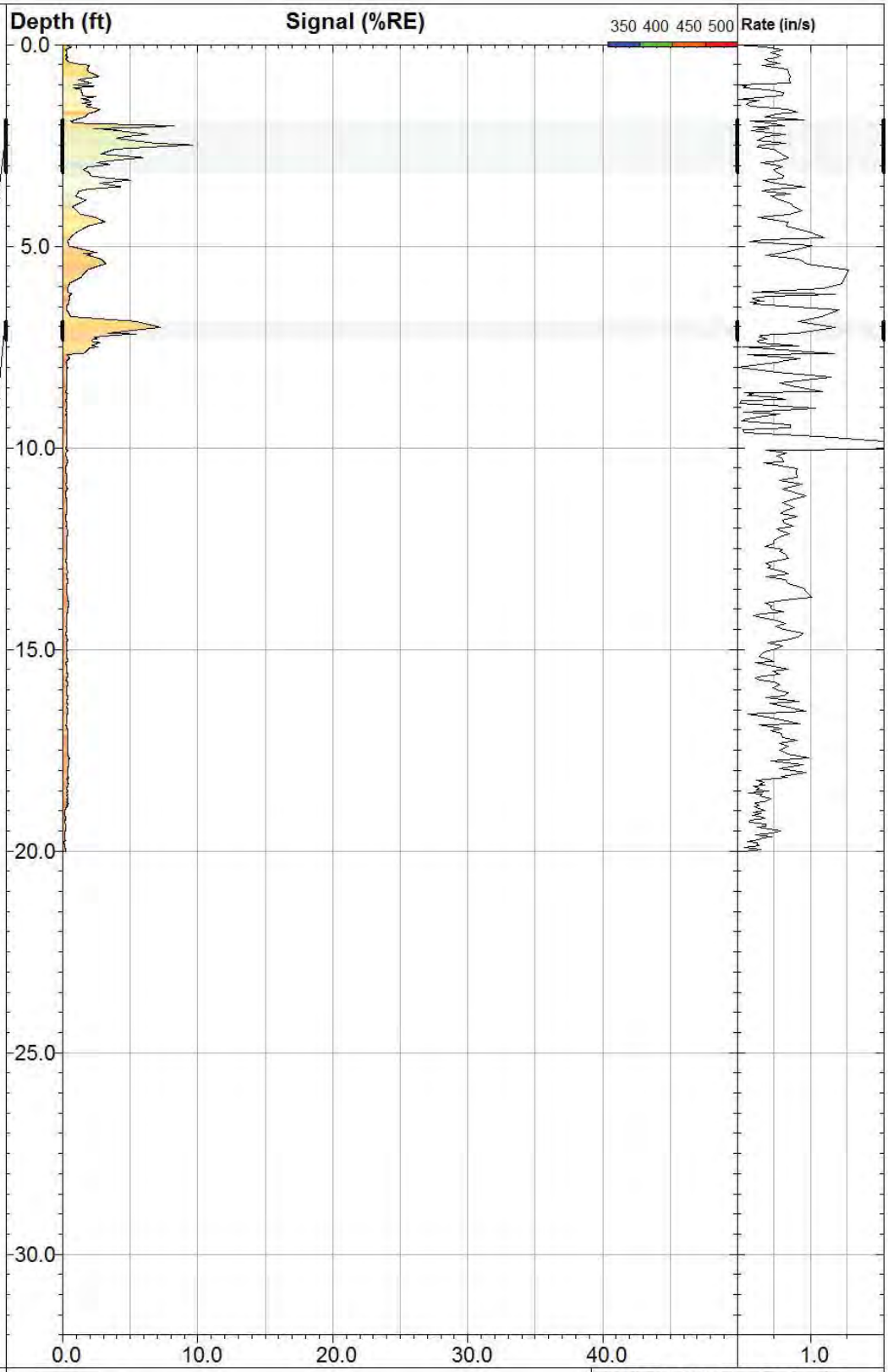
preprobe to 2'



1.88 - 3.18 ft
4.3 %RE (s 2.5)



6.86 - 7.32 ft
3.9 %RE (s 1.7)



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LIF-05

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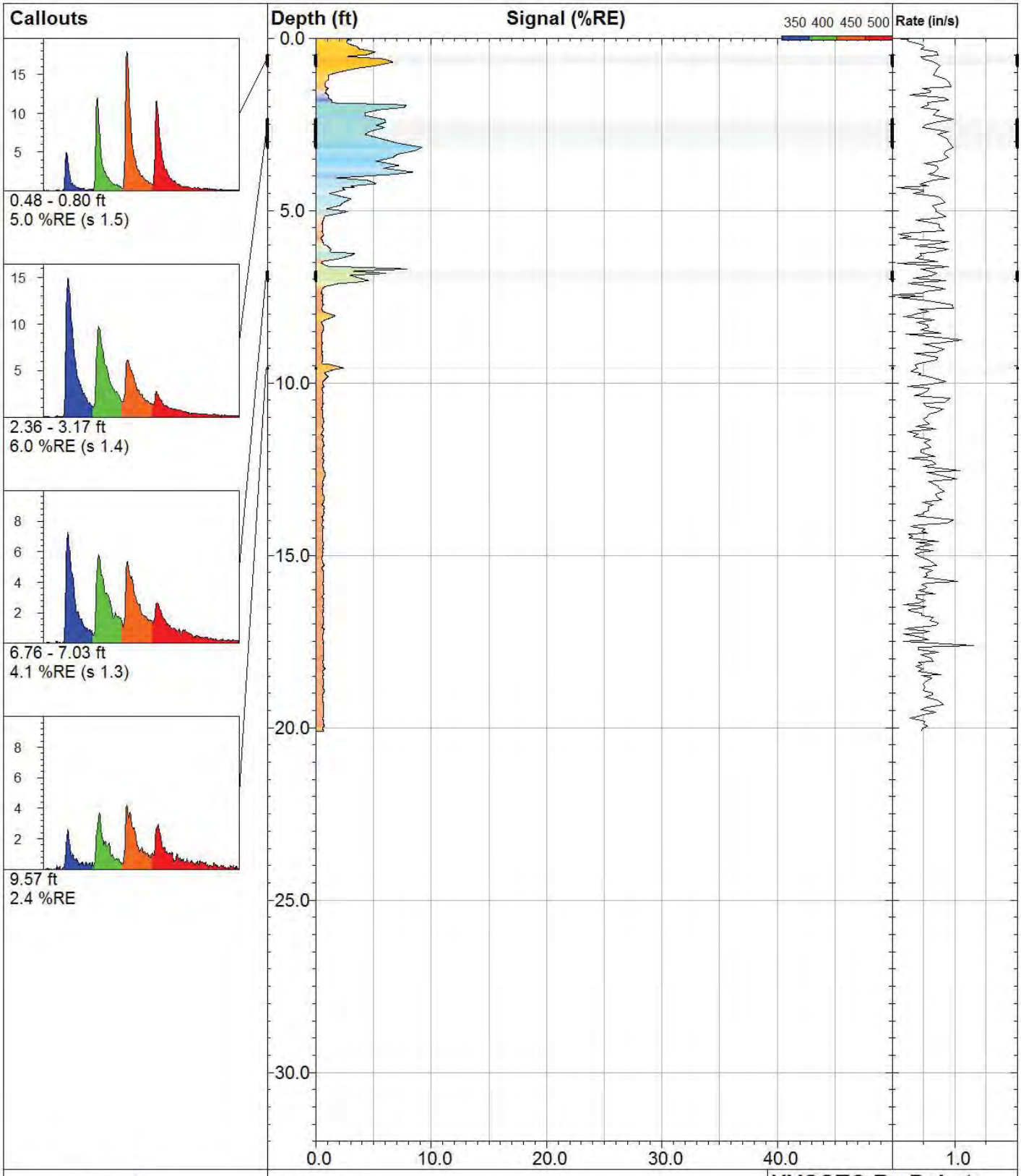
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909057.56 /**	*Final depth:* **20.00 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141123.13 /**	*Max signal:* **9.7 %RE @ 2.49 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.0 ft**	*Date & Time:* **2018-05-31 07:58 EDT**



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LIF-06

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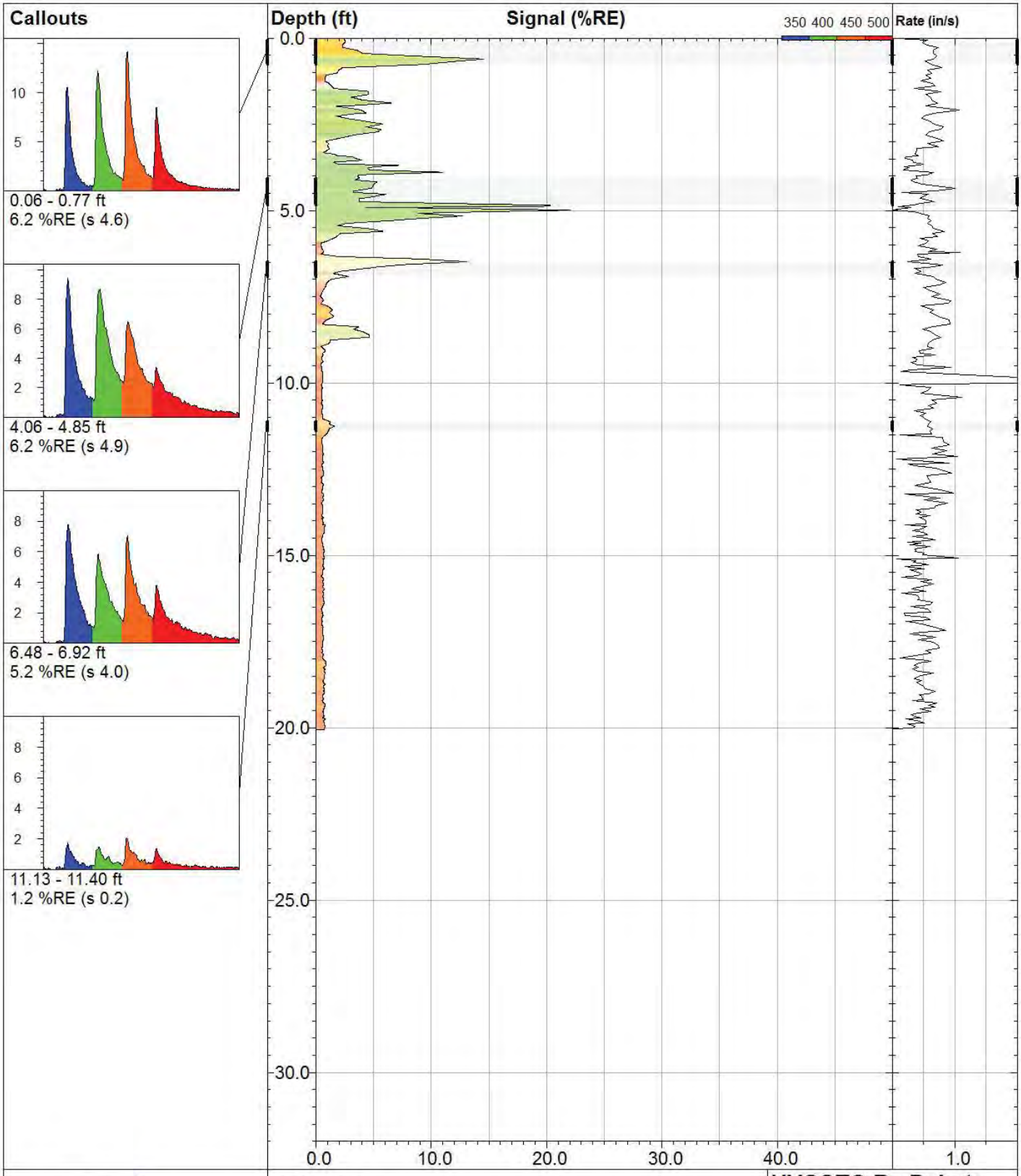
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909143.34 /**	*Final depth:* **20.10 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141105.83 /**	*Max signal:* **9.2 %RE @ 3.17 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.3 ft**	*Date & Time:* **2018-05-30 14:29 EDT**



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LIF-07

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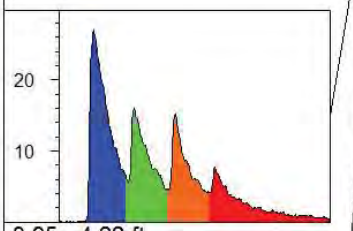
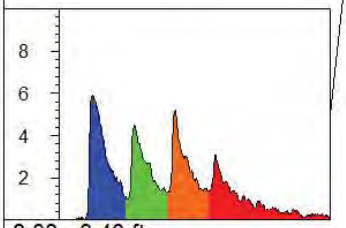
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909203.11 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141105.33 /**	*Max signal:* **22.4 %RE @ 4.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.1 ft**	*Date & Time:* **2018-05-30 13:55 EDT**

Callouts

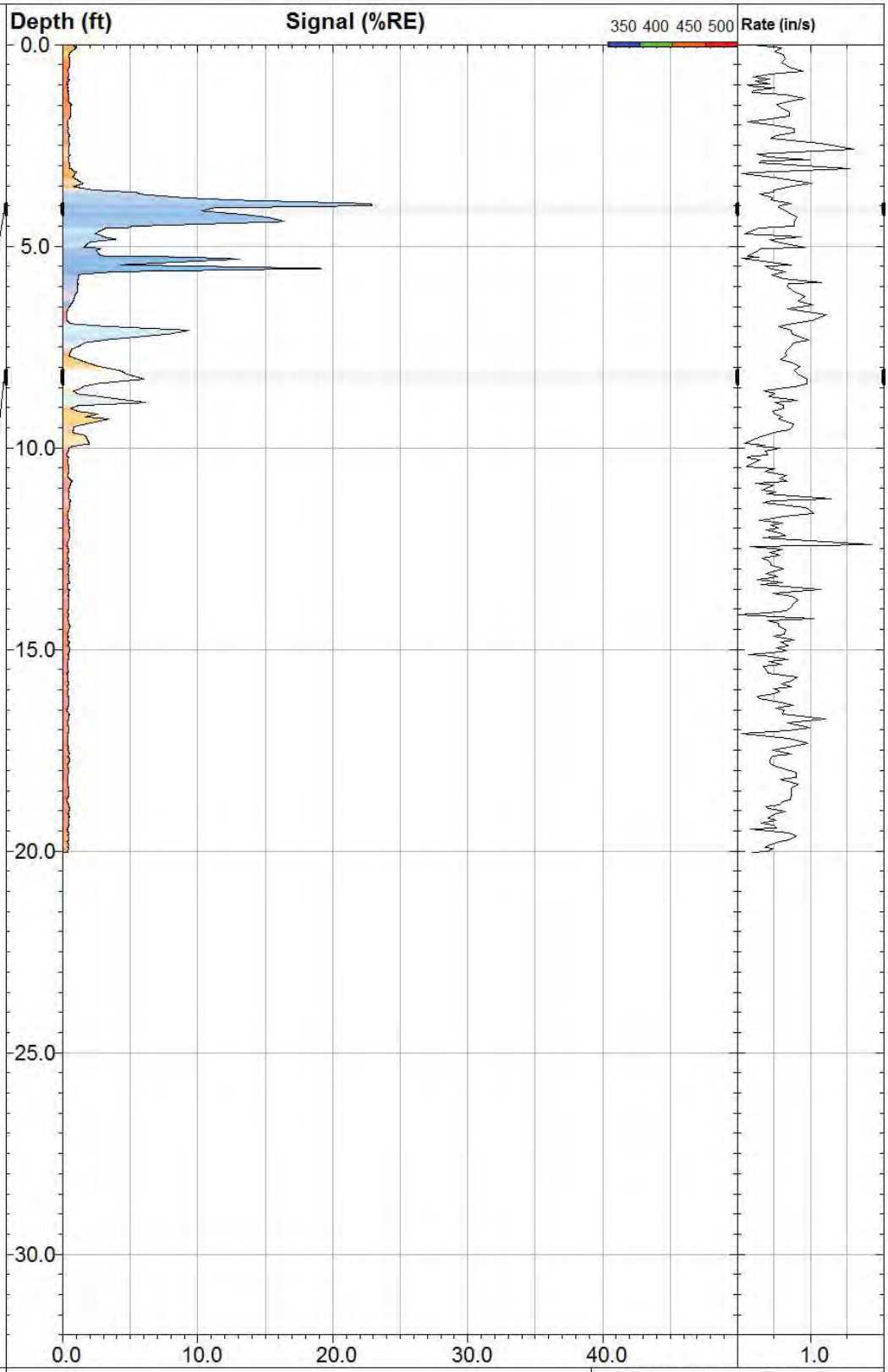
preprobe 2'



3.95 - 4.22 ft
16.2 %RE (s 6.3)



8.08 - 8.40 ft
4.4 %RE (s 1.4)



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LIF-08 dup

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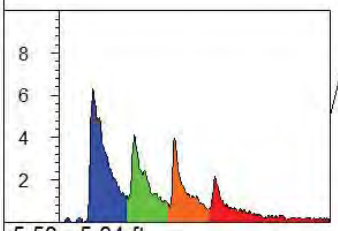
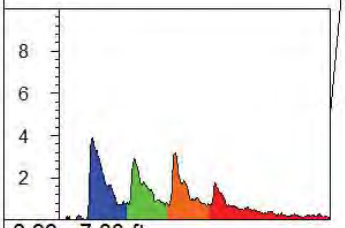
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **22.9 %RE @ 3.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **Unavailable**	*Date & Time:* **2018-05-31 15:12 EDT**

Callouts

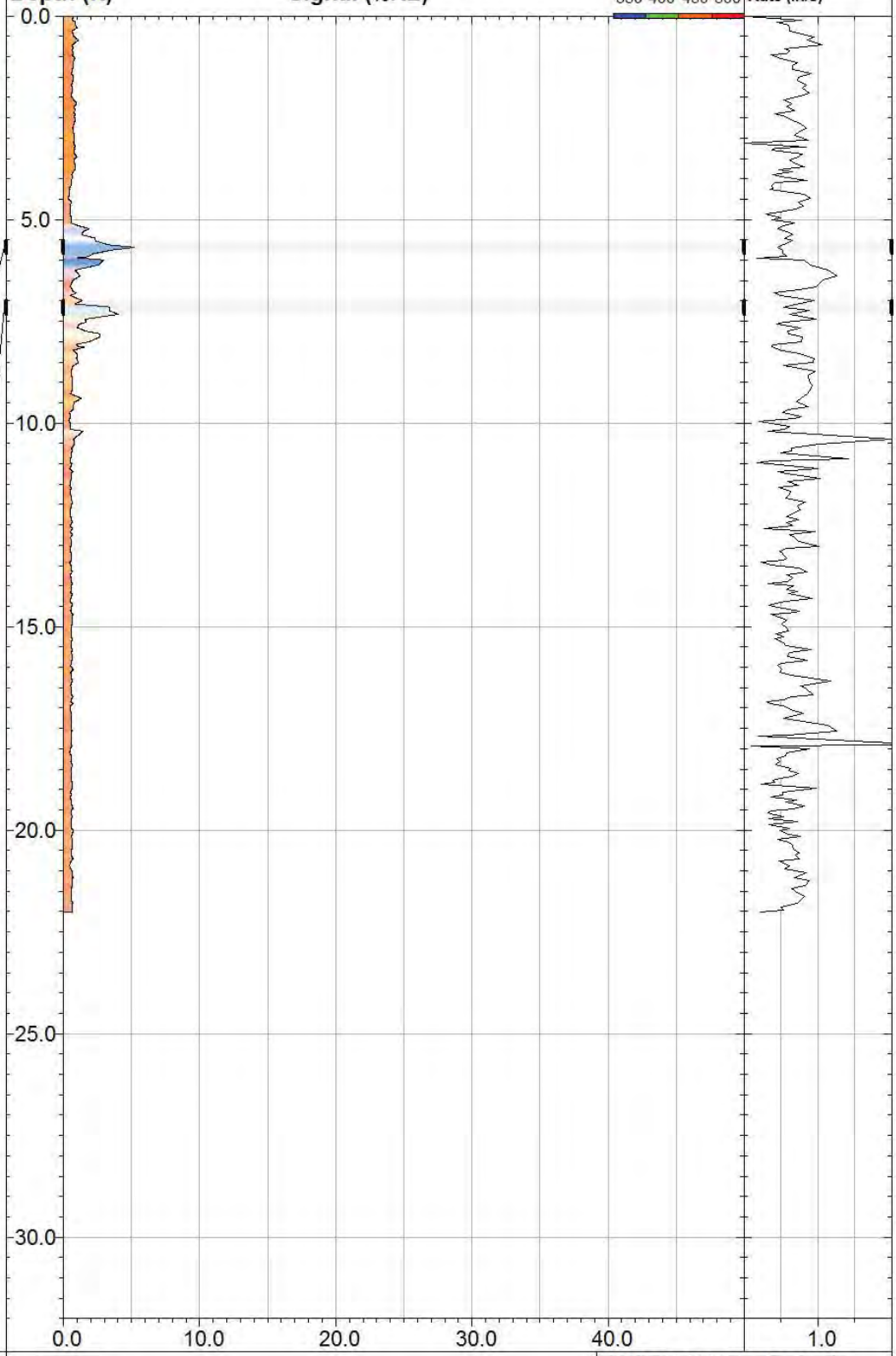
preprobe to 1'



5.53 - 5.84 ft
3.3 %RE (s 1.2)



6.99 - 7.33 ft
2.6 %RE (s 1.4)



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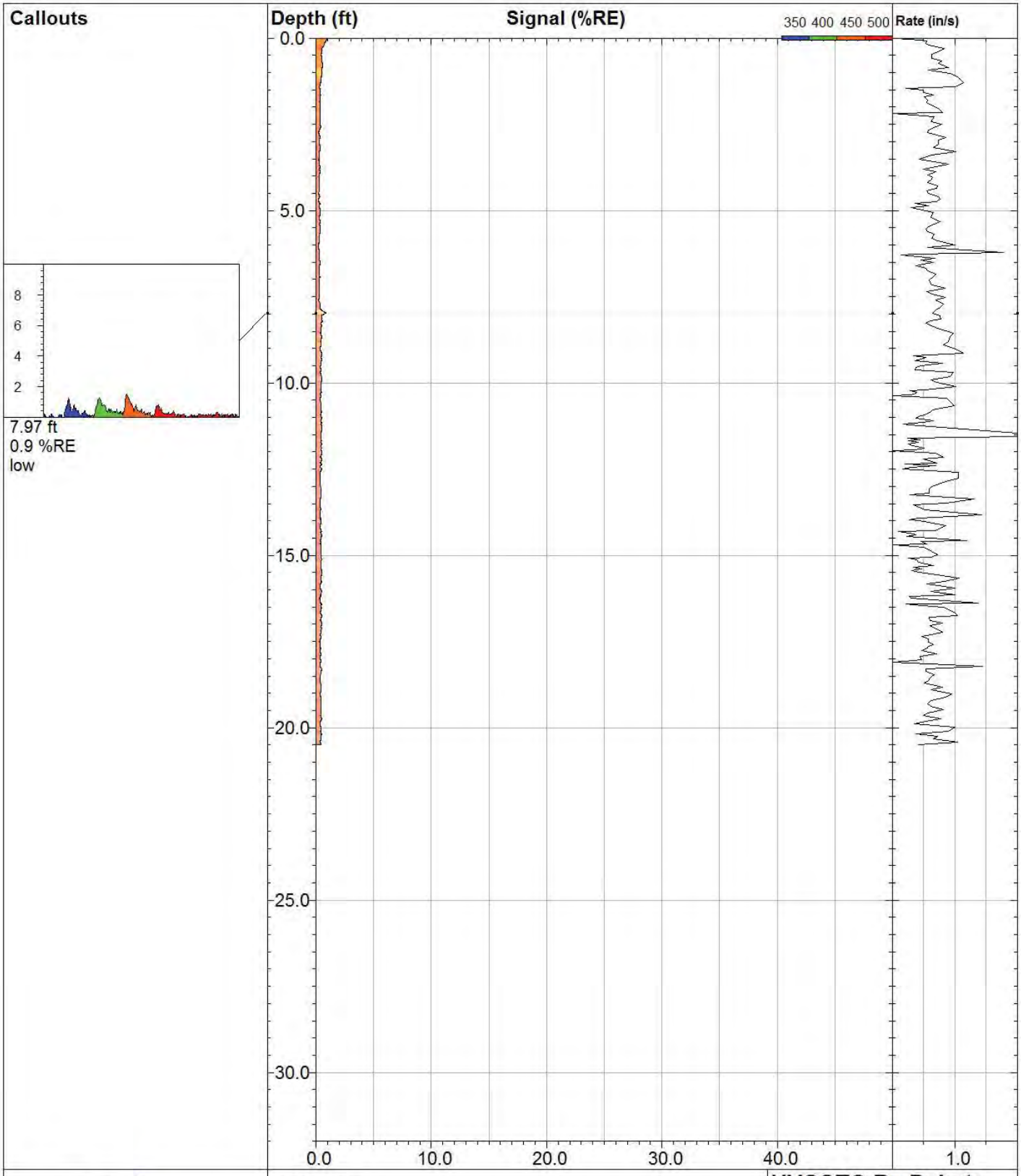
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909227.09 /**	*Final depth:* **22.02 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141121.47 /**	*Max signal:* **5.2 %RE @ 5.68 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.1 ft**	*Date & Time:* **2018-05-30 12:45 EDT**



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LIF-09

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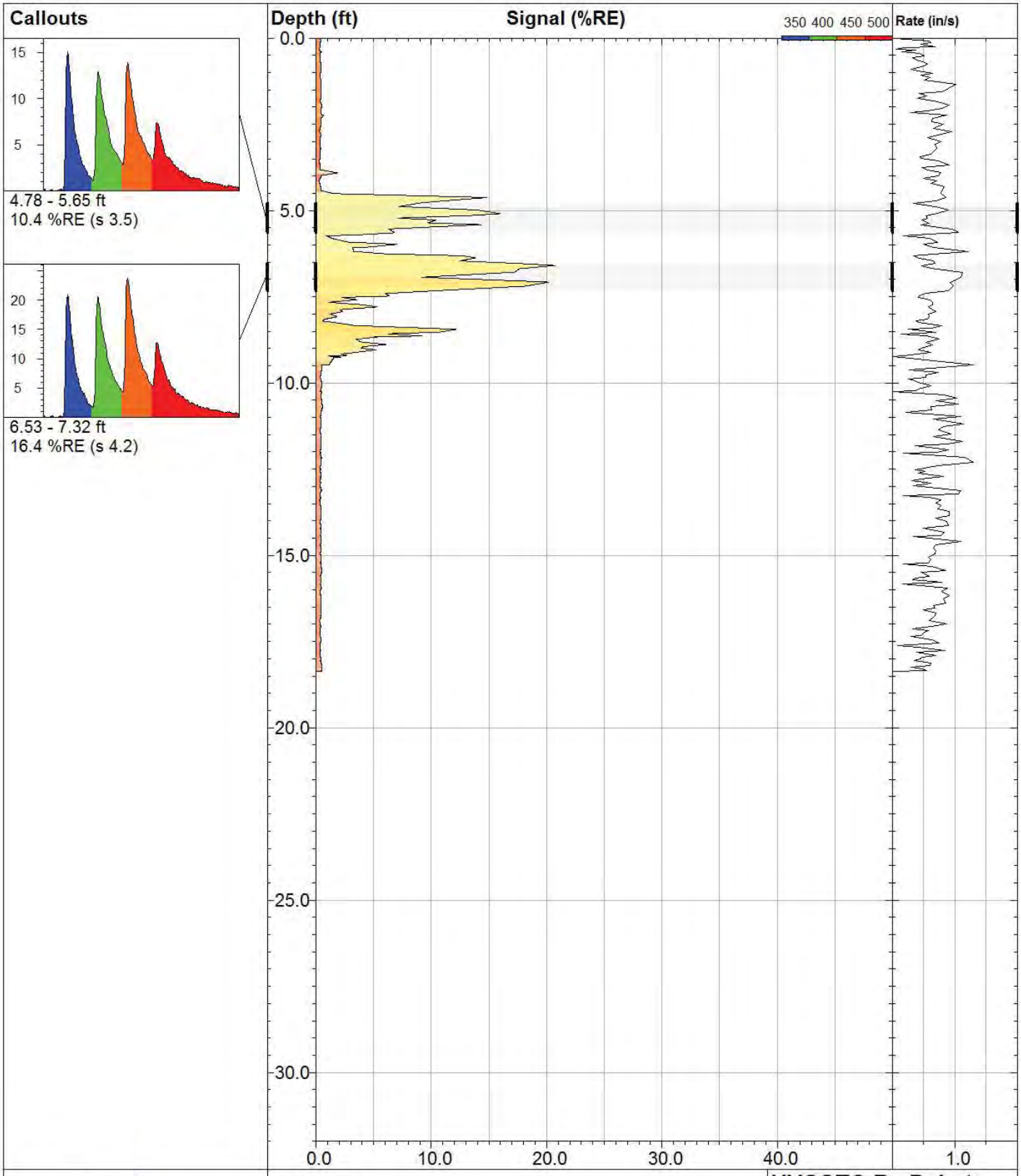
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908784.27 /**	*Final depth:* **20.50 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141041.15 /**	*Max signal:* **1.0 %RE @ 0.03 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **371.7 ft**	*Date & Time:* **2018-05-31 13:21 EDT**



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LIF-10

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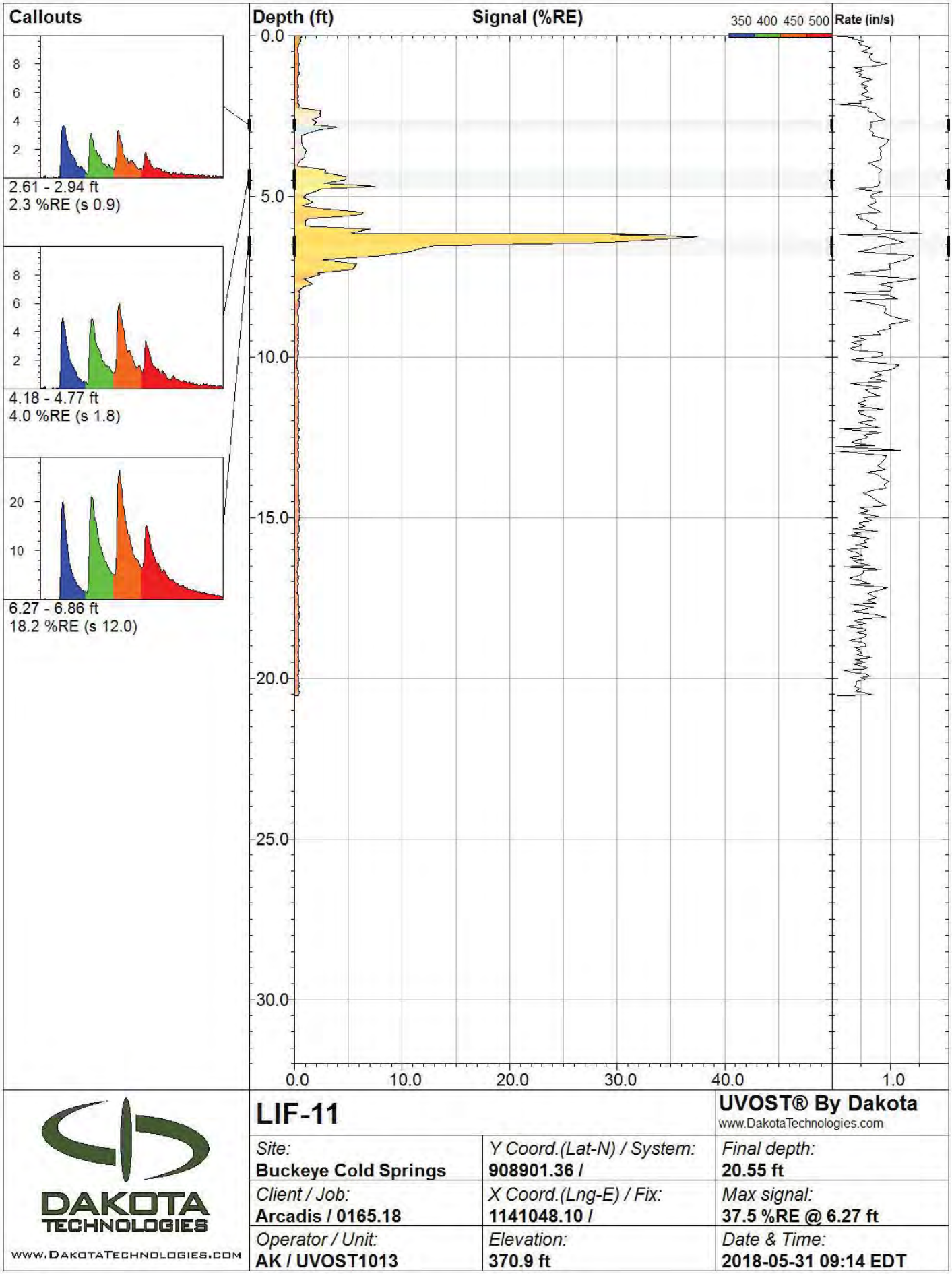
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908842.83 /**	*Final depth:* **18.37 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141050.30 /**	*Max signal:* **20.8 %RE @ 6.60 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **371.9 ft**	*Date & Time:* **2018-05-31 12:53 EDT**



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LIF-11

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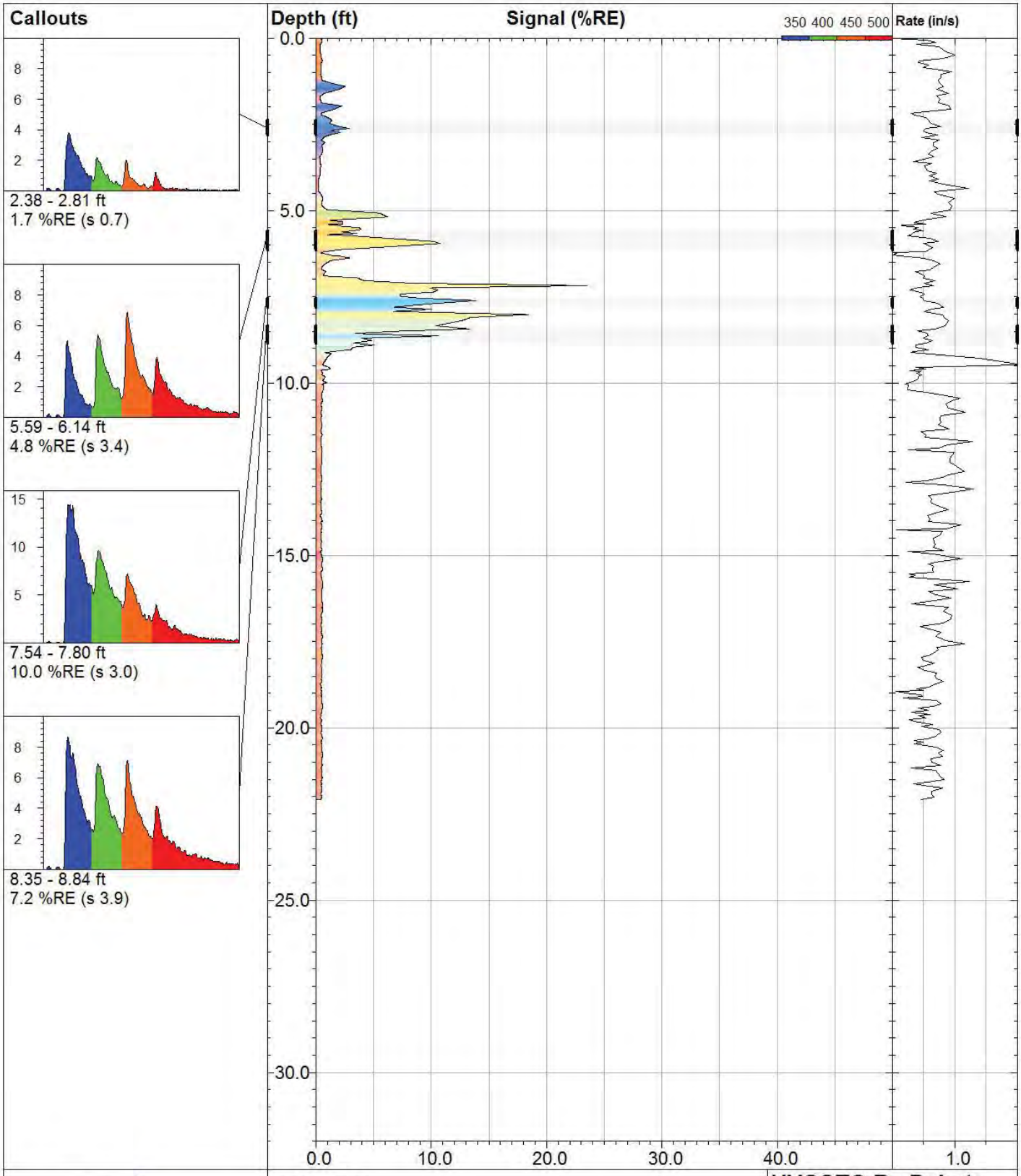
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908901.36 /**	*Final depth:* **20.55 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141048.10 /**	*Max signal:* **37.5 %RE @ 6.27 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.9 ft**	*Date & Time:* **2018-05-31 09:14 EDT**



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LIF-12

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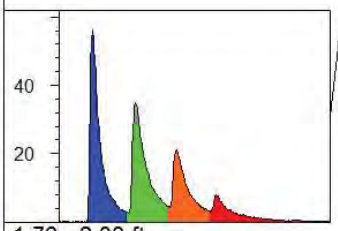
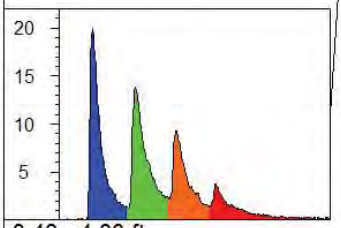
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908963.11 /**	*Final depth:* **22.09 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141042.12 /**	*Max signal:* **23.7 %RE @ 7.18 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.5 ft**	*Date & Time:* **2018-05-31 08:44 EDT**

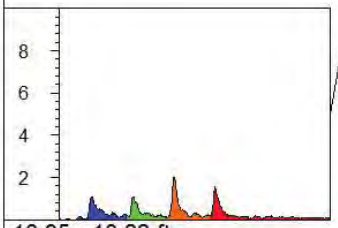
Callouts



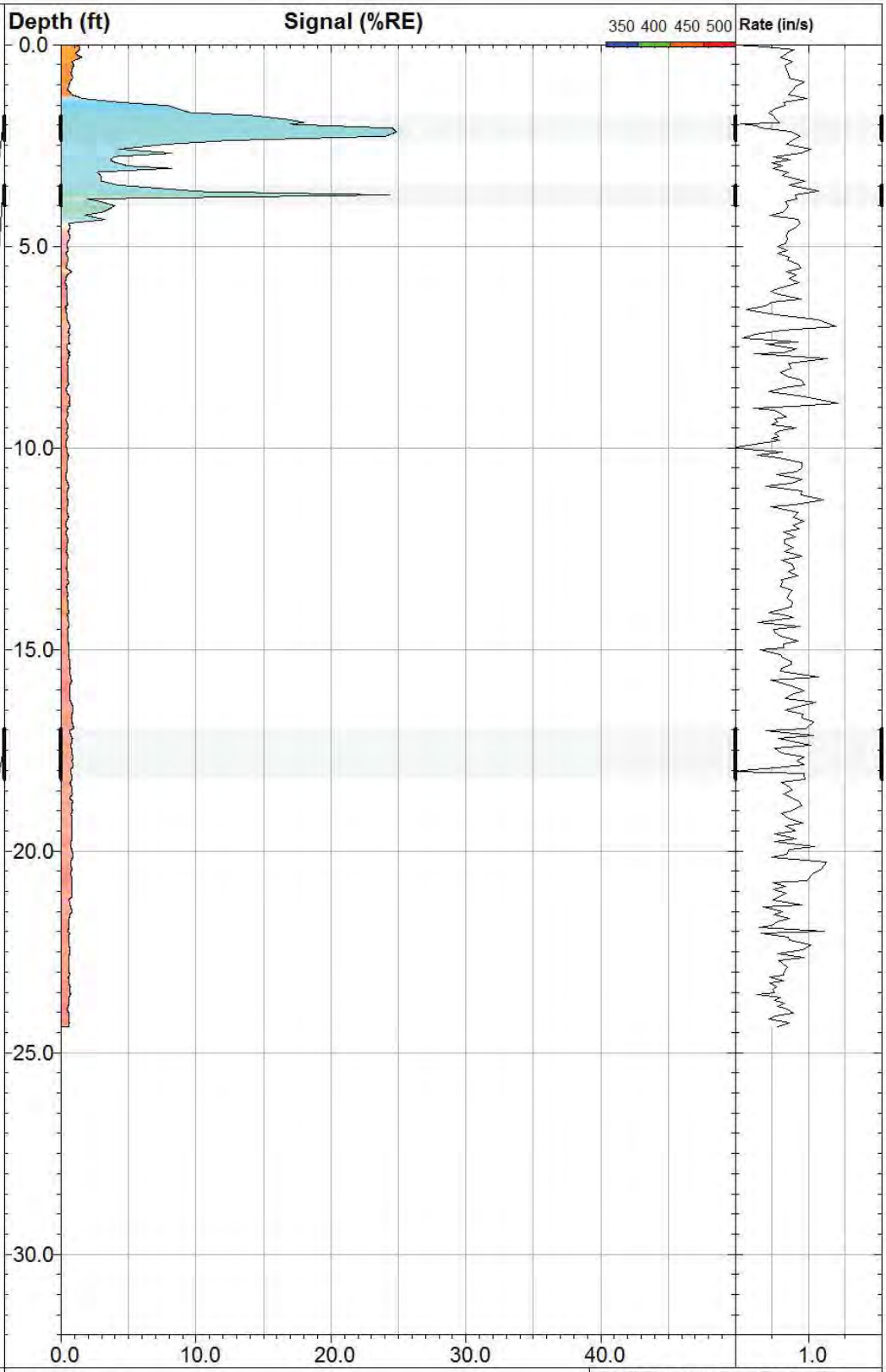
1.76 - 2.38 ft
19.0 %RE (s 4.6)



3.48 - 4.00 ft
7.9 %RE (s 8.6)



16.95 - 18.22 ft
0.8 %RE (s 0.1)
low



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LIF-13

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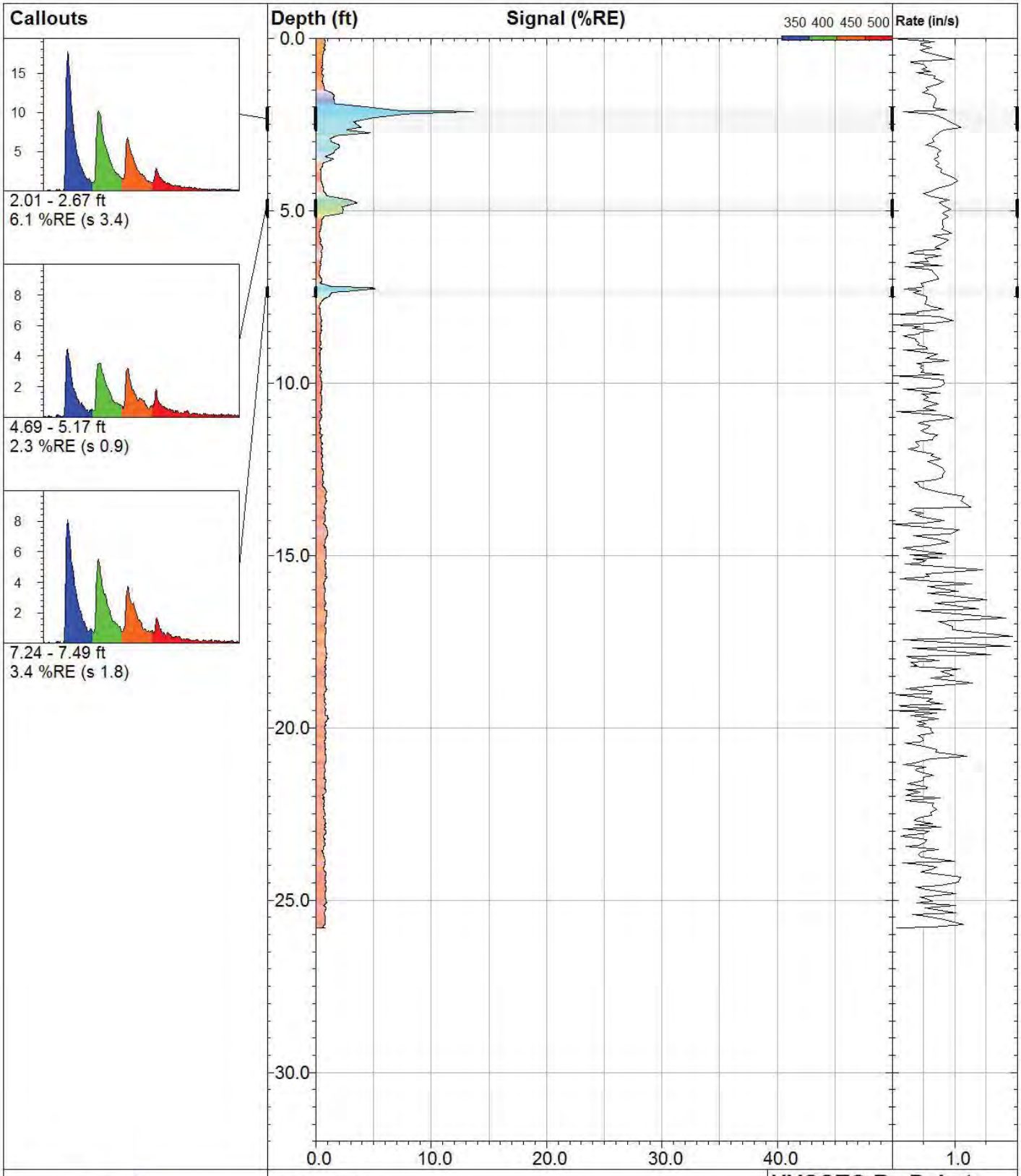
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909082.15 /**	*Final depth:* **24.36 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141046.86 /**	*Max signal:* **24.9 %RE @ 2.17 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.6 ft**	*Date & Time:* **2018-05-30 16:04 EDT**



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LIF-14

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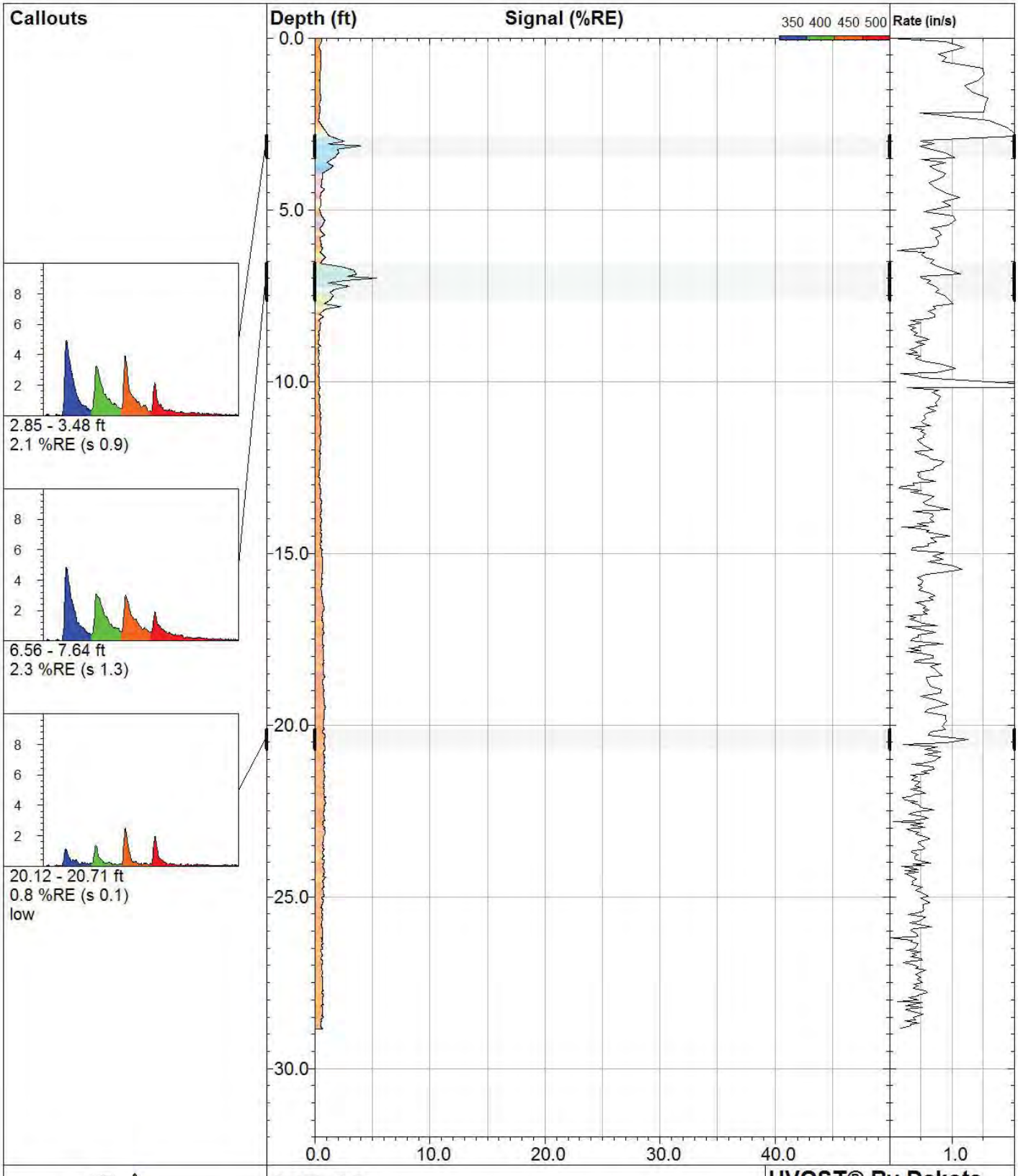
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909139.26 /**	*Final depth:* **25.82 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141028.72 /**	*Max signal:* **13.8 %RE @ 2.13 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.8 ft**	*Date & Time:* **2018-05-30 15:32 EDT**



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LIF-15

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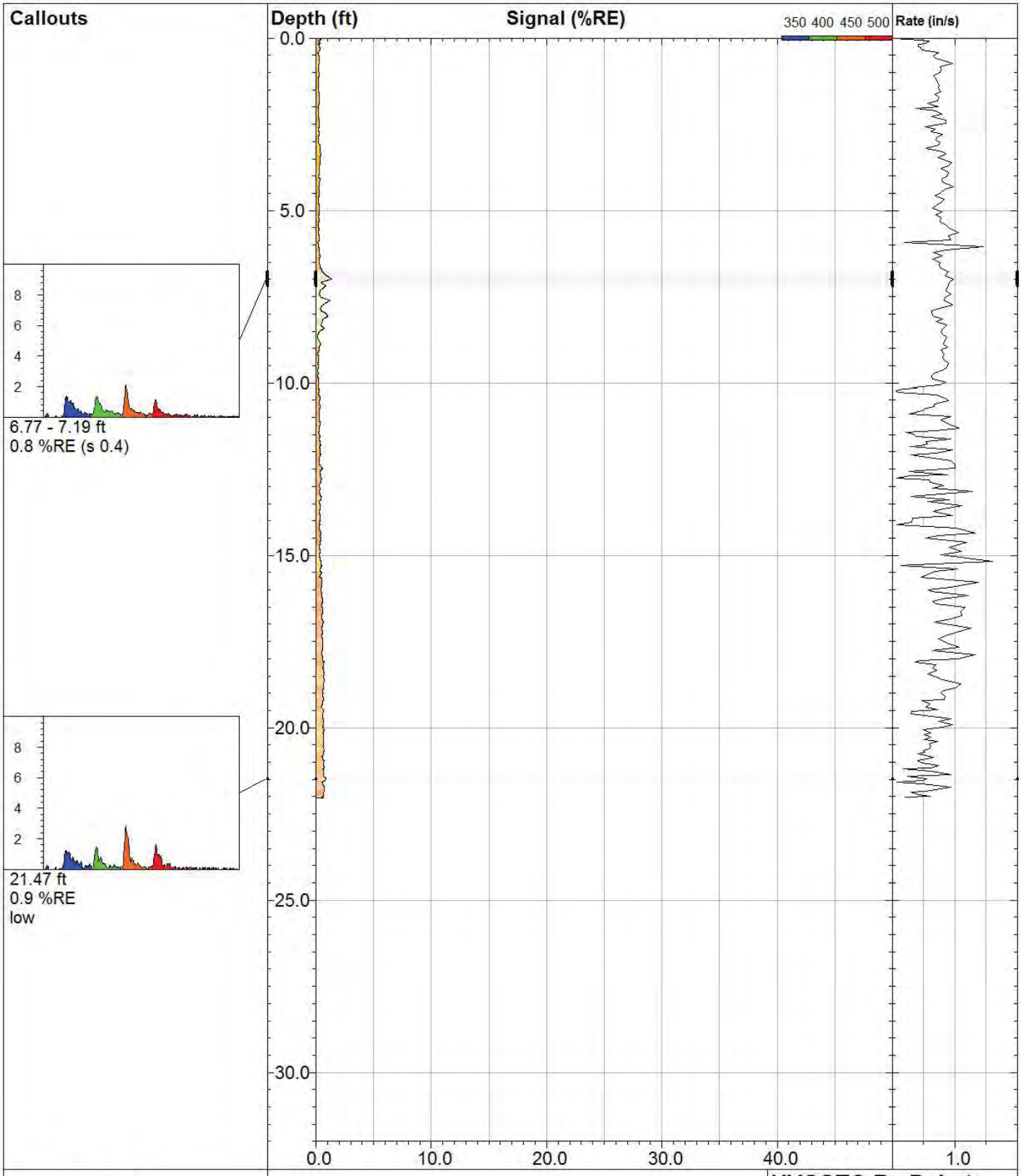
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909199.61 /**	*Final depth:* **28.85 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141037.61 /**	*Max signal:* **5.3 %RE @ 6.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.9 ft**	*Date & Time:* **2018-05-30 11:09 EDT**



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LIF-16

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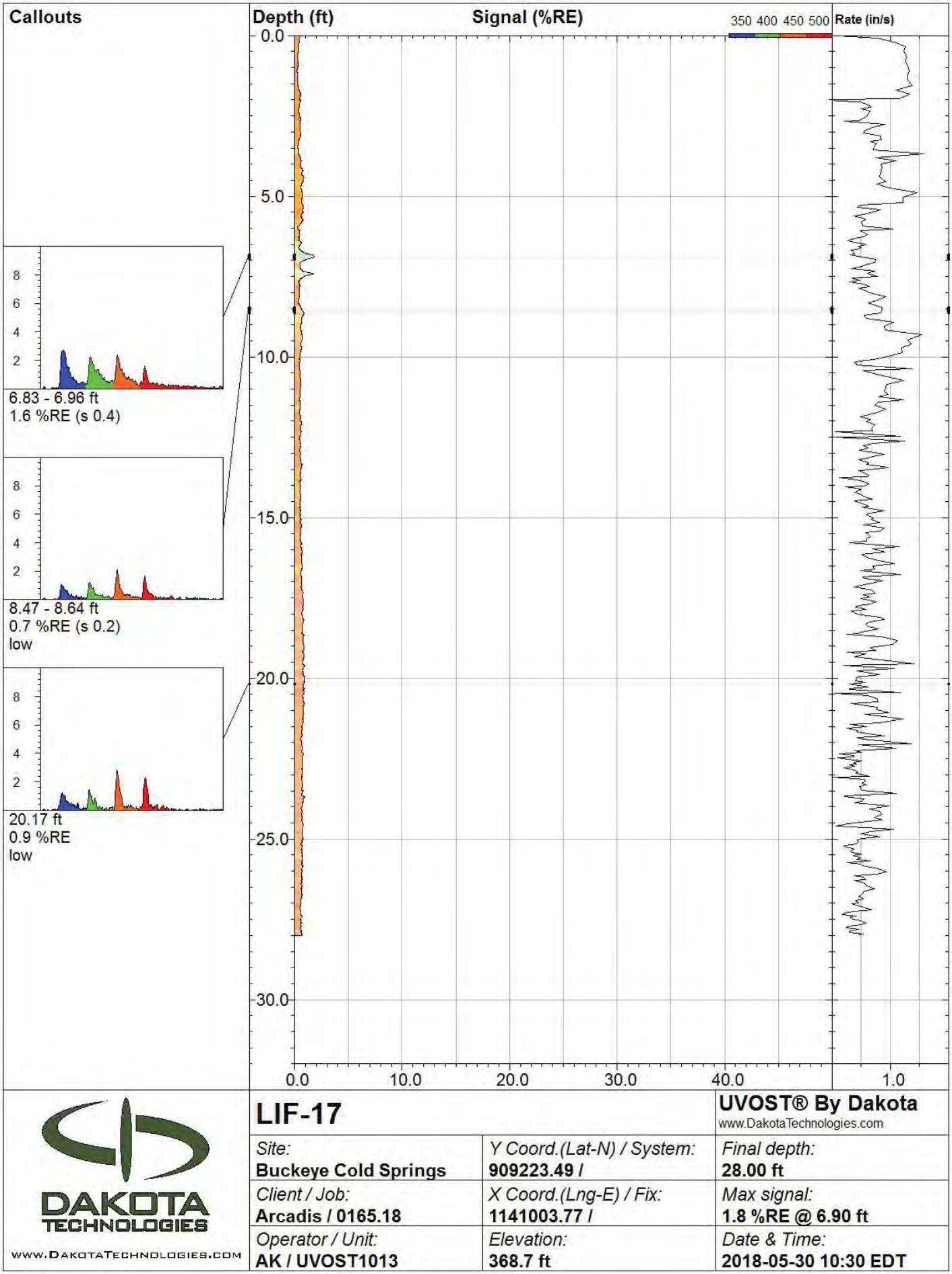
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909262.85 /**	*Final depth:* **22.03 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141043.82 /**	*Max signal:* **1.4 %RE @ 6.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.2 ft**	*Date & Time:* **2018-05-30 09:47 EDT**



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LIF-17

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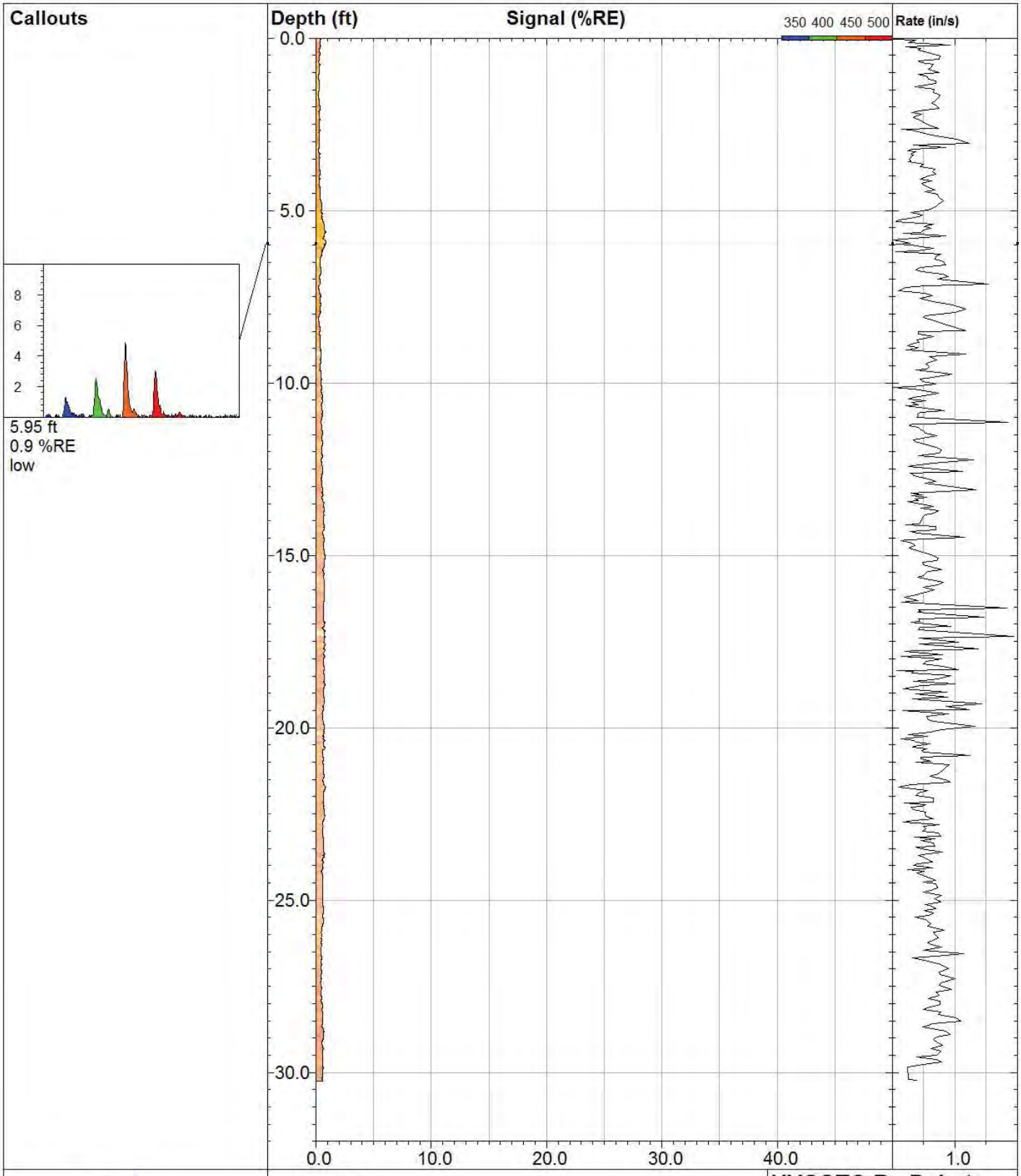
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909223.49 /**	*Final depth:* **28.00 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141003.77 /**	*Max signal:* **1.8 %RE @ 6.90 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.7 ft**	*Date & Time:* **2018-05-30 10:30 EDT**



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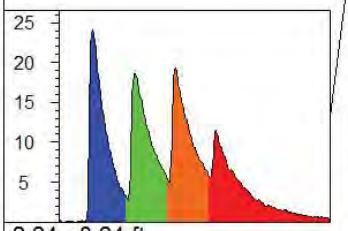
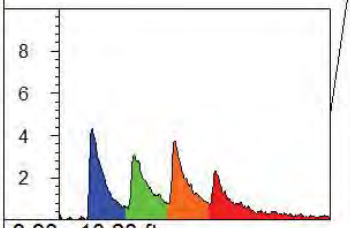
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909301.23 /**	*Final depth:* **30.25 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141015.65 /**	*Max signal:* **0.9 %RE @ 5.95 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.9 ft**	*Date & Time:* **2018-05-30 08:53 EDT**

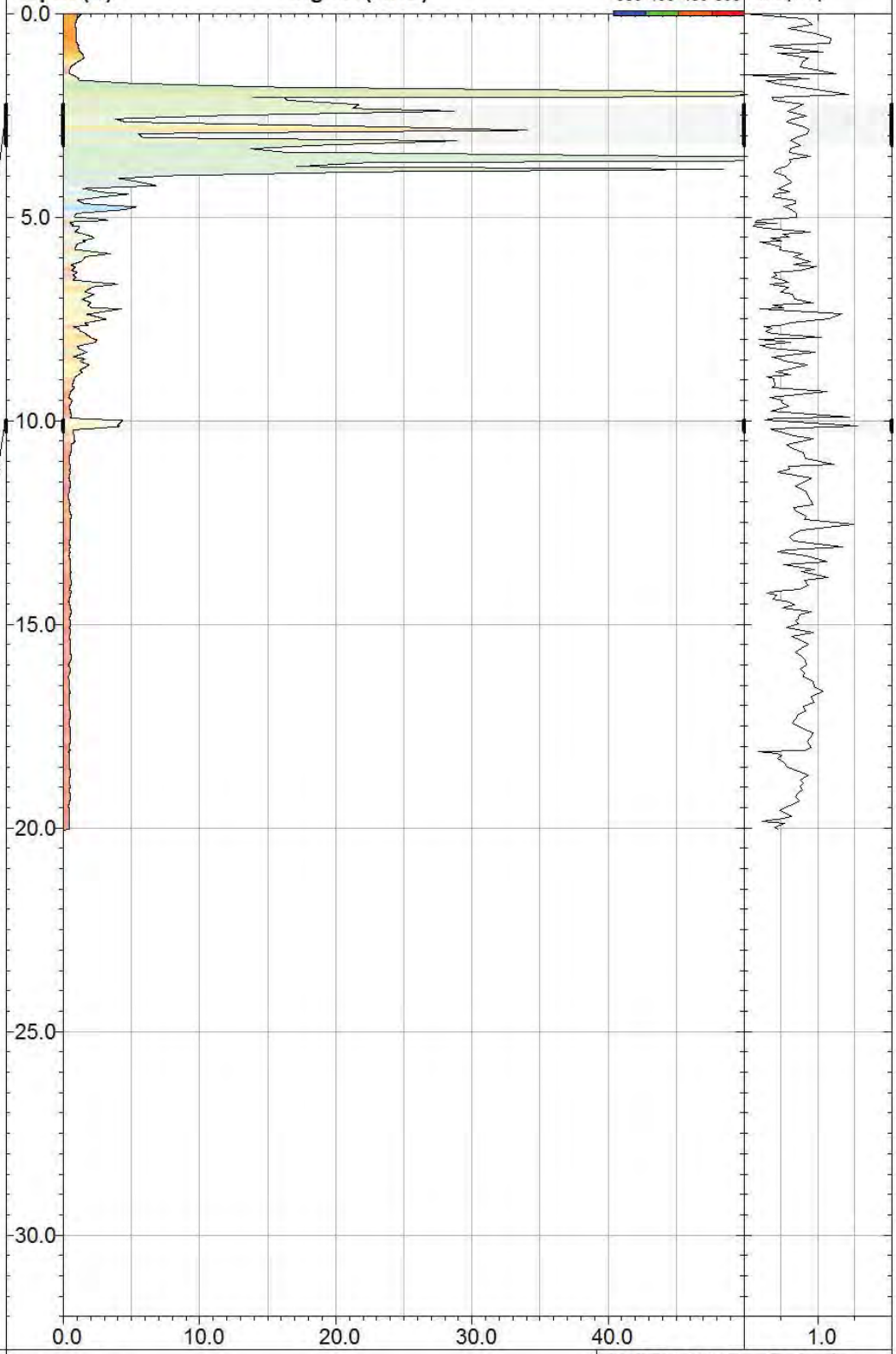
Callouts



2.24 - 3.24 ft
17.4 %RE (s 10.8)
low



9.98 - 10.28 ft
2.8 %RE (s 1.6)



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LIF-19

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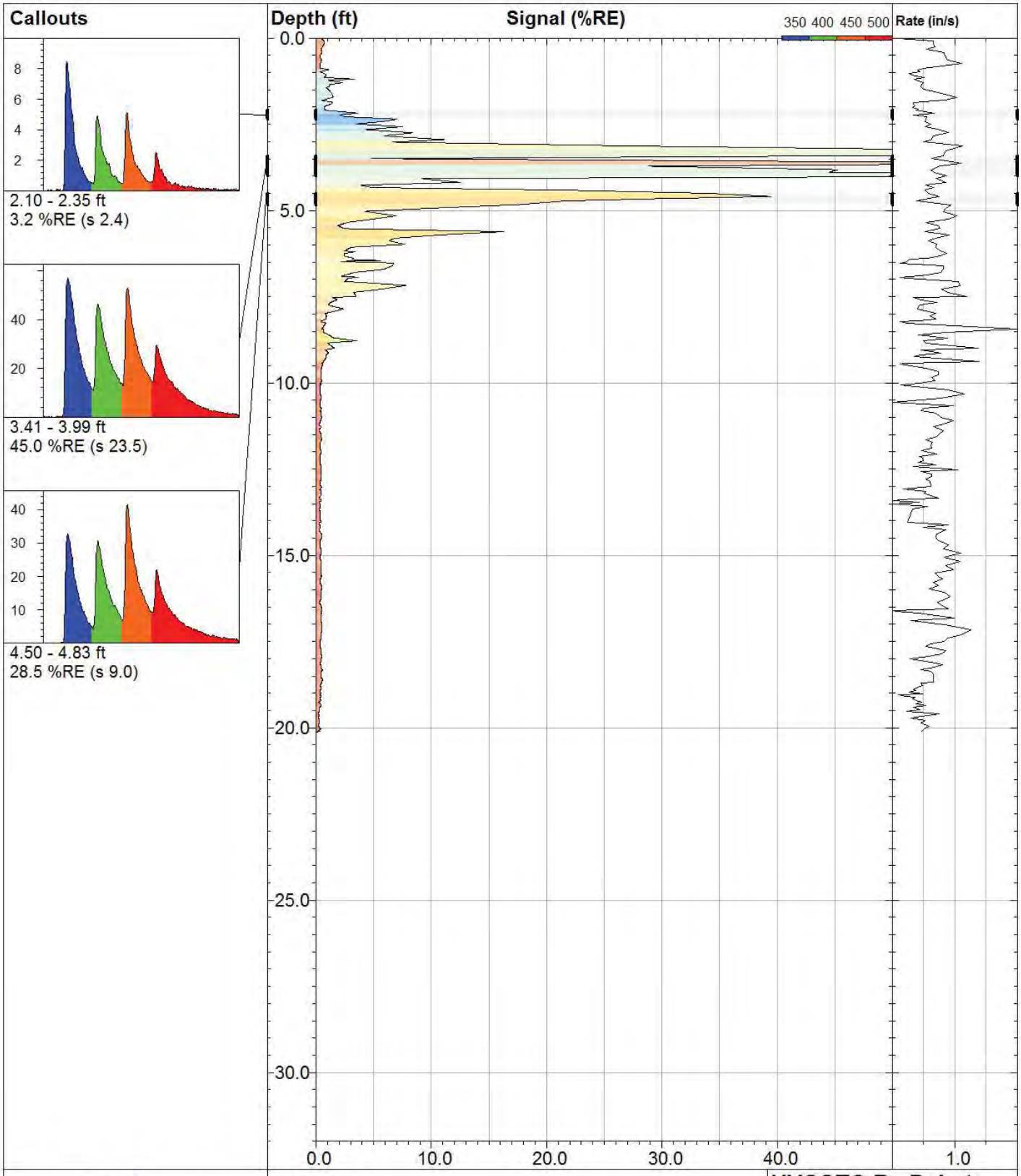
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909085.12 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141082.55 /**	*Max signal:* **75.8 %RE @ 3.58 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.8 ft**	*Date & Time:* **2018-05-31 14:05 EDT**



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LIF-20

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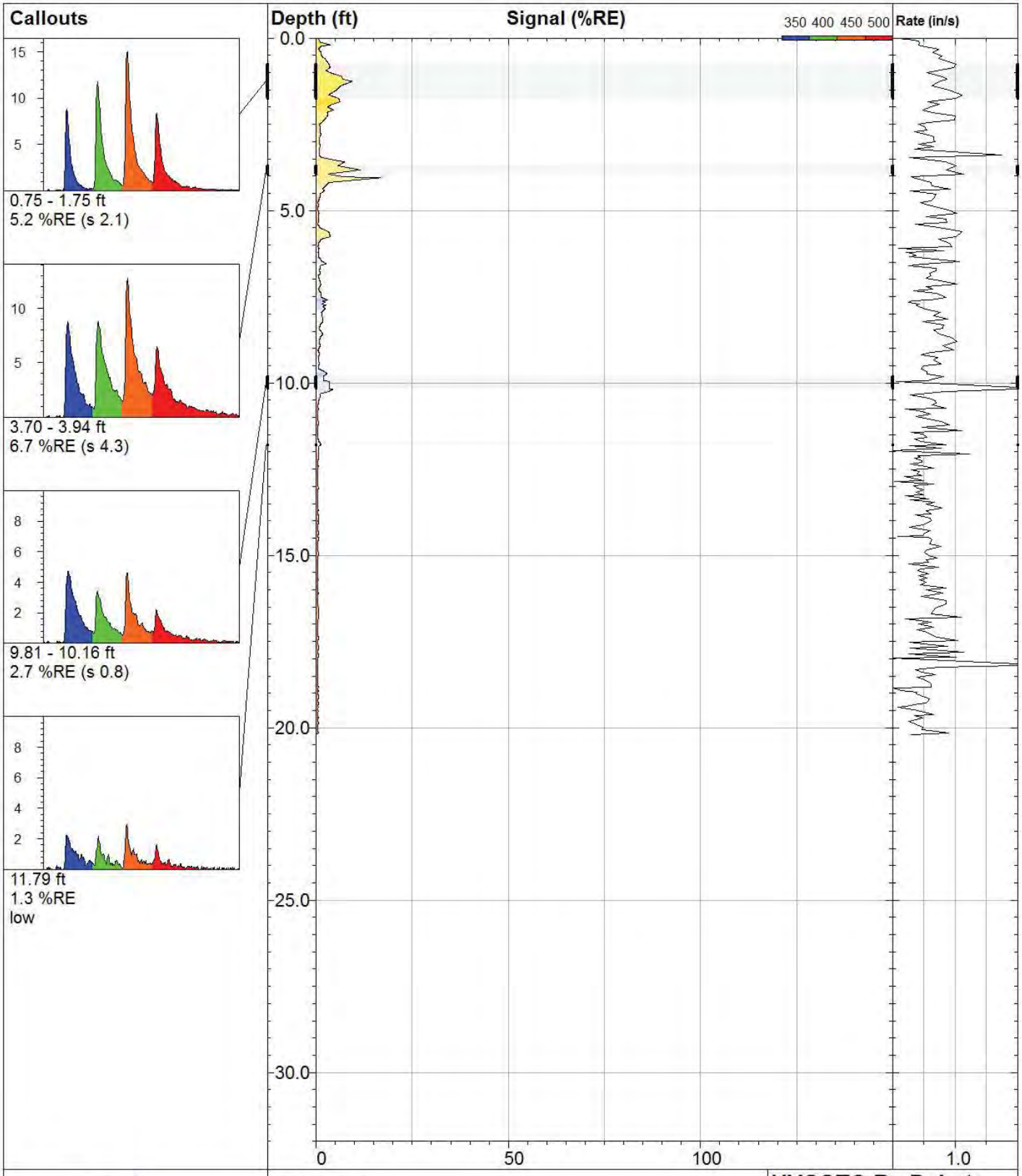
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909133.40 /**	*Final depth:* **20.12 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141143.06 /**	*Max signal:* **74.9 %RE @ 3.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.5 ft**	*Date & Time:* **2018-05-31 14:38 EDT**

UVOST® LIF Logs at 150% RE



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LIF-01

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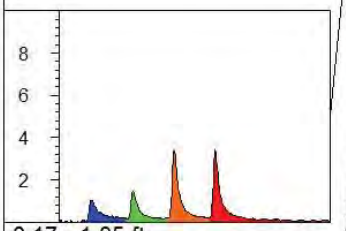
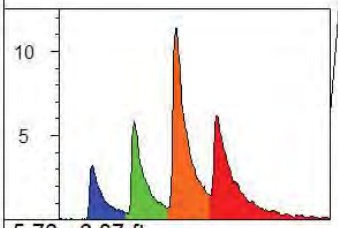
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909199.28 /**	*Final depth:* **20.19 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141155.25 /**	*Max signal:* **16.8 %RE @ 4.05 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.6 ft**	*Date & Time:* **2018-05-30 13:22 EDT**

Callouts

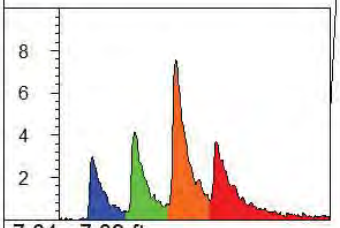
+ 2.5' in elevation vs. LIF-03
Probe sitting on a pad to drill.



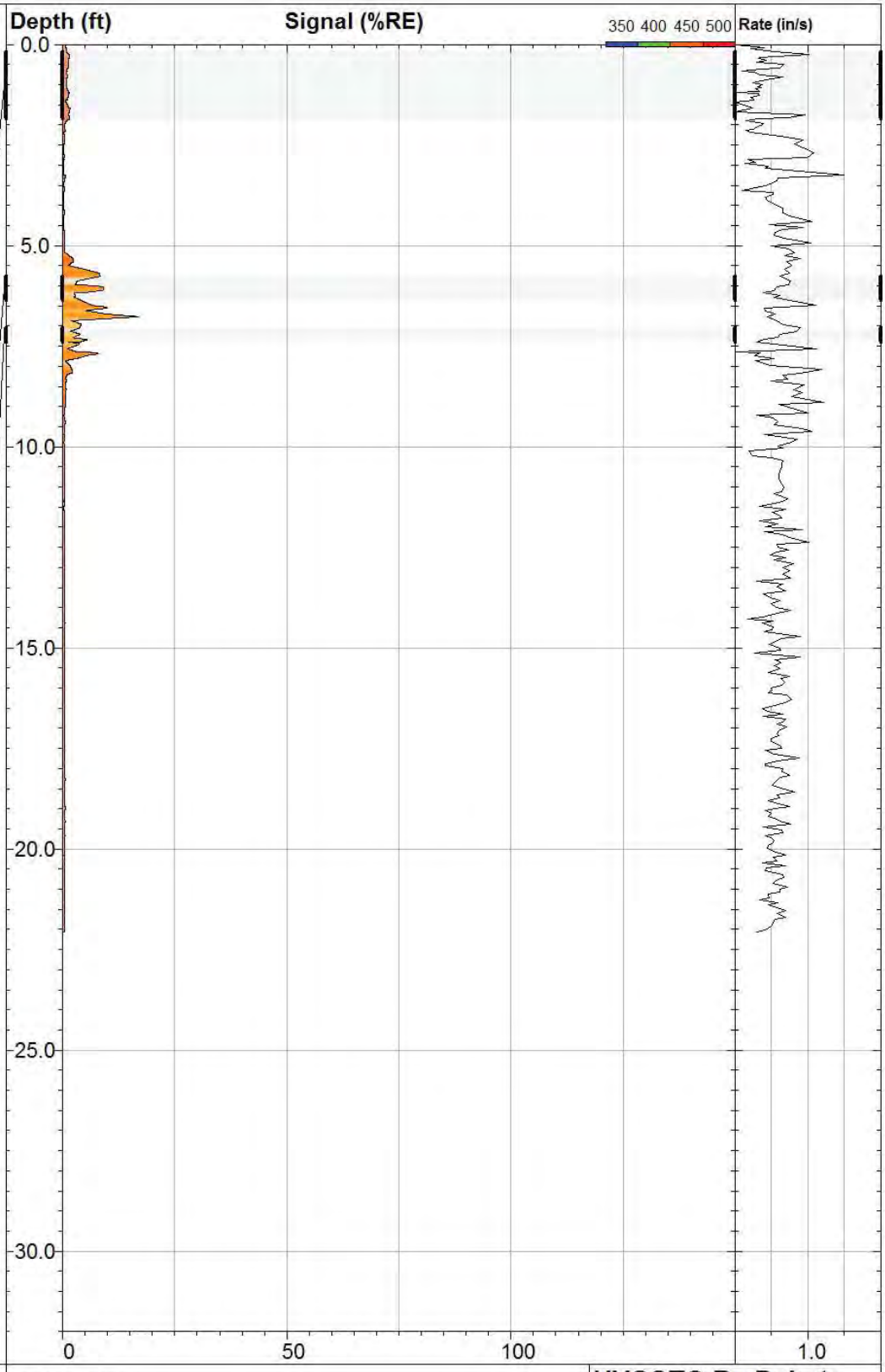
0.17 - 1.85 ft
1.1 %RE (s 0.3)



5.76 - 6.37 ft
5.0 %RE (s 2.8)



7.04 - 7.39 ft
3.5 %RE (s 1.4)



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LIF-02

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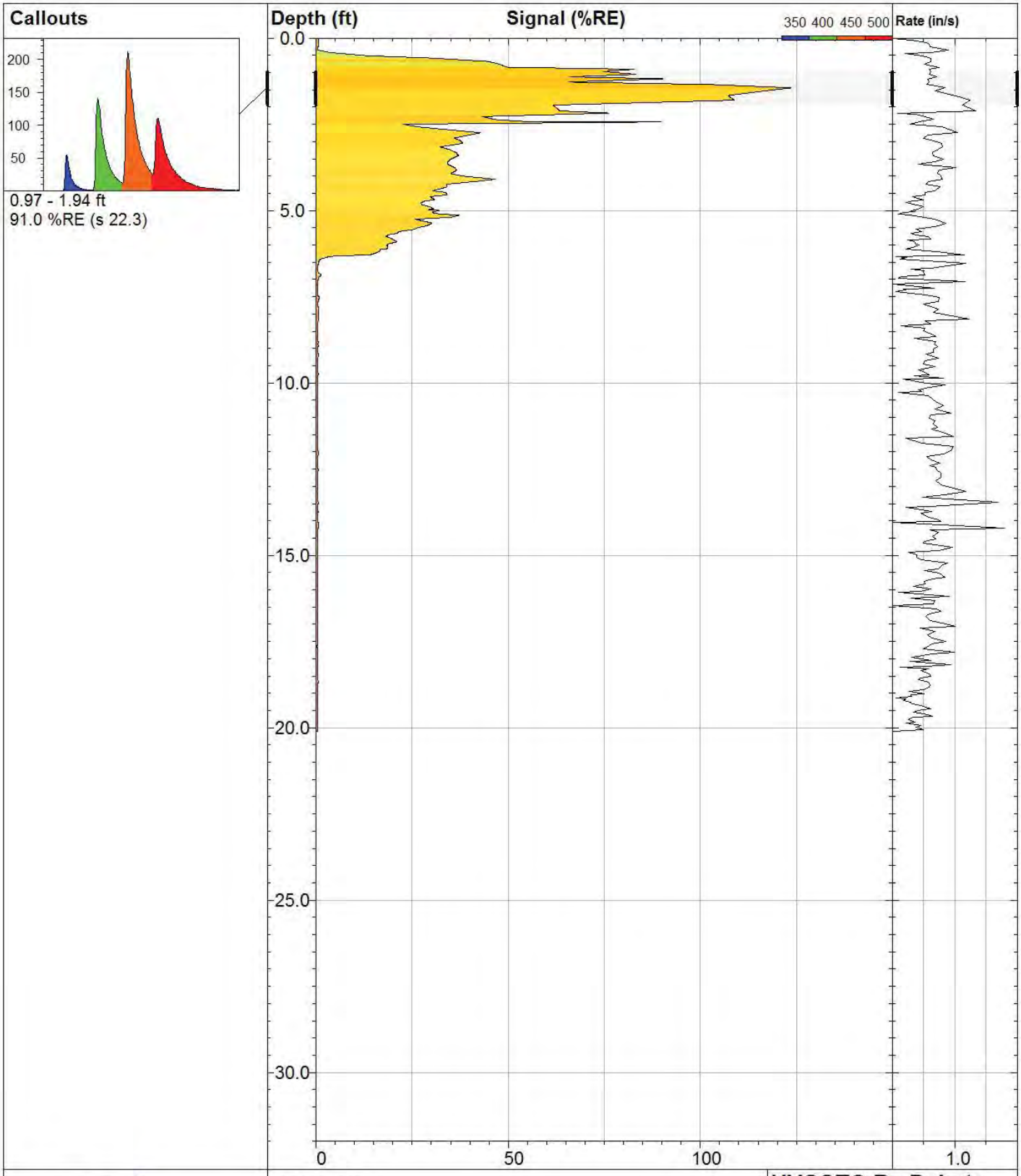
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908854.42 /**	*Final depth:* **22.06 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141100.07 /**	*Max signal:* **17.1 %RE @ 6.77 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **372.6 ft**	*Date & Time:* **2018-05-31 10:49 EDT**



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LIF-03

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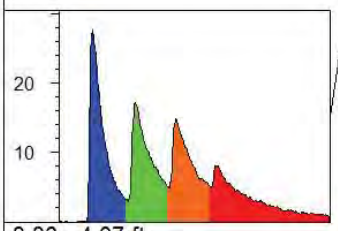
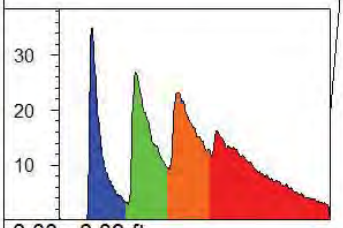
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908903.60 /**	*Final depth:* **20.11 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141109.60 /**	*Max signal:* **123.8 %RE @ 1.44 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.7 ft**	*Date & Time:* **2018-05-31 10:19 EDT**

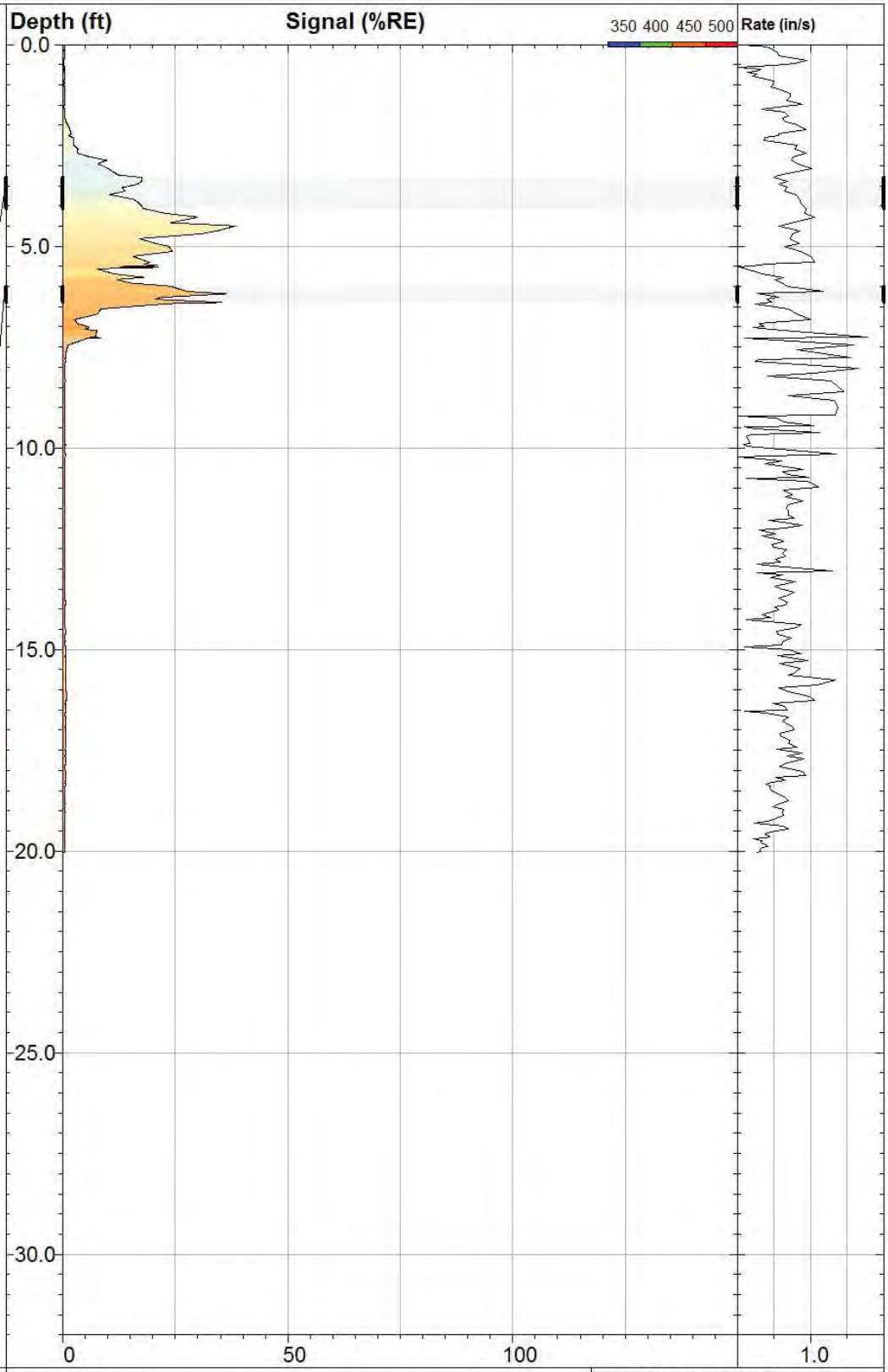
Callouts



3.30 - 4.07 ft
15.5 %RE (s 2.6)



6.00 - 6.39 ft
27.7 %RE (s 7.0)



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LIF-04

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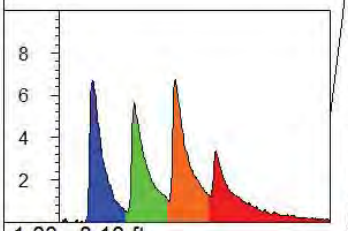
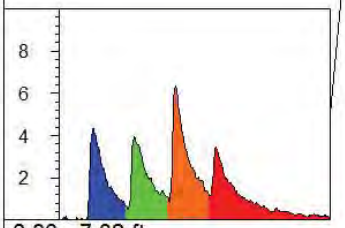
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908945.47 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141099.59 /**	*Max signal:* **38.4 %RE @ 4.50 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.8 ft**	*Date & Time:* **2018-05-31 09:51 EDT**

Callouts

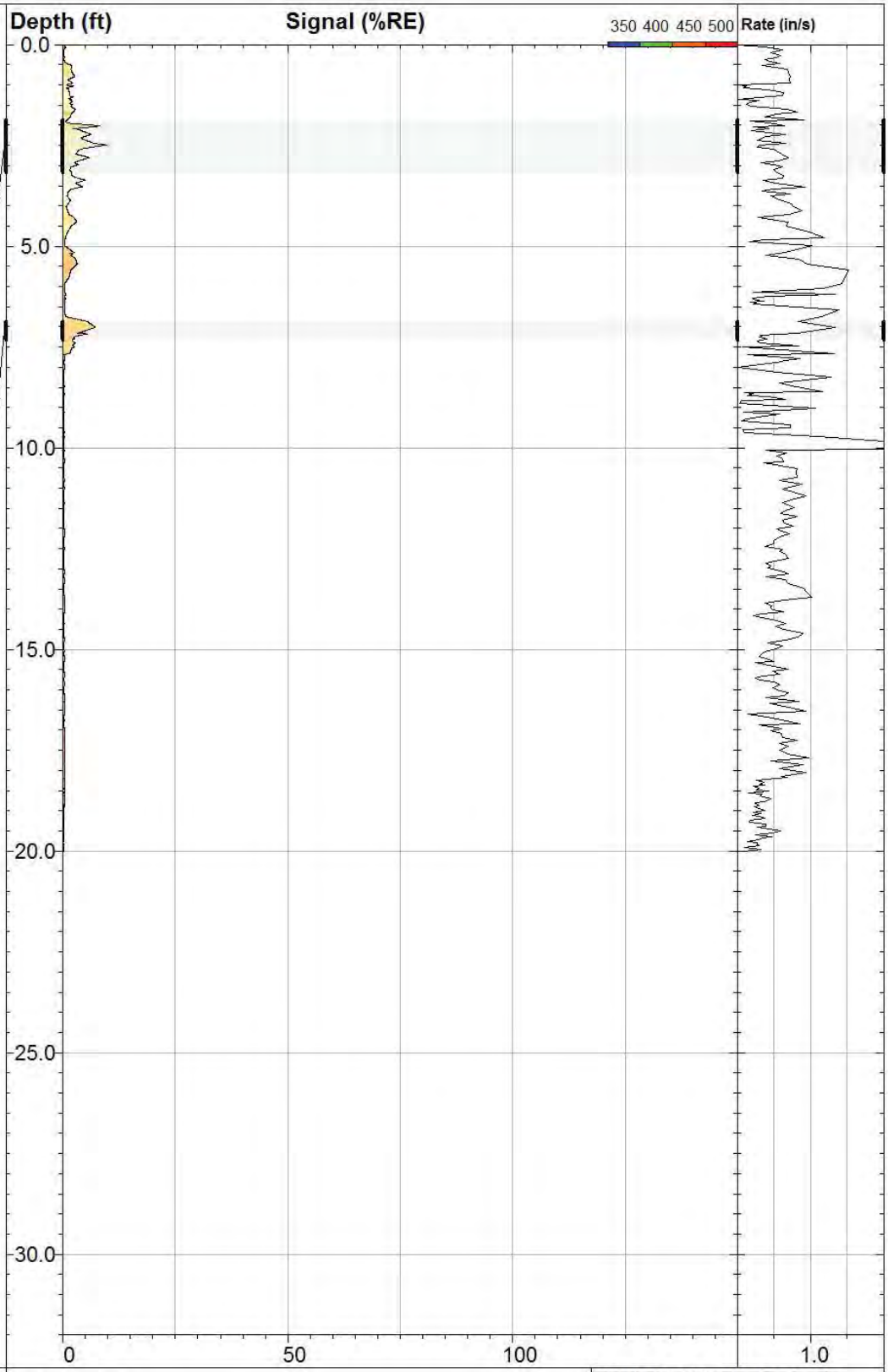
preprobe to 2'



1.88 - 3.18 ft
4.3 %RE (s 2.5)



6.86 - 7.32 ft
3.9 %RE (s 1.7)



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LIF-05

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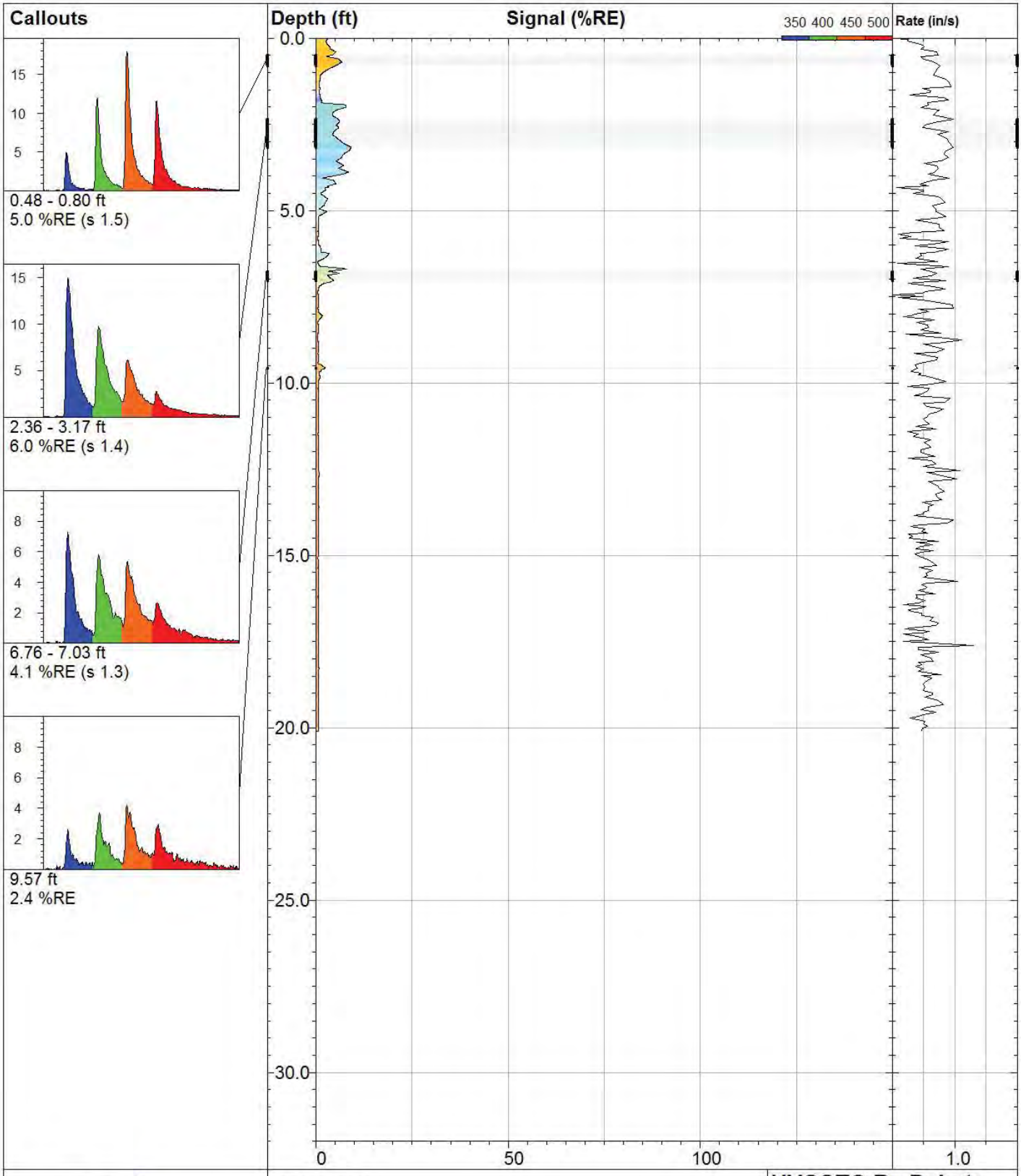
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909057.56 /**	*Final depth:* **20.00 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141123.13 /**	*Max signal:* **9.7 %RE @ 2.49 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.0 ft**	*Date & Time:* **2018-05-31 07:58 EDT**



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LIF-06

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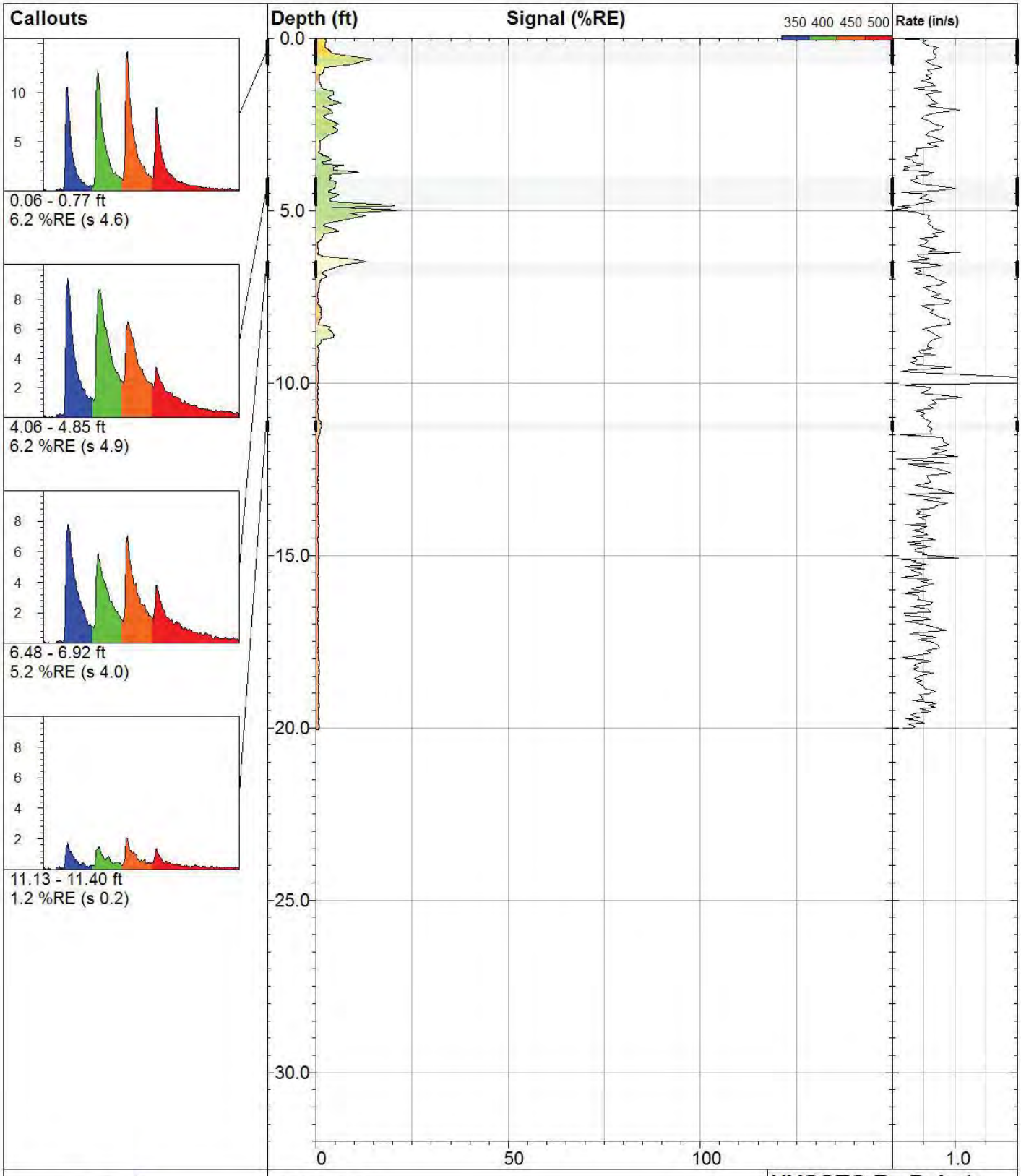
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909143.34 /**	*Final depth:* **20.10 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141105.83 /**	*Max signal:* **9.2 %RE @ 3.17 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.3 ft**	*Date & Time:* **2018-05-30 14:29 EDT**



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LIF-07

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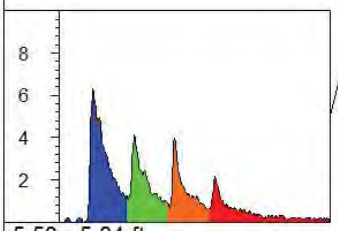
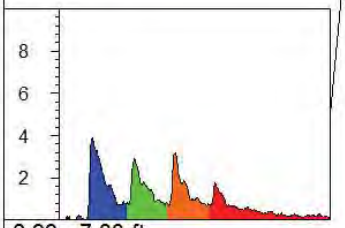
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909203.11 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141105.33 /**	*Max signal:* **22.4 %RE @ 4.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.1 ft**	*Date & Time:* **2018-05-30 13:55 EDT**

Callouts

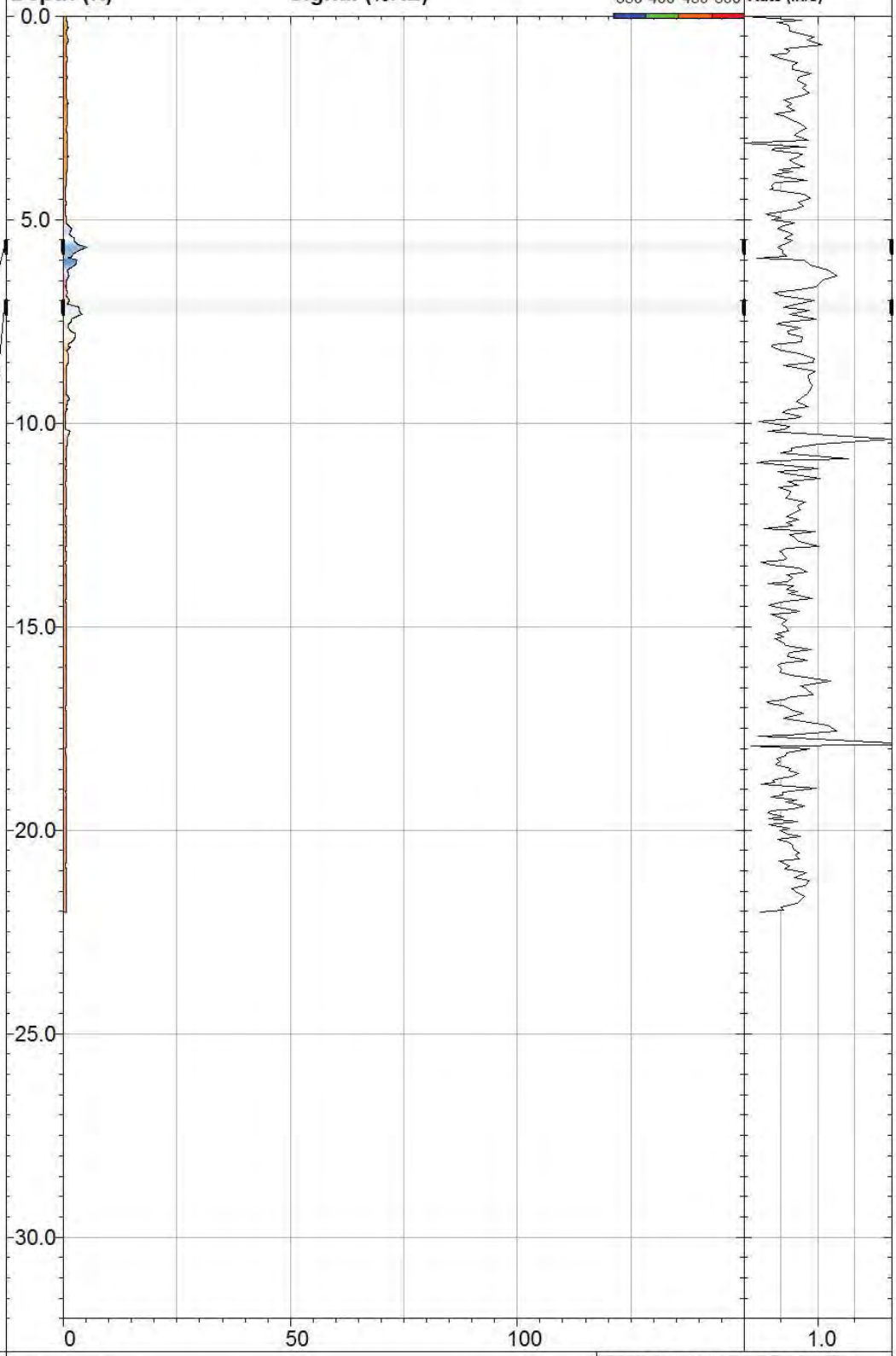
preprobe to 1'



5.53 - 5.84 ft
3.3 %RE (s 1.2)



6.99 - 7.33 ft
2.6 %RE (s 1.4)



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LIF-08

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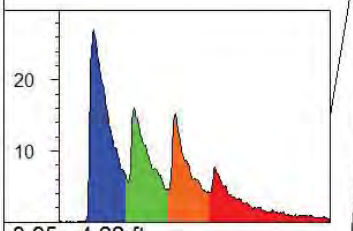
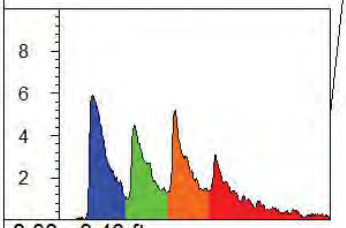
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909227.09 /**	*Final depth:* **22.02 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141121.47 /**	*Max signal:* **5.2 %RE @ 5.68 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.1 ft**	*Date & Time:* **2018-05-30 12:45 EDT**

Callouts

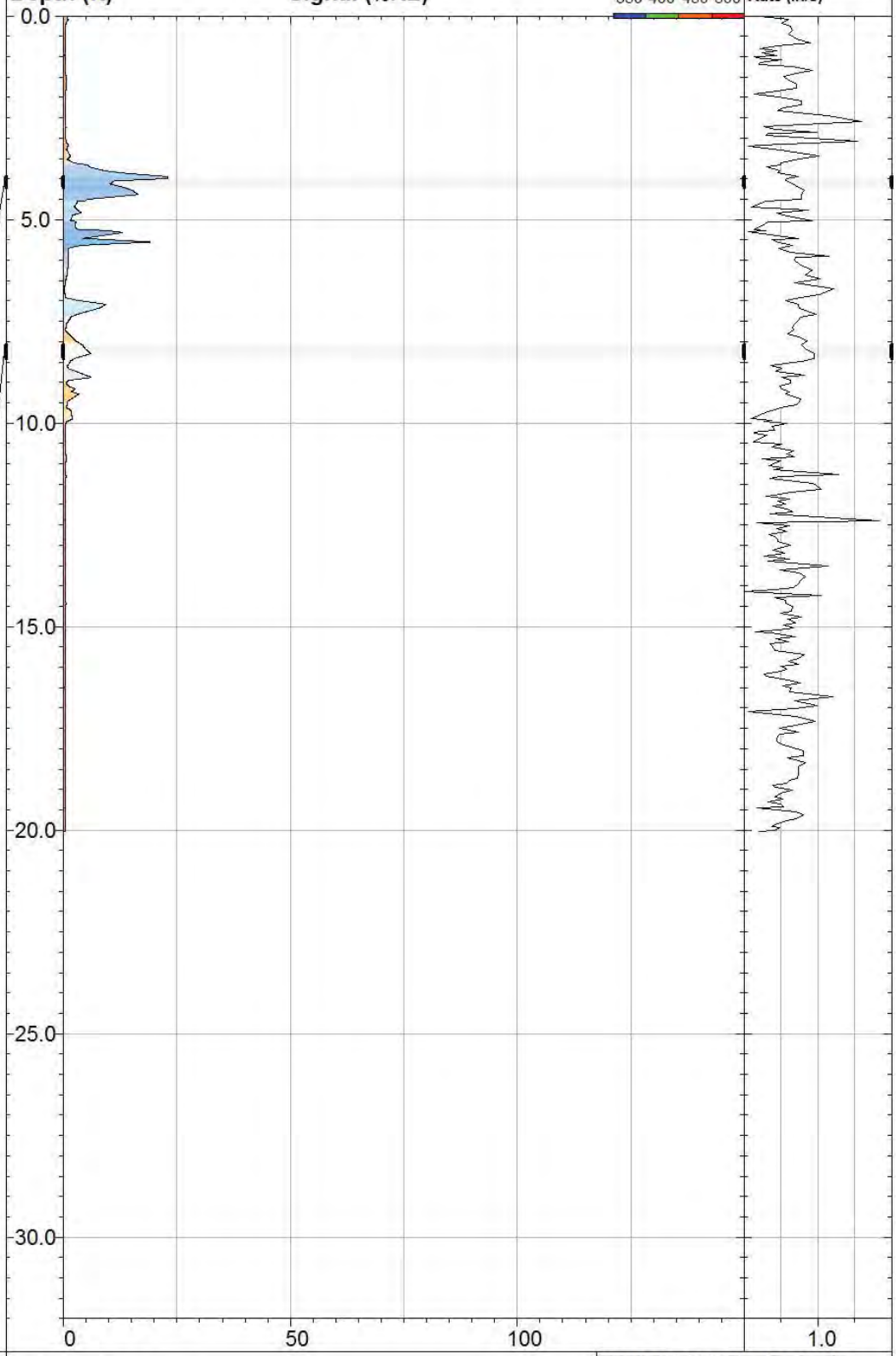
preprobe 2'



3.95 - 4.22 ft
16.2 %RE (s 6.3)



8.08 - 8.40 ft
4.4 %RE (s 1.4)



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LIF-08 dup

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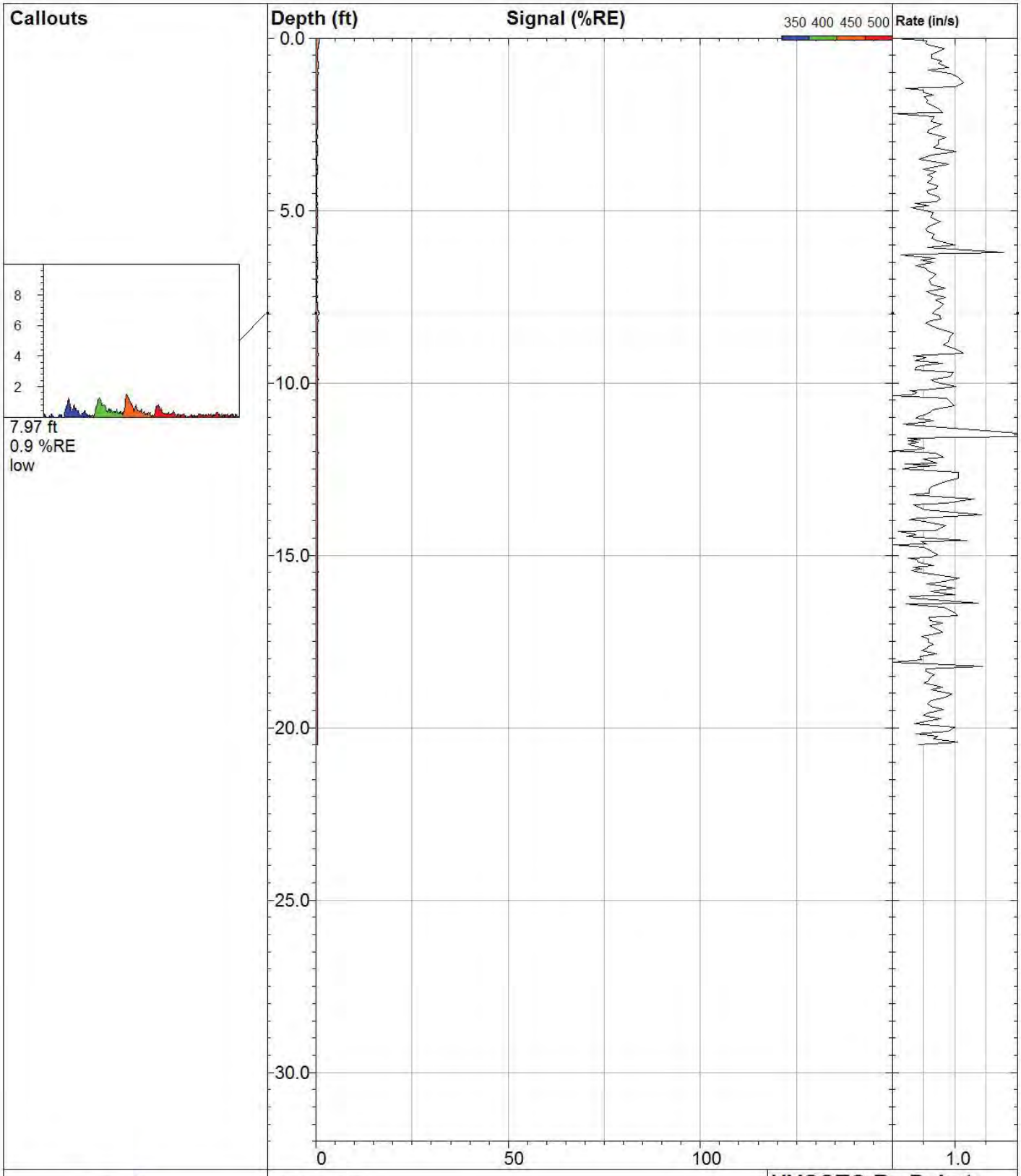
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **20.03 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **22.9 %RE @ 3.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **Unavailable**	*Date & Time:* **2018-05-31 15:12 EDT**



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LIF-09

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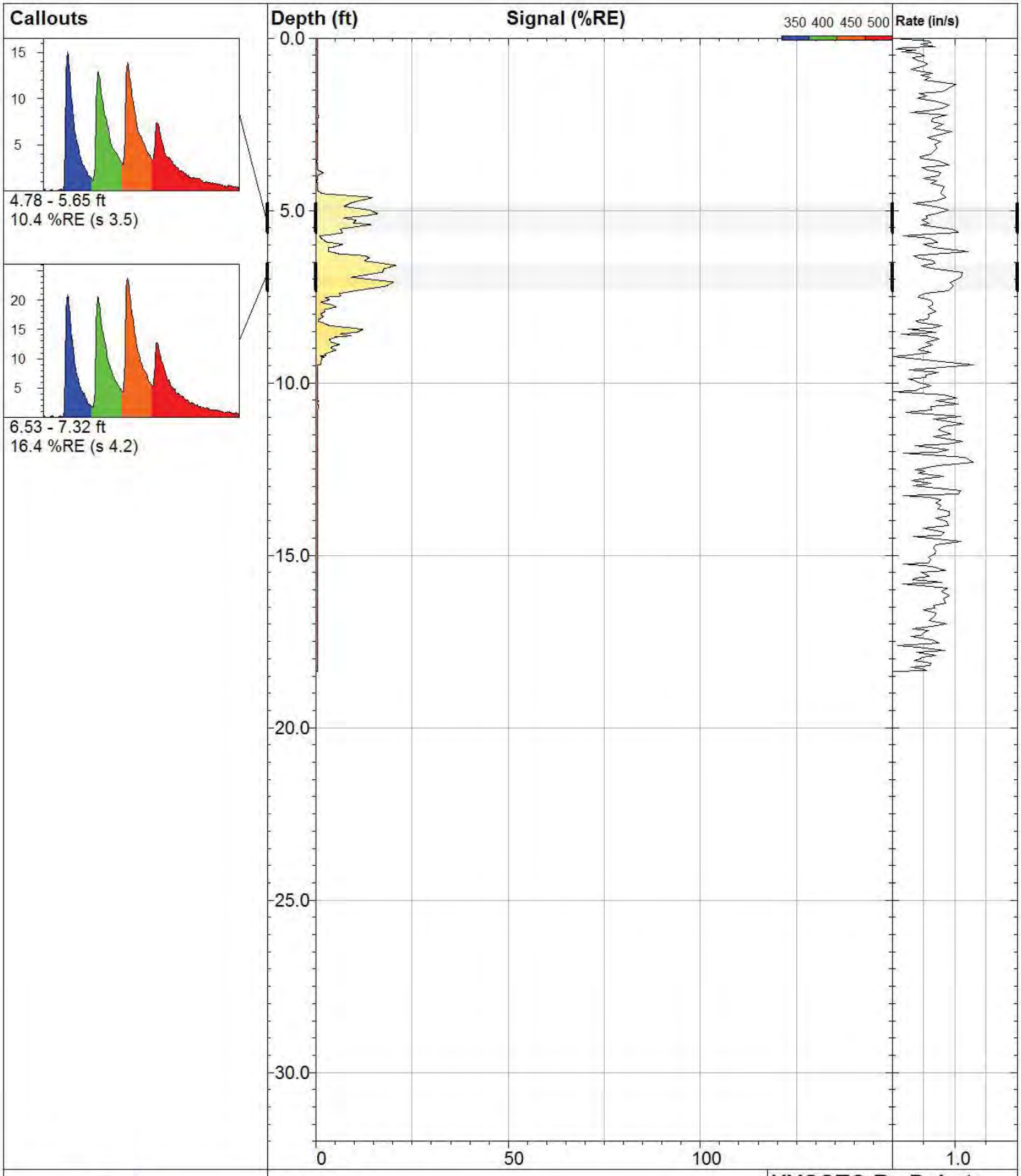
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908784.27 /**	*Final depth:* **20.50 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141041.15 /**	*Max signal:* **1.0 %RE @ 0.03 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **371.7 ft**	*Date & Time:* **2018-05-31 13:21 EDT**



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LIF-10

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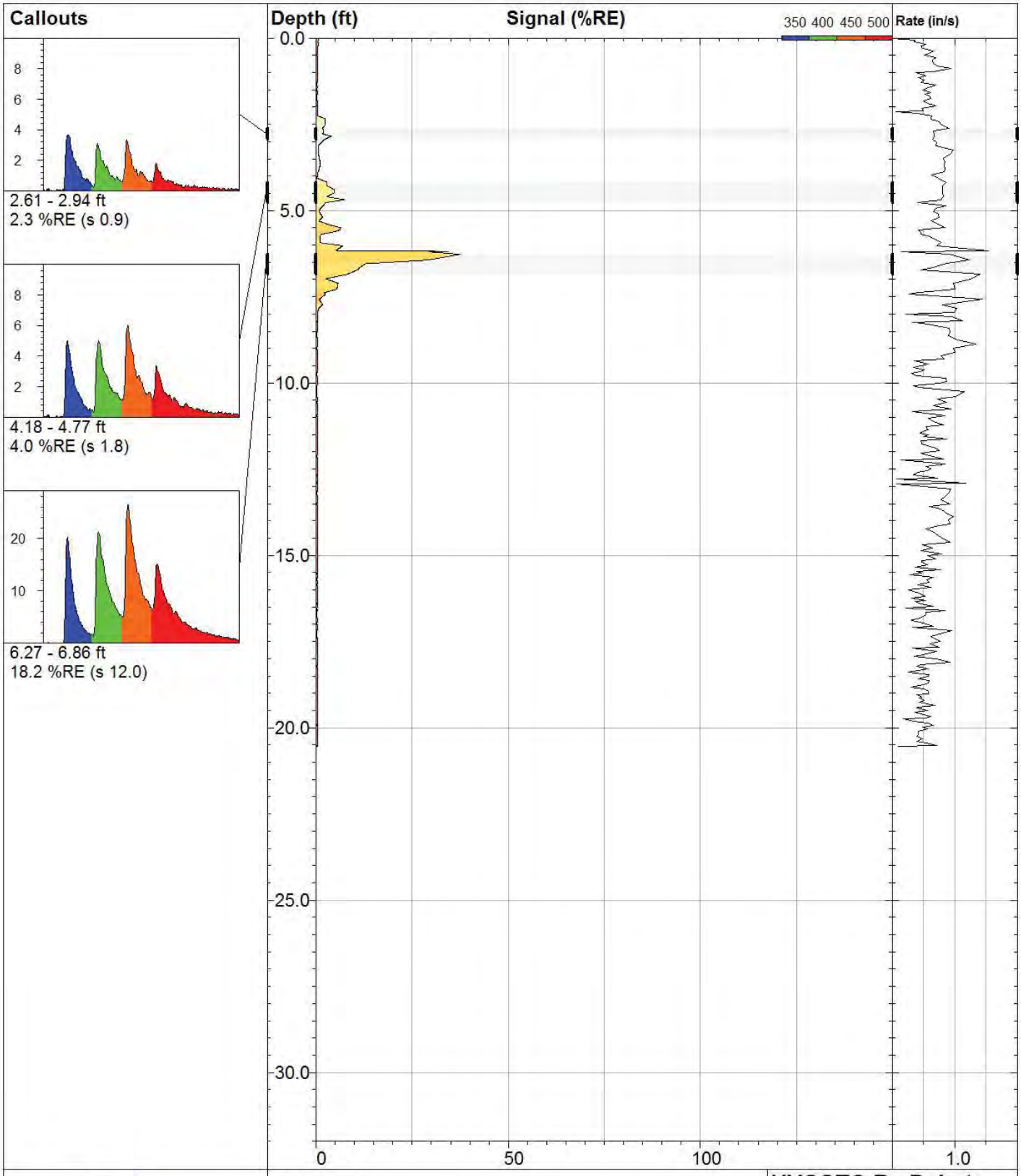
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908842.83 /**	*Final depth:* **18.37 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141050.30 /**	*Max signal:* **20.8 %RE @ 6.60 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **371.9 ft**	*Date & Time:* **2018-05-31 12:53 EDT**



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LIF-11

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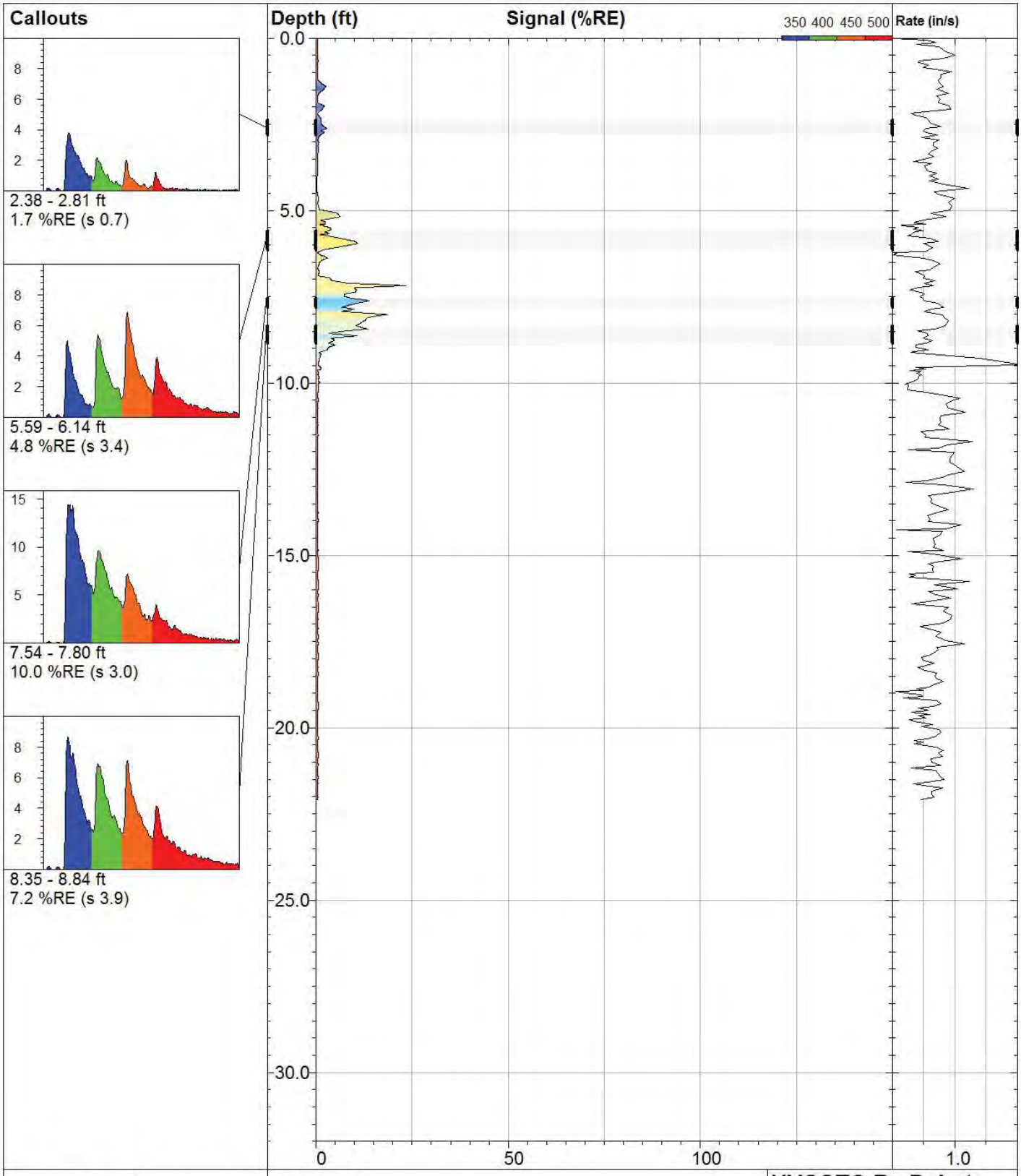
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908901.36 /**	*Final depth:* **20.55 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141048.10 /**	*Max signal:* **37.5 %RE @ 6.27 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.9 ft**	*Date & Time:* **2018-05-31 09:14 EDT**



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LIF-12

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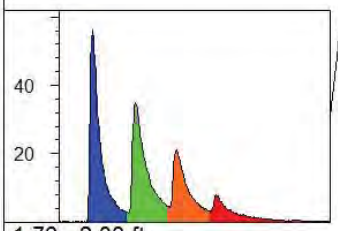
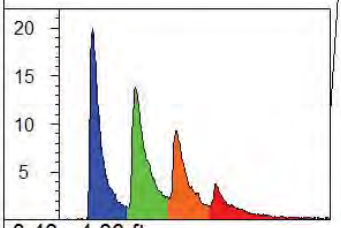
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **908963.11 /**	*Final depth:* **22.09 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141042.12 /**	*Max signal:* **23.7 %RE @ 7.18 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **370.5 ft**	*Date & Time:* **2018-05-31 08:44 EDT**

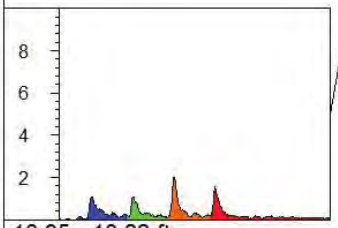
Callouts



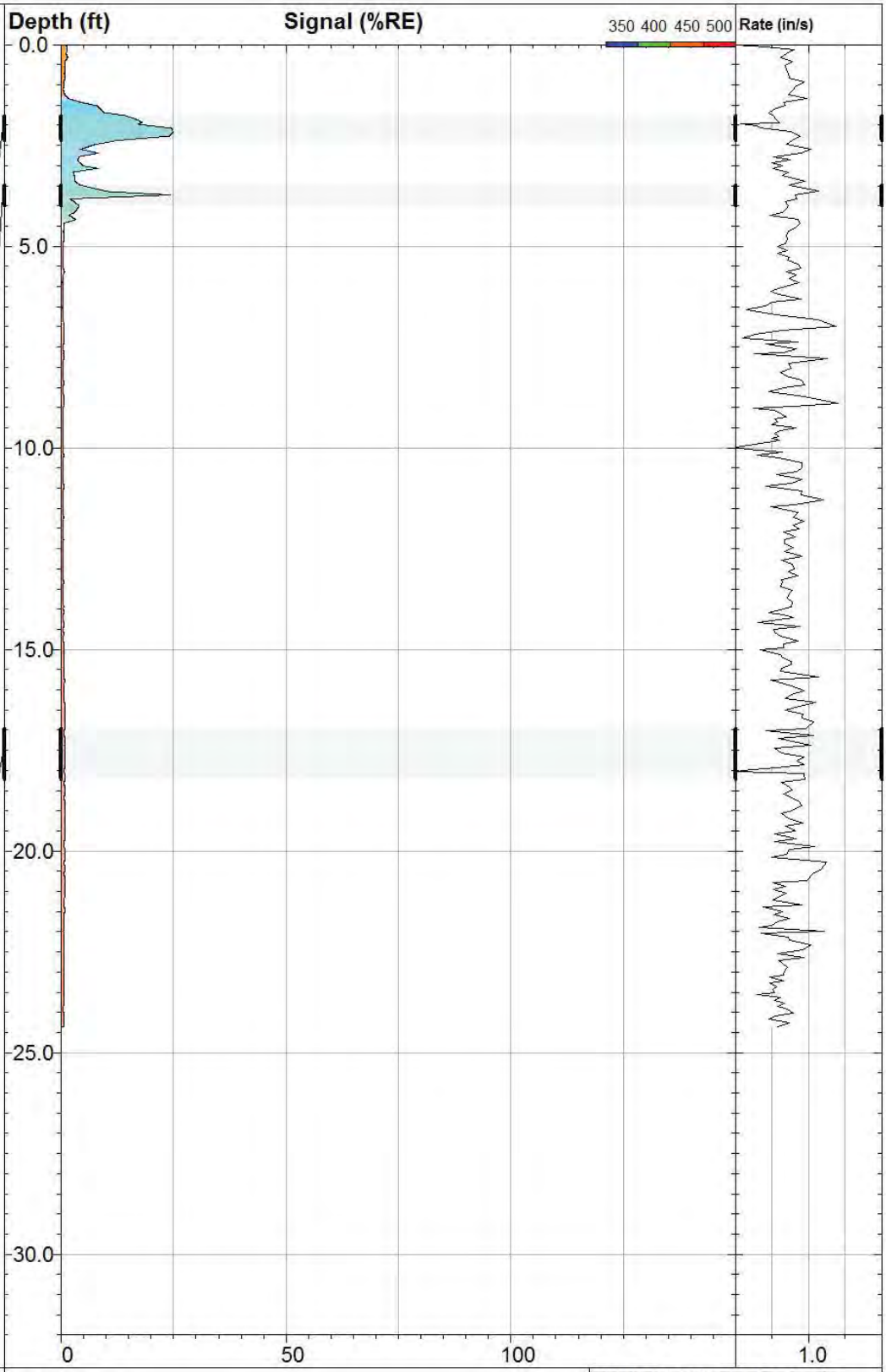
1.76 - 2.38 ft
19.0 %RE (s 4.6)



3.48 - 4.00 ft
7.9 %RE (s 8.6)



16.95 - 18.22 ft
0.8 %RE (s 0.1)
low



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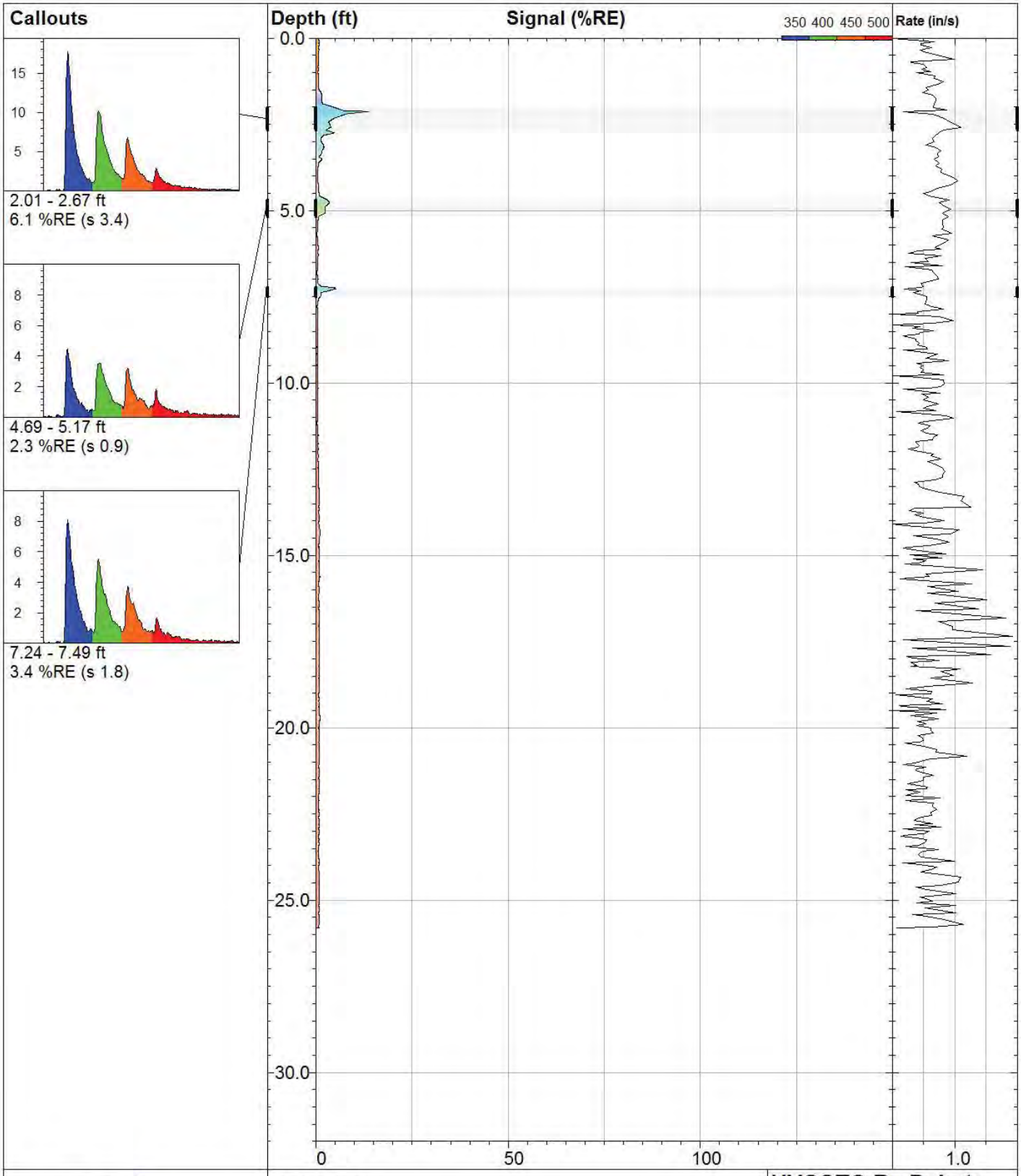
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909082.15 /**	*Final depth:* **24.36 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141046.86 /**	*Max signal:* **24.9 %RE @ 2.17 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.6 ft**	*Date & Time:* **2018-05-30 16:04 EDT**



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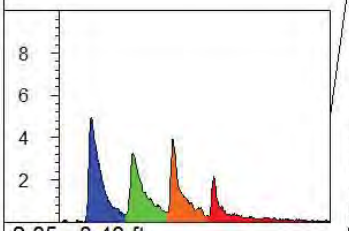
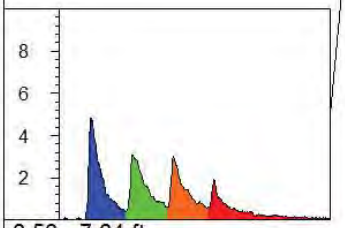
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909139.26 /**	*Final depth:* **25.82 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141028.72 /**	*Max signal:* **13.8 %RE @ 2.13 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.8 ft**	*Date & Time:* **2018-05-30 15:32 EDT**

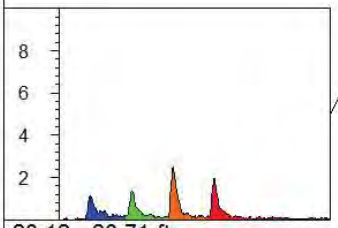
Callouts



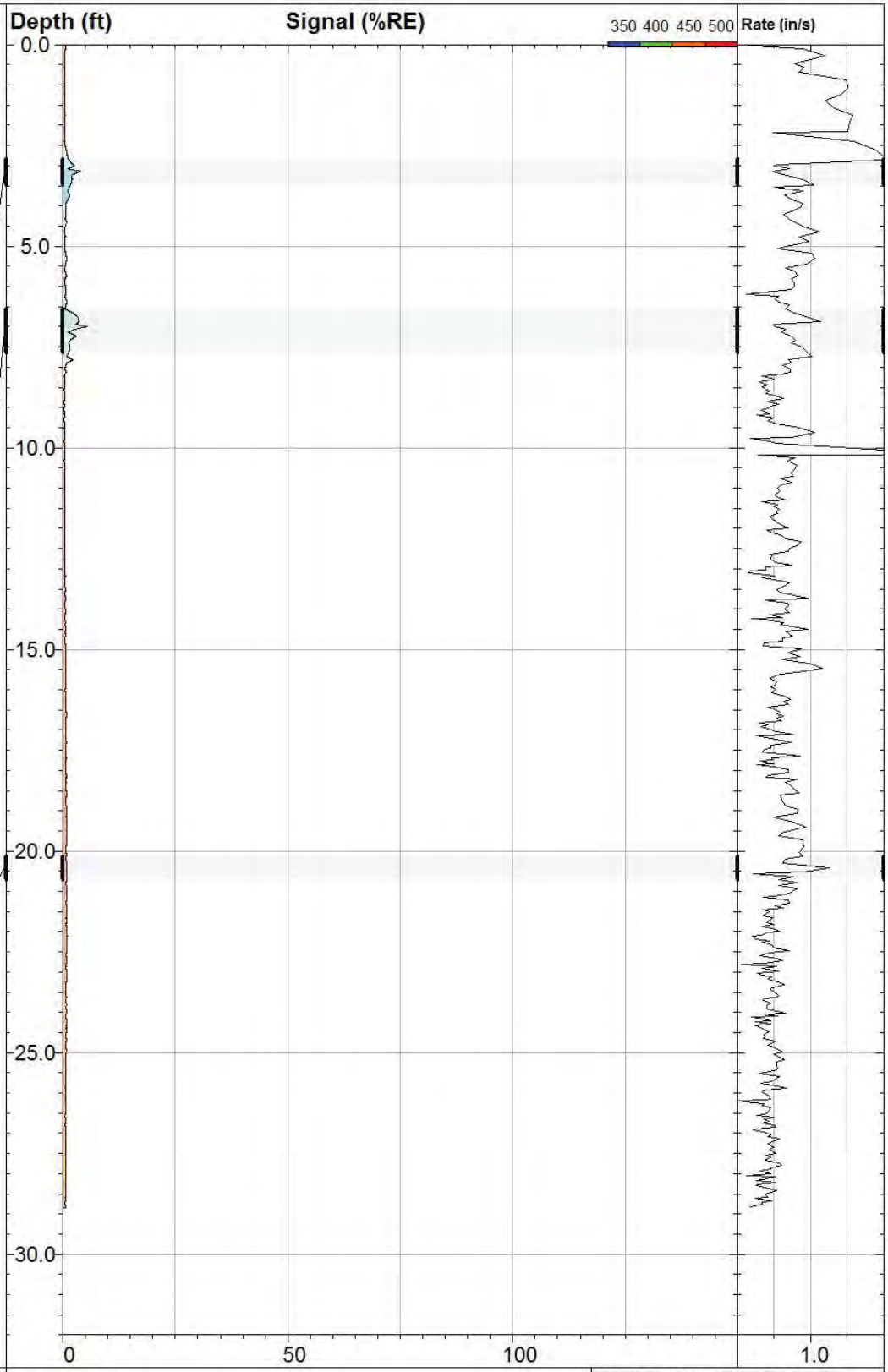
2.85 - 3.48 ft
2.1 %RE (s 0.9)



6.56 - 7.64 ft
2.3 %RE (s 1.3)



20.12 - 20.71 ft
0.8 %RE (s 0.1)
low



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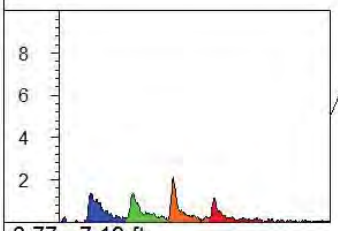
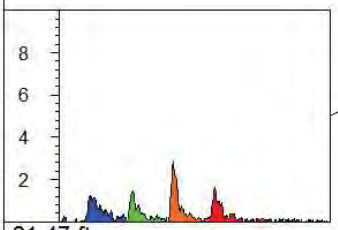
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909199.61 /**	*Final depth:* **28.85 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141037.61 /**	*Max signal:* **5.3 %RE @ 6.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.9 ft**	*Date & Time:* **2018-05-30 11:09 EDT**

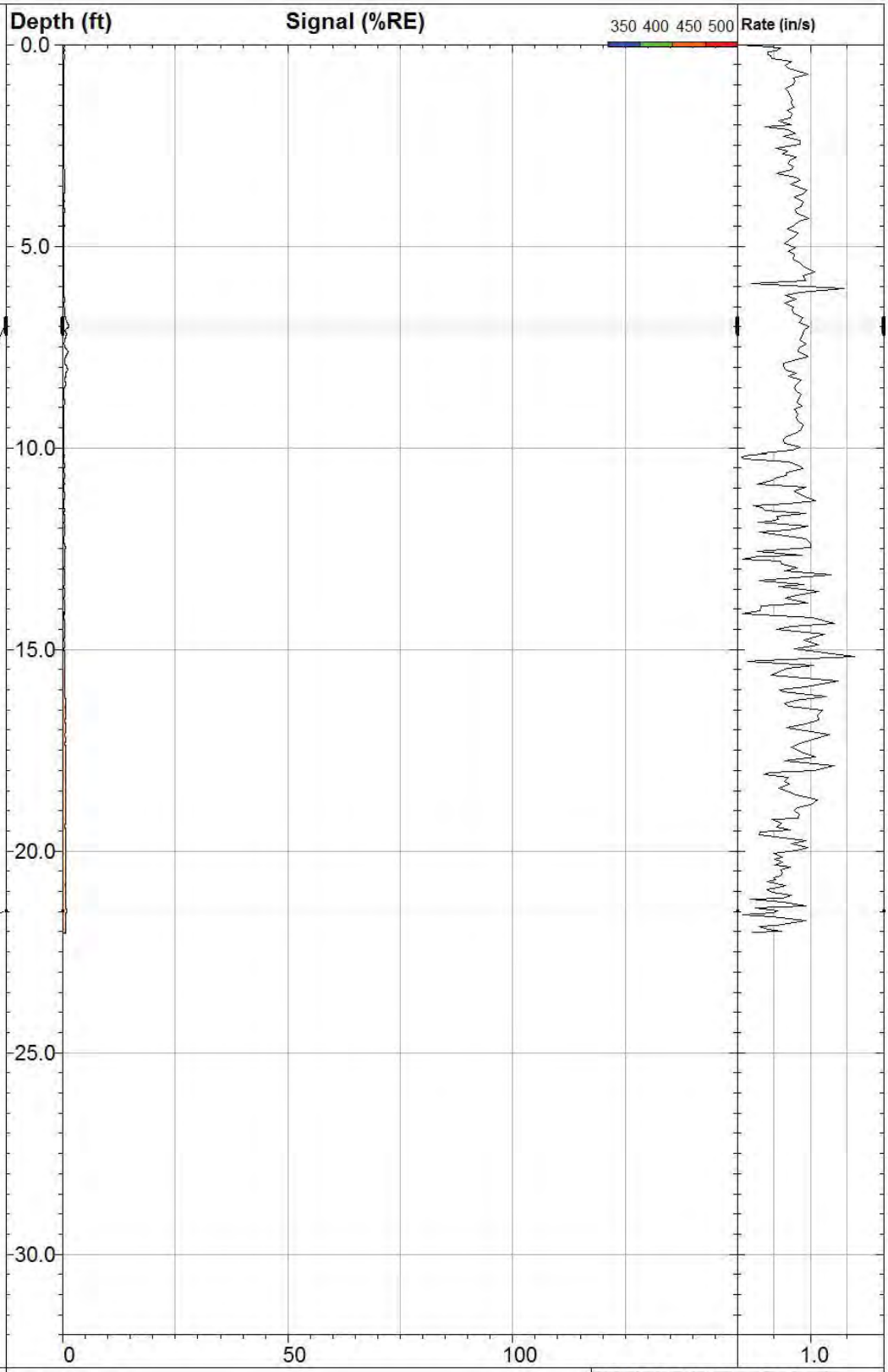
Callouts



6.77 - 7.19 ft
0.8 %RE (s 0.4)



21.47 ft
0.9 %RE
low



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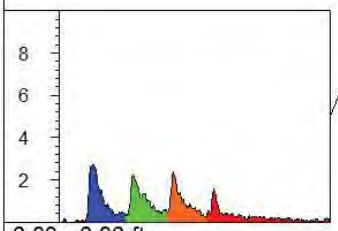
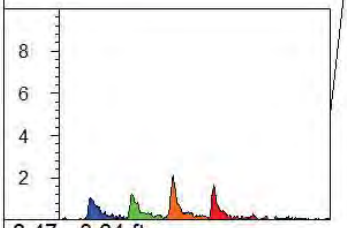
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909262.85 /**	*Final depth:* **22.03 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141043.82 /**	*Max signal:* **1.4 %RE @ 6.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.2 ft**	*Date & Time:* **2018-05-30 09:47 EDT**

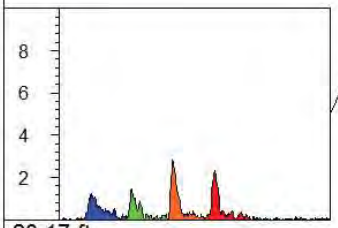
Callouts



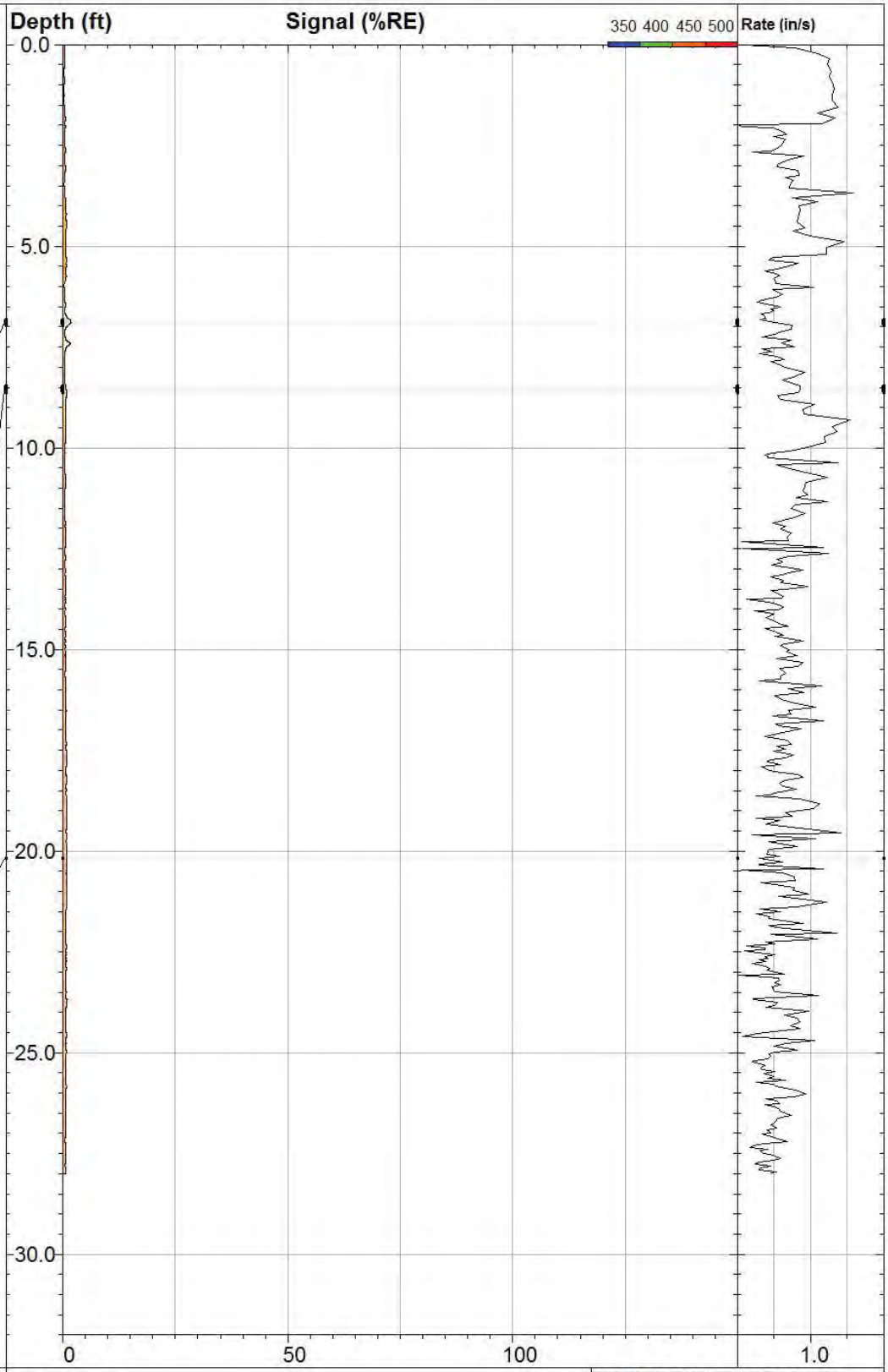
6.83 - 6.96 ft
1.6 %RE (s 0.4)



8.47 - 8.64 ft
0.7 %RE (s 0.2)
low



20.17 ft
0.9 %RE
low



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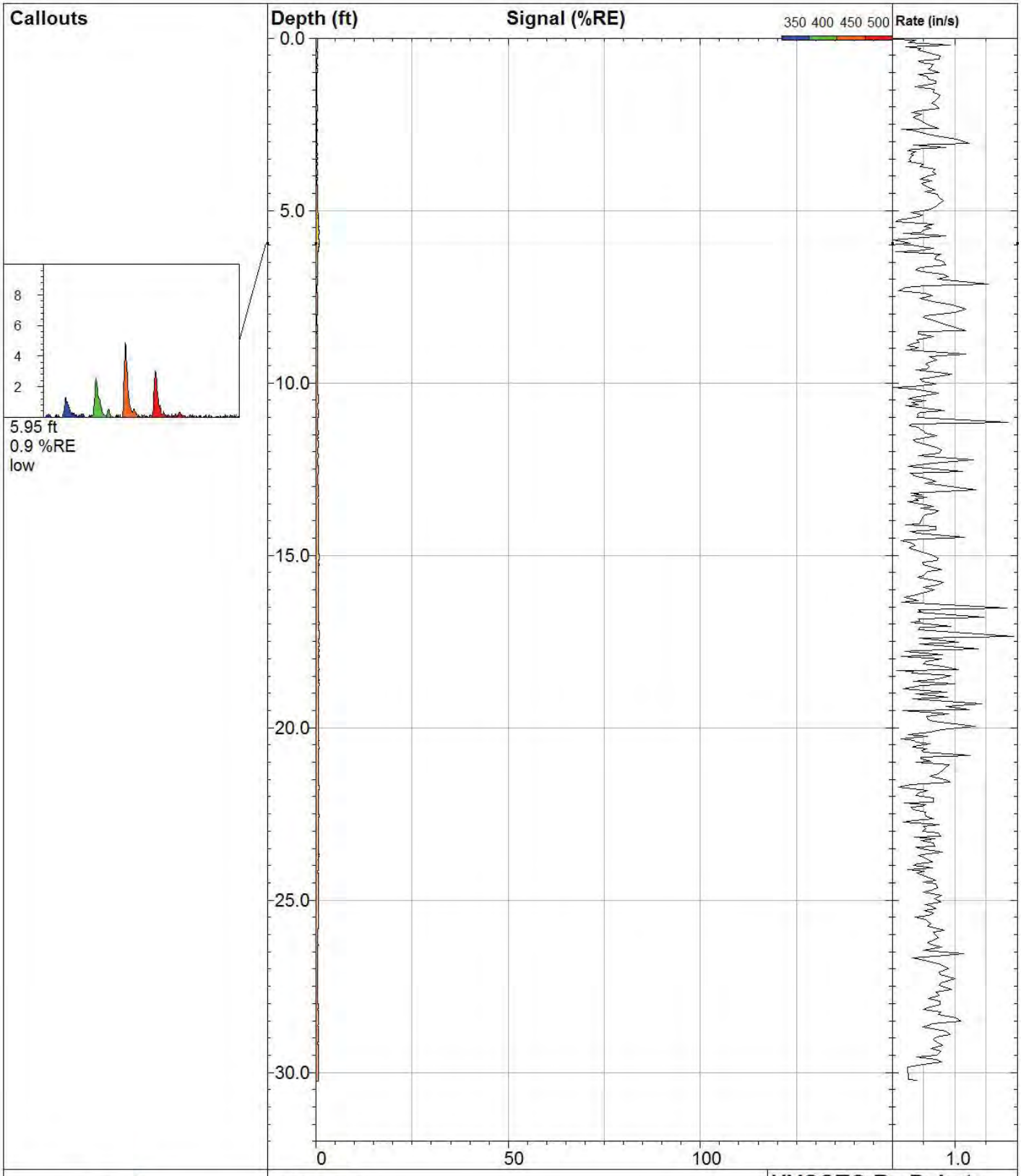
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909223.49 /**	*Final depth:* **28.00 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141003.77 /**	*Max signal:* **1.8 %RE @ 6.90 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.7 ft**	*Date & Time:* **2018-05-30 10:30 EDT**



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LIF-18

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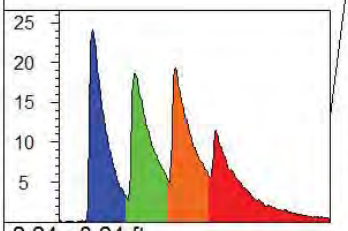
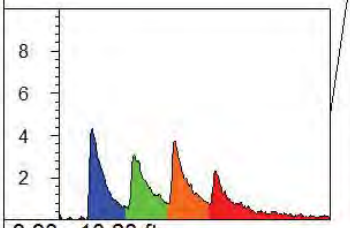
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909301.23 /**	*Final depth:* **30.25 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141015.65 /**	*Max signal:* **0.9 %RE @ 5.95 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.9 ft**	*Date & Time:* **2018-05-30 08:53 EDT**

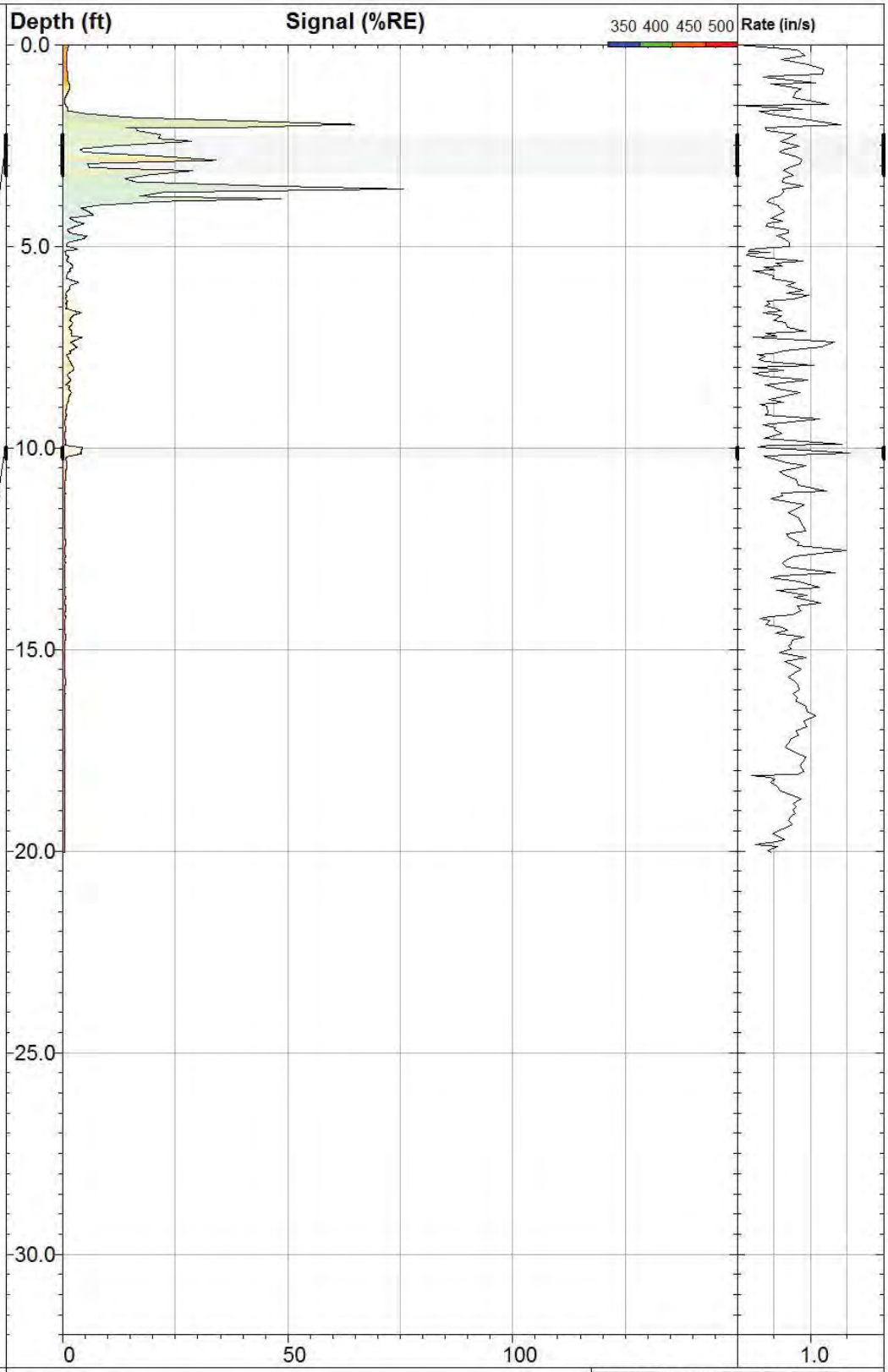
Callouts



2.24 - 3.24 ft
17.4 %RE (s 10.8)
low



9.98 - 10.28 ft
2.8 %RE (s 1.6)



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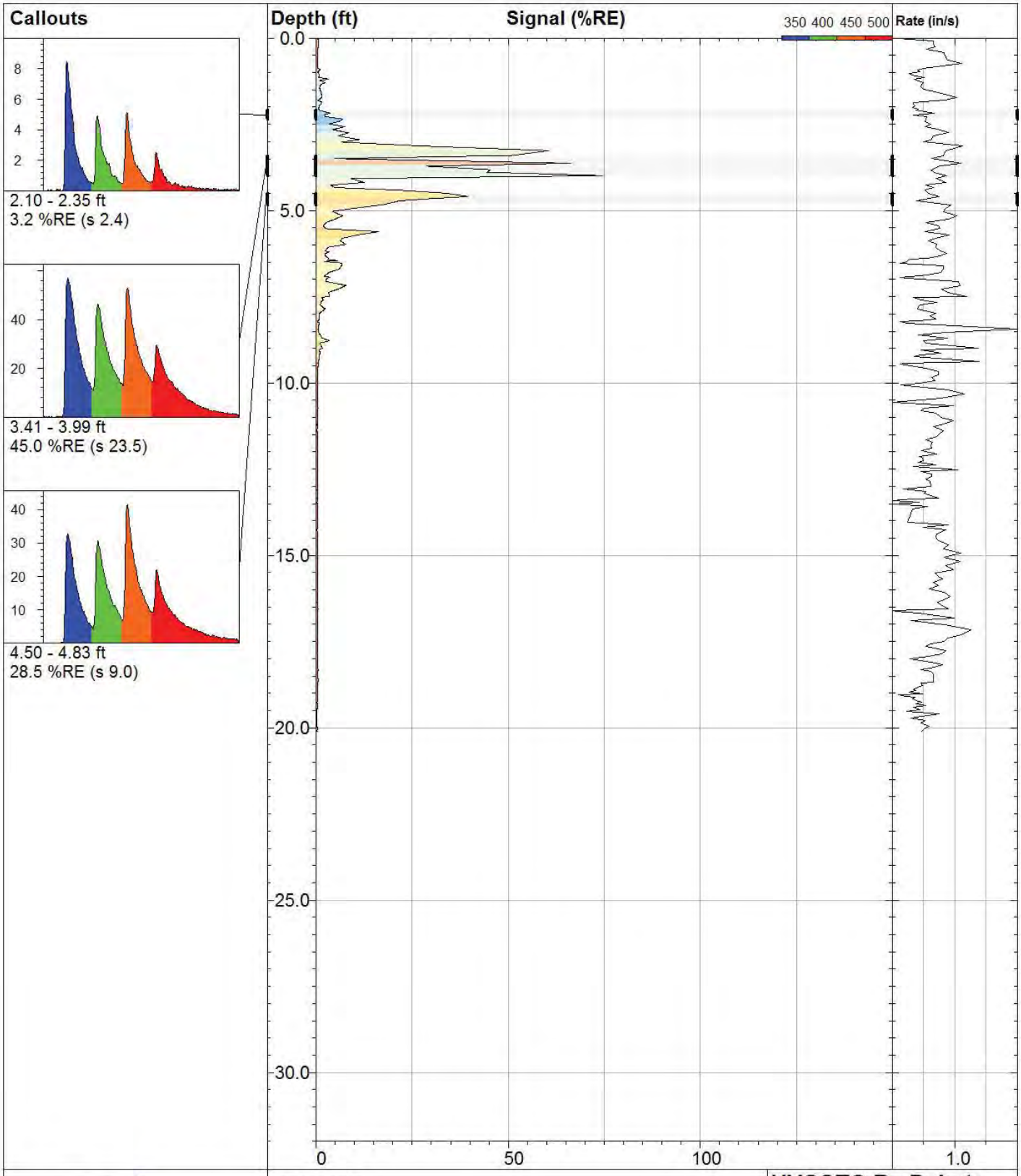
Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909085.12 /**	*Final depth:* **20.05 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141082.55 /**	*Max signal:* **75.8 %RE @ 3.58 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **368.8 ft**	*Date & Time:* **2018-05-31 14:05 EDT**



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LIF-20

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Site: **Buckeye Cold Springs**	*Y Coord.(Lat-N) / System:* **909133.40 /**	*Final depth:* **20.12 ft**
Client / Job: **Arcadis / 0165.18**	*X Coord.(Lng-E) / Fix:* **1141143.06 /**	*Max signal:* **74.9 %RE @ 3.99 ft**
Operator / Unit: **AK / UVOST1013**	*Elevation:* **369.5 ft**	*Date & Time:* **2018-05-31 14:38 EDT**

APPENDIX 3

Soil Boring Logs

Date Start/Finish:	6/5/2018	**Northing:**	1141201.99	**Well/Boring ID:**	**B122**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	909223.09	**Client:**	Cold Springs Terminal
Driller's Name:	Matt Carnie	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	20 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2' x 2" Split Spoon	**Surface Elevation:**	372.15		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	375							
0								
		1	0-5	5.0	0.0		Hand auger from 0-5' bgs. SAND, fine to medium, subangular to subround; some Gravel, rounded; loose, poorly sorted, light brown, no odor.	
	370							
5		2	5-7	1.2	31.4		Silty SAND; fine to medium, subangular to subround, medium dense, wet, light brown/gray, mild odor.	
	365	3	7-9	0.9	26.2		Silty CLAY and SAND, fine; moist, medium plasticity, light brown, mild odor.	
10		4	9-11	2.0	90.4		Silty SAND, fine; trace Clay; medium plasticity, wet, light brown, odor. No staining.	Backfilled from 0-20' bgs.
	360	5	11-13	2.0	400.5		Stronger odor.	
		6	13-15	2.0	85.3		Silty SAND, fine to medium, subangular to subround, medium dense, light brown, odor, wet.	
15								

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; HSA = Hollow-stem augers.

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Client: Cold Springs Terminal

Well/Boring ID: **B122**

Site Location:
Lysander, NY

Borehole Depth: 20 feet bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	7	15-17	2.0	405.2		Silty SAND, fine to medium, subangular to subround, medium dense, light brown, odor, wet.	
355	8	17-19	2.0	286.4			Backfilled from 0-20' bgs.
	9	19-20	1.0	26.9		Increasing density, trace odor.	
20						Refusal at 20' bgs. End of boring.	
350							
25							
345							
30							
340							
35							

Remarks: ags = above ground surface; bgs = below ground surface;
NA = Not Applicable/Available; HSA = Hollow-stem augers.

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Date Start/Finish:	8/2/2018	**Northing:**	1141059.96	**Well/Boring ID:**	**CB-1**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	908830.33	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	371.45		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	370	1	0-2	2.0	294		SAND, fine to medium; and GRAVEL and ORGANICS; trace Silt, dry, light brown, odor, no sheen.	
		2	2-4	2.0	197		Silty SAND, fine to medium; and CLAY and GRAVEL, moist, light brown, odor.	
5		3	4-6	2.0	296			
	365	4	6-8	2.0	618		SAND, fine to medium, well sorted; trace Clay, wet, light brown, odor.	Backfilled from 0-12' bgs.
10		5	8-12	4.0	38.7		Trace odor.	
	360						End of boring at 12' bgs.	
15								

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; HSA = Hollow-stem augers.

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Date Start/Finish:	8/2/2018	**Northing:**	1141098.21	**Well/Boring ID:**	**CB-2**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	908894.09	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	370.69		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	370	1	0-2	2.0	14.0		SAND, fine; and CLAY and GRAVEL and ORGANICS, dry, light brown, trace odor.	
		2	2-4	2.0	567		Silty SAND, fine to medium; and CLAY, damp, light brown/gray, strong odor.	
5	365	3	4-6	1.0	626		Trace sheen. Wet, no sheen.	Backfilled from 0-12' bgs.
		4	6-8	3.0	143			
10	360	5	8-12	4.0	196			
							End of boring at 12' bgs.	
15	355							

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Remarks: ags = above ground surface; bgs = below ground surface;
NA = Not Applicable/Available; HSA = Hollow-stem augers.

Date Start/Finish:	8/2/2018	**Northing:**	1141127.97	**Well/Boring ID:**	**CB-3**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	908979.79	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	371.62		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	370	1	0-2	2.0	11.4		SAND, fine to medium; and ORGANICS and CLAY, light brown, damp, trace odor.	
		2	2-4	2.0	1218		Silty SAND, fine to medium; trace Clay; medium dense, moist, light brown, strong odor.	
5	365	3	4-6	2.0	754.2		SAND, fine to medium, well sorted; trace Clay; damp, light brown, odor. Wet.	Backfilled from 0-12' bgs.
		4	6-8	2.0	542.6			
10	360	5	8-12	2.0	106.2			
							End of boring at 12' bgs.	
15								

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Remarks: ags = above ground surface; bgs = below ground surface;
NA = Not Applicable/Available; HSA = Hollow-stem augers.

Date Start/Finish:	8/2/2018	**Northing:**	1141080.85	**Well/Boring ID:**	**CB-4**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	908982.69	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	370.79		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	370	1	0-2	2.0	167.2		SAND, fine to medium; and GRAVEL and ORGANICS, moist, light brown, odor.	
		2	2-4	2.0	934.6		SAND, fine to medium; and CLAY and SILT; moist, gray, strong odor, sheen.	
5	365	3	4-6	1.5	835.2			
		4	6-8	2.5	1334		SAND, fine to medium, well sorted; trace Clay; wet, light gray, strong odor, sheen.	Backfilled from 0-12' bgs.
10	360	5	8-12	4.0	442.3			
15	355						End of boring at 12' bgs.	

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; HSA = Hollow-stem augers.

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Date Start/Finish:	8/1/2018	**Northing:**	1141066.69	**Well/Boring ID:**	**CB-5**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	909084.53	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	368.91		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	370							
0		1	0-2	2.0	134		SAND, fine to medium; and ORGANICS (grass, roots); trace Silt; dry, dark brown, slight odor.	
		2	2-4	2.0	850		Silty SAND, fine to medium; and GRAVEL; trace Clay; light brown, dense, dry, strong odor.	
	365	3	4-6	2.0	1325		Slight staining.	
5		4	6-8	2.0	132.7		SAND, fine to medium, subangular to subround, well sorted; trace Clay, wet, light gray/brown, slight odor, no staining.	Backfilled from 0-12' bgs.
	360	5	8-12	4.0	140.8			
10							End of boring at 12' bgs.	
	355							
15								

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; HSA = Hollow-stem augers.

Date Start/Finish:	8/1/2018	**Northing:**	1141140.79	**Well/Boring ID:**	**CB-6**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	909146.66	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	369.38		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	370							
0		1	0-2	2.0	93.6		SAND, fine to medium; and GRAVEL, trace Clay and Organics, dry, light brown, trace odor.	
		2	2-4	2.0	1354		Silty SAND, fine to medium; and CLAY; medium plasticity, moist, light gray, strong odor.	
	365	3	4-6	2.0	1032		SAND, fine to medium, well sorted; trace Clay, wet, light brown, slight odor.	Backfilled from 0-12' bgs.
5		4	6-8	2.0	460			
	360	5	8-12	2.0	67		Less odor.	
10								
	355						End of boring at 12' bgs.	
15								

ARCADIS Design & Consultancy for natural and built assets

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; HSA = Hollow-stem augers.

Date Start/Finish:	8/1/2018	**Northing:**	1141088.87	**Well/Boring ID:**	**CB-7**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	909179.78	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	368.83		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	370							
0		1	0-2	2.0	24.2		SAND, fine to medium, subangular to subround; trace Silty and Organics; moist, dark brown, odor.	
		2	2-4	1.0	1255		Silty SAND, fine to medium; and CLAY; medium dense, light brown to gray, strong odor.	
	365							
5		3	4-6	2.0	962		Increased CLAY content.	
		4	6-8	2.0	1540		SAND, fine to medium, well sorted; some Silt; wet, light brown, strong odor.	Backfilled from 0-12' bgs.
	360							
10		5	8-12	2.0	42.0			
							End of boring at 12' bgs.	
	355							
15								

ARCADIS Design & Consultancy for natural and built assets

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Date Start/Finish:	8/1/2018	**Northing:**	1141016.07	**Well/Boring ID:**	**CB-8**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	909344.01	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	368.57		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	370							
0		1	0-4	2.2	18.2		SAND, fine to medium; and SILT; and ORGANICS; trace Gravel; dry, dark brown, trace odor.	
	365	2	4-6.5	2.5	161.2		SAND, fine to medium; and SILT; and CLAY; trace Gravel, moist, dark brown, odor.	
5		3	6.5-8	1.5	50.6		SAND, fine to medium; trace Clay; wet, light gray/brown, odor.	Backfilled from 0-12' bgs.
	360	4	8-12	4.0	9.2			
10							End of boring at 12' bgs.	
	355							
15								

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; HSA = Hollow-stem augers.

ARCADIS Design & Consultancy for natural and built assets

Date Start/Finish:	8/1/2018	**Northing:**	1141120.98	**Well/Boring ID:**	**CB-10**
Drilling Company:	Parratt-Wolff, Inc.	**Easting:**	909222.06	**Client:**	Cold Springs Terminal
Driller's Name:	Wayne	**Casing Elevation:**	NA		
Drilling Method:	Direct Push / HSA	**Borehole Depth:**	12 feet bgs	**Location:**	Lysander, NY
Sampling Method:	2" x 4' Macro-Core	**Surface Elevation:**	369.63		
Rig Type:	Truck-Mounted Geoprobe Rig	**Descriptions By:**	Jeff Spradlin		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	370							
0		1	0-2	1.0	31.2		SAND, fine; and CLAY and GRAVEL and ORGANICS, dry, light brown, trace odor.	
		2	2-4	2.0	111.5		Silty SAND, fine to medium; and CLAY, damp, light brown/gray, strong odor.	
5	365	3	4-6	2.0	511.7		Trace sheen. Wet, no sheen.	Backfilled from 0-12' bgs.
		4	6-8	2.0	937.2			
10	360	5	8-12	4.0	426.1			
							End of boring at 12' bgs.	
15	355							

ARCADIS Design & Consultancy for natural and built assets

Remarks: ags = above ground surface; bgs = below ground surface;
NA = Not Applicable/Available; HSA = Hollow-stem augers.

APPENDIX 4

Laboratory Analytical Reports

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

June 15, 2018

Vin Maresco
Arcadis
6723 Towpath Road
Syracuse, NY 13214

RE: Project: Cold Springs
Pace Project No.: 30255017

Dear Vin Maresco:
Enclosed are the analytical results for sample(s) received by the laboratory on June 06, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Rachel Christner
rachel.christner@pacelabs.com
724-850-5611
Project Manager

Enclosures

cc: Mr. P.J. Hart, Arcadis
Mr. Edward Mason, Arcadis
Mr. Mike Teeling, Woodard & Curran

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: Cold Springs
Pace Project No.: 30255017

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: Cold Springs
Pace Project No.: 30255017

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30255017001	**B-122(0-2)_060518**	Solid	06/05/18 08:55	06/06/18 10:10
30255017002	**B-122(7-9)_060518**	Solid	06/05/18 11:30	06/06/18 10:10
30255017003	**B-122(11-13)_060518**	Solid	06/05/18 11:50	06/06/18 10:10
30255017004	**B-122(15-17)_060518**	Solid	06/05/18 12:00	06/06/18 10:10
30255017005	**B-123(0-2)_060518**	Solid	06/05/18 09:40	06/06/18 10:10
30255017006	**B-123(2-4)_060518**	Solid	06/05/18 09:45	06/06/18 10:10
30255017007	**B-124(0-1)_060518**	Solid	06/05/18 10:05	06/06/18 10:10
30255017008	**B-125(0-2)_060518**	Solid	06/05/18 10:15	06/06/18 10:10
30255017009	**Trip Blank_060518**	Water	06/05/18 00:01	06/06/18 10:10

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: Cold Springs
Pace Project No.: 30255017

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30255017001	**B-122(0-2)_060518**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017002	**B-122(7-9)_060518**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017003	**B-122(11-13)_060518**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017004	**B-122(15-17)_060518**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017005	**B-123(0-2)_060518**	EPA 6010B	CTS	7	PASI-PA
		EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017006	**B-123(2-4)_060518**	EPA 6010B	CTS	7	PASI-PA
		EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017007	**B-124(0-1)_060518**	EPA 6010B	CTS	7	PASI-PA
		EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017008	**B-125(0-2)_060518**	EPA 6010B	CTS	7	PASI-PA
		EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	APW	1	PASI-PA
30255017009	**Trip Blank_060518**	EPA 8260C	JAS	21	PASI-PA

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Cold Springs
Pace Project No.: 30255017

Sample: B-122(0-2)_060518 **Lab ID: 30255017001** Collected: 06/05/18 08:55 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**32.3**	mg/kg	0.54	0.53	1	06/06/18 15:45	06/08/18 07:14	7439-92-1	ML
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.5**	%	0.10	0.10	1		06/06/18 15:00		

Sample: B-122(7-9)_060518 **Lab ID: 30255017002** Collected: 06/05/18 11:30 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	9.3	0.84	1	06/06/18 19:31	06/08/18 15:46	83-32-9	
Acenaphthylene	ND	ug/kg	9.3	0.67	1	06/06/18 19:31	06/08/18 15:46	208-96-8	
Anthracene	ND	ug/kg	9.3	0.84	1	06/06/18 19:31	06/08/18 15:46	120-12-7	
Benzo(a)anthracene	ND	ug/kg	9.3	1.1	1	06/06/18 19:31	06/08/18 15:46	56-55-3	
Benzo(a)pyrene	ND	ug/kg	9.3	0.58	1	06/06/18 19:31	06/08/18 15:46	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	9.3	1.1	1	06/06/18 19:31	06/08/18 15:46	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	9.3	1.4	1	06/06/18 19:31	06/08/18 15:46	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	9.3	1.6	1	06/06/18 19:31	06/08/18 15:46	207-08-9	
Chrysene	ND	ug/kg	9.3	0.48	1	06/06/18 19:31	06/08/18 15:46	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	9.3	2.1	1	06/06/18 19:31	06/08/18 15:46	53-70-3	
Fluoranthene	ND	ug/kg	9.3	0.71	1	06/06/18 19:31	06/08/18 15:46	206-44-0	
Fluorene	ND	ug/kg	9.3	0.86	1	06/06/18 19:31	06/08/18 15:46	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	9.3	1.8	1	06/06/18 19:31	06/08/18 15:46	193-39-5	
Phenanthrene	ND	ug/kg	9.3	0.82	1	06/06/18 19:31	06/08/18 15:46	85-01-8	
Pyrene	ND	ug/kg	9.3	1.0	1	06/06/18 19:31	06/08/18 15:46	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	63	%	31-105		1	06/06/18 19:31	06/08/18 15:46	321-60-8	
Terphenyl-d14 (S)	72	%	49-115		1	06/06/18 19:31	06/08/18 15:46	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	5.3	1.5	1	06/08/18 14:49	06/08/18 21:43	71-43-2	1c
n-Butylbenzene	**6.6**	ug/kg	5.3	1.9	1	06/08/18 14:49	06/08/18 21:43	104-51-8	1c
sec-Butylbenzene	**6.0**	ug/kg	5.3	1.6	1	06/08/18 14:49	06/08/18 21:43	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	5.3	1.5	1	06/08/18 14:49	06/08/18 21:43	98-06-6	1c
Ethanol	ND	ug/kg	212	27.5	1	06/08/18 14:49	06/08/18 21:43	64-17-5	1c
Ethylbenzene	ND	ug/kg	5.3	1.6	1	06/08/18 14:49	06/08/18 21:43	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	5.3	1.5	1	06/08/18 14:49	06/08/18 21:43	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	5.3	1.5	1	06/08/18 14:49	06/08/18 21:43	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	5.3	0.84	1	06/08/18 14:49	06/08/18 21:43	1634-04-4	1c
Naphthalene	ND	ug/kg	5.3	2.4	1	06/08/18 14:49	06/08/18 21:43	91-20-3	1c
n-Propylbenzene	**9.8**	ug/kg	5.3	1.5	1	06/08/18 14:49	06/08/18 21:43	103-65-1	1c
Toluene	ND	ug/kg	5.3	1.5	1	06/08/18 14:49	06/08/18 21:43	108-88-3	1c

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Cold Springs
Pace Project No.: 30255017

Sample: B-122(7-9)_060518 **Lab ID: 30255017002** Collected: 06/05/18 11:30 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
1,2,4-Trimethylbenzene	ND	ug/kg	5.3	1.4	1	06/08/18 14:49	06/08/18 21:43	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	5.3	1.4	1	06/08/18 14:49	06/08/18 21:43	108-67-8	1c
m&p-Xylene	ND	ug/kg	10.6	3.2	1	06/08/18 14:49	06/08/18 21:43	179601-23-1	1c
o-Xylene	ND	ug/kg	5.3	1.5	1	06/08/18 14:49	06/08/18 21:43	95-47-6	1c
Surrogates									
Toluene-d8 (S)	95	%	76-124		1	06/08/18 14:49	06/08/18 21:43	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-133		1	06/08/18 14:49	06/08/18 21:43	460-00-4	
1,2-Dichloroethane-d4 (S)	120	%	74-131		1	06/08/18 14:49	06/08/18 21:43	17060-07-0	
Dibromofluoromethane (S)	107	%	71-130		1	06/08/18 14:49	06/08/18 21:43	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**28.7**	%	0.10	0.10	1		06/06/18 15:00		

Sample: B-122(11-13)_060518 **Lab ID: 30255017003** Collected: 06/05/18 11:50 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	8.1	0.74	1	06/06/18 19:31	06/08/18 16:39	83-32-9	
Acenaphthylene	ND	ug/kg	8.1	0.58	1	06/06/18 19:31	06/08/18 16:39	208-96-8	
Anthracene	ND	ug/kg	8.1	0.74	1	06/06/18 19:31	06/08/18 16:39	120-12-7	
Benzo(a)anthracene	ND	ug/kg	8.1	0.96	1	06/06/18 19:31	06/08/18 16:39	56-55-3	
Benzo(a)pyrene	ND	ug/kg	8.1	0.51	1	06/06/18 19:31	06/08/18 16:39	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	8.1	0.98	1	06/06/18 19:31	06/08/18 16:39	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	8.1	1.2	1	06/06/18 19:31	06/08/18 16:39	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	8.1	1.4	1	06/06/18 19:31	06/08/18 16:39	207-08-9	
Chrysene	ND	ug/kg	8.1	0.42	1	06/06/18 19:31	06/08/18 16:39	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	8.1	1.8	1	06/06/18 19:31	06/08/18 16:39	53-70-3	
Fluoranthene	ND	ug/kg	8.1	0.62	1	06/06/18 19:31	06/08/18 16:39	206-44-0	
Fluorene	ND	ug/kg	8.1	0.75	1	06/06/18 19:31	06/08/18 16:39	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	8.1	1.5	1	06/06/18 19:31	06/08/18 16:39	193-39-5	
Phenanthrene	ND	ug/kg	8.1	0.72	1	06/06/18 19:31	06/08/18 16:39	85-01-8	
Pyrene	ND	ug/kg	8.1	0.91	1	06/06/18 19:31	06/08/18 16:39	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	52	%	31-105		1	06/06/18 19:31	06/08/18 16:39	321-60-8	
Terphenyl-d14 (S)	60	%	49-115		1	06/06/18 19:31	06/08/18 16:39	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	275	79.8	50	06/08/18 14:50	06/08/18 22:02	71-43-2	1c
n-Butylbenzene	ND	ug/kg	275	97.4	50	06/08/18 14:50	06/08/18 22:02	104-51-8	1c
sec-Butylbenzene	ND	ug/kg	275	82.5	50	06/08/18 14:50	06/08/18 22:02	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	275	79.8	50	06/08/18 14:50	06/08/18 22:02	98-06-6	1c

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Cold Springs
Pace Project No.: 30255017

Sample: B-122(11-13)_060518 **Lab ID: 30255017003** Collected: 06/05/18 11:50 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Ethanol	ND	ug/kg	11000	1430	50	06/08/18 14:50	06/08/18 22:02	64-17-5	1c
Ethylbenzene	**1120**	ug/kg	275	84.2	50	06/08/18 14:50	06/08/18 22:02	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	275	79.8	50	06/08/18 14:50	06/08/18 22:02	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	275	75.9	50	06/08/18 14:50	06/08/18 22:02	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	275	43.5	50	06/08/18 14:50	06/08/18 22:02	1634-04-4	1c
Naphthalene	**514**	ug/kg	275	122	50	06/08/18 14:50	06/08/18 22:02	91-20-3	1c
n-Propylbenzene	**304**	ug/kg	275	79.2	50	06/08/18 14:50	06/08/18 22:02	103-65-1	1c
Toluene	ND	ug/kg	275	79.8	50	06/08/18 14:50	06/08/18 22:02	108-88-3	1c
1,2,4-Trimethylbenzene	**1750**	ug/kg	275	72.1	50	06/08/18 14:50	06/08/18 22:02	95-63-6	1c
1,3,5-Trimethylbenzene	**561**	ug/kg	275	73.7	50	06/08/18 14:50	06/08/18 22:02	108-67-8	1c
m&p-Xylene	**3430**	ug/kg	550	164	50	06/08/18 14:50	06/08/18 22:02	179601-23-1	1c
o-Xylene	**355**	ug/kg	275	77.6	50	06/08/18 14:50	06/08/18 22:02	95-47-6	1c
Surrogates									
Toluene-d8 (S)	93	%	76-124		50	06/08/18 14:50	06/08/18 22:02	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-133		50	06/08/18 14:50	06/08/18 22:02	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	74-131		50	06/08/18 14:50	06/08/18 22:02	17060-07-0	
Dibromofluoromethane (S)	104	%	71-130		50	06/08/18 14:50	06/08/18 22:02	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.4**	%	0.10	0.10	1		06/06/18 15:00		

Sample: B-122(15-17)_060518 **Lab ID: 30255017004** Collected: 06/05/18 12:00 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	8.0	0.72	1	06/06/18 19:31	06/08/18 16:57	83-32-9	
Acenaphthylene	ND	ug/kg	8.0	0.57	1	06/06/18 19:31	06/08/18 16:57	208-96-8	
Anthracene	ND	ug/kg	8.0	0.72	1	06/06/18 19:31	06/08/18 16:57	120-12-7	
Benzo(a)anthracene	ND	ug/kg	8.0	0.94	1	06/06/18 19:31	06/08/18 16:57	56-55-3	
Benzo(a)pyrene	ND	ug/kg	8.0	0.50	1	06/06/18 19:31	06/08/18 16:57	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	8.0	0.96	1	06/06/18 19:31	06/08/18 16:57	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	8.0	1.2	1	06/06/18 19:31	06/08/18 16:57	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	8.0	1.3	1	06/06/18 19:31	06/08/18 16:57	207-08-9	
Chrysene	ND	ug/kg	8.0	0.41	1	06/06/18 19:31	06/08/18 16:57	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	8.0	1.8	1	06/06/18 19:31	06/08/18 16:57	53-70-3	
Fluoranthene	ND	ug/kg	8.0	0.61	1	06/06/18 19:31	06/08/18 16:57	206-44-0	
Fluorene	ND	ug/kg	8.0	0.74	1	06/06/18 19:31	06/08/18 16:57	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	8.0	1.5	1	06/06/18 19:31	06/08/18 16:57	193-39-5	
Phenanthrene	ND	ug/kg	8.0	0.70	1	06/06/18 19:31	06/08/18 16:57	85-01-8	
Pyrene	ND	ug/kg	8.0	0.90	1	06/06/18 19:31	06/08/18 16:57	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	56	%	31-105		1	06/06/18 19:31	06/08/18 16:57	321-60-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Cold Springs
Pace Project No.: 30255017

Sample: B-122(15-17)_060518 **Lab ID: 30255017004** Collected: 06/05/18 12:00 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Surrogates									
Terphenyl-d14 (S)	67	%	49-115		1	06/06/18 19:31	06/08/18 16:57	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	265	76.9	50	06/08/18 14:50	06/08/18 22:21	71-43-2	1c
n-Butylbenzene	**1520**	ug/kg	265	93.9	50	06/08/18 14:50	06/08/18 22:21	104-51-8	1c
sec-Butylbenzene	**507**	ug/kg	265	79.6	50	06/08/18 14:50	06/08/18 22:21	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	265	76.9	50	06/08/18 14:50	06/08/18 22:21	98-06-6	1c
Ethanol	ND	ug/kg	10600	1380	50	06/08/18 14:50	06/08/18 22:21	64-17-5	1c
Ethylbenzene	**5000**	ug/kg	265	81.2	50	06/08/18 14:50	06/08/18 22:21	100-41-4	1c
Isopropylbenzene (Cumene)	**1000**	ug/kg	265	76.9	50	06/08/18 14:50	06/08/18 22:21	98-82-8	1c
p-Isopropyltoluene	**352**	ug/kg	265	73.2	50	06/08/18 14:50	06/08/18 22:21	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	265	41.9	50	06/08/18 14:50	06/08/18 22:21	1634-04-4	1c
Naphthalene	**2470**	ug/kg	265	118	50	06/08/18 14:50	06/08/18 22:21	91-20-3	1c
n-Propylbenzene	**3910**	ug/kg	265	76.4	50	06/08/18 14:50	06/08/18 22:21	103-65-1	1c
Toluene	**365**	ug/kg	265	76.9	50	06/08/18 14:50	06/08/18 22:21	108-88-3	1c
1,2,4-Trimethylbenzene	**17500**	ug/kg	265	69.5	50	06/08/18 14:50	06/08/18 22:21	95-63-6	1c
1,3,5-Trimethylbenzene	**7070**	ug/kg	265	71.1	50	06/08/18 14:50	06/08/18 22:21	108-67-8	1c
m&p-Xylene	**15800**	ug/kg	531	159	50	06/08/18 14:50	06/08/18 22:21	179601-23-1	1c
o-Xylene	**1130**	ug/kg	265	74.8	50	06/08/18 14:50	06/08/18 22:21	95-47-6	1c
Surrogates									
Toluene-d8 (S)	93	%	76-124		50	06/08/18 14:50	06/08/18 22:21	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-133		50	06/08/18 14:50	06/08/18 22:21	460-00-4	
1,2-Dichloroethane-d4 (S)	120	%	74-131		50	06/08/18 14:50	06/08/18 22:21	17060-07-0	
Dibromofluoromethane (S)	89	%	71-130		50	06/08/18 14:50	06/08/18 22:21	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.9**	%	0.10	0.10	1		06/06/18 15:00		

Sample: B-123(0-2)_060518 **Lab ID: 30255017005** Collected: 06/05/18 09:40 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010B Preparation Method: EPA 3005A Leachate Method/Date: EPA 1311; 06/13/18 12:16 Initial pH: 9.18; Final pH: 6.58								
Arsenic	ND	mg/L	0.025	0.013	1	06/14/18 14:48	06/15/18 10:52	7440-38-2	
Barium	**0.43**	mg/L	0.050	0.0038	1	06/14/18 14:48	06/15/18 10:52	7440-39-3	
Cadmium	ND	mg/L	0.015	0.0044	1	06/14/18 14:48	06/15/18 10:52	7440-43-9	
Chromium	ND	mg/L	0.025	0.0043	1	06/14/18 14:48	06/15/18 10:52	7440-47-3	
Lead	ND	mg/L	0.025	0.0090	1	06/14/18 14:48	06/15/18 10:52	7439-92-1	
Selenium	ND	mg/L	0.040	0.024	1	06/14/18 14:48	06/15/18 10:52	7782-49-2	
Silver	ND	mg/L	0.030	0.0050	1	06/14/18 14:48	06/15/18 10:52	7440-22-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Cold Springs
Pace Project No.: 30255017

Sample: B-123(0-2)_060518 **Lab ID: 30255017005** Collected: 06/05/18 09:40 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**12.2**	mg/kg	0.52	0.50	1	06/06/18 15:45	06/08/18 07:20	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**10.2**	%	0.10	0.10	1		06/06/18 15:00		

Sample: B-123(2-4)_060518 **Lab ID: 30255017006** Collected: 06/05/18 09:45 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010B Preparation Method: EPA 3005A Leachate Method/Date: EPA 1311; 06/13/18 12:16 Initial pH: 8.98; Final pH: 6.26								
Arsenic	ND	mg/L	0.025	0.013	1	06/14/18 14:48	06/15/18 11:01	7440-38-2	
Barium	**0.28**	mg/L	0.050	0.0038	1	06/14/18 14:48	06/15/18 11:01	7440-39-3	
Cadmium	ND	mg/L	0.015	0.0044	1	06/14/18 14:48	06/15/18 11:01	7440-43-9	
Chromium	ND	mg/L	0.025	0.0043	1	06/14/18 14:48	06/15/18 11:01	7440-47-3	
Lead	ND	mg/L	0.025	0.0090	1	06/14/18 14:48	06/15/18 11:01	7439-92-1	
Selenium	ND	mg/L	0.040	0.024	1	06/14/18 14:48	06/15/18 11:01	7782-49-2	
Silver	ND	mg/L	0.030	0.0050	1	06/14/18 14:48	06/15/18 11:01	7440-22-4	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**6.6**	mg/kg	0.50	0.49	1	06/06/18 15:45	06/08/18 07:22	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**11.4**	%	0.10	0.10	1		06/06/18 15:00		

Sample: B-124(0-1)_060518 **Lab ID: 30255017007** Collected: 06/05/18 10:05 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010B Preparation Method: EPA 3005A Leachate Method/Date: EPA 1311; 06/13/18 12:16 Initial pH: 9.59; Final pH: 6.65								
Arsenic	ND	mg/L	0.025	0.013	1	06/14/18 14:48	06/15/18 11:07	7440-38-2	
Barium	**1.6**	mg/L	0.050	0.0038	1	06/14/18 14:48	06/15/18 11:07	7440-39-3	
Cadmium	ND	mg/L	0.015	0.0044	1	06/14/18 14:48	06/15/18 11:07	7440-43-9	
Chromium	ND	mg/L	0.025	0.0043	1	06/14/18 14:48	06/15/18 11:07	7440-47-3	
Lead	ND	mg/L	0.025	0.0090	1	06/14/18 14:48	06/15/18 11:07	7439-92-1	
Selenium	ND	mg/L	0.040	0.024	1	06/14/18 14:48	06/15/18 11:07	7782-49-2	
Silver	ND	mg/L	0.030	0.0050	1	06/14/18 14:48	06/15/18 11:07	7440-22-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Cold Springs
Pace Project No.: 30255017

Sample: B-124(0-1)_060518 **Lab ID: 30255017007** Collected: 06/05/18 10:05 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**48.8**	mg/kg	2.5	2.4	5	06/06/18 15:45	06/08/18 07:38	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**7.4**	%	0.10	0.10	1		06/06/18 15:01		

Sample: B-125(0-2)_060518 **Lab ID: 30255017008** Collected: 06/05/18 10:15 Received: 06/06/18 10:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010B Preparation Method: EPA 3005A Leachate Method/Date: EPA 1311; 06/13/18 12:16 Initial pH: 7.27; Final pH: 4.81								
Arsenic	ND	mg/L	0.025	0.013	1	06/14/18 14:48	06/15/18 11:09	7440-38-2	
Barium	**0.22**	mg/L	0.050	0.0038	1	06/14/18 14:48	06/15/18 11:09	7440-39-3	
Cadmium	ND	mg/L	0.015	0.0044	1	06/14/18 14:48	06/15/18 11:09	7440-43-9	
Chromium	ND	mg/L	0.025	0.0043	1	06/14/18 14:48	06/15/18 11:09	7440-47-3	
Lead	ND	mg/L	0.025	0.0090	1	06/14/18 14:48	06/15/18 11:09	7439-92-1	
Selenium	ND	mg/L	0.040	0.024	1	06/14/18 14:48	06/15/18 11:09	7782-49-2	
Silver	ND	mg/L	0.030	0.0050	1	06/14/18 14:48	06/15/18 11:09	7440-22-4	
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**9.6**	mg/kg	0.55	0.54	1	06/06/18 15:45	06/08/18 07:26	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.5**	%	0.10	0.10	1		06/06/18 15:01		

Sample: Trip Blank_060518 **Lab ID: 30255017009** Collected: 06/05/18 00:01 Received: 06/06/18 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260C MSV	Analytical Method: EPA 8260C								
Benzene	ND	ug/L	1.0	0.24	1		06/08/18 15:02	71-43-2	
tert-Butyl Alcohol	ND	ug/L	5.0	3.7	1		06/08/18 15:02	75-65-0	
n-Butylbenzene	ND	ug/L	1.0	0.20	1		06/08/18 15:02	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.25	1		06/08/18 15:02	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.28	1		06/08/18 15:02	98-06-6	
Ethanol	ND	ug/L	200	79.8	1		06/08/18 15:02	64-17-5	L1
Ethylbenzene	ND	ug/L	1.0	0.31	1		06/08/18 15:02	100-41-4	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.24	1		06/08/18 15:02	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	0.36	1		06/08/18 15:02	99-87-6	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.23	1		06/08/18 15:02	1634-04-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Cold Springs
Pace Project No.: 30255017

Sample: Trip Blank_060518 **Lab ID: 30255017009** Collected: 06/05/18 00:01 Received: 06/06/18 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260C MSV	Analytical Method: EPA 8260C								
Naphthalene	ND	ug/L	2.0	0.82	1		06/08/18 15:02	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.29	1		06/08/18 15:02	103-65-1	
Toluene	ND	ug/L	1.0	0.30	1		06/08/18 15:02	108-88-3	
1,2,4-Trimethylbenzene	ND	ug/L	1.0	0.25	1		06/08/18 15:02	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.21	1		06/08/18 15:02	108-67-8	
m&p-Xylene	ND	ug/L	2.0	0.60	1		06/08/18 15:02	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.18	1		06/08/18 15:02	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	104	%	79-129		1		06/08/18 15:02	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	80-120		1		06/08/18 15:02	17060-07-0	
Toluene-d8 (S)	96	%	80-120		1		06/08/18 15:02	2037-26-5	
Dibromofluoromethane (S)	103	%	80-120		1		06/08/18 15:02	1868-53-7	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

QC Batch: 302241 Analysis Method: EPA 6010B
QC Batch Method: EPA 3005A Analysis Description: 6010 MET TCLP
Associated Lab Samples: 30255017005, 30255017006, 30255017007, 30255017008

METHOD BLANK: 1478846 Matrix: Water
Associated Lab Samples: 30255017005, 30255017006, 30255017007, 30255017008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.025	0.013	06/15/18 10:41	
Barium	mg/L	ND	0.050	0.0038	06/15/18 10:41	
Cadmium	mg/L	ND	0.015	0.0044	06/15/18 10:41	
Chromium	mg/L	ND	0.025	0.0043	06/15/18 10:41	
Lead	mg/L	ND	0.025	0.0090	06/15/18 10:41	
Selenium	mg/L	ND	0.040	0.024	06/15/18 10:41	
Silver	mg/L	ND	0.030	0.0050	06/15/18 10:41	

METHOD BLANK: 1477786 Matrix: Water
Associated Lab Samples: 30255017005, 30255017006, 30255017007, 30255017008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.025	0.013	06/15/18 10:46	
Barium	mg/L	ND	0.050	0.0038	06/15/18 10:46	
Cadmium	mg/L	ND	0.015	0.0044	06/15/18 10:46	
Chromium	mg/L	ND	0.025	0.0043	06/15/18 10:46	
Lead	mg/L	ND	0.025	0.0090	06/15/18 10:46	
Selenium	mg/L	ND	0.040	0.024	06/15/18 10:46	
Silver	mg/L	ND	0.030	0.0050	06/15/18 10:46	

METHOD BLANK: 1477787 Matrix: Water
Associated Lab Samples: 30255017005, 30255017006, 30255017007, 30255017008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.025	0.013	06/15/18 10:48	
Barium	mg/L	ND	0.050	0.0038	06/15/18 10:48	
Cadmium	mg/L	ND	0.015	0.0044	06/15/18 10:48	
Chromium	mg/L	ND	0.025	0.0043	06/15/18 10:48	
Lead	mg/L	ND	0.025	0.0090	06/15/18 10:48	
Selenium	mg/L	ND	0.040	0.024	06/15/18 10:48	
Silver	mg/L	ND	0.030	0.0050	06/15/18 10:48	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

METHOD BLANK: 1478216 Matrix: Water
Associated Lab Samples: 30255017005, 30255017006, 30255017007, 30255017008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/L	ND	0.025	0.013	06/15/18 10:50	
Barium	mg/L	ND	0.050	0.0038	06/15/18 10:50	
Cadmium	mg/L	ND	0.015	0.0044	06/15/18 10:50	
Chromium	mg/L	ND	0.025	0.0043	06/15/18 10:50	
Lead	mg/L	ND	0.025	0.0090	06/15/18 10:50	
Selenium	mg/L	ND	0.040	0.024	06/15/18 10:50	
Silver	mg/L	ND	0.030	0.0050	06/15/18 10:50	

LABORATORY CONTROL SAMPLE: 1478847

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	.5	0.50	101	80-120	
Barium	mg/L	.5	0.51	103	80-120	
Cadmium	mg/L	.5	0.52	105	80-120	
Chromium	mg/L	.5	0.52	105	80-120	
Lead	mg/L	.5	0.49	98	80-120	
Selenium	mg/L	.5	0.53	105	80-120	
Silver	mg/L	.25	0.26	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1478849 1478850

Parameter	Units	30255017005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	ND	.5	.5	0.56	0.56	111	112	75-125	1	20	
Barium	mg/L	0.43	.5	.5	0.92	0.94	99	103	75-125	2	20	
Cadmium	mg/L	ND	.5	.5	0.55	0.56	111	113	75-125	2	20	
Chromium	mg/L	ND	.5	.5	0.50	0.51	99	102	75-125	3	20	
Lead	mg/L	ND	.5	.5	0.49	0.51	99	101	75-125	3	20	
Selenium	mg/L	ND	.5	.5	0.58	0.59	115	117	75-125	2	20	
Silver	mg/L	ND	.25	.25	0.28	0.29	112	115	75-125	2	20	

MATRIX SPIKE SAMPLE: 1478852

Parameter	Units	30255454001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	ND	.5	0.53	104	75-125	
Barium	mg/L	ND	.5	0.48	95	75-125	
Cadmium	mg/L	ND	.5	0.52	104	75-125	
Chromium	mg/L	ND	.5	0.50	99	75-125	
Lead	mg/L	ND	.5	0.48	96	75-125	
Selenium	mg/L	ND	.5	0.55	109	75-125	
Silver	mg/L	ND	.25	0.27	107	75-125	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

SAMPLE DUPLICATE: 1478848

Parameter	Units	30255017005 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic	mg/L	ND	ND		20	
Barium	mg/L	0.43	0.42	3	20	
Cadmium	mg/L	ND	ND		20	
Chromium	mg/L	ND	ND		20	
Lead	mg/L	ND	ND		20	
Selenium	mg/L	ND	ND		20	
Silver	mg/L	ND	ND		20	

SAMPLE DUPLICATE: 1478851

Parameter	Units	30255454001 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic	mg/L	ND	.014J		20	
Barium	mg/L	ND	ND		20	
Cadmium	mg/L	ND	ND		20	
Chromium	mg/L	ND	ND		20	
Lead	mg/L	ND	ND		20	
Selenium	mg/L	ND	ND		20	
Silver	mg/L	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

QC Batch: 301207 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050B Analysis Description: 6010C MET
Associated Lab Samples: 30255017001, 30255017005, 30255017006, 30255017007, 30255017008

METHOD BLANK: 1473822 Matrix: Solid
Associated Lab Samples: 30255017001, 30255017005, 30255017006, 30255017007, 30255017008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Lead	mg/kg	ND	0.50	0.49	06/08/18 07:09	

LABORATORY CONTROL SAMPLE: 1473823

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	50	48.5	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1473824 1473825

Parameter	Units	30255017001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	32.3	54.5	54.5	74.7	67.3	78	64	75-125	10	20	ML

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

QC Batch: 301538 Analysis Method: EPA 8260C
QC Batch Method: EPA 5035A Analysis Description: 8260C MSV 5035 Low
Associated Lab Samples: 30255017002

METHOD BLANK: 1475455 Matrix: Solid
Associated Lab Samples: 30255017002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	1.3	06/08/18 16:01	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	1.3	06/08/18 16:01	
Benzene	ug/kg	ND	5.0	1.4	06/08/18 16:01	
Ethanol	ug/kg	ND	200	25.9	06/08/18 16:01	
Ethylbenzene	ug/kg	ND	5.0	1.5	06/08/18 16:01	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	1.4	06/08/18 16:01	
m&p-Xylene	ug/kg	ND	10.0	3.0	06/08/18 16:01	
Methyl-tert-butyl ether	ug/kg	ND	5.0	0.79	06/08/18 16:01	
n-Butylbenzene	ug/kg	ND	5.0	1.8	06/08/18 16:01	
n-Propylbenzene	ug/kg	ND	5.0	1.4	06/08/18 16:01	
Naphthalene	ug/kg	ND	5.0	2.2	06/08/18 16:01	
o-Xylene	ug/kg	ND	5.0	1.4	06/08/18 16:01	
p-Isopropyltoluene	ug/kg	ND	5.0	1.4	06/08/18 16:01	
sec-Butylbenzene	ug/kg	ND	5.0	1.5	06/08/18 16:01	
tert-Butylbenzene	ug/kg	ND	5.0	1.4	06/08/18 16:01	
Toluene	ug/kg	ND	5.0	1.4	06/08/18 16:01	
1,2-Dichloroethane-d4 (S)	%	120	74-131		06/08/18 16:01	
4-Bromofluorobenzene (S)	%	99	70-133		06/08/18 16:01	
Dibromofluoromethane (S)	%	110	71-130		06/08/18 16:01	
Toluene-d8 (S)	%	93	76-124		06/08/18 16:01	

LABORATORY CONTROL SAMPLE: 1475456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	20.7	104	70-130	
1,3,5-Trimethylbenzene	ug/kg	20	21.3	107	70-130	
Benzene	ug/kg	20	22.2	111	70-130	
Ethanol	ug/kg	200	82.5J	41	10-175	
Ethylbenzene	ug/kg	20	21.3	107	70-130	
Isopropylbenzene (Cumene)	ug/kg	20	22.2	111	70-130	
m&p-Xylene	ug/kg	40	42.6	107	70-130	
Methyl-tert-butyl ether	ug/kg	20	20.2	101	70-130	
n-Butylbenzene	ug/kg	20	24.1	120	70-130	
n-Propylbenzene	ug/kg	20	22.7	113	70-130	
Naphthalene	ug/kg	20	20.0	100	70-130	
o-Xylene	ug/kg	20	20.0	100	70-130	
p-Isopropyltoluene	ug/kg	20	23.6	118	70-130	
sec-Butylbenzene	ug/kg	20	23.8	119	70-130	
tert-Butylbenzene	ug/kg	20	23.3	116	70-130	
Toluene	ug/kg	20	20.7	103	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

LABORATORY CONTROL SAMPLE: 1475456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%			111	74-131	
4-Bromofluorobenzene (S)	%			98	70-133	
Dibromofluoromethane (S)	%			112	71-130	
Toluene-d8 (S)	%			93	76-124	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

QC Batch: 301539 Analysis Method: EPA 8260C
QC Batch Method: EPA 5035A Analysis Description: 8260C MSV 5035 Low
Associated Lab Samples: 30255017003, 30255017004

METHOD BLANK: 1475457 Matrix: Solid
Associated Lab Samples: 30255017003, 30255017004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	65.5	06/08/18 15:35	
1,3,5-Trimethylbenzene	ug/kg	ND	250	67.0	06/08/18 15:35	
Benzene	ug/kg	ND	250	72.5	06/08/18 15:35	
Ethanol	ug/kg	ND	10000	1300	06/08/18 15:35	
Ethylbenzene	ug/kg	ND	250	76.5	06/08/18 15:35	
Isopropylbenzene (Cumene)	ug/kg	ND	250	72.5	06/08/18 15:35	
m&p-Xylene	ug/kg	ND	500	150	06/08/18 15:35	
Methyl-tert-butyl ether	ug/kg	ND	250	39.5	06/08/18 15:35	
n-Butylbenzene	ug/kg	ND	250	88.5	06/08/18 15:35	
n-Propylbenzene	ug/kg	ND	250	72.0	06/08/18 15:35	
Naphthalene	ug/kg	ND	250	111	06/08/18 15:35	
o-Xylene	ug/kg	ND	250	70.5	06/08/18 15:35	
p-Isopropyltoluene	ug/kg	ND	250	69.0	06/08/18 15:35	
sec-Butylbenzene	ug/kg	ND	250	75.0	06/08/18 15:35	
tert-Butylbenzene	ug/kg	ND	250	72.5	06/08/18 15:35	
Toluene	ug/kg	ND	250	72.5	06/08/18 15:35	
1,2-Dichloroethane-d4 (S)	%	119	74-131		06/08/18 15:35	
4-Bromofluorobenzene (S)	%	95	70-133		06/08/18 15:35	
Dibromofluoromethane (S)	%	105	71-130		06/08/18 15:35	
Toluene-d8 (S)	%	97	76-124		06/08/18 15:35	

LABORATORY CONTROL SAMPLE: 1475458

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	20.7	104	70-130	
1,3,5-Trimethylbenzene	ug/kg	20	21.3	107	70-130	
Benzene	ug/kg	20	22.2	111	70-130	
Ethanol	ug/kg	200	82.5J	41	10-175	
Ethylbenzene	ug/kg	20	21.3	107	70-130	
Isopropylbenzene (Cumene)	ug/kg	20	22.2	111	70-130	
m&p-Xylene	ug/kg	40	42.6	107	70-130	
Methyl-tert-butyl ether	ug/kg	20	20.2	101	70-130	
n-Butylbenzene	ug/kg	20	24.1	120	70-130	
n-Propylbenzene	ug/kg	20	22.7	113	70-130	
Naphthalene	ug/kg	20	20.0	100	70-130	
o-Xylene	ug/kg	20	20.0	100	70-130	
p-Isopropyltoluene	ug/kg	20	23.6	118	70-130	
sec-Butylbenzene	ug/kg	20	23.8	119	70-130	
tert-Butylbenzene	ug/kg	20	23.3	116	70-130	
Toluene	ug/kg	20	20.7	103	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

LABORATORY CONTROL SAMPLE: 1475458

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%			111	74-131	
4-Bromofluorobenzene (S)	%			98	70-133	
Dibromofluoromethane (S)	%			112	71-130	
Toluene-d8 (S)	%			93	76-124	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

QC Batch: 301520 Analysis Method: EPA 8260C
QC Batch Method: EPA 8260C Analysis Description: 8260C MSV
Associated Lab Samples: 30255017009

METHOD BLANK: 1475340 Matrix: Water
Associated Lab Samples: 30255017009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	ND	1.0	0.25	06/08/18 14:35	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	0.21	06/08/18 14:35	
Benzene	ug/L	ND	1.0	0.24	06/08/18 14:35	
Ethanol	ug/L	ND	200	79.8	06/08/18 14:35	
Ethylbenzene	ug/L	ND	1.0	0.31	06/08/18 14:35	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	0.24	06/08/18 14:35	
m&p-Xylene	ug/L	ND	2.0	0.60	06/08/18 14:35	
Methyl-tert-butyl ether	ug/L	ND	1.0	0.23	06/08/18 14:35	
n-Butylbenzene	ug/L	ND	1.0	0.20	06/08/18 14:35	
n-Propylbenzene	ug/L	ND	1.0	0.29	06/08/18 14:35	
Naphthalene	ug/L	ND	2.0	0.82	06/08/18 14:35	
o-Xylene	ug/L	ND	1.0	0.18	06/08/18 14:35	
p-Isopropyltoluene	ug/L	ND	1.0	0.36	06/08/18 14:35	
sec-Butylbenzene	ug/L	ND	1.0	0.25	06/08/18 14:35	
tert-Butyl Alcohol	ug/L	ND	5.0	3.7	06/08/18 14:35	
tert-Butylbenzene	ug/L	ND	1.0	0.28	06/08/18 14:35	
Toluene	ug/L	ND	1.0	0.30	06/08/18 14:35	
1,2-Dichloroethane-d4 (S)	%	100	80-120		06/08/18 14:35	
4-Bromofluorobenzene (S)	%	97	79-129		06/08/18 14:35	
Dibromofluoromethane (S)	%	102	80-120		06/08/18 14:35	
Toluene-d8 (S)	%	95	80-120		06/08/18 14:35	

LABORATORY CONTROL SAMPLE: 1475341

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.6	108	70-130	
1,3,5-Trimethylbenzene	ug/L	20	21.5	108	70-130	
Benzene	ug/L	20	20.2	101	70-130	
Ethanol	ug/L	200	406	203	10-175	L1
Ethylbenzene	ug/L	20	20.4	102	70-130	
Isopropylbenzene (Cumene)	ug/L	20	21.6	108	70-130	
m&p-Xylene	ug/L	40	41.6	104	70-130	
Methyl-tert-butyl ether	ug/L	20	20.9	104	70-130	
n-Butylbenzene	ug/L	20	23.7	118	70-130	
n-Propylbenzene	ug/L	20	21.4	107	70-130	
Naphthalene	ug/L	20	23.0	115	70-130	
o-Xylene	ug/L	20	19.3	97	70-130	
p-Isopropyltoluene	ug/L	20	22.9	115	70-130	
sec-Butylbenzene	ug/L	20	22.1	110	70-130	
tert-Butyl Alcohol	ug/L	100	102	102	76-159	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

LABORATORY CONTROL SAMPLE: 1475341

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
tert-Butylbenzene	ug/L	20	22.6	113	70-130	
Toluene	ug/L	20	20.2	101	70-130	
1,2-Dichloroethane-d4 (S)	%			98	80-120	
4-Bromofluorobenzene (S)	%			103	79-129	
Dibromofluoromethane (S)	%			97	80-120	
Toluene-d8 (S)	%			99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1475342 1475343

Parameter	Units	30254918001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	20	20	21.2	21.9	106	109	75-125	3	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	19.8	21.3	99	106	76-121	7	30	
Benzene	ug/L	ND	20	20	19.3	20.5	96	102	67-121	6	30	
Ethanol	ug/L	ND	200	200	130J	310	65	155	10-175		30	
Ethylbenzene	ug/L	ND	20	20	20.3	21.8	101	109	70-127	7	30	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20.7	22.5	104	112	80-122	8	30	
m&p-Xylene	ug/L	ND	40	40	40.0	42.6	100	106	71-128	6	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	18.9	20.8	94	104	79-135	10	30	
n-Butylbenzene	ug/L	ND	20	20	21.0	23.4	105	117	54-128	11	30	
n-Propylbenzene	ug/L	ND	20	20	20.2	21.4	101	107	61-127	6	30	
Naphthalene	ug/L	ND	20	20	19.6	21.6	95	104	62-131	9	30	
o-Xylene	ug/L	ND	20	20	19.6	20.8	98	104	68-125	6	30	
p-Isopropyltoluene	ug/L	ND	20	20	20.4	22.2	102	111	60-125	9	30	
sec-Butylbenzene	ug/L	ND	20	20	21.4	22.7	107	114	61-125	6	30	
tert-Butyl Alcohol	ug/L	26.6	100	100	115	122	88	95	65-152	6	30	
tert-Butylbenzene	ug/L	ND	20	20	20.7	22.2	103	111	62-125	7	30	
Toluene	ug/L	ND	20	20	20.1	20.9	100	104	77-125	4	30	
1,2-Dichloroethane-d4 (S)	%						98	100	80-120			
4-Bromofluorobenzene (S)	%						96	102	79-129			
Dibromofluoromethane (S)	%						100	101	80-120			
Toluene-d8 (S)	%						97	100	80-120			

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REPORT OF LABORATORY ANALYSIS

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(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

QC Batch: 301225 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3546 Analysis Description: 8270D/3546 MSSV PAH by SIM
Associated Lab Samples: 30255017002, 30255017003, 30255017004

METHOD BLANK: 1473892 Matrix: Solid
Associated Lab Samples: 30255017002, 30255017003, 30255017004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	6.7	0.61	06/08/18 15:11	
Acenaphthylene	ug/kg	ND	6.7	0.48	06/08/18 15:11	
Anthracene	ug/kg	ND	6.7	0.61	06/08/18 15:11	
Benzo(a)anthracene	ug/kg	ND	6.7	0.79	06/08/18 15:11	
Benzo(a)pyrene	ug/kg	ND	6.7	0.42	06/08/18 15:11	
Benzo(b)fluoranthene	ug/kg	ND	6.7	0.80	06/08/18 15:11	
Benzo(g,h,i)perylene	ug/kg	ND	6.7	1.0	06/08/18 15:11	
Benzo(k)fluoranthene	ug/kg	ND	6.7	1.1	06/08/18 15:11	
Chrysene	ug/kg	ND	6.7	0.35	06/08/18 15:11	
Dibenz(a,h)anthracene	ug/kg	ND	6.7	1.5	06/08/18 15:11	
Fluoranthene	ug/kg	ND	6.7	0.51	06/08/18 15:11	
Fluorene	ug/kg	ND	6.7	0.62	06/08/18 15:11	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	6.7	1.3	06/08/18 15:11	
Phenanthrene	ug/kg	ND	6.7	0.59	06/08/18 15:11	
Pyrene	ug/kg	ND	6.7	0.75	06/08/18 15:11	
2-Fluorobiphenyl (S)	%	66	31-105		06/08/18 15:11	
Terphenyl-d14 (S)	%	79	49-115		06/08/18 15:11	

LABORATORY CONTROL SAMPLE: 1473893

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	133	94.7	71	33-109	
Acenaphthylene	ug/kg	133	102	77	32-123	
Anthracene	ug/kg	133	111	84	41-122	
Benzo(a)anthracene	ug/kg	133	113	84	49-133	
Benzo(a)pyrene	ug/kg	133	110	83	49-133	
Benzo(b)fluoranthene	ug/kg	133	120	90	49-131	
Benzo(g,h,i)perylene	ug/kg	133	106	79	40-130	
Benzo(k)fluoranthene	ug/kg	133	109	81	43-130	
Chrysene	ug/kg	133	113	85	46-115	
Dibenz(a,h)anthracene	ug/kg	133	115	87	45-133	
Fluoranthene	ug/kg	133	113	85	46-130	
Fluorene	ug/kg	133	100	75	37-118	
Indeno(1,2,3-cd)pyrene	ug/kg	133	113	84	44-134	
Phenanthrene	ug/kg	133	105	79	36-116	
Pyrene	ug/kg	133	115	86	46-131	
2-Fluorobiphenyl (S)	%			69	31-105	
Terphenyl-d14 (S)	%			80	49-115	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1473894 1473895

Parameter	Units	30255017002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	184	187	125	139	67	73	26-113	11	20	
Acenaphthylene	ug/kg	ND	184	187	143	161	78	86	19-145	11	20	
Anthracene	ug/kg	ND	184	187	157	172	84	91	42-123	9	20	
Benzo(a)anthracene	ug/kg	ND	184	187	172	184	94	99	49-135	6	20	
Benzo(a)pyrene	ug/kg	ND	184	187	162	175	87	94	40-137	8	20	
Benzo(b)fluoranthene	ug/kg	ND	184	187	165	174	89	93	25-144	5	20	
Benzo(g,h,i)perylene	ug/kg	ND	184	187	144	158	78	85	13-148	10	20	
Benzo(k)fluoranthene	ug/kg	ND	184	187	153	169	82	90	10-165	10	20	
Chrysene	ug/kg	ND	184	187	155	166	83	88	43-118	7	20	
Dibenz(a,h)anthracene	ug/kg	ND	184	187	161	177	87	95	30-140	9	20	
Fluoranthene	ug/kg	ND	184	187	165	176	88	93	39-146	6	20	
Fluorene	ug/kg	ND	184	187	140	154	75	82	36-116	10	20	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	184	187	156	171	85	92	24-145	9	20	
Phenanthrene	ug/kg	ND	184	187	149	163	77	83	30-124	9	20	
Pyrene	ug/kg	ND	184	187	167	178	89	94	42-137	6	20	
2-Fluorobiphenyl (S)	%						62	69	31-105			
Terphenyl-d14 (S)	%						74	78	49-115			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Cold Springs
Pace Project No.: 30255017

QC Batch: 301196 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 30255017001, 30255017002, 30255017003, 30255017004, 30255017005, 30255017006, 30255017007, 30255017008

SAMPLE DUPLICATE: 1473755

Parameter	Units	30254137001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	3.5	4.0	11	20	

SAMPLE DUPLICATE: 1473777

Parameter	Units	30254553001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	82.8	82.3	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: Cold Springs
Pace Project No.: 30255017

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA	Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 301538

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 301539

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
ML	Matrix spike recovery and/or matrix spike duplicate recovery was below laboratory control limits. Result may be biased low.

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Cold Springs
Pace Project No.: 30255017

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30255017005	**B-123(0-2)_060518**	EPA 3005A	302241	EPA 6010B	302283
30255017006	**B-123(2-4)_060518**	EPA 3005A	302241	EPA 6010B	302283
30255017007	**B-124(0-1)_060518**	EPA 3005A	302241	EPA 6010B	302283
30255017008	**B-125(0-2)_060518**	EPA 3005A	302241	EPA 6010B	302283
30255017001	**B-122(0-2)_060518**	EPA 3050B	301207	EPA 6010C	301250
30255017005	**B-123(0-2)_060518**	EPA 3050B	301207	EPA 6010C	301250
30255017006	**B-123(2-4)_060518**	EPA 3050B	301207	EPA 6010C	301250
30255017007	**B-124(0-1)_060518**	EPA 3050B	301207	EPA 6010C	301250
30255017008	**B-125(0-2)_060518**	EPA 3050B	301207	EPA 6010C	301250
30255017002	**B-122(7-9)_060518**	EPA 3546	301225	EPA 8270D by SIM	301258
30255017003	**B-122(11-13)_060518**	EPA 3546	301225	EPA 8270D by SIM	301258
30255017004	**B-122(15-17)_060518**	EPA 3546	301225	EPA 8270D by SIM	301258
30255017002	**B-122(7-9)_060518**	EPA 5035A	301538	EPA 8260C	301551
30255017003	**B-122(11-13)_060518**	EPA 5035A	301539	EPA 8260C	301552
30255017004	**B-122(15-17)_060518**	EPA 5035A	301539	EPA 8260C	301552
30255017009	**Trip Blank_060518**	EPA 8260C	301520		
30255017001	**B-122(0-2)_060518**	ASTM D2974-87	301196		
30255017002	**B-122(7-9)_060518**	ASTM D2974-87	301196		
30255017003	**B-122(11-13)_060518**	ASTM D2974-87	301196		
30255017004	**B-122(15-17)_060518**	ASTM D2974-87	301196		
30255017005	**B-123(0-2)_060518**	ASTM D2974-87	301196		
30255017006	**B-123(2-4)_060518**	ASTM D2974-87	301196		
30255017007	**B-124(0-1)_060518**	ASTM D2974-87	301196		
30255017008	**B-125(0-2)_060518**	ASTM D2974-87	301196		

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

2203677

Section A Required Client Information:

Company: Arcadis
Address: 110 West Fayette Street Suite 300 Syracuse, NY 13202
Email To: Vin.Maresco@arcadis.com
Phone: 315-671-9256 Fax: —
Requested Due Date/TAT: 3 Day TAT

Section B Required Project Information:

Report To: Vin.Maresco@arcadis.com
Copy To: P.J.Hart@arcadis.com
Purchase Order No.: —
Project Name: Cold Springs
Project Number: —

Section C Invoice Information:

Attention: Krista Manley
Company Name: Buckeye
Address: 5 Trek Park, 9999 Hamilton Blvd, Breinigsville, PA 18031
Pace Quote Reference: —
Pace Project Manager: —
Pace Profile #: —

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER Soil

Site Location STATE: NY

Requested Analysis Filtered (Y/N)

WO#: 30255017

30255017

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: VOC 8260 5035	SVOC 8270	Lead - Total	Residual Chl	Pace Project No./ Lab I.D.
1	B-122(0-2)_060518	SL	G	—	—	6/5/18	0855		1	1										X		001
2	B-122(7-9)_060518	SL	G	—	—	6/5/18	1130		5	2					2	1		X	X			002
3	B-122(11-13)_060518	SL	G	—	—	6/5/18	1150		5	2					2	1		X	X			003
4	B-122(15-17)_060518	SL	G	—	—	6/5/18	1200		5	2					2	1		X	X			004
5	B-123(0-2)_060518	SL	G	—	—	6/5/18	0940		1	1										X		005
6	B-123(2-4)_060518	SL	G	—	—	6/5/18	0945		1	1										X		006
7	B-124(0-1)_060518	SL	G	—	—	6/5/18	1005		1	1										X		007
8	B-125(0-2)_060518	SL	G	—	—	6/5/18	1015		1	1										X		008
9	Trip Blank_060518	WT	—	—	—	6/5/18	—		2				2					X				009
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	Jeff Spradlin / Arcadis	6/5/18	14:00	PACE	6/5/18	14:00
	PACE	6/5/18	17:00	PACE	6/6/18	1010

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
4.7	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Spradlin
SIGNATURE of SAMPLER:
DATE Signed (MM/DD/YY): 06/05/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pittsburgh Lab Sample Condition Upon Receipt

30255017

Face Analytical

Client Name: Arcadis Project #

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Label MJS
LIMS Login ANC

Tracking #: 7724 0132 6000

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☒ yes ☐ no

Thermometer Used 6 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 4.6 °C Correction Factor: 10.1 °C Final Temp: 4.7 °C

Temp should be above freezing to 6°C

pH paper Lot# NA

Date and Initials of person examining contents: 6/6/18 DJB

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: SL	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):	✓	✓		7. DJB 6/6/18
Rush Turn Around Time Requested:	✓			8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics			✓ ✓	16. Initial when completed DJB Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):	✓			17. 2 Trip Blanks
Trip Blank Present:	✓			18.
Trip Blank Custody Seals Present	✓			
Rad Aqueous Samples Screened > 0.5 mrem/hr			✓	Initial when completed: Date:

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

August 14, 2018

Vin Maresco
Arcadis
6723 Towpath Road
Syracuse, NY 13214

RE: Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Dear Vin Maresco:
Enclosed are the analytical results for sample(s) received by the laboratory on August 03, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Rachel Christner
rachel.christner@pacelabs.com
724-850-5611
Project Manager

Enclosures

cc: Mr. P.J. Hart, Arcadis
Mr. Edward Mason, Arcadis
Mr. Mike Teeling, Woodard & Curran

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30261182001	**CB-10 (4-6)_080118**	Solid	08/01/18 15:40	08/03/18 09:20
30261182002	**CB-10 (6-8)_080118**	Solid	08/01/18 15:40	08/03/18 09:20
30261182003	**CB-6 (0-2)_080118**	Solid	08/01/18 16:45	08/03/18 09:20
30261182004	**CB-6 (2-4)_080118**	Solid	08/01/18 16:45	08/03/18 09:20
30261182005	**CB-6 (4-5)_080118**	Solid	08/01/18 16:45	08/03/18 09:20
30261182006	**CB-8 (4-6.5)_080118**	Solid	08/01/18 14:20	08/03/18 09:20
30261182007	**CB-8 (6.5-8)_080118**	Solid	08/01/18 14:20	08/03/18 09:20
30261182008	**CB-7 (2-4)_080118**	Solid	08/01/18 11:40	08/03/18 09:20
30261182009	**CB-7 (6-8)_080118**	Solid	08/01/18 11:40	08/03/18 09:20
30261182010	**CB-5(2-4)_080118**	Solid	08/01/18 12:40	08/03/18 09:20
30261182011	**CB-5(4-6)_080118**	Solid	08/01/18 12:40	08/03/18 09:20
30261182012	**CB-5(6-8)_080118**	Solid	08/01/18 12:40	08/03/18 09:20
30261182013	**CB-7(0-2)_080118**	Solid	08/01/18 11:40	08/03/18 09:20
30261182014	**CB-5(0-2)_080118**	Solid	08/01/18 12:40	08/03/18 09:20
30261182015	**CB-8(0-2)_080118**	Solid	08/01/18 14:20	08/03/18 09:20
30261182016	**CB-10(0-2)_080118**	Solid	08/01/18 15:40	08/03/18 09:20
30261182017	**CB-6(0-2)_080118**	Solid	08/01/18 16:45	08/03/18 09:20
30261182018	**CB-3(0-2)_080218**	Solid	08/02/18 09:00	08/03/18 09:20
30261182019	**CB-4(0-2)_080218**	Solid	08/02/18 09:50	08/03/18 09:20
30261182020	**CB-2(0-2)_080218**	Solid	08/02/18 10:40	08/03/18 09:20
30261182021	**CB-1(0-2)_080218**	Solid	08/02/18 11:40	08/03/18 09:20
30261182022	**CB-1(0-2)_080218**	Solid	08/02/18 11:40	08/03/18 09:20
30261182023	**CB-1(4-6)_080218**	Solid	08/02/18 11:40	08/03/18 09:20
30261182024	**CB-2(2-4)_080218**	Solid	08/02/18 10:40	08/03/18 09:20
30261182025	**CB-2(4-5)_080218**	Solid	08/02/18 10:40	08/03/18 09:20
30261182026	**CB-3(2-4)_080218**	Solid	08/02/18 09:00	08/03/18 09:20
30261182027	**CB-3(4-5)_080218**	Solid	08/02/18 09:00	08/03/18 09:20
30261182028	**CB-4(2-4)_080218**	Solid	08/02/18 09:50	08/03/18 09:20
30261182029	**CB-4(5.5-7.5)_080218**	Solid	08/02/18 09:50	08/03/18 09:20

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30261182001	**CB-10 (4-6)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182002	**CB-10 (6-8)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182003	**CB-6 (0-2)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182004	**CB-6 (2-4)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182005	**CB-6 (4-5)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182006	**CB-8 (4-6.5)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182007	**CB-8 (6.5-8)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182008	**CB-7 (2-4)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182009	**CB-7 (6-8)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182010	**CB-5(2-4)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182011	**CB-5(4-6)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182012	**CB-5(6-8)_080118**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182013	**CB-7(0-2)_080118**	EPA 6010C	CTS	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	AK1	1	PASI-PA
30261182014	**CB-5(0-2)_080118**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182015	**CB-8(0-2)_080118**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182016	**CB-10(0-2)_080118**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182017	**CB-6(0-2)_080118**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182018	**CB-3(0-2)_080218**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182019	**CB-4(0-2)_080218**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182020	**CB-2(0-2)_080218**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182021	**CB-1(0-2)_080218**	EPA 6010C	CTS	1	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182022	**CB-1(0-2)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182023	**CB-1(4-6)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182024	**CB-2(2-4)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182025	**CB-2(4-5)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182026	**CB-3(2-4)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182027	**CB-3(4-5)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	JEW, MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA
30261182028	**CB-4(2-4)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	JEW, MAK	20	PASI-PA

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SAMPLE ANALYTE COUNT

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		ASTM D2974-87	AK1	1	PASI-PA
30261182029	**CB-4(5.5-7.5)_080218**	EPA 8270D by SIM	AJC	17	PASI-PA
		EPA 8260C	MAK	20	PASI-PA
		ASTM D2974-87	AK1	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
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ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-10 (4-6)_080118 **Lab ID: 30261182001** Collected: 08/01/18 15:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	78.5	7.1	10	08/07/18 19:16	08/09/18 18:26	83-32-9	M6
Acenaphthylene	ND	ug/kg	78.5	5.6	10	08/07/18 19:16	08/09/18 18:26	208-96-8	M6
Anthracene	ND	ug/kg	78.5	7.1	10	08/07/18 19:16	08/09/18 18:26	120-12-7	
Benzo(a)anthracene	ND	ug/kg	78.5	9.2	10	08/07/18 19:16	08/09/18 18:26	56-55-3	
Benzo(a)pyrene	ND	ug/kg	78.5	4.9	10	08/07/18 19:16	08/09/18 18:26	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	78.5	9.4	10	08/07/18 19:16	08/09/18 18:26	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	78.5	11.8	10	08/07/18 19:16	08/09/18 18:26	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	78.5	13.2	10	08/07/18 19:16	08/09/18 18:26	207-08-9	
Chrysene	ND	ug/kg	78.5	4.1	10	08/07/18 19:16	08/09/18 18:26	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	78.5	17.4	10	08/07/18 19:16	08/09/18 18:26	53-70-3	
Fluoranthene	ND	ug/kg	78.5	6.0	10	08/07/18 19:16	08/09/18 18:26	206-44-0	
Fluorene	**241**	ug/kg	78.5	7.3	10	08/07/18 19:16	08/09/18 18:26	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	78.5	14.9	10	08/07/18 19:16	08/09/18 18:26	193-39-5	
Phenanthrene	**160**	ug/kg	78.5	6.9	10	08/07/18 19:16	08/09/18 18:26	85-01-8	
Pyrene	ND	ug/kg	78.5	8.8	10	08/07/18 19:16	08/09/18 18:26	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	80	%	31-105		10	08/07/18 19:16	08/09/18 18:26	321-60-8	
Terphenyl-d14 (S)	67	%	49-115		10	08/07/18 19:16	08/09/18 18:26	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	2360	683	500	08/07/18 13:59	08/07/18 22:12	71-43-2	1c
n-Butylbenzene	**5430**	ug/kg	2360	834	500	08/07/18 13:59	08/07/18 22:12	104-51-8	1c
sec-Butylbenzene	**2480**	ug/kg	2360	707	500	08/07/18 13:59	08/07/18 22:12	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	2360	683	500	08/07/18 13:59	08/07/18 22:12	98-06-6	1c
Ethanol	ND	ug/kg	94300	12200	500	08/07/18 13:59	08/07/18 22:12	64-17-5	1c
Ethylbenzene	**10200**	ug/kg	2360	721	500	08/07/18 13:59	08/07/18 22:12	100-41-4	1c
Isopropylbenzene (Cumene)	**3840**	ug/kg	2360	683	500	08/07/18 13:59	08/07/18 22:12	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	2360	650	500	08/07/18 13:59	08/07/18 22:12	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	2360	372	500	08/07/18 13:59	08/07/18 22:12	1634-04-4	1c,L2
Naphthalene	ND	ug/kg	2360	1050	500	08/07/18 13:59	08/07/18 22:12	91-20-3	1c
n-Propylbenzene	**14300**	ug/kg	2360	679	500	08/07/18 13:59	08/07/18 22:12	103-65-1	1c
Toluene	ND	ug/kg	2360	683	500	08/07/18 13:59	08/07/18 22:12	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	2360	617	500	08/07/18 13:59	08/07/18 22:12	95-63-6	1c
1,3,5-Trimethylbenzene	**8210**	ug/kg	2360	632	500	08/07/18 13:59	08/07/18 22:12	108-67-8	1c
m&p-Xylene	ND	ug/kg	4710	1410	500	08/07/18 13:59	08/07/18 22:12	179601-23-1	1c
o-Xylene	ND	ug/kg	2360	665	500	08/07/18 13:59	08/07/18 22:12	95-47-6	1c
Surrogates									
Toluene-d8 (S)	99	%	76-124		500	08/07/18 13:59	08/07/18 22:12	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-133		500	08/07/18 13:59	08/07/18 22:12	460-00-4	
1,2-Dichloroethane-d4 (S)	125	%	74-131		500	08/07/18 13:59	08/07/18 22:12	17060-07-0	
Dibromofluoromethane (S)	103	%	71-130		500	08/07/18 13:59	08/07/18 22:12	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.3**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
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ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-10 (6-8)_080118 **Lab ID: 30261182002** Collected: 08/01/18 15:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	7.9	0.72	1	08/07/18 19:16	08/08/18 14:05	83-32-9	
Acenaphthylene	ND	ug/kg	7.9	0.57	1	08/07/18 19:16	08/08/18 14:05	208-96-8	
Anthracene	ND	ug/kg	7.9	0.72	1	08/07/18 19:16	08/08/18 14:05	120-12-7	
Benzo(a)anthracene	ND	ug/kg	7.9	0.93	1	08/07/18 19:16	08/08/18 14:05	56-55-3	
Benzo(a)pyrene	ND	ug/kg	7.9	0.49	1	08/07/18 19:16	08/08/18 14:05	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	7.9	0.95	1	08/07/18 19:16	08/08/18 14:05	205-99-2	ip
Benzo(g,h,i)perylene	ND	ug/kg	7.9	1.2	1	08/07/18 19:16	08/08/18 14:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	7.9	1.3	1	08/07/18 19:16	08/08/18 14:05	207-08-9	ip
Chrysene	ND	ug/kg	7.9	0.41	1	08/07/18 19:16	08/08/18 14:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.9	1.8	1	08/07/18 19:16	08/08/18 14:05	53-70-3	
Fluoranthene	ND	ug/kg	7.9	0.60	1	08/07/18 19:16	08/08/18 14:05	206-44-0	
Fluorene	**8.2**	ug/kg	7.9	0.73	1	08/07/18 19:16	08/08/18 14:05	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	7.9	1.5	1	08/07/18 19:16	08/08/18 14:05	193-39-5	
Phenanthrene	**12.6**	ug/kg	7.9	0.70	1	08/07/18 19:16	08/08/18 14:05	85-01-8	
Pyrene	ND	ug/kg	7.9	0.89	1	08/07/18 19:16	08/08/18 14:05	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	68	%	31-105		1	08/07/18 19:16	08/08/18 14:05	321-60-8	
Terphenyl-d14 (S)	71	%	49-115		1	08/07/18 19:16	08/08/18 14:05	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	224	64.9	50	08/08/18 07:05	08/08/18 18:16	71-43-2	1c
n-Butylbenzene	**522**	ug/kg	224	79.2	50	08/08/18 07:05	08/08/18 18:16	104-51-8	1c
sec-Butylbenzene	**269**	ug/kg	224	67.2	50	08/08/18 07:05	08/08/18 18:16	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	224	64.9	50	08/08/18 07:05	08/08/18 18:16	98-06-6	1c
Ethanol	ND	ug/kg	8950	1160	50	08/08/18 07:05	08/08/18 18:16	64-17-5	1c
Ethylbenzene	ND	ug/kg	224	68.5	50	08/08/18 07:05	08/08/18 18:16	100-41-4	1c
Isopropylbenzene (Cumene)	**415**	ug/kg	224	64.9	50	08/08/18 07:05	08/08/18 18:16	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	224	61.8	50	08/08/18 07:05	08/08/18 18:16	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	224	35.4	50	08/08/18 07:05	08/08/18 18:16	1634-04-4	1c
Naphthalene	ND	ug/kg	224	99.4	50	08/08/18 07:05	08/08/18 18:16	91-20-3	1c
n-Propylbenzene	**1500**	ug/kg	224	64.5	50	08/08/18 07:05	08/08/18 18:16	103-65-1	1c
Toluene	ND	ug/kg	224	64.9	50	08/08/18 07:05	08/08/18 18:16	108-88-3	1c
1,2,4-Trimethylbenzene	**255**	ug/kg	224	58.6	50	08/08/18 07:05	08/08/18 18:16	95-63-6	1c
1,3,5-Trimethylbenzene	**342**	ug/kg	224	60.0	50	08/08/18 07:05	08/08/18 18:16	108-67-8	1c
m&p-Xylene	ND	ug/kg	448	134	50	08/08/18 07:05	08/08/18 18:16	179601-23-1	1c
o-Xylene	ND	ug/kg	224	63.1	50	08/08/18 07:05	08/08/18 18:16	95-47-6	1c
Surrogates									
Toluene-d8 (S)	103	%	76-124		50	08/08/18 07:05	08/08/18 18:16	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-133		50	08/08/18 07:05	08/08/18 18:16	460-00-4	
1,2-Dichloroethane-d4 (S)	150	%	74-131		50	08/08/18 07:05	08/08/18 18:16	17060-07-0	ST
Dibromofluoromethane (S)	107	%	71-130		50	08/08/18 07:05	08/08/18 18:16	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.0**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-6 (0-2)_080118 **Lab ID: 30261182003** Collected: 08/01/18 16:45 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**39.5**	ug/kg	7.8	0.70	1	08/07/18 19:16	08/08/18 14:30	83-32-9	
Acenaphthylene	**25.2**	ug/kg	7.8	0.56	1	08/07/18 19:16	08/08/18 14:30	208-96-8	
Anthracene	**10.3**	ug/kg	7.8	0.70	1	08/07/18 19:16	08/08/18 14:30	120-12-7	
Benzo(a)anthracene	**41.6**	ug/kg	7.8	0.91	1	08/07/18 19:16	08/08/18 14:30	56-55-3	
Benzo(a)pyrene	**39.3**	ug/kg	7.8	0.49	1	08/07/18 19:16	08/08/18 14:30	50-32-8	
Benzo(b)fluoranthene	**87.0**	ug/kg	7.8	0.93	1	08/07/18 19:16	08/08/18 14:30	205-99-2	ip
Benzo(g,h,i)perylene	**27.4**	ug/kg	7.8	1.2	1	08/07/18 19:16	08/08/18 14:30	191-24-2	
Benzo(k)fluoranthene	**64.3**	ug/kg	7.8	1.3	1	08/07/18 19:16	08/08/18 14:30	207-08-9	ip
Chrysene	**57.2**	ug/kg	7.8	0.40	1	08/07/18 19:16	08/08/18 14:30	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.8	1.7	1	08/07/18 19:16	08/08/18 14:30	53-70-3	
Fluoranthene	**71.4**	ug/kg	7.8	0.59	1	08/07/18 19:16	08/08/18 14:30	206-44-0	
Fluorene	**69.0**	ug/kg	7.8	0.72	1	08/07/18 19:16	08/08/18 14:30	86-73-7	
Indeno(1,2,3-cd)pyrene	**23.0**	ug/kg	7.8	1.5	1	08/07/18 19:16	08/08/18 14:30	193-39-5	
Phenanthrene	**135**	ug/kg	7.8	0.68	1	08/07/18 19:16	08/08/18 14:30	85-01-8	
Pyrene	**92.2**	ug/kg	7.8	0.87	1	08/07/18 19:16	08/08/18 14:30	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	62	%	31-105		1	08/07/18 19:16	08/08/18 14:30	321-60-8	
Terphenyl-d14 (S)	64	%	49-115		1	08/07/18 19:16	08/08/18 14:30	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	224	65.1	50	08/07/18 13:59	08/07/18 18:51	71-43-2	1c
n-Butylbenzene	**261**	ug/kg	224	79.4	50	08/07/18 13:59	08/07/18 18:51	104-51-8	1c
sec-Butylbenzene	ND	ug/kg	224	67.3	50	08/07/18 13:59	08/07/18 18:51	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	224	65.1	50	08/07/18 13:59	08/07/18 18:51	98-06-6	1c
Ethanol	ND	ug/kg	8970	1160	50	08/07/18 13:59	08/07/18 18:51	64-17-5	1c
Ethylbenzene	**432**	ug/kg	224	68.7	50	08/07/18 13:59	08/07/18 18:51	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	224	65.1	50	08/07/18 13:59	08/07/18 18:51	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	224	61.9	50	08/07/18 13:59	08/07/18 18:51	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	224	35.4	50	08/07/18 13:59	08/07/18 18:51	1634-04-4	1c,L2
Naphthalene	**1850**	ug/kg	224	99.6	50	08/07/18 13:59	08/07/18 18:51	91-20-3	1c
n-Propylbenzene	**328**	ug/kg	224	64.6	50	08/07/18 13:59	08/07/18 18:51	103-65-1	1c
Toluene	**493**	ug/kg	224	65.1	50	08/07/18 13:59	08/07/18 18:51	108-88-3	1c
1,2,4-Trimethylbenzene	**2430**	ug/kg	224	58.8	50	08/07/18 13:59	08/07/18 18:51	95-63-6	1c
1,3,5-Trimethylbenzene	**926**	ug/kg	224	60.1	50	08/07/18 13:59	08/07/18 18:51	108-67-8	1c
m&p-Xylene	**1700**	ug/kg	449	134	50	08/07/18 13:59	08/07/18 18:51	179601-23-1	1c
o-Xylene	**596**	ug/kg	224	63.3	50	08/07/18 13:59	08/07/18 18:51	95-47-6	1c
Surrogates									
Toluene-d8 (S)	97	%	76-124		50	08/07/18 13:59	08/07/18 18:51	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-133		50	08/07/18 13:59	08/07/18 18:51	460-00-4	
1,2-Dichloroethane-d4 (S)	117	%	74-131		50	08/07/18 13:59	08/07/18 18:51	17060-07-0	
Dibromofluoromethane (S)	111	%	71-130		50	08/07/18 13:59	08/07/18 18:51	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.7**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
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ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-6 (2-4)_080118 **Lab ID: 30261182004** Collected: 08/01/18 16:45 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**1310**	ug/kg	80.3	7.3	10	08/07/18 19:16	08/10/18 14:18	83-32-9	
Acenaphthylene	**526**	ug/kg	80.3	5.7	10	08/07/18 19:16	08/10/18 14:18	208-96-8	
Anthracene	**327**	ug/kg	80.3	7.3	10	08/07/18 19:16	08/10/18 14:18	120-12-7	
Benzo(a)anthracene	**160**	ug/kg	80.3	9.4	10	08/07/18 19:16	08/10/18 14:18	56-55-3	
Benzo(a)pyrene	ND	ug/kg	80.3	5.0	10	08/07/18 19:16	08/10/18 14:18	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	80.3	9.6	10	08/07/18 19:16	08/10/18 14:18	205-99-2	2c
Benzo(g,h,i)perylene	ND	ug/kg	80.3	12.1	10	08/07/18 19:16	08/10/18 14:18	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	80.3	13.5	10	08/07/18 19:16	08/10/18 14:18	207-08-9	
Chrysene	**112**	ug/kg	80.3	4.1	10	08/07/18 19:16	08/10/18 14:18	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	80.3	17.8	10	08/07/18 19:16	08/10/18 14:18	53-70-3	
Fluoranthene	**293**	ug/kg	80.3	6.1	10	08/07/18 19:16	08/10/18 14:18	206-44-0	
Fluorene	**1250**	ug/kg	80.3	7.4	10	08/07/18 19:16	08/10/18 14:18	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	80.3	15.3	10	08/07/18 19:16	08/10/18 14:18	193-39-5	
Phenanthrene	**2230**	ug/kg	80.3	7.1	10	08/07/18 19:16	08/10/18 14:18	85-01-8	
Pyrene	**340**	ug/kg	80.3	9.0	10	08/07/18 19:16	08/10/18 14:18	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	115	%	31-105		10	08/07/18 19:16	08/10/18 14:18	321-60-8	S4
Terphenyl-d14 (S)	71	%	49-115		10	08/07/18 19:16	08/10/18 14:18	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**102000**	ug/kg	2730	791	500	08/07/18 13:59	08/07/18 22:40	71-43-2	1c
n-Butylbenzene	**17500**	ug/kg	2730	965	500	08/07/18 13:59	08/07/18 22:40	104-51-8	1c
sec-Butylbenzene	**7370**	ug/kg	2730	818	500	08/07/18 13:59	08/07/18 22:40	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	2730	791	500	08/07/18 13:59	08/07/18 22:40	98-06-6	1c
Ethanol	ND	ug/kg	109000	14100	500	08/07/18 13:59	08/07/18 22:40	64-17-5	1c
Ethylbenzene	**138000**	ug/kg	2730	835	500	08/07/18 13:59	08/07/18 22:40	100-41-4	1c
Isopropylbenzene (Cumene)	**14400**	ug/kg	2730	791	500	08/07/18 13:59	08/07/18 22:40	98-82-8	1c
p-Isopropyltoluene	**5860**	ug/kg	2730	753	500	08/07/18 13:59	08/07/18 22:40	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	2730	431	500	08/07/18 13:59	08/07/18 22:40	1634-04-4	1c,L2
Naphthalene	**63500**	ug/kg	2730	1210	500	08/07/18 13:59	08/07/18 22:40	91-20-3	1c
n-Propylbenzene	**48700**	ug/kg	2730	785	500	08/07/18 13:59	08/07/18 22:40	103-65-1	1c
Toluene	**482000**	ug/kg	27300	7910	5000	08/07/18 13:59	08/08/18 17:18	108-88-3	
1,2,4-Trimethylbenzene	**281000**	ug/kg	27300	7150	5000	08/07/18 13:59	08/08/18 17:18	95-63-6	
1,3,5-Trimethylbenzene	**95700**	ug/kg	2730	731	500	08/07/18 13:59	08/07/18 22:40	108-67-8	1c
m&p-Xylene	**417000**	ug/kg	5450	1630	500	08/07/18 13:59	08/07/18 22:40	179601-23-1	1c
o-Xylene	**186000**	ug/kg	2730	769	500	08/07/18 13:59	08/07/18 22:40	95-47-6	1c
Surrogates									
Toluene-d8 (S)	103	%	76-124		500	08/07/18 13:59	08/07/18 22:40	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-133		500	08/07/18 13:59	08/07/18 22:40	460-00-4	
1,2-Dichloroethane-d4 (S)	163	%	74-131		500	08/07/18 13:59	08/07/18 22:40	17060-07-0	ST
Dibromofluoromethane (S)	87	%	71-130		500	08/07/18 13:59	08/07/18 22:40	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.0**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-6 (4-5)_080118 **Lab ID: 30261182005** Collected: 08/01/18 16:45 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**912**	ug/kg	79.5	7.2	10	08/07/18 19:16	08/10/18 14:54	83-32-9	
Acenaphthylene	**129**	ug/kg	79.5	5.7	10	08/07/18 19:16	08/10/18 14:54	208-96-8	
Anthracene	**161**	ug/kg	79.5	7.2	10	08/07/18 19:16	08/10/18 14:54	120-12-7	
Benzo(a)anthracene	ND	ug/kg	79.5	9.3	10	08/07/18 19:16	08/10/18 14:54	56-55-3	
Benzo(a)pyrene	ND	ug/kg	79.5	5.0	10	08/07/18 19:16	08/10/18 14:54	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	79.5	9.5	10	08/07/18 19:16	08/10/18 14:54	205-99-2	2c
Benzo(g,h,i)perylene	ND	ug/kg	79.5	12.0	10	08/07/18 19:16	08/10/18 14:54	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	79.5	13.3	10	08/07/18 19:16	08/10/18 14:54	207-08-9	
Chrysene	ND	ug/kg	79.5	4.1	10	08/07/18 19:16	08/10/18 14:54	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	79.5	17.7	10	08/07/18 19:16	08/10/18 14:54	53-70-3	
Fluoranthene	**149**	ug/kg	79.5	6.0	10	08/07/18 19:16	08/10/18 14:54	206-44-0	
Fluorene	**1010**	ug/kg	79.5	7.4	10	08/07/18 19:16	08/10/18 14:54	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	79.5	15.1	10	08/07/18 19:16	08/10/18 14:54	193-39-5	
Phenanthrene	**1290**	ug/kg	79.5	7.0	10	08/07/18 19:16	08/10/18 14:54	85-01-8	
Pyrene	**172**	ug/kg	79.5	8.9	10	08/07/18 19:16	08/10/18 14:54	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	109	%	31-105		10	08/07/18 19:16	08/10/18 14:54	321-60-8	S4
Terphenyl-d14 (S)	62	%	49-115		10	08/07/18 19:16	08/10/18 14:54	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**145000**	ug/kg	26600	7710	5000	08/07/18 13:59	08/08/18 00:06	71-43-2	1c
n-Butylbenzene	ND	ug/kg	26600	9410	5000	08/07/18 13:59	08/08/18 00:06	104-51-8	1c
sec-Butylbenzene	ND	ug/kg	26600	7970	5000	08/07/18 13:59	08/08/18 00:06	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	26600	7710	5000	08/07/18 13:59	08/08/18 00:06	98-06-6	1c
Ethanol	ND	ug/kg	1060000	138000	5000	08/07/18 13:59	08/08/18 00:06	64-17-5	1c
Ethylbenzene	**145000**	ug/kg	26600	8130	5000	08/07/18 13:59	08/08/18 00:06	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	26600	7710	5000	08/07/18 13:59	08/08/18 00:06	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	26600	7330	5000	08/07/18 13:59	08/08/18 00:06	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	26600	4200	5000	08/07/18 13:59	08/08/18 00:06	1634-04-4	1c,L2
Naphthalene	**86800**	ug/kg	26600	11800	5000	08/07/18 13:59	08/08/18 00:06	91-20-3	1c
n-Propylbenzene	**52800**	ug/kg	26600	7650	5000	08/07/18 13:59	08/08/18 00:06	103-65-1	1c
Toluene	**621000**	ug/kg	26600	7710	5000	08/07/18 13:59	08/08/18 00:06	108-88-3	1c
1,2,4-Trimethylbenzene	**322000**	ug/kg	26600	6960	5000	08/07/18 13:59	08/08/18 00:06	95-63-6	1c
1,3,5-Trimethylbenzene	**104000**	ug/kg	26600	7120	5000	08/07/18 13:59	08/08/18 00:06	108-67-8	1c
m&p-Xylene	**570000**	ug/kg	53100	15900	5000	08/07/18 13:59	08/08/18 00:06	179601-23-1	1c
o-Xylene	**205000**	ug/kg	26600	7490	5000	08/07/18 13:59	08/08/18 00:06	95-47-6	1c
Surrogates									
Toluene-d8 (S)	97	%	76-124		5000	08/07/18 13:59	08/08/18 00:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-133		5000	08/07/18 13:59	08/08/18 00:06	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	74-131		5000	08/07/18 13:59	08/08/18 00:06	17060-07-0	
Dibromofluoromethane (S)	106	%	71-130		5000	08/07/18 13:59	08/08/18 00:06	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.2**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-8 (4-6.5)_080118 **Lab ID: 30261182006** Collected: 08/01/18 14:20 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**322**	ug/kg	8.0	0.72	1	08/07/18 19:16	08/08/18 15:43	83-32-9	
Acenaphthylene	ND	ug/kg	8.0	0.57	1	08/07/18 19:16	08/08/18 15:43	208-96-8	
Anthracene	**25.7**	ug/kg	8.0	0.72	1	08/07/18 19:16	08/08/18 15:43	120-12-7	
Benzo(a)anthracene	ND	ug/kg	8.0	0.93	1	08/07/18 19:16	08/08/18 15:43	56-55-3	
Benzo(a)pyrene	ND	ug/kg	8.0	0.50	1	08/07/18 19:16	08/08/18 15:43	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	8.0	0.95	1	08/07/18 19:16	08/08/18 15:43	205-99-2	ip
Benzo(g,h,i)perylene	ND	ug/kg	8.0	1.2	1	08/07/18 19:16	08/08/18 15:43	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	8.0	1.3	1	08/07/18 19:16	08/08/18 15:43	207-08-9	ip
Chrysene	**12.6**	ug/kg	8.0	0.41	1	08/07/18 19:16	08/08/18 15:43	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	8.0	1.8	1	08/07/18 19:16	08/08/18 15:43	53-70-3	
Fluoranthene	**25.7**	ug/kg	8.0	0.60	1	08/07/18 19:16	08/08/18 15:43	206-44-0	
Fluorene	**487**	ug/kg	8.0	0.74	1	08/07/18 19:16	08/08/18 15:43	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	8.0	1.5	1	08/07/18 19:16	08/08/18 15:43	193-39-5	
Phenanthrene	**1230**	ug/kg	8.0	0.70	1	08/07/18 19:16	08/08/18 15:43	85-01-8	
Pyrene	**81.1**	ug/kg	8.0	0.89	1	08/07/18 19:16	08/08/18 15:43	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	45	%	31-105		1	08/07/18 19:16	08/08/18 15:43	321-60-8	
Terphenyl-d14 (S)	56	%	49-115		1	08/07/18 19:16	08/08/18 15:43	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	245	71.0	50	08/07/18 13:59	08/07/18 19:20	71-43-2	1c
n-Butylbenzene	**406**	ug/kg	245	86.7	50	08/07/18 13:59	08/07/18 19:20	104-51-8	1c
sec-Butylbenzene	**427**	ug/kg	245	73.5	50	08/07/18 13:59	08/07/18 19:20	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	245	71.0	50	08/07/18 13:59	08/07/18 19:20	98-06-6	1c
Ethanol	ND	ug/kg	9790	1270	50	08/07/18 13:59	08/07/18 19:20	64-17-5	1c
Ethylbenzene	ND	ug/kg	245	74.9	50	08/07/18 13:59	08/07/18 19:20	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	245	71.0	50	08/07/18 13:59	08/07/18 19:20	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	245	67.6	50	08/07/18 13:59	08/07/18 19:20	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	245	38.7	50	08/07/18 13:59	08/07/18 19:20	1634-04-4	1c,L2
Naphthalene	**1390**	ug/kg	245	109	50	08/07/18 13:59	08/07/18 19:20	91-20-3	1c
n-Propylbenzene	**461**	ug/kg	245	70.5	50	08/07/18 13:59	08/07/18 19:20	103-65-1	1c
Toluene	**305**	ug/kg	245	71.0	50	08/07/18 13:59	08/07/18 19:20	108-88-3	1c
1,2,4-Trimethylbenzene	**2920**	ug/kg	245	64.2	50	08/07/18 13:59	08/07/18 19:20	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	245	65.6	50	08/07/18 13:59	08/07/18 19:20	108-67-8	1c
m&p-Xylene	**557**	ug/kg	490	146	50	08/07/18 13:59	08/07/18 19:20	179601-23-1	1c
o-Xylene	ND	ug/kg	245	69.1	50	08/07/18 13:59	08/07/18 19:20	95-47-6	1c
Surrogates									
Toluene-d8 (S)	98	%	76-124		50	08/07/18 13:59	08/07/18 19:20	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-133		50	08/07/18 13:59	08/07/18 19:20	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	74-131		50	08/07/18 13:59	08/07/18 19:20	17060-07-0	
Dibromofluoromethane (S)	110	%	71-130		50	08/07/18 13:59	08/07/18 19:20	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.1**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-8 (6.5-8)_080118 **Lab ID: 30261182007** Collected: 08/01/18 14:20 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**18.5**	ug/kg	7.8	0.71	1	08/07/18 19:16	08/08/18 16:07	83-32-9	
Acenaphthylene	ND	ug/kg	7.8	0.56	1	08/07/18 19:16	08/08/18 16:07	208-96-8	
Anthracene	ND	ug/kg	7.8	0.71	1	08/07/18 19:16	08/08/18 16:07	120-12-7	
Benzo(a)anthracene	ND	ug/kg	7.8	0.92	1	08/07/18 19:16	08/08/18 16:07	56-55-3	
Benzo(a)pyrene	ND	ug/kg	7.8	0.49	1	08/07/18 19:16	08/08/18 16:07	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	7.8	0.94	1	08/07/18 19:16	08/08/18 16:07	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	7.8	1.2	1	08/07/18 19:16	08/08/18 16:07	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	7.8	1.3	1	08/07/18 19:16	08/08/18 16:07	207-08-9	
Chrysene	ND	ug/kg	7.8	0.40	1	08/07/18 19:16	08/08/18 16:07	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.8	1.7	1	08/07/18 19:16	08/08/18 16:07	53-70-3	
Fluoranthene	ND	ug/kg	7.8	0.59	1	08/07/18 19:16	08/08/18 16:07	206-44-0	
Fluorene	**29.3**	ug/kg	7.8	0.72	1	08/07/18 19:16	08/08/18 16:07	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	7.8	1.5	1	08/07/18 19:16	08/08/18 16:07	193-39-5	
Phenanthrene	**73.3**	ug/kg	7.8	0.69	1	08/07/18 19:16	08/08/18 16:07	85-01-8	
Pyrene	**8.8**	ug/kg	7.8	0.88	1	08/07/18 19:16	08/08/18 16:07	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	70	%	31-105		1	08/07/18 19:16	08/08/18 16:07	321-60-8	
Terphenyl-d14 (S)	84	%	49-115		1	08/07/18 19:16	08/08/18 16:07	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	240	69.6	50	08/08/18 07:05	08/08/18 18:44	71-43-2	1c
n-Butylbenzene	ND	ug/kg	240	84.9	50	08/08/18 07:05	08/08/18 18:44	104-51-8	1c
sec-Butylbenzene	ND	ug/kg	240	72.0	50	08/08/18 07:05	08/08/18 18:44	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	240	69.6	50	08/08/18 07:05	08/08/18 18:44	98-06-6	1c
Ethanol	ND	ug/kg	9600	1240	50	08/08/18 07:05	08/08/18 18:44	64-17-5	1c
Ethylbenzene	ND	ug/kg	240	73.4	50	08/08/18 07:05	08/08/18 18:44	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	240	69.6	50	08/08/18 07:05	08/08/18 18:44	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	240	66.2	50	08/08/18 07:05	08/08/18 18:44	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	240	37.9	50	08/08/18 07:05	08/08/18 18:44	1634-04-4	1c
Naphthalene	ND	ug/kg	240	107	50	08/08/18 07:05	08/08/18 18:44	91-20-3	1c
n-Propylbenzene	ND	ug/kg	240	69.1	50	08/08/18 07:05	08/08/18 18:44	103-65-1	1c
Toluene	ND	ug/kg	240	69.6	50	08/08/18 07:05	08/08/18 18:44	108-88-3	1c
1,2,4-Trimethylbenzene	**663**	ug/kg	240	62.8	50	08/08/18 07:05	08/08/18 18:44	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	240	64.3	50	08/08/18 07:05	08/08/18 18:44	108-67-8	1c
m&p-Xylene	ND	ug/kg	480	143	50	08/08/18 07:05	08/08/18 18:44	179601-23-1	1c
o-Xylene	ND	ug/kg	240	67.6	50	08/08/18 07:05	08/08/18 18:44	95-47-6	1c
Surrogates									
Toluene-d8 (S)	98	%	76-124		50	08/08/18 07:05	08/08/18 18:44	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-133		50	08/08/18 07:05	08/08/18 18:44	460-00-4	
1,2-Dichloroethane-d4 (S)	133	%	74-131		50	08/08/18 07:05	08/08/18 18:44	17060-07-0	ST
Dibromofluoromethane (S)	106	%	71-130		50	08/08/18 07:05	08/08/18 18:44	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**16.4**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-7 (2-4)_080118 **Lab ID: 30261182008** Collected: 08/01/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**37.9**	ug/kg	7.4	0.67	1	08/07/18 19:16	08/08/18 16:30	83-32-9	
Acenaphthylene	**19.2**	ug/kg	7.4	0.53	1	08/07/18 19:16	08/08/18 16:30	208-96-8	
Anthracene	ND	ug/kg	7.4	0.67	1	08/07/18 19:16	08/08/18 16:30	120-12-7	
Benzo(a)anthracene	ND	ug/kg	7.4	0.87	1	08/07/18 19:16	08/08/18 16:30	56-55-3	
Benzo(a)pyrene	ND	ug/kg	7.4	0.46	1	08/07/18 19:16	08/08/18 16:30	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	7.4	0.89	1	08/07/18 19:16	08/08/18 16:30	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	7.4	1.1	1	08/07/18 19:16	08/08/18 16:30	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	7.4	1.2	1	08/07/18 19:16	08/08/18 16:30	207-08-9	
Chrysene	ND	ug/kg	7.4	0.38	1	08/07/18 19:16	08/08/18 16:30	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.4	1.7	1	08/07/18 19:16	08/08/18 16:30	53-70-3	
Fluoranthene	ND	ug/kg	7.4	0.56	1	08/07/18 19:16	08/08/18 16:30	206-44-0	
Fluorene	**48.7**	ug/kg	7.4	0.69	1	08/07/18 19:16	08/08/18 16:30	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	7.4	1.4	1	08/07/18 19:16	08/08/18 16:30	193-39-5	
Phenanthrene	**99.2**	ug/kg	7.4	0.65	1	08/07/18 19:16	08/08/18 16:30	85-01-8	
Pyrene	**7.8**	ug/kg	7.4	0.83	1	08/07/18 19:16	08/08/18 16:30	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	76	%	31-105		1	08/07/18 19:16	08/08/18 16:30	321-60-8	
Terphenyl-d14 (S)	79	%	49-115		1	08/07/18 19:16	08/08/18 16:30	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**61900**	ug/kg	1960	570	500	08/07/18 13:59	08/07/18 23:09	71-43-2	1c
n-Butylbenzene	**7790**	ug/kg	1960	695	500	08/07/18 13:59	08/07/18 23:09	104-51-8	1c
sec-Butylbenzene	**2650**	ug/kg	1960	589	500	08/07/18 13:59	08/07/18 23:09	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	1960	570	500	08/07/18 13:59	08/07/18 23:09	98-06-6	1c
Ethanol	ND	ug/kg	78600	10200	500	08/07/18 13:59	08/07/18 23:09	64-17-5	1c
Ethylbenzene	**66700**	ug/kg	1960	601	500	08/07/18 13:59	08/07/18 23:09	100-41-4	1c
Isopropylbenzene (Cumene)	**6450**	ug/kg	1960	570	500	08/07/18 13:59	08/07/18 23:09	98-82-8	1c
p-Isopropyltoluene	**2110**	ug/kg	1960	542	500	08/07/18 13:59	08/07/18 23:09	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	1960	310	500	08/07/18 13:59	08/07/18 23:09	1634-04-4	1c,L2
Naphthalene	**26300**	ug/kg	1960	872	500	08/07/18 13:59	08/07/18 23:09	91-20-3	1c
n-Propylbenzene	**23400**	ug/kg	1960	566	500	08/07/18 13:59	08/07/18 23:09	103-65-1	1c
Toluene	**324000**	ug/kg	19600	5700	5000	08/07/18 13:59	08/08/18 17:47	108-88-3	
1,2,4-Trimethylbenzene	**128000**	ug/kg	1960	515	500	08/07/18 13:59	08/07/18 23:09	95-63-6	1c
1,3,5-Trimethylbenzene	**47800**	ug/kg	1960	526	500	08/07/18 13:59	08/07/18 23:09	108-67-8	1c
m&p-Xylene	**224000**	ug/kg	3930	1170	500	08/07/18 13:59	08/07/18 23:09	179601-23-1	1c
o-Xylene	**90600**	ug/kg	1960	554	500	08/07/18 13:59	08/07/18 23:09	95-47-6	1c
Surrogates									
Toluene-d8 (S)	102	%	76-124		500	08/07/18 13:59	08/07/18 23:09	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-133		500	08/07/18 13:59	08/07/18 23:09	460-00-4	
1,2-Dichloroethane-d4 (S)	148	%	74-131		500	08/07/18 13:59	08/07/18 23:09	17060-07-0	ST
Dibromofluoromethane (S)	92	%	71-130		500	08/07/18 13:59	08/07/18 23:09	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**11.7**	%	0.10	0.10	1		08/06/18 11:28		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-7 (6-8)_080118 **Lab ID: 30261182009** Collected: 08/01/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	8.5	0.77	1	08/07/18 19:16	08/08/18 16:54	83-32-9	
Acenaphthylene	ND	ug/kg	8.5	0.61	1	08/07/18 19:16	08/08/18 16:54	208-96-8	
Anthracene	ND	ug/kg	8.5	0.77	1	08/07/18 19:16	08/08/18 16:54	120-12-7	
Benzo(a)anthracene	ND	ug/kg	8.5	1.0	1	08/07/18 19:16	08/08/18 16:54	56-55-3	
Benzo(a)pyrene	ND	ug/kg	8.5	0.53	1	08/07/18 19:16	08/08/18 16:54	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	8.5	1.0	1	08/07/18 19:16	08/08/18 16:54	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	8.5	1.3	1	08/07/18 19:16	08/08/18 16:54	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	8.5	1.4	1	08/07/18 19:16	08/08/18 16:54	207-08-9	
Chrysene	ND	ug/kg	8.5	0.44	1	08/07/18 19:16	08/08/18 16:54	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	8.5	1.9	1	08/07/18 19:16	08/08/18 16:54	53-70-3	
Fluoranthene	ND	ug/kg	8.5	0.65	1	08/07/18 19:16	08/08/18 16:54	206-44-0	
Fluorene	ND	ug/kg	8.5	0.79	1	08/07/18 19:16	08/08/18 16:54	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	8.5	1.6	1	08/07/18 19:16	08/08/18 16:54	193-39-5	
Phenanthrene	**12.9**	ug/kg	8.5	0.75	1	08/07/18 19:16	08/08/18 16:54	85-01-8	
Pyrene	ND	ug/kg	8.5	0.96	1	08/07/18 19:16	08/08/18 16:54	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	65	%	31-105		1	08/07/18 19:16	08/08/18 16:54	321-60-8	
Terphenyl-d14 (S)	78	%	49-115		1	08/07/18 19:16	08/08/18 16:54	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**6820**	ug/kg	250	72.6	50	08/07/18 13:59	08/07/18 19:49	71-43-2	1c
n-Butylbenzene	ND	ug/kg	250	88.6	50	08/07/18 13:59	08/07/18 19:49	104-51-8	1c
sec-Butylbenzene	ND	ug/kg	250	75.1	50	08/07/18 13:59	08/07/18 19:49	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	250	72.6	50	08/07/18 13:59	08/07/18 19:49	98-06-6	1c
Ethanol	ND	ug/kg	10000	1300	50	08/07/18 13:59	08/07/18 19:49	64-17-5	1c
Ethylbenzene	**691**	ug/kg	250	76.6	50	08/07/18 13:59	08/07/18 19:49	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	250	72.6	50	08/07/18 13:59	08/07/18 19:49	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	250	69.1	50	08/07/18 13:59	08/07/18 19:49	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	250	39.6	50	08/07/18 13:59	08/07/18 19:49	1634-04-4	1c,L2
Naphthalene	**911**	ug/kg	250	111	50	08/07/18 13:59	08/07/18 19:49	91-20-3	1c
n-Propylbenzene	ND	ug/kg	250	72.1	50	08/07/18 13:59	08/07/18 19:49	103-65-1	1c
Toluene	**7060**	ug/kg	250	72.6	50	08/07/18 13:59	08/07/18 19:49	108-88-3	1c
1,2,4-Trimethylbenzene	**1100**	ug/kg	250	65.6	50	08/07/18 13:59	08/07/18 19:49	95-63-6	1c
1,3,5-Trimethylbenzene	**301**	ug/kg	250	67.1	50	08/07/18 13:59	08/07/18 19:49	108-67-8	1c
m&p-Xylene	**2720**	ug/kg	501	150	50	08/07/18 13:59	08/07/18 19:49	179601-23-1	1c
o-Xylene	**1060**	ug/kg	250	70.6	50	08/07/18 13:59	08/07/18 19:49	95-47-6	1c
Surrogates									
Toluene-d8 (S)	96	%	76-124		50	08/07/18 13:59	08/07/18 19:49	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-133		50	08/07/18 13:59	08/07/18 19:49	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	74-131		50	08/07/18 13:59	08/07/18 19:49	17060-07-0	
Dibromofluoromethane (S)	108	%	71-130		50	08/07/18 13:59	08/07/18 19:49	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.5**	%	0.10	0.10	1		08/06/18 11:29		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-5(2-4)_080118 **Lab ID: 30261182010** Collected: 08/01/18 12:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**33.6**	ug/kg	7.8	0.71	1	08/07/18 19:16	08/08/18 17:18	83-32-9	
Acenaphthylene	ND	ug/kg	7.8	0.56	1	08/07/18 19:16	08/08/18 17:18	208-96-8	
Anthracene	ND	ug/kg	7.8	0.71	1	08/07/18 19:16	08/08/18 17:18	120-12-7	
Benzo(a)anthracene	ND	ug/kg	7.8	0.92	1	08/07/18 19:16	08/08/18 17:18	56-55-3	
Benzo(a)pyrene	ND	ug/kg	7.8	0.49	1	08/07/18 19:16	08/08/18 17:18	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	7.8	0.94	1	08/07/18 19:16	08/08/18 17:18	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	7.8	1.2	1	08/07/18 19:16	08/08/18 17:18	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	7.8	1.3	1	08/07/18 19:16	08/08/18 17:18	207-08-9	
Chrysene	ND	ug/kg	7.8	0.40	1	08/07/18 19:16	08/08/18 17:18	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.8	1.7	1	08/07/18 19:16	08/08/18 17:18	53-70-3	
Fluoranthene	**8.8**	ug/kg	7.8	0.59	1	08/07/18 19:16	08/08/18 17:18	206-44-0	
Fluorene	**44.3**	ug/kg	7.8	0.72	1	08/07/18 19:16	08/08/18 17:18	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	7.8	1.5	1	08/07/18 19:16	08/08/18 17:18	193-39-5	
Phenanthrene	**68.8**	ug/kg	7.8	0.69	1	08/07/18 19:16	08/08/18 17:18	85-01-8	
Pyrene	**10.5**	ug/kg	7.8	0.88	1	08/07/18 19:16	08/08/18 17:18	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	72	%	31-105		1	08/07/18 19:16	08/08/18 17:18	321-60-8	
Terphenyl-d14 (S)	80	%	49-115		1	08/07/18 19:16	08/08/18 17:18	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**22900**	ug/kg	2250	652	500	08/07/18 13:59	08/07/18 23:37	71-43-2	1c
n-Butylbenzene	**8110**	ug/kg	2250	796	500	08/07/18 13:59	08/07/18 23:37	104-51-8	1c
sec-Butylbenzene	**3640**	ug/kg	2250	674	500	08/07/18 13:59	08/07/18 23:37	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	2250	652	500	08/07/18 13:59	08/07/18 23:37	98-06-6	1c
Ethanol	ND	ug/kg	89900	11700	500	08/07/18 13:59	08/07/18 23:37	64-17-5	1c
Ethylbenzene	**55000**	ug/kg	2250	688	500	08/07/18 13:59	08/07/18 23:37	100-41-4	1c
Isopropylbenzene (Cumene)	**6710**	ug/kg	2250	652	500	08/07/18 13:59	08/07/18 23:37	98-82-8	1c
p-Isopropyltoluene	**2950**	ug/kg	2250	620	500	08/07/18 13:59	08/07/18 23:37	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	2250	355	500	08/07/18 13:59	08/07/18 23:37	1634-04-4	1c,L2
Naphthalene	**26200**	ug/kg	2250	998	500	08/07/18 13:59	08/07/18 23:37	91-20-3	1c
n-Propylbenzene	**21900**	ug/kg	2250	647	500	08/07/18 13:59	08/07/18 23:37	103-65-1	1c
Toluene	**145000**	ug/kg	2250	652	500	08/07/18 13:59	08/07/18 23:37	108-88-3	1c
1,2,4-Trimethylbenzene	**120000**	ug/kg	2250	589	500	08/07/18 13:59	08/07/18 23:37	95-63-6	1c
1,3,5-Trimethylbenzene	**43900**	ug/kg	2250	602	500	08/07/18 13:59	08/07/18 23:37	108-67-8	1c
m&p-Xylene	**194000**	ug/kg	4500	1340	500	08/07/18 13:59	08/07/18 23:37	179601-23-1	1c
o-Xylene	**74100**	ug/kg	2250	634	500	08/07/18 13:59	08/07/18 23:37	95-47-6	1c
Surrogates									
Toluene-d8 (S)	101	%	76-124		500	08/07/18 13:59	08/07/18 23:37	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-133		500	08/07/18 13:59	08/07/18 23:37	460-00-4	
1,2-Dichloroethane-d4 (S)	137	%	74-131		500	08/07/18 13:59	08/07/18 23:37	17060-07-0	ST
Dibromofluoromethane (S)	99	%	71-130		500	08/07/18 13:59	08/07/18 23:37	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.2**	%	0.10	0.10	1		08/06/18 11:29		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-5(4-6)_080118 **Lab ID: 30261182011** Collected: 08/01/18 12:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**70.1**	ug/kg	8.5	0.77	1	08/07/18 19:16	08/08/18 17:42	83-32-9	
Acenaphthylene	**32.4**	ug/kg	8.5	0.61	1	08/07/18 19:16	08/08/18 17:42	208-96-8	
Anthracene	**13.3**	ug/kg	8.5	0.77	1	08/07/18 19:16	08/08/18 17:42	120-12-7	
Benzo(a)anthracene	ND	ug/kg	8.5	1.0	1	08/07/18 19:16	08/08/18 17:42	56-55-3	
Benzo(a)pyrene	ND	ug/kg	8.5	0.53	1	08/07/18 19:16	08/08/18 17:42	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	8.5	1.0	1	08/07/18 19:16	08/08/18 17:42	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	8.5	1.3	1	08/07/18 19:16	08/08/18 17:42	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	8.5	1.4	1	08/07/18 19:16	08/08/18 17:42	207-08-9	
Chrysene	ND	ug/kg	8.5	0.44	1	08/07/18 19:16	08/08/18 17:42	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	8.5	1.9	1	08/07/18 19:16	08/08/18 17:42	53-70-3	
Fluoranthene	**18.2**	ug/kg	8.5	0.64	1	08/07/18 19:16	08/08/18 17:42	206-44-0	
Fluorene	**90.5**	ug/kg	8.5	0.79	1	08/07/18 19:16	08/08/18 17:42	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	8.5	1.6	1	08/07/18 19:16	08/08/18 17:42	193-39-5	
Phenanthrene	**155**	ug/kg	8.5	0.75	1	08/07/18 19:16	08/08/18 17:42	85-01-8	
Pyrene	**23.9**	ug/kg	8.5	0.95	1	08/07/18 19:16	08/08/18 17:42	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	67	%	31-105		1	08/07/18 19:16	08/08/18 17:42	321-60-8	
Terphenyl-d14 (S)	73	%	49-115		1	08/07/18 19:16	08/08/18 17:42	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**8770**	ug/kg	261	75.7	50	08/07/18 13:59	08/07/18 20:17	71-43-2	1c
n-Butylbenzene	**1960**	ug/kg	261	92.4	50	08/07/18 13:59	08/07/18 20:17	104-51-8	1c
sec-Butylbenzene	**877**	ug/kg	261	78.3	50	08/07/18 13:59	08/07/18 20:17	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	261	75.7	50	08/07/18 13:59	08/07/18 20:17	98-06-6	1c
Ethanol	ND	ug/kg	10400	1350	50	08/07/18 13:59	08/07/18 20:17	64-17-5	1c
Ethylbenzene	**13200**	ug/kg	261	79.9	50	08/07/18 13:59	08/07/18 20:17	100-41-4	1c
Isopropylbenzene (Cumene)	**1600**	ug/kg	261	75.7	50	08/07/18 13:59	08/07/18 20:17	98-82-8	1c
p-Isopropyltoluene	**706**	ug/kg	261	72.1	50	08/07/18 13:59	08/07/18 20:17	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	261	41.3	50	08/07/18 13:59	08/07/18 20:17	1634-04-4	1c,L2
Naphthalene	**6830**	ug/kg	261	116	50	08/07/18 13:59	08/07/18 20:17	91-20-3	1c
n-Propylbenzene	**5180**	ug/kg	261	75.2	50	08/07/18 13:59	08/07/18 20:17	103-65-1	1c
Toluene	**38000**	ug/kg	2610	757	500	08/07/18 13:59	08/08/18 16:50	108-88-3	
1,2,4-Trimethylbenzene	**27900**	ug/kg	2610	684	500	08/07/18 13:59	08/08/18 16:50	95-63-6	
1,3,5-Trimethylbenzene	**10100**	ug/kg	261	70.0	50	08/07/18 13:59	08/07/18 20:17	108-67-8	1c
m&p-Xylene	**39900**	ug/kg	522	156	50	08/07/18 13:59	08/07/18 20:17	179601-23-1	1c
o-Xylene	**17500**	ug/kg	261	73.6	50	08/07/18 13:59	08/07/18 20:17	95-47-6	1c
Surrogates									
Toluene-d8 (S)	106	%	76-124		50	08/07/18 13:59	08/07/18 20:17	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-133		50	08/07/18 13:59	08/07/18 20:17	460-00-4	
1,2-Dichloroethane-d4 (S)	151	%	74-131		50	08/07/18 13:59	08/07/18 20:17	17060-07-0	ST
Dibromofluoromethane (S)	90	%	71-130		50	08/07/18 13:59	08/07/18 20:17	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.0**	%	0.10	0.10	1		08/06/18 11:29		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-5(6-8)_080118 **Lab ID: 30261182012** Collected: 08/01/18 12:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	7.9	0.72	1	08/07/18 19:16	08/08/18 18:05	83-32-9	
Acenaphthylene	ND	ug/kg	7.9	0.57	1	08/07/18 19:16	08/08/18 18:05	208-96-8	
Anthracene	ND	ug/kg	7.9	0.72	1	08/07/18 19:16	08/08/18 18:05	120-12-7	
Benzo(a)anthracene	ND	ug/kg	7.9	0.93	1	08/07/18 19:16	08/08/18 18:05	56-55-3	
Benzo(a)pyrene	ND	ug/kg	7.9	0.50	1	08/07/18 19:16	08/08/18 18:05	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	7.9	0.95	1	08/07/18 19:16	08/08/18 18:05	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	7.9	1.2	1	08/07/18 19:16	08/08/18 18:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	7.9	1.3	1	08/07/18 19:16	08/08/18 18:05	207-08-9	
Chrysene	ND	ug/kg	7.9	0.41	1	08/07/18 19:16	08/08/18 18:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.9	1.8	1	08/07/18 19:16	08/08/18 18:05	53-70-3	
Fluoranthene	ND	ug/kg	7.9	0.60	1	08/07/18 19:16	08/08/18 18:05	206-44-0	
Fluorene	ND	ug/kg	7.9	0.73	1	08/07/18 19:16	08/08/18 18:05	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	7.9	1.5	1	08/07/18 19:16	08/08/18 18:05	193-39-5	
Phenanthrene	**9.1**	ug/kg	7.9	0.70	1	08/07/18 19:16	08/08/18 18:05	85-01-8	
Pyrene	ND	ug/kg	7.9	0.89	1	08/07/18 19:16	08/08/18 18:05	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	65	%	31-105		1	08/07/18 19:16	08/08/18 18:05	321-60-8	
Terphenyl-d14 (S)	73	%	49-115		1	08/07/18 19:16	08/08/18 18:05	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**8870**	ug/kg	250	72.5	50	08/07/18 13:59	08/07/18 20:46	71-43-2	1c
n-Butylbenzene	**1250**	ug/kg	250	88.5	50	08/07/18 13:59	08/07/18 20:46	104-51-8	1c
sec-Butylbenzene	**538**	ug/kg	250	75.0	50	08/07/18 13:59	08/07/18 20:46	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	250	72.5	50	08/07/18 13:59	08/07/18 20:46	98-06-6	1c
Ethanol	ND	ug/kg	10000	1300	50	08/07/18 13:59	08/07/18 20:46	64-17-5	1c
Ethylbenzene	**8690**	ug/kg	250	76.5	50	08/07/18 13:59	08/07/18 20:46	100-41-4	1c
Isopropylbenzene (Cumene)	**1000**	ug/kg	250	72.5	50	08/07/18 13:59	08/07/18 20:46	98-82-8	1c
p-Isopropyltoluene	**489**	ug/kg	250	69.0	50	08/07/18 13:59	08/07/18 20:46	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	250	39.5	50	08/07/18 13:59	08/07/18 20:46	1634-04-4	1c,L2
Naphthalene	**4510**	ug/kg	250	111	50	08/07/18 13:59	08/07/18 20:46	91-20-3	1c
n-Propylbenzene	**3240**	ug/kg	250	72.0	50	08/07/18 13:59	08/07/18 20:46	103-65-1	1c
Toluene	**13000**	ug/kg	250	72.5	50	08/07/18 13:59	08/07/18 20:46	108-88-3	1c
1,2,4-Trimethylbenzene	**17000**	ug/kg	250	65.5	50	08/07/18 13:59	08/07/18 20:46	95-63-6	1c
1,3,5-Trimethylbenzene	**6540**	ug/kg	250	67.0	50	08/07/18 13:59	08/07/18 20:46	108-67-8	1c
m&p-Xylene	**27900**	ug/kg	500	150	50	08/07/18 13:59	08/07/18 20:46	179601-23-1	1c
o-Xylene	**10700**	ug/kg	250	70.5	50	08/07/18 13:59	08/07/18 20:46	95-47-6	1c
Surrogates									
Toluene-d8 (S)	102	%	76-124		50	08/07/18 13:59	08/07/18 20:46	2037-26-5	
4-Bromofluorobenzene (S)	100	%	70-133		50	08/07/18 13:59	08/07/18 20:46	460-00-4	
1,2-Dichloroethane-d4 (S)	145	%	74-131		50	08/07/18 13:59	08/07/18 20:46	17060-07-0	ST
Dibromofluoromethane (S)	96	%	71-130		50	08/07/18 13:59	08/07/18 20:46	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.5**	%	0.10	0.10	1		08/06/18 11:29		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-7(0-2)_080118 **Lab ID: 30261182013** Collected: 08/01/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**10.0**	mg/kg	0.53	0.52	1	08/06/18 10:09	08/08/18 11:07	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.3**	%	0.10	0.10	1		08/06/18 11:29		

Sample: CB-5(0-2)_080118 **Lab ID: 30261182014** Collected: 08/01/18 12:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**3.6**	mg/kg	0.54	0.53	1	08/06/18 10:09	08/08/18 11:13	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.7**	%	0.10	0.10	1		08/06/18 11:29		

Sample: CB-8(0-2)_080118 **Lab ID: 30261182015** Collected: 08/01/18 14:20 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**7.7**	mg/kg	0.54	0.53	1	08/06/18 10:09	08/08/18 11:15	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.7**	%	0.10	0.10	1		08/06/18 11:29		

Sample: CB-10(0-2)_080118 **Lab ID: 30261182016** Collected: 08/01/18 15:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**12.3**	mg/kg	0.59	0.58	1	08/06/18 10:09	08/08/18 11:18	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.9**	%	0.10	0.10	1		08/06/18 11:29		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-6(0-2)_080118 **Lab ID: 30261182017** Collected: 08/01/18 16:45 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**6.7**	mg/kg	0.53	0.52	1	08/06/18 10:09	08/08/18 11:20	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.3**	%	0.10	0.10	1		08/06/18 11:29		

Sample: CB-3(0-2)_080218 **Lab ID: 30261182018** Collected: 08/02/18 09:00 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**6.0**	mg/kg	0.54	0.53	1	08/06/18 10:09	08/08/18 11:22	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.4**	%	0.10	0.10	1		08/06/18 11:29		

Sample: CB-4(0-2)_080218 **Lab ID: 30261182019** Collected: 08/02/18 09:50 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**9.6**	mg/kg	0.55	0.54	1	08/06/18 10:09	08/08/18 11:32	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.6**	%	0.10	0.10	1		08/06/18 11:29		

Sample: CB-2(0-2)_080218 **Lab ID: 30261182020** Collected: 08/02/18 10:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**3.9**	mg/kg	0.54	0.53	1	08/06/18 10:09	08/08/18 11:35	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.4**	%	0.10	0.10	1		08/06/18 11:29		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-1(0-2)_080218 **Lab ID: 30261182021** Collected: 08/02/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP	Analytical Method: EPA 6010C Preparation Method: EPA 3050B								
Lead	**6.3**	mg/kg	0.50	0.49	1	08/06/18 10:09	08/08/18 11:37	7439-92-1	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**9.4**	%	0.10	0.10	1		08/06/18 11:31		

Sample: CB-1(0-2)_080218 **Lab ID: 30261182022** Collected: 08/02/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	7.3	0.66	1	08/07/18 19:16	08/08/18 18:28	83-32-9	
Acenaphthylene	ND	ug/kg	7.3	0.52	1	08/07/18 19:16	08/08/18 18:28	208-96-8	
Anthracene	ND	ug/kg	7.3	0.66	1	08/07/18 19:16	08/08/18 18:28	120-12-7	
Benzo(a)anthracene	**12.9**	ug/kg	7.3	0.86	1	08/07/18 19:16	08/08/18 18:28	56-55-3	
Benzo(a)pyrene	**14.0**	ug/kg	7.3	0.46	1	08/07/18 19:16	08/08/18 18:28	50-32-8	
Benzo(b)fluoranthene	**33.0**	ug/kg	7.3	0.87	1	08/07/18 19:16	08/08/18 18:28	205-99-2	ip
Benzo(g,h,i)perylene	**10.0**	ug/kg	7.3	1.1	1	08/07/18 19:16	08/08/18 18:28	191-24-2	
Benzo(k)fluoranthene	**24.3**	ug/kg	7.3	1.2	1	08/07/18 19:16	08/08/18 18:28	207-08-9	ip
Chrysene	**16.7**	ug/kg	7.3	0.38	1	08/07/18 19:16	08/08/18 18:28	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.3	1.6	1	08/07/18 19:16	08/08/18 18:28	53-70-3	
Fluoranthene	**30.8**	ug/kg	7.3	0.55	1	08/07/18 19:16	08/08/18 18:28	206-44-0	
Fluorene	ND	ug/kg	7.3	0.68	1	08/07/18 19:16	08/08/18 18:28	86-73-7	
Indeno(1,2,3-cd)pyrene	**8.9**	ug/kg	7.3	1.4	1	08/07/18 19:16	08/08/18 18:28	193-39-5	
Phenanthrene	**18.0**	ug/kg	7.3	0.64	1	08/07/18 19:16	08/08/18 18:28	85-01-8	
Pyrene	**24.5**	ug/kg	7.3	0.82	1	08/07/18 19:16	08/08/18 18:28	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	56	%	31-105		1	08/07/18 19:16	08/08/18 18:28	321-60-8	
Terphenyl-d14 (S)	61	%	49-115		1	08/07/18 19:16	08/08/18 18:28	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	4.8	1.4	1	08/07/18 13:55	08/07/18 15:57	71-43-2	1c
n-Butylbenzene	ND	ug/kg	4.8	1.7	1	08/07/18 13:55	08/07/18 15:57	104-51-8	1c
sec-Butylbenzene	ND	ug/kg	4.8	1.4	1	08/07/18 13:55	08/07/18 15:57	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	4.8	1.4	1	08/07/18 13:55	08/07/18 15:57	98-06-6	1c
Ethanol	ND	ug/kg	193	25.0	1	08/07/18 13:55	08/07/18 15:57	64-17-5	1c
Ethylbenzene	ND	ug/kg	4.8	1.5	1	08/07/18 13:55	08/07/18 15:57	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	4.8	1.4	1	08/07/18 13:55	08/07/18 15:57	98-82-8	1c
p-Isopropyltoluene	ND	ug/kg	4.8	1.3	1	08/07/18 13:55	08/07/18 15:57	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	4.8	0.76	1	08/07/18 13:55	08/07/18 15:57	1634-04-4	1c,L2
Naphthalene	ND	ug/kg	4.8	2.1	1	08/07/18 13:55	08/07/18 15:57	91-20-3	1c
n-Propylbenzene	ND	ug/kg	4.8	1.4	1	08/07/18 13:55	08/07/18 15:57	103-65-1	1c

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-1(0-2)_080218 **Lab ID: 30261182022** Collected: 08/02/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Toluene	ND	ug/kg	4.8	1.4	1	08/07/18 13:55	08/07/18 15:57	108-88-3	1c
1,2,4-Trimethylbenzene	ND	ug/kg	4.8	1.3	1	08/07/18 13:55	08/07/18 15:57	95-63-6	1c
1,3,5-Trimethylbenzene	ND	ug/kg	4.8	1.3	1	08/07/18 13:55	08/07/18 15:57	108-67-8	1c
m&p-Xylene	ND	ug/kg	9.6	2.9	1	08/07/18 13:55	08/07/18 15:57	179601-23-1	1c
o-Xylene	ND	ug/kg	4.8	1.4	1	08/07/18 13:55	08/07/18 15:57	95-47-6	1c
Surrogates									
Toluene-d8 (S)	95	%	76-124		1	08/07/18 13:55	08/07/18 15:57	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-133		1	08/07/18 13:55	08/07/18 15:57	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	74-131		1	08/07/18 13:55	08/07/18 15:57	17060-07-0	
Dibromofluoromethane (S)	110	%	71-130		1	08/07/18 13:55	08/07/18 15:57	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**9.2**	%	0.10	0.10	1		08/06/18 11:31		

Sample: CB-1(4-6)_080218 **Lab ID: 30261182023** Collected: 08/02/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	8.1	0.73	1	08/07/18 19:16	08/08/18 18:52	83-32-9	
Acenaphthylene	ND	ug/kg	8.1	0.58	1	08/07/18 19:16	08/08/18 18:52	208-96-8	
Anthracene	ND	ug/kg	8.1	0.73	1	08/07/18 19:16	08/08/18 18:52	120-12-7	
Benzo(a)anthracene	ND	ug/kg	8.1	0.95	1	08/07/18 19:16	08/08/18 18:52	56-55-3	
Benzo(a)pyrene	ND	ug/kg	8.1	0.51	1	08/07/18 19:16	08/08/18 18:52	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	8.1	0.97	1	08/07/18 19:16	08/08/18 18:52	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	8.1	1.2	1	08/07/18 19:16	08/08/18 18:52	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	8.1	1.4	1	08/07/18 19:16	08/08/18 18:52	207-08-9	
Chrysene	ND	ug/kg	8.1	0.42	1	08/07/18 19:16	08/08/18 18:52	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	8.1	1.8	1	08/07/18 19:16	08/08/18 18:52	53-70-3	
Fluoranthene	ND	ug/kg	8.1	0.61	1	08/07/18 19:16	08/08/18 18:52	206-44-0	
Fluorene	ND	ug/kg	8.1	0.75	1	08/07/18 19:16	08/08/18 18:52	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	8.1	1.5	1	08/07/18 19:16	08/08/18 18:52	193-39-5	
Phenanthrene	**9.0**	ug/kg	8.1	0.71	1	08/07/18 19:16	08/08/18 18:52	85-01-8	
Pyrene	ND	ug/kg	8.1	0.91	1	08/07/18 19:16	08/08/18 18:52	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	59	%	31-105		1	08/07/18 19:16	08/08/18 18:52	321-60-8	
Terphenyl-d14 (S)	72	%	49-115		1	08/07/18 19:16	08/08/18 18:52	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	257	74.7	50	08/07/18 13:59	08/07/18 21:15	71-43-2	1c
n-Butylbenzene	**2760**	ug/kg	257	91.1	50	08/07/18 13:59	08/07/18 21:15	104-51-8	1c

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-1(4-6)_080218 **Lab ID: 30261182023** Collected: 08/02/18 11:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
sec-Butylbenzene	**1360**	ug/kg	257	77.2	50	08/07/18 13:59	08/07/18 21:15	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	257	74.7	50	08/07/18 13:59	08/07/18 21:15	98-06-6	1c
Ethanol	ND	ug/kg	10300	1330	50	08/07/18 13:59	08/07/18 21:15	64-17-5	1c
Ethylbenzene	**1670**	ug/kg	257	78.8	50	08/07/18 13:59	08/07/18 21:15	100-41-4	1c
Isopropylbenzene (Cumene)	**1010**	ug/kg	257	74.7	50	08/07/18 13:59	08/07/18 21:15	98-82-8	1c
p-Isopropyltoluene	**1670**	ug/kg	257	71.1	50	08/07/18 13:59	08/07/18 21:15	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	257	40.7	50	08/07/18 13:59	08/07/18 21:15	1634-04-4	1c,L2
Naphthalene	**736**	ug/kg	257	114	50	08/07/18 13:59	08/07/18 21:15	91-20-3	1c
n-Propylbenzene	**3470**	ug/kg	257	74.1	50	08/07/18 13:59	08/07/18 21:15	103-65-1	1c
Toluene	ND	ug/kg	257	74.7	50	08/07/18 13:59	08/07/18 21:15	108-88-3	1c
1,2,4-Trimethylbenzene	**5700**	ug/kg	257	67.4	50	08/07/18 13:59	08/07/18 21:15	95-63-6	1c
1,3,5-Trimethylbenzene	**4470**	ug/kg	257	69.0	50	08/07/18 13:59	08/07/18 21:15	108-67-8	1c
m&p-Xylene	**1340**	ug/kg	515	154	50	08/07/18 13:59	08/07/18 21:15	179601-23-1	1c
o-Xylene	**561**	ug/kg	257	72.6	50	08/07/18 13:59	08/07/18 21:15	95-47-6	1c
Surrogates									
Toluene-d8 (S)	112	%	76-124		50	08/07/18 13:59	08/07/18 21:15	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-133		50	08/07/18 13:59	08/07/18 21:15	460-00-4	
1,2-Dichloroethane-d4 (S)	143	%	74-131		50	08/07/18 13:59	08/07/18 21:15	17060-07-0	ST
Dibromofluoromethane (S)	96	%	71-130		50	08/07/18 13:59	08/07/18 21:15	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.0**	%	0.10	0.10	1		08/06/18 11:31		

Sample: CB-2(2-4)_080218 **Lab ID: 30261182024** Collected: 08/02/18 10:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**79.7**	ug/kg	7.9	0.72	1	08/07/18 19:16	08/08/18 19:15	83-32-9	
Acenaphthylene	**31.9**	ug/kg	7.9	0.57	1	08/07/18 19:16	08/08/18 19:15	208-96-8	
Anthracene	ND	ug/kg	7.9	0.72	1	08/07/18 19:16	08/08/18 19:15	120-12-7	
Benzo(a)anthracene	ND	ug/kg	7.9	0.93	1	08/07/18 19:16	08/08/18 19:15	56-55-3	
Benzo(a)pyrene	ND	ug/kg	7.9	0.50	1	08/07/18 19:16	08/08/18 19:15	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	7.9	0.95	1	08/07/18 19:16	08/08/18 19:15	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	7.9	1.2	1	08/07/18 19:16	08/08/18 19:15	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	7.9	1.3	1	08/07/18 19:16	08/08/18 19:15	207-08-9	
Chrysene	ND	ug/kg	7.9	0.41	1	08/07/18 19:16	08/08/18 19:15	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.9	1.8	1	08/07/18 19:16	08/08/18 19:15	53-70-3	
Fluoranthene	ND	ug/kg	7.9	0.60	1	08/07/18 19:16	08/08/18 19:15	206-44-0	
Fluorene	**98.0**	ug/kg	7.9	0.74	1	08/07/18 19:16	08/08/18 19:15	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	7.9	1.5	1	08/07/18 19:16	08/08/18 19:15	193-39-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-2(2-4)_080218 **Lab ID: 30261182024** Collected: 08/02/18 10:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Phenanthrene	**102**	ug/kg	7.9	0.70	1	08/07/18 19:16	08/08/18 19:15	85-01-8	
Pyrene	ND	ug/kg	7.9	0.89	1	08/07/18 19:16	08/08/18 19:15	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	62	%	31-105		1	08/07/18 19:16	08/08/18 19:15	321-60-8	
Terphenyl-d14 (S)	62	%	49-115		1	08/07/18 19:16	08/08/18 19:15	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	225	65.2	50	08/07/18 13:59	08/07/18 21:44	71-43-2	1c
n-Butylbenzene	**947**	ug/kg	225	79.6	50	08/07/18 13:59	08/07/18 21:44	104-51-8	1c
sec-Butylbenzene	**449**	ug/kg	225	67.5	50	08/07/18 13:59	08/07/18 21:44	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	225	65.2	50	08/07/18 13:59	08/07/18 21:44	98-06-6	1c
Ethanol	ND	ug/kg	8990	1170	50	08/07/18 13:59	08/07/18 21:44	64-17-5	1c
Ethylbenzene	ND	ug/kg	225	68.8	50	08/07/18 13:59	08/07/18 21:44	100-41-4	1c
Isopropylbenzene (Cumene)	ND	ug/kg	225	65.2	50	08/07/18 13:59	08/07/18 21:44	98-82-8	1c
p-Isopropyltoluene	**509**	ug/kg	225	62.1	50	08/07/18 13:59	08/07/18 21:44	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	225	35.5	50	08/07/18 13:59	08/07/18 21:44	1634-04-4	1c,L2
Naphthalene	**1160**	ug/kg	225	99.8	50	08/07/18 13:59	08/07/18 21:44	91-20-3	1c
n-Propylbenzene	**886**	ug/kg	225	64.8	50	08/07/18 13:59	08/07/18 21:44	103-65-1	1c
Toluene	ND	ug/kg	225	65.2	50	08/07/18 13:59	08/07/18 21:44	108-88-3	1c
1,2,4-Trimethylbenzene	**1970**	ug/kg	225	58.9	50	08/07/18 13:59	08/07/18 21:44	95-63-6	1c
1,3,5-Trimethylbenzene	**1550**	ug/kg	225	60.3	50	08/07/18 13:59	08/07/18 21:44	108-67-8	1c
m&p-Xylene	ND	ug/kg	450	134	50	08/07/18 13:59	08/07/18 21:44	179601-23-1	1c
o-Xylene	ND	ug/kg	225	63.4	50	08/07/18 13:59	08/07/18 21:44	95-47-6	1c
Surrogates									
Toluene-d8 (S)	102	%	76-124		50	08/07/18 13:59	08/07/18 21:44	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-133		50	08/07/18 13:59	08/07/18 21:44	460-00-4	
1,2-Dichloroethane-d4 (S)	129	%	74-131		50	08/07/18 13:59	08/07/18 21:44	17060-07-0	
Dibromofluoromethane (S)	105	%	71-130		50	08/07/18 13:59	08/07/18 21:44	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.6**	%	0.10	0.10	1		08/06/18 11:31		

Sample: CB-2(4-5)_080218 **Lab ID: 30261182025** Collected: 08/02/18 10:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**223**	ug/kg	78.1	7.1	10	08/07/18 19:16	08/10/18 15:29	83-32-9	
Acenaphthylene	ND	ug/kg	78.1	5.6	10	08/07/18 19:16	08/10/18 15:29	208-96-8	
Anthracene	ND	ug/kg	78.1	7.1	10	08/07/18 19:16	08/10/18 15:29	120-12-7	
Benzo(a)anthracene	ND	ug/kg	78.1	9.2	10	08/07/18 19:16	08/10/18 15:29	56-55-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-2(4-5)_080218 **Lab ID: 30261182025** Collected: 08/02/18 10:40 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Benzo(a)pyrene	ND	ug/kg	78.1	4.9	10	08/07/18 19:16	08/10/18 15:29	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	78.1	9.4	10	08/07/18 19:16	08/10/18 15:29	205-99-2	2c
Benzo(g,h,i)perylene	ND	ug/kg	78.1	11.8	10	08/07/18 19:16	08/10/18 15:29	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	78.1	13.1	10	08/07/18 19:16	08/10/18 15:29	207-08-9	
Chrysene	ND	ug/kg	78.1	4.0	10	08/07/18 19:16	08/10/18 15:29	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	78.1	17.4	10	08/07/18 19:16	08/10/18 15:29	53-70-3	
Fluoranthene	ND	ug/kg	78.1	5.9	10	08/07/18 19:16	08/10/18 15:29	206-44-0	
Fluorene	**273**	ug/kg	78.1	7.2	10	08/07/18 19:16	08/10/18 15:29	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	78.1	14.9	10	08/07/18 19:16	08/10/18 15:29	193-39-5	
Phenanthrene	**313**	ug/kg	78.1	6.9	10	08/07/18 19:16	08/10/18 15:29	85-01-8	
Pyrene	ND	ug/kg	78.1	8.8	10	08/07/18 19:16	08/10/18 15:29	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	90	%	31-105		10	08/07/18 19:16	08/10/18 15:29	321-60-8	
Terphenyl-d14 (S)	72	%	49-115		10	08/07/18 19:16	08/10/18 15:29	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	ND	ug/kg	257	74.4	50	08/08/18 07:05	08/08/18 19:12	71-43-2	1c
n-Butylbenzene	**2980**	ug/kg	257	90.8	50	08/08/18 07:05	08/08/18 19:12	104-51-8	1c
sec-Butylbenzene	**1270**	ug/kg	257	77.0	50	08/08/18 07:05	08/08/18 19:12	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	257	74.4	50	08/08/18 07:05	08/08/18 19:12	98-06-6	1c
Ethanol	ND	ug/kg	10300	1330	50	08/08/18 07:05	08/08/18 19:12	64-17-5	1c
Ethylbenzene	**6370**	ug/kg	257	78.5	50	08/08/18 07:05	08/08/18 19:12	100-41-4	1c
Isopropylbenzene (Cumene)	**2120**	ug/kg	257	74.4	50	08/08/18 07:05	08/08/18 19:12	98-82-8	1c
p-Isopropyltoluene	**1240**	ug/kg	257	70.8	50	08/08/18 07:05	08/08/18 19:12	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	257	40.5	50	08/08/18 07:05	08/08/18 19:12	1634-04-4	1c
Naphthalene	**5910**	ug/kg	257	114	50	08/08/18 07:05	08/08/18 19:12	91-20-3	1c
n-Propylbenzene	**6550**	ug/kg	257	73.9	50	08/08/18 07:05	08/08/18 19:12	103-65-1	1c
Toluene	ND	ug/kg	257	74.4	50	08/08/18 07:05	08/08/18 19:12	108-88-3	1c
1,2,4-Trimethylbenzene	**20500**	ug/kg	257	67.2	50	08/08/18 07:05	08/08/18 19:12	95-63-6	1c
1,3,5-Trimethylbenzene	**12600**	ug/kg	257	68.8	50	08/08/18 07:05	08/08/18 19:12	108-67-8	1c
m&p-Xylene	**21500**	ug/kg	513	153	50	08/08/18 07:05	08/08/18 19:12	179601-23-1	1c
o-Xylene	**2800**	ug/kg	257	72.4	50	08/08/18 07:05	08/08/18 19:12	95-47-6	1c
Surrogates									
Toluene-d8 (S)	113	%	76-124		50	08/08/18 07:05	08/08/18 19:12	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-133		50	08/08/18 07:05	08/08/18 19:12	460-00-4	
1,2-Dichloroethane-d4 (S)	201	%	74-131		50	08/08/18 07:05	08/08/18 19:12	17060-07-0	ST
Dibromofluoromethane (S)	86	%	71-130		50	08/08/18 07:05	08/08/18 19:12	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.4**	%	0.10	0.10	1		08/06/18 11:31		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-3(2-4)_080218 **Lab ID: 30261182026** Collected: 08/02/18 09:00 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**189**	ug/kg	7.9	0.71	1	08/07/18 19:16	08/08/18 20:01	83-32-9	
Acenaphthylene	**18.7**	ug/kg	7.9	0.57	1	08/07/18 19:16	08/08/18 20:01	208-96-8	
Anthracene	**18.6**	ug/kg	7.9	0.72	1	08/07/18 19:16	08/08/18 20:01	120-12-7	
Benzo(a)anthracene	**16.8**	ug/kg	7.9	0.93	1	08/07/18 19:16	08/08/18 20:01	56-55-3	
Benzo(a)pyrene	**8.9**	ug/kg	7.9	0.49	1	08/07/18 19:16	08/08/18 20:01	50-32-8	
Benzo(b)fluoranthene	**16.0**	ug/kg	7.9	0.95	1	08/07/18 19:16	08/08/18 20:01	205-99-2	ip
Benzo(g,h,i)perylene	ND	ug/kg	7.9	1.2	1	08/07/18 19:16	08/08/18 20:01	191-24-2	
Benzo(k)fluoranthene	**11.8**	ug/kg	7.9	1.3	1	08/07/18 19:16	08/08/18 20:01	207-08-9	ip
Chrysene	**15.4**	ug/kg	7.9	0.41	1	08/07/18 19:16	08/08/18 20:01	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	7.9	1.8	1	08/07/18 19:16	08/08/18 20:01	53-70-3	
Fluoranthene	**38.4**	ug/kg	7.9	0.60	1	08/07/18 19:16	08/08/18 20:01	206-44-0	
Fluorene	**226**	ug/kg	7.9	0.73	1	08/07/18 19:16	08/08/18 20:01	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	7.9	1.5	1	08/07/18 19:16	08/08/18 20:01	193-39-5	
Phenanthrene	**427**	ug/kg	7.9	0.70	1	08/07/18 19:16	08/08/18 20:01	85-01-8	
Pyrene	**53.9**	ug/kg	7.9	0.89	1	08/07/18 19:16	08/08/18 20:01	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	92	%	31-105		1	08/07/18 19:16	08/08/18 20:01	321-60-8	
Terphenyl-d14 (S)	82	%	49-115		1	08/07/18 19:16	08/08/18 20:01	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**2040**	ug/kg	251	72.8	50	08/08/18 07:05	08/08/18 19:41	71-43-2	1c
n-Butylbenzene	**1600**	ug/kg	251	88.9	50	08/08/18 07:05	08/08/18 19:41	104-51-8	1c
sec-Butylbenzene	**657**	ug/kg	251	75.3	50	08/08/18 07:05	08/08/18 19:41	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	251	72.8	50	08/08/18 07:05	08/08/18 19:41	98-06-6	1c
Ethanol	ND	ug/kg	10000	1300	50	08/08/18 07:05	08/08/18 19:41	64-17-5	1c
Ethylbenzene	**6310**	ug/kg	251	76.8	50	08/08/18 07:05	08/08/18 19:41	100-41-4	1c
Isopropylbenzene (Cumene)	**970**	ug/kg	251	72.8	50	08/08/18 07:05	08/08/18 19:41	98-82-8	1c
p-Isopropyltoluene	**766**	ug/kg	251	69.3	50	08/08/18 07:05	08/08/18 19:41	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	251	39.7	50	08/08/18 07:05	08/08/18 19:41	1634-04-4	1c
Naphthalene	**4140**	ug/kg	251	111	50	08/08/18 07:05	08/08/18 19:41	91-20-3	1c
n-Propylbenzene	**2830**	ug/kg	251	72.3	50	08/08/18 07:05	08/08/18 19:41	103-65-1	1c
Toluene	**8110**	ug/kg	251	72.8	50	08/08/18 07:05	08/08/18 19:41	108-88-3	1c
1,2,4-Trimethylbenzene	**16000**	ug/kg	251	65.8	50	08/08/18 07:05	08/08/18 19:41	95-63-6	1c
1,3,5-Trimethylbenzene	**8240**	ug/kg	251	67.3	50	08/08/18 07:05	08/08/18 19:41	108-67-8	1c
m&p-Xylene	**20700**	ug/kg	502	150	50	08/08/18 07:05	08/08/18 19:41	179601-23-1	1c
o-Xylene	**6670**	ug/kg	251	70.8	50	08/08/18 07:05	08/08/18 19:41	95-47-6	1c
Surrogates									
Toluene-d8 (S)	105	%	76-124		50	08/08/18 07:05	08/08/18 19:41	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-133		50	08/08/18 07:05	08/08/18 19:41	460-00-4	
1,2-Dichloroethane-d4 (S)	169	%	74-131		50	08/08/18 07:05	08/08/18 19:41	17060-07-0	ST
Dibromofluoromethane (S)	95	%	71-130		50	08/08/18 07:05	08/08/18 19:41	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.3**	%	0.10	0.10	1		08/06/18 11:31		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-3(4-5)_080218 **Lab ID: 30261182027** Collected: 08/02/18 09:00 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**124**	ug/kg	8.0	0.72	1	08/07/18 19:16	08/08/18 20:23	83-32-9	
Acenaphthylene	**57.0**	ug/kg	8.0	0.57	1	08/07/18 19:16	08/08/18 20:23	208-96-8	
Anthracene	**23.9**	ug/kg	8.0	0.72	1	08/07/18 19:16	08/08/18 20:23	120-12-7	
Benzo(a)anthracene	**13.0**	ug/kg	8.0	0.94	1	08/07/18 19:16	08/08/18 20:23	56-55-3	
Benzo(a)pyrene	**9.9**	ug/kg	8.0	0.50	1	08/07/18 19:16	08/08/18 20:23	50-32-8	
Benzo(b)fluoranthene	**14.7**	ug/kg	8.0	0.96	1	08/07/18 19:16	08/08/18 20:23	205-99-2	
Benzo(g,h,i)perylene	**20.4**	ug/kg	8.0	1.2	1	08/07/18 19:16	08/08/18 20:23	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	8.0	1.3	1	08/07/18 19:16	08/08/18 20:23	207-08-9	
Chrysene	**14.9**	ug/kg	8.0	0.41	1	08/07/18 19:16	08/08/18 20:23	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	8.0	1.8	1	08/07/18 19:16	08/08/18 20:23	53-70-3	
Fluoranthene	**36.8**	ug/kg	8.0	0.60	1	08/07/18 19:16	08/08/18 20:23	206-44-0	
Fluorene	**160**	ug/kg	8.0	0.74	1	08/07/18 19:16	08/08/18 20:23	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	8.0	1.5	1	08/07/18 19:16	08/08/18 20:23	193-39-5	
Phenanthrene	**278**	ug/kg	8.0	0.70	1	08/07/18 19:16	08/08/18 20:23	85-01-8	
Pyrene	**45.2**	ug/kg	8.0	0.90	1	08/07/18 19:16	08/08/18 20:23	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	74	%	31-105		1	08/07/18 19:16	08/08/18 20:23	321-60-8	
Terphenyl-d14 (S)	72	%	49-115		1	08/07/18 19:16	08/08/18 20:23	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**7220**	ug/kg	276	80.1	50	08/08/18 07:05	08/08/18 21:06	71-43-2	1c
n-Butylbenzene	**9640**	ug/kg	276	97.7	50	08/08/18 07:05	08/08/18 21:06	104-51-8	1c
sec-Butylbenzene	**4440**	ug/kg	276	82.8	50	08/08/18 07:05	08/08/18 21:06	135-98-8	1c
tert-Butylbenzene	**536**	ug/kg	276	80.1	50	08/08/18 07:05	08/08/18 21:06	98-06-6	1c
Ethanol	ND	ug/kg	11000	1430	50	08/08/18 07:05	08/08/18 21:06	64-17-5	1c
Ethylbenzene	**53300**	ug/kg	2760	845	500	08/08/18 07:05	08/13/18 14:37	100-41-4	
Isopropylbenzene (Cumene)	**7850**	ug/kg	276	80.1	50	08/08/18 07:05	08/08/18 21:06	98-82-8	1c
p-Isopropyltoluene	**4010**	ug/kg	276	76.2	50	08/08/18 07:05	08/08/18 21:06	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	276	43.6	50	08/08/18 07:05	08/08/18 21:06	1634-04-4	1c
Naphthalene	**14400**	ug/kg	276	123	50	08/08/18 07:05	08/08/18 21:06	91-20-3	1c
n-Propylbenzene	**15100**	ug/kg	276	79.5	50	08/08/18 07:05	08/08/18 21:06	103-65-1	1c
Toluene	**121000**	ug/kg	2760	801	500	08/08/18 07:05	08/13/18 14:37	108-88-3	
1,2,4-Trimethylbenzene	**136000**	ug/kg	2760	723	500	08/08/18 07:05	08/13/18 14:37	95-63-6	
1,3,5-Trimethylbenzene	**50200**	ug/kg	2760	740	500	08/08/18 07:05	08/13/18 14:37	108-67-8	
m&p-Xylene	**200000**	ug/kg	5520	1650	500	08/08/18 07:05	08/13/18 14:37	179601-23-1	
o-Xylene	**64600**	ug/kg	2760	779	500	08/08/18 07:05	08/13/18 14:37	95-47-6	
Surrogates									
Toluene-d8 (S)	143	%	76-124		50	08/08/18 07:05	08/08/18 21:06	2037-26-5	S0
4-Bromofluorobenzene (S)	94	%	70-133		50	08/08/18 07:05	08/08/18 21:06	460-00-4	
1,2-Dichloroethane-d4 (S)	162	%	74-131		50	08/08/18 07:05	08/08/18 21:06	17060-07-0	S0
Dibromofluoromethane (S)	50	%	71-130		50	08/08/18 07:05	08/08/18 21:06	1868-53-7	S0
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.1**	%	0.10	0.10	1		08/06/18 11:31		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-4(2-4)_080218 **Lab ID: 30261182028** Collected: 08/02/18 09:50 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**532**	ug/kg	79.5	7.2	10	08/07/18 19:16	08/10/18 15:47	83-32-9	
Acenaphthylene	**192**	ug/kg	79.5	5.7	10	08/07/18 19:16	08/10/18 15:47	208-96-8	
Anthracene	**88.5**	ug/kg	79.5	7.2	10	08/07/18 19:16	08/10/18 15:47	120-12-7	
Benzo(a)anthracene	ND	ug/kg	79.5	9.3	10	08/07/18 19:16	08/10/18 15:47	56-55-3	
Benzo(a)pyrene	ND	ug/kg	79.5	5.0	10	08/07/18 19:16	08/10/18 15:47	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	79.5	9.5	10	08/07/18 19:16	08/10/18 15:47	205-99-2	2c
Benzo(g,h,i)perylene	ND	ug/kg	79.5	12.0	10	08/07/18 19:16	08/10/18 15:47	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	79.5	13.3	10	08/07/18 19:16	08/10/18 15:47	207-08-9	
Chrysene	ND	ug/kg	79.5	4.1	10	08/07/18 19:16	08/10/18 15:47	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	79.5	17.7	10	08/07/18 19:16	08/10/18 15:47	53-70-3	
Fluoranthene	ND	ug/kg	79.5	6.0	10	08/07/18 19:16	08/10/18 15:47	206-44-0	
Fluorene	**1070**	ug/kg	79.5	7.4	10	08/07/18 19:16	08/10/18 15:47	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	79.5	15.1	10	08/07/18 19:16	08/10/18 15:47	193-39-5	
Phenanthrene	**1170**	ug/kg	79.5	7.0	10	08/07/18 19:16	08/10/18 15:47	85-01-8	
Pyrene	**111**	ug/kg	79.5	8.9	10	08/07/18 19:16	08/10/18 15:47	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	110	%	31-105		10	08/07/18 19:16	08/10/18 15:47	321-60-8	S4
Terphenyl-d14 (S)	54	%	49-115		10	08/07/18 19:16	08/10/18 15:47	1718-51-0	
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**10500**	ug/kg	249	72.2	50	08/08/18 07:05	08/08/18 20:37	71-43-2	1c
n-Butylbenzene	**8290**	ug/kg	249	88.1	50	08/08/18 07:05	08/08/18 20:37	104-51-8	1c
sec-Butylbenzene	**4140**	ug/kg	249	74.7	50	08/08/18 07:05	08/08/18 20:37	135-98-8	1c
tert-Butylbenzene	**430**	ug/kg	249	72.2	50	08/08/18 07:05	08/08/18 20:37	98-06-6	1c
Ethanol	ND	ug/kg	9950	1290	50	08/08/18 07:05	08/08/18 20:37	64-17-5	1c
Ethylbenzene	**42100**	ug/kg	2490	762	500	08/08/18 07:05	08/13/18 15:03	100-41-4	
Isopropylbenzene (Cumene)	**7020**	ug/kg	249	72.2	50	08/08/18 07:05	08/08/18 20:37	98-82-8	1c
p-Isopropyltoluene	**4760**	ug/kg	249	68.7	50	08/08/18 07:05	08/08/18 20:37	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	249	39.3	50	08/08/18 07:05	08/08/18 20:37	1634-04-4	1c
Naphthalene	**17200**	ug/kg	249	110	50	08/08/18 07:05	08/08/18 20:37	91-20-3	1c
n-Propylbenzene	**14500**	ug/kg	249	71.7	50	08/08/18 07:05	08/08/18 20:37	103-65-1	1c
Toluene	**52700**	ug/kg	2490	722	500	08/08/18 07:05	08/13/18 15:03	108-88-3	
1,2,4-Trimethylbenzene	**106000**	ug/kg	2490	652	500	08/08/18 07:05	08/13/18 15:03	95-63-6	
1,3,5-Trimethylbenzene	**36700**	ug/kg	2490	667	500	08/08/18 07:05	08/13/18 15:03	108-67-8	
m&p-Xylene	**152000**	ug/kg	4980	1490	500	08/08/18 07:05	08/13/18 15:03	179601-23-1	
o-Xylene	**55200**	ug/kg	2490	702	500	08/08/18 07:05	08/13/18 15:03	95-47-6	
Surrogates									
Toluene-d8 (S)	146	%	76-124		50	08/08/18 07:05	08/08/18 20:37	2037-26-5	S0
4-Bromofluorobenzene (S)	108	%	70-133		50	08/08/18 07:05	08/08/18 20:37	460-00-4	
1,2-Dichloroethane-d4 (S)	161	%	74-131		50	08/08/18 07:05	08/08/18 20:37	17060-07-0	S0
Dibromofluoromethane (S)	53	%	71-130		50	08/08/18 07:05	08/08/18 20:37	1868-53-7	S0
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.9**	%	0.10	0.10	1		08/06/18 11:31		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Sample: CB-4(5.5-7.5)_080218 **Lab ID: 30261182029** Collected: 08/02/18 09:50 Received: 08/03/18 09:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.
Comments: • Samples in this workorder were received in the laboratory without an associated trip blank.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270D MSSV PAH by SIM	Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3546								
Acenaphthene	**278**	ug/kg	81.8	7.4	10	08/07/18 19:16	08/10/18 16:05	83-32-9	
Acenaphthylene	**113**	ug/kg	81.8	5.9	10	08/07/18 19:16	08/10/18 16:05	208-96-8	
Anthracene	ND	ug/kg	81.8	7.4	10	08/07/18 19:16	08/10/18 16:05	120-12-7	
Benzo(a)anthracene	ND	ug/kg	81.8	9.6	10	08/07/18 19:16	08/10/18 16:05	56-55-3	
Benzo(a)pyrene	ND	ug/kg	81.8	5.1	10	08/07/18 19:16	08/10/18 16:05	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	81.8	9.8	10	08/07/18 19:16	08/10/18 16:05	205-99-2	2c
Benzo(g,h,i)perylene	ND	ug/kg	81.8	12.3	10	08/07/18 19:16	08/10/18 16:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	81.8	13.7	10	08/07/18 19:16	08/10/18 16:05	207-08-9	
Chrysene	ND	ug/kg	81.8	4.2	10	08/07/18 19:16	08/10/18 16:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	81.8	18.2	10	08/07/18 19:16	08/10/18 16:05	53-70-3	
Fluoranthene	ND	ug/kg	81.8	6.2	10	08/07/18 19:16	08/10/18 16:05	206-44-0	
Fluorene	**605**	ug/kg	81.8	7.6	10	08/07/18 19:16	08/10/18 16:05	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	81.8	15.6	10	08/07/18 19:16	08/10/18 16:05	193-39-5	
Phenanthrene	**1040**	ug/kg	81.8	7.2	10	08/07/18 19:16	08/10/18 16:05	85-01-8	
Pyrene	**86.6**	ug/kg	81.8	9.2	10	08/07/18 19:16	08/10/18 16:05	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	65	%	31-105		10	08/07/18 19:16	08/10/18 16:05	321-60-8	
Terphenyl-d14 (S)	46	%	49-115		10	08/07/18 19:16	08/10/18 16:05	1718-51-0	S4
8260C MSV 5035 Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A								
Benzene	**9290**	ug/kg	253	73.5	50	08/08/18 07:05	08/08/18 20:09	71-43-2	1c
n-Butylbenzene	**1930**	ug/kg	253	89.7	50	08/08/18 07:05	08/08/18 20:09	104-51-8	1c
sec-Butylbenzene	**931**	ug/kg	253	76.0	50	08/08/18 07:05	08/08/18 20:09	135-98-8	1c
tert-Butylbenzene	ND	ug/kg	253	73.5	50	08/08/18 07:05	08/08/18 20:09	98-06-6	1c
Ethanol	ND	ug/kg	10100	1310	50	08/08/18 07:05	08/08/18 20:09	64-17-5	1c
Ethylbenzene	**11100**	ug/kg	253	77.5	50	08/08/18 07:05	08/08/18 20:09	100-41-4	1c
Isopropylbenzene (Cumene)	**1460**	ug/kg	253	73.5	50	08/08/18 07:05	08/08/18 20:09	98-82-8	1c
p-Isopropyltoluene	**762**	ug/kg	253	69.9	50	08/08/18 07:05	08/08/18 20:09	99-87-6	1c
Methyl-tert-butyl ether	ND	ug/kg	253	40.0	50	08/08/18 07:05	08/08/18 20:09	1634-04-4	1c
Naphthalene	**6290**	ug/kg	253	112	50	08/08/18 07:05	08/08/18 20:09	91-20-3	1c
n-Propylbenzene	**4430**	ug/kg	253	73.0	50	08/08/18 07:05	08/08/18 20:09	103-65-1	1c
Toluene	**19800**	ug/kg	253	73.5	50	08/08/18 07:05	08/08/18 20:09	108-88-3	1c
1,2,4-Trimethylbenzene	**18200**	ug/kg	253	66.4	50	08/08/18 07:05	08/08/18 20:09	95-63-6	1c
1,3,5-Trimethylbenzene	**8680**	ug/kg	253	67.9	50	08/08/18 07:05	08/08/18 20:09	108-67-8	1c
m&p-Xylene	**34000**	ug/kg	507	151	50	08/08/18 07:05	08/08/18 20:09	179601-23-1	1c
o-Xylene	**14100**	ug/kg	253	71.4	50	08/08/18 07:05	08/08/18 20:09	95-47-6	1c
Surrogates									
Toluene-d8 (S)	103	%	76-124		50	08/08/18 07:05	08/08/18 20:09	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-133		50	08/08/18 07:05	08/08/18 20:09	460-00-4	
1,2-Dichloroethane-d4 (S)	175	%	74-131		50	08/08/18 07:05	08/08/18 20:09	17060-07-0	ST
Dibromofluoromethane (S)	91	%	71-130		50	08/08/18 07:05	08/08/18 20:09	1868-53-7	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**19.4**	%	0.10	0.10	1		08/06/18 11:31		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

QC Batch: 308455 Analysis Method: EPA 6010C
QC Batch Method: EPA 3050B Analysis Description: 6010C MET
Associated Lab Samples: 30261182013, 30261182014, 30261182015, 30261182016, 30261182017, 30261182018, 30261182019, 30261182020, 30261182021

METHOD BLANK: 1507621 Matrix: Solid
Associated Lab Samples: 30261182013, 30261182014, 30261182015, 30261182016, 30261182017, 30261182018, 30261182019, 30261182020, 30261182021

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Lead	mg/kg	ND	0.49	0.48	08/08/18 11:03	

LABORATORY CONTROL SAMPLE: 1507622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	mg/kg	49	45.6	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1507623 1507624

Parameter	Units	30261182013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	mg/kg	10.0	53.1	53.1	60.3	60.6	95	95	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

QC Batch: 308677 Analysis Method: EPA 8260C
QC Batch Method: EPA 5035A Analysis Description: 8260C MSV 5035 Low
Associated Lab Samples: 30261182022

METHOD BLANK: 1508418 Matrix: Solid
Associated Lab Samples: 30261182022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	1.3	08/07/18 14:25	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	1.3	08/07/18 14:25	
Benzene	ug/kg	ND	5.0	1.4	08/07/18 14:25	
Ethanol	ug/kg	ND	200	25.9	08/07/18 14:25	
Ethylbenzene	ug/kg	ND	5.0	1.5	08/07/18 14:25	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	1.4	08/07/18 14:25	
m&p-Xylene	ug/kg	ND	10.0	3.0	08/07/18 14:25	
Methyl-tert-butyl ether	ug/kg	ND	5.0	0.79	08/07/18 14:25	
n-Butylbenzene	ug/kg	ND	5.0	1.8	08/07/18 14:25	
n-Propylbenzene	ug/kg	ND	5.0	1.4	08/07/18 14:25	
Naphthalene	ug/kg	ND	5.0	2.2	08/07/18 14:25	
o-Xylene	ug/kg	ND	5.0	1.4	08/07/18 14:25	
p-Isopropyltoluene	ug/kg	ND	5.0	1.4	08/07/18 14:25	
sec-Butylbenzene	ug/kg	ND	5.0	1.5	08/07/18 14:25	
tert-Butylbenzene	ug/kg	ND	5.0	1.4	08/07/18 14:25	
Toluene	ug/kg	ND	5.0	1.4	08/07/18 14:25	
1,2-Dichloroethane-d4 (S)	%	111	74-131		08/07/18 14:25	
4-Bromofluorobenzene (S)	%	98	70-133		08/07/18 14:25	
Dibromofluoromethane (S)	%	109	71-130		08/07/18 14:25	
Toluene-d8 (S)	%	95	76-124		08/07/18 14:25	

LABORATORY CONTROL SAMPLE: 1508419

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	18.1	90	70-130	
1,3,5-Trimethylbenzene	ug/kg	20	18.1	90	70-130	
Benzene	ug/kg	20	17.7	88	70-130	
Ethanol	ug/kg	200	194J	97	10-175	
Ethylbenzene	ug/kg	20	17.6	88	70-130	
Isopropylbenzene (Cumene)	ug/kg	20	18.1	90	70-130	
m&p-Xylene	ug/kg	40	35.4	88	70-130	
Methyl-tert-butyl ether	ug/kg	20	8.1	41	70-130	L2
n-Butylbenzene	ug/kg	20	17.7	88	70-130	
n-Propylbenzene	ug/kg	20	17.6	88	70-130	
Naphthalene	ug/kg	20	18.4	92	70-130	
o-Xylene	ug/kg	20	17.1	86	70-130	
p-Isopropyltoluene	ug/kg	20	18.0	90	70-130	
sec-Butylbenzene	ug/kg	20	18.4	92	70-130	
tert-Butylbenzene	ug/kg	20	18.3	92	70-130	
Toluene	ug/kg	20	17.6	88	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

LABORATORY CONTROL SAMPLE: 1508419

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%			119	74-131	
4-Bromofluorobenzene (S)	%			101	70-133	
Dibromofluoromethane (S)	%			107	71-130	
Toluene-d8 (S)	%			97	76-124	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

QC Batch: 308678 Analysis Method: EPA 8260C
QC Batch Method: EPA 5035A Analysis Description: 8260C MSV 5035 Low
Associated Lab Samples: 30261182001, 30261182003, 30261182004, 30261182005, 30261182006, 30261182008, 30261182009, 30261182010, 30261182011, 30261182012, 30261182023, 30261182024

METHOD BLANK: 1508420 Matrix: Solid
Associated Lab Samples: 30261182001, 30261182003, 30261182004, 30261182005, 30261182006, 30261182008, 30261182009, 30261182010, 30261182011, 30261182012, 30261182023, 30261182024

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	65.5	08/07/18 13:55	
1,3,5-Trimethylbenzene	ug/kg	ND	250	67.0	08/07/18 13:55	
Benzene	ug/kg	ND	250	72.5	08/07/18 13:55	
Ethanol	ug/kg	ND	10000	1300	08/07/18 13:55	
Ethylbenzene	ug/kg	ND	250	76.5	08/07/18 13:55	
Isopropylbenzene (Cumene)	ug/kg	ND	250	72.5	08/07/18 13:55	
m&p-Xylene	ug/kg	ND	500	150	08/07/18 13:55	
Methyl-tert-butyl ether	ug/kg	ND	250	39.5	08/07/18 13:55	
n-Butylbenzene	ug/kg	ND	250	88.5	08/07/18 13:55	
n-Propylbenzene	ug/kg	ND	250	72.0	08/07/18 13:55	
Naphthalene	ug/kg	ND	250	111	08/07/18 13:55	
o-Xylene	ug/kg	ND	250	70.5	08/07/18 13:55	
p-Isopropyltoluene	ug/kg	ND	250	69.0	08/07/18 13:55	
sec-Butylbenzene	ug/kg	ND	250	75.0	08/07/18 13:55	
tert-Butylbenzene	ug/kg	ND	250	72.5	08/07/18 13:55	
Toluene	ug/kg	ND	250	72.5	08/07/18 13:55	
1,2-Dichloroethane-d4 (S)	%	114	74-131		08/07/18 13:55	
4-Bromofluorobenzene (S)	%	97	70-133		08/07/18 13:55	
Dibromofluoromethane (S)	%	109	71-130		08/07/18 13:55	
Toluene-d8 (S)	%	96	76-124		08/07/18 13:55	

LABORATORY CONTROL SAMPLE: 1508421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	18.1	90	70-130	
1,3,5-Trimethylbenzene	ug/kg	20	18.1	90	70-130	
Benzene	ug/kg	20	17.7	88	70-130	
Ethanol	ug/kg	200	194J	97	10-175	
Ethylbenzene	ug/kg	20	17.6	88	70-130	
Isopropylbenzene (Cumene)	ug/kg	20	18.1	90	70-130	
m&p-Xylene	ug/kg	40	35.4	88	70-130	
Methyl-tert-butyl ether	ug/kg	20	8.1	41	70-130	L2
n-Butylbenzene	ug/kg	20	17.7	88	70-130	
n-Propylbenzene	ug/kg	20	17.6	88	70-130	
Naphthalene	ug/kg	20	18.4	92	70-130	
o-Xylene	ug/kg	20	17.1	86	70-130	
p-Isopropyltoluene	ug/kg	20	18.0	90	70-130	
sec-Butylbenzene	ug/kg	20	18.4	92	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

LABORATORY CONTROL SAMPLE: 1508421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
tert-Butylbenzene	ug/kg	20	18.3	92	70-130	
Toluene	ug/kg	20	17.6	88	70-130	
1,2-Dichloroethane-d4 (S)	%			119	74-131	
4-Bromofluorobenzene (S)	%			101	70-133	
Dibromofluoromethane (S)	%			107	71-130	
Toluene-d8 (S)	%			97	76-124	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

QC Batch: 308894 Analysis Method: EPA 8260C
QC Batch Method: EPA 5035A Analysis Description: 8260C MSV 5035 Low
Associated Lab Samples: 30261182002, 30261182007, 30261182025, 30261182026, 30261182027, 30261182028, 30261182029

METHOD BLANK: 1509341 Matrix: Solid
Associated Lab Samples: 30261182002, 30261182007, 30261182025, 30261182026, 30261182027, 30261182028, 30261182029

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	250	65.5	08/08/18 12:08	
1,3,5-Trimethylbenzene	ug/kg	ND	250	67.0	08/08/18 12:08	
Benzene	ug/kg	ND	250	72.5	08/08/18 12:08	
Ethanol	ug/kg	ND	10000	1300	08/08/18 12:08	
Ethylbenzene	ug/kg	ND	250	76.5	08/08/18 12:08	
Isopropylbenzene (Cumene)	ug/kg	ND	250	72.5	08/08/18 12:08	
m&p-Xylene	ug/kg	ND	500	150	08/08/18 12:08	
Methyl-tert-butyl ether	ug/kg	ND	250	39.5	08/08/18 12:08	
n-Butylbenzene	ug/kg	ND	250	88.5	08/08/18 12:08	
n-Propylbenzene	ug/kg	ND	250	72.0	08/08/18 12:08	
Naphthalene	ug/kg	ND	250	111	08/08/18 12:08	
o-Xylene	ug/kg	ND	250	70.5	08/08/18 12:08	
p-Isopropyltoluene	ug/kg	ND	250	69.0	08/08/18 12:08	
sec-Butylbenzene	ug/kg	ND	250	75.0	08/08/18 12:08	
tert-Butylbenzene	ug/kg	ND	250	72.5	08/08/18 12:08	
Toluene	ug/kg	ND	250	72.5	08/08/18 12:08	
1,2-Dichloroethane-d4 (S)	%	129	74-131		08/08/18 12:08	
4-Bromofluorobenzene (S)	%	98	70-133		08/08/18 12:08	
Dibromofluoromethane (S)	%	113	71-130		08/08/18 12:08	
Toluene-d8 (S)	%	96	76-124		08/08/18 12:08	

LABORATORY CONTROL SAMPLE: 1509342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	20	20.4	102	70-130	
1,3,5-Trimethylbenzene	ug/kg	20	20.7	103	70-130	
Benzene	ug/kg	20	20.2	101	70-130	
Ethanol	ug/kg	200	201	100	10-175	
Ethylbenzene	ug/kg	20	19.8	99	70-130	
Isopropylbenzene (Cumene)	ug/kg	20	20.6	103	70-130	
m&p-Xylene	ug/kg	40	40.1	100	70-130	
Methyl-tert-butyl ether	ug/kg	20	21.0	105	70-130	
n-Butylbenzene	ug/kg	20	21.8	109	70-130	
n-Propylbenzene	ug/kg	20	20.6	103	70-130	
Naphthalene	ug/kg	20	18.6	93	70-130	
o-Xylene	ug/kg	20	19.0	95	70-130	
p-Isopropyltoluene	ug/kg	20	20.8	104	70-130	
sec-Butylbenzene	ug/kg	20	21.4	107	70-130	
tert-Butylbenzene	ug/kg	20	21.0	105	70-130	
Toluene	ug/kg	20	20.0	100	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

LABORATORY CONTROL SAMPLE: 1509342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%			132	74-131	ST
4-Bromofluorobenzene (S)	%			98	70-133	
Dibromofluoromethane (S)	%			110	71-130	
Toluene-d8 (S)	%			97	76-124	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

QC Batch: 308742 Analysis Method: EPA 8270D by SIM
QC Batch Method: EPA 3546 Analysis Description: 8270D/3546 MSSV PAH by SIM
Associated Lab Samples: 30261182001, 30261182002, 30261182003, 30261182004, 30261182005, 30261182006, 30261182007, 30261182008, 30261182009, 30261182010, 30261182011, 30261182012, 30261182022, 30261182023, 30261182024, 30261182025, 30261182026, 30261182027, 30261182028, 30261182029

METHOD BLANK: 1508635 Matrix: Solid
Associated Lab Samples: 30261182001, 30261182002, 30261182003, 30261182004, 30261182005, 30261182006, 30261182007, 30261182008, 30261182009, 30261182010, 30261182011, 30261182012, 30261182022, 30261182023, 30261182024, 30261182025, 30261182026, 30261182027, 30261182028, 30261182029

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Acenaphthene	ug/kg	ND	6.7	0.61	08/08/18 12:04	
Acenaphthylene	ug/kg	ND	6.7	0.48	08/08/18 12:04	
Anthracene	ug/kg	ND	6.7	0.61	08/08/18 12:04	
Benzo(a)anthracene	ug/kg	ND	6.7	0.79	08/08/18 12:04	
Benzo(a)pyrene	ug/kg	ND	6.7	0.42	08/08/18 12:04	
Benzo(b)fluoranthene	ug/kg	ND	6.7	0.80	08/08/18 12:04	
Benzo(g,h,i)perylene	ug/kg	ND	6.7	1.0	08/08/18 12:04	
Benzo(k)fluoranthene	ug/kg	ND	6.7	1.1	08/08/18 12:04	
Chrysene	ug/kg	ND	6.7	0.35	08/08/18 12:04	
Dibenz(a,h)anthracene	ug/kg	ND	6.7	1.5	08/08/18 12:04	
Fluoranthene	ug/kg	ND	6.7	0.51	08/08/18 12:04	
Fluorene	ug/kg	ND	6.7	0.62	08/08/18 12:04	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	6.7	1.3	08/08/18 12:04	
Phenanthrene	ug/kg	ND	6.7	0.59	08/08/18 12:04	
Pyrene	ug/kg	ND	6.7	0.75	08/08/18 12:04	
2-Fluorobiphenyl (S)	%	70	31-105		08/08/18 12:04	
Terphenyl-d14 (S)	%	76	49-115		08/08/18 12:04	

LABORATORY CONTROL SAMPLE: 1508636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	133	91.6	69	33-109	
Acenaphthylene	ug/kg	133	99.0	74	32-123	
Anthracene	ug/kg	133	99.4	75	41-122	
Benzo(a)anthracene	ug/kg	133	112	84	49-133	
Benzo(a)pyrene	ug/kg	133	119	89	49-133	
Benzo(b)fluoranthene	ug/kg	133	123	92	49-131	
Benzo(g,h,i)perylene	ug/kg	133	123	92	40-130	
Benzo(k)fluoranthene	ug/kg	133	109	82	43-130	
Chrysene	ug/kg	133	113	85	46-115	
Dibenz(a,h)anthracene	ug/kg	133	127	95	45-133	
Fluoranthene	ug/kg	133	118	89	46-130	
Fluorene	ug/kg	133	99.1	74	37-118	
Indeno(1,2,3-cd)pyrene	ug/kg	133	127	95	44-134	
Phenanthrene	ug/kg	133	103	78	36-116	
Pyrene	ug/kg	133	113	85	46-131	

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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

LABORATORY CONTROL SAMPLE: 1508636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Fluorobiphenyl (S)	%			75	31-105	
Terphenyl-d14 (S)	%			88	49-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1508637 1508638

Parameter	Units	30261182001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	156	153	300	118	193	77	26-113	87	20	M6
Acenaphthylene	ug/kg	ND	156	153	279	97.0	179	63	19-145	97	20	M6
Anthracene	ug/kg	ND	156	153	129	47.6J	83	31	42-123		20	
Benzo(a)anthracene	ug/kg	ND	156	153	133	53.9J	85	35	49-135		20	
Benzo(a)pyrene	ug/kg	ND	156	153	119	38.6J	75	23	40-137		20	
Benzo(b)fluoranthene	ug/kg	ND	156	153	103	22.7J	63	12	25-144		20	2c
Benzo(g,h,i)perylene	ug/kg	ND	156	153	119	47.5J	77	31	13-148		20	
Benzo(k)fluoranthene	ug/kg	ND	156	153	133	40.4J	84	25	10-165		20	
Chrysene	ug/kg	ND	156	153	151	52.3J	92	29	43-118		20	
Dibenz(a,h)anthracene	ug/kg	ND	156	153	105	44.6J	67	29	30-140		20	
Fluoranthene	ug/kg	ND	156	153	152	49.6J	86	21	39-146		20	
Fluorene	ug/kg	241	156	153	366	125	80	-76	36-116	98	20	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	156	153	126	31.6J	81	21	24-145		20	
Phenanthrene	ug/kg	160	156	153	266	141	68	-13	30-124	62	20	
Pyrene	ug/kg	ND	156	153	143	45.8J	77	15	42-137		20	
2-Fluorobiphenyl (S)	%						83	32	31-105			
Terphenyl-d14 (S)	%						67	19	49-115			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

QC Batch: 308473 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 30261182001, 30261182002, 30261182003, 30261182004, 30261182005, 30261182006, 30261182007, 30261182008, 30261182009, 30261182010, 30261182011, 30261182012, 30261182013, 30261182014, 30261182015, 30261182016, 30261182017, 30261182018, 30261182019, 30261182020

SAMPLE DUPLICATE: 1507676

Parameter	Units	30261182001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	15.3	15.0	2	20	

SAMPLE DUPLICATE: 1507677

Parameter	Units	30261182002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	16.0	17.1	7	20	

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QUALITY CONTROL DATA

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

QC Batch: 308474 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 30261182021, 30261182022, 30261182023, 30261182024, 30261182025, 30261182026, 30261182027, 30261182028, 30261182029

SAMPLE DUPLICATE: 1507678

Parameter	Units	30261005001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	14.0	16.4	16	20	

SAMPLE DUPLICATE: 1507679

Parameter	Units	30261005002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	15.4	15.9	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA	Pace Analytical Services - Greensburg

BATCH QUALIFIERS

Batch: 308677

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 308678

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 308894

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1c	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.
2c	The read back of the low concentration calibration standard for this compound is not within 30% of the true value. The results may be biased low and should be considered estimated
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
ST	Surrogate recovery was above laboratory control limits. Results may be biased high.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

ANALYTE QUALIFIERS

ip Benzo(b)fluoranthene and benzo(k)fluoranthene were separated in the check standard but did not meet the resolution criteria in SW846 Method 8270D. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30261182013	**CB-7(0-2)_080118**	EPA 3050B	308455	EPA 6010C	308566
30261182014	**CB-5(0-2)_080118**	EPA 3050B	308455	EPA 6010C	308566
30261182015	**CB-8(0-2)_080118**	EPA 3050B	308455	EPA 6010C	308566
30261182016	**CB-10(0-2)_080118**	EPA 3050B	308455	EPA 6010C	308566
30261182017	**CB-6(0-2)_080118**	EPA 3050B	308455	EPA 6010C	308566
30261182018	**CB-3(0-2)_080218**	EPA 3050B	308455	EPA 6010C	308566
30261182019	**CB-4(0-2)_080218**	EPA 3050B	308455	EPA 6010C	308566
30261182020	**CB-2(0-2)_080218**	EPA 3050B	308455	EPA 6010C	308566
30261182021	**CB-1(0-2)_080218**	EPA 3050B	308455	EPA 6010C	308566
30261182001	**CB-10 (4-6)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182002	**CB-10 (6-8)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182003	**CB-6 (0-2)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182004	**CB-6 (2-4)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182005	**CB-6 (4-5)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182006	**CB-8 (4-6.5)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182007	**CB-8 (6.5-8)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182008	**CB-7 (2-4)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182009	**CB-7 (6-8)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182010	**CB-5(2-4)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182011	**CB-5(4-6)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182012	**CB-5(6-8)_080118**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182022	**CB-1(0-2)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182023	**CB-1(4-6)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182024	**CB-2(2-4)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182025	**CB-2(4-5)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182026	**CB-3(2-4)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182027	**CB-3(4-5)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182028	**CB-4(2-4)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182029	**CB-4(5.5-7.5)_080218**	EPA 3546	308742	EPA 8270D by SIM	308771
30261182001	**CB-10 (4-6)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182002	**CB-10 (6-8)_080118**	EPA 5035A	308894	EPA 8260C	308895
30261182003	**CB-6 (0-2)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182004	**CB-6 (2-4)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182005	**CB-6 (4-5)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182006	**CB-8 (4-6.5)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182007	**CB-8 (6.5-8)_080118**	EPA 5035A	308894	EPA 8260C	308895
30261182008	**CB-7 (2-4)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182009	**CB-7 (6-8)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182010	**CB-5(2-4)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182011	**CB-5(4-6)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182012	**CB-5(6-8)_080118**	EPA 5035A	308678	EPA 8260C	308716
30261182022	**CB-1(0-2)_080218**	EPA 5035A	308677	EPA 8260C	308689
30261182023	**CB-1(4-6)_080218**	EPA 5035A	308678	EPA 8260C	308716
30261182024	**CB-2(2-4)_080218**	EPA 5035A	308678	EPA 8260C	308716

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Liverpool Terminal-Cold Spring
Pace Project No.: 30261182

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
30261182025	**CB-2(4-5)_080218**	EPA 5035A	308894	EPA 8260C	308895
30261182026	**CB-3(2-4)_080218**	EPA 5035A	308894	EPA 8260C	308895
30261182027	**CB-3(4-5)_080218**	EPA 5035A	308894	EPA 8260C	308895
30261182028	**CB-4(2-4)_080218**	EPA 5035A	308894	EPA 8260C	308895
30261182029	**CB-4(5.5-7.5)_080218**	EPA 5035A	308894	EPA 8260C	308895
30261182001	**CB-10 (4-6)_080118**	ASTM D2974-87	308473		
30261182002	**CB-10 (6-8)_080118**	ASTM D2974-87	308473		
30261182003	**CB-6 (0-2)_080118**	ASTM D2974-87	308473		
30261182004	**CB-6 (2-4)_080118**	ASTM D2974-87	308473		
30261182005	**CB-6 (4-5)_080118**	ASTM D2974-87	308473		
30261182006	**CB-8 (4-6.5)_080118**	ASTM D2974-87	308473		
30261182007	**CB-8 (6.5-8)_080118**	ASTM D2974-87	308473		
30261182008	**CB-7 (2-4)_080118**	ASTM D2974-87	308473		
30261182009	**CB-7 (6-8)_080118**	ASTM D2974-87	308473		
30261182010	**CB-5(2-4)_080118**	ASTM D2974-87	308473		
30261182011	**CB-5(4-6)_080118**	ASTM D2974-87	308473		
30261182012	**CB-5(6-8)_080118**	ASTM D2974-87	308473		
30261182013	**CB-7(0-2)_080118**	ASTM D2974-87	308473		
30261182014	**CB-5(0-2)_080118**	ASTM D2974-87	308473		
30261182015	**CB-8(0-2)_080118**	ASTM D2974-87	308473		
30261182016	**CB-10(0-2)_080118**	ASTM D2974-87	308473		
30261182017	**CB-6(0-2)_080118**	ASTM D2974-87	308473		
30261182018	**CB-3(0-2)_080218**	ASTM D2974-87	308473		
30261182019	**CB-4(0-2)_080218**	ASTM D2974-87	308473		
30261182020	**CB-2(0-2)_080218**	ASTM D2974-87	308473		
30261182021	**CB-1(0-2)_080218**	ASTM D2974-87	308474		
30261182022	**CB-1(0-2)_080218**	ASTM D2974-87	308474		
30261182023	**CB-1(4-6)_080218**	ASTM D2974-87	308474		
30261182024	**CB-2(2-4)_080218**	ASTM D2974-87	308474		
30261182025	**CB-2(4-5)_080218**	ASTM D2974-87	308474		
30261182026	**CB-3(2-4)_080218**	ASTM D2974-87	308474		
30261182027	**CB-3(4-5)_080218**	ASTM D2974-87	308474		
30261182028	**CB-4(2-4)_080218**	ASTM D2974-87	308474		
30261182029	**CB-4(5.5-7.5)_080218**	ASTM D2974-87	308474		

WO#: 30261182

30261182

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

2262006

Section A — Required Client Information:

Company: Arcadis
Address: 110 West Fayette Street Suite 300 Syracuse, NY 13202
Email To: Vin.Marsco@arcadis.com
Phone: 315-671-9256 Fax: —
Requested Due Date/TAT: 3 Day TAT

Required Project Information:

Report To: Vin.Marsco@arcadis.com
Copy To: PJ Hart (P.J.Hart@arcadis.com
Purchase Order No.: —
Project Name: Cold Springs
Project Number: —

Section C — Invoice Information:

Attention: Krista Manley
Company Name: Buckeye
Address: 5 Tsek Park, 9999 Hamilton Blvd, Breinigsville, PA 18031
Pace Quote Reference: —
Pace Project Manager: —
Pace Profile #: —

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER Soil

Site Location STATE: NY

Section D — Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N)	Analysis Test: VOC 8260 5035	SVOC 8270	Lead-Total	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N		
1	CB-10(4-6)_080118	SL	G	—	—	8/1/18	1540		5	2					2	1			X	X	X		001
2	CB-10(6-8)_080118	SL	G	—	—	8/1/18	1540		5	2					2	1			X	X	X		002
3	CB-6(0-2)_080118	SL	G	—	—	8/1/18	1645		5	2					2	1			X	X	X		003
4	CB-6(2-4)_080118	SL	G	—	—	8/1/18	1645		5	2					2	1			X	X	X		004
5	CB-6(4-5)_080118	SL	G	—	—	8/1/18	1645		5	2					2	1			X	X	X		005
6	CB-8(4-6.5)_080118	SL	G	—	—	8/1/18	1420		5	2					2	1			X	X	X		006
7	CB-8(6.5-8)_080118	SL	G	—	—	8/1/18	1420		5	2					2	1			X	X	X		007
8	CB-7(2-4)_080118	SL	G	—	—	8/1/18	1140		5	2					2	1			X	X	X		008
9	CB-7(6-8)_080118	SL	G	—	—	8/1/18	1140		5	2					2	1			X	X	X		009
10	CB-5(2-4)_080118	SL	G	—	—	8/1/18	1240		5	2					2	1			X	X	X		010
11	CB-5(4-6)_080118	SL	G	—	—	8/1/18	1240		5	2					2	1			X	X	X		011
12	CB-5(6-8)_080118	SL	G	—	—	8/1/18	1240		5	2					2	1			X	X	X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Jeff Spradlin/Arcadis	8/2/18	1240	Zachary Price/Arcadis	8/2/18	1240				
	Zachary Price/Arcadis	8/2/18	13:20	PACE	8/2/18	13:20				
	PACE	8/2/18	17:00	Alyndel Mulchaney Pace	8/3/18	0920	4.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Spradlin
SIGNATURE of SAMPLER: Jeff Spradlin
DATE Signed (MM/DD/YY): 080218

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

30261182

Page: 2 of 3

2262007

Section A Required Client Information:
Company: Arcadis
Address: 110 West Fayette Street, Suite 300, Syracuse, NY 13202
Email To: Vin.Maresco@arcadis.com
Phone: 315-671-9256 Fax: —
Requested Due Date/TAT: 3 Day TAT

Section B Required Project Information:
Report To: Vin.Maresco@arcadis.com
Copy To: PJ Hart (P.J.Hart@arcadis.com)
Purchase Order No.: —
Project Name: Cold Springs
Project Number: —

Section C Invoice Information:
Attention: Krista Manley
Company Name: Buckeye
Address: 5 Trek Park, 9999 Hamilton Blvd, Breinigsville, PA 18031
Pace Quote Reference: —
Pace Project Manager: —
Pace Profile #: —

REGULATORY AGENCY
NPDES / GROUND WATER / DRINKING WATER / UST / RCRA / OTHER: X Soil
Site Location STATE: NY

Section D Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): VOC 8260 5035 – N; SVOC 8270 – N; Lead - Total – N

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	VOC 8260 5035	SVOC 8270	Lead - Total	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	CB-7(0-2)_080118	SL	G	—	—	8/1/18	1140		1	1										X		013
2	CB-5(0-2)_080118	SL	G	—	—	8/1/18	1240		1	1										X		014
3	CB-8(0-2)_080118	SL	G	—	—	8/1/18	1420		1	1										X		015
4	CB-10(0-2)_080118	SL	G	—	—	8/1/18	1540		1	1										X		016
5	CB-6(0-2)_080118	SL	G	—	—	8/1/18	1645		1	1										X		017
6	CB-3(0-2)_080218	SL	G	—	—	8/2/18	0900		1	1										X		018
7	CB-4(0-2)_080218	SL	G	—	—	8/2/18	0950		1	1										X		019
8	CB-2(0-2)_080218	SL	G	—	—	8/2/18	1040		1	1										X		020
9	CB-1(0-2)_080218	SL	G	—	—	8/2/18	1140		1	1										X		021
10	CB-1(0-2)_080218	SL	G	—	—	8/2/18	1140		5	2					2	1		X	X			022
11	CB-1(4-6)_080218	SL	G	—	—	8/2/18	1140		5	2					2	1		X	X			023
12	CB-2(2-4)_080218	SL	G	—	—	8/2/18	1040		5	2					2	1		X	X			024

ADDITIONAL COMMENTS

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Jeff Spradlin / Arcadis	8/2/18	1240	Zachary Price / Arcadis	8/2/18	1240				
Zachary Price / Arcadis	8/2/18	13:20	[signature] PACE	8/2/18	13:20				
[signature] PACE	8/2/18	17:00	[signature] Mahoney Pace	8/3/18	0920	4.0	Y	Y	Y

SAMPLE CONDITIONS

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Jeff Spradlin
SIGNATURE of SAMPLER: [signature]
DATE Signed (MM/DD/YY): 080218

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-C-010-rev.00, 09Nov2017

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Pace Analytical® www.pacelabs.com

30261182

Page: 3 of 3

2262005

Section A Required Client Information:

Company: Arcadis
Address: 110 West Fayette St, Suite 300, Syracuse, NY 13202
Email To: Vin.Maresco@arcadis.com
Phone: 315-671-9258 Fax: —
Requested Due Date/TAT: 3 Day TAT

Section B Required Project Information:

Report To: Vin.Maresco@arcadis.com
Copy To: PJ Hart (P.J.Hart@arcadis.com
Purchase Order No.: —
Project Name: Cold Springs
Project Number: —

Section C Invoice Information:

Attention: Krista Manley
Company Name: Buckeye
Address: 5 Trek Park, 9999 Hamilton Blvd. Breinigsville, PA 18031
Pace Quote Reference: —
Pace Project Manager: —
Pace Profile #: —

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER Soil

Site Location STATE: NY

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: VOC 8260 504.2	SVOC 8270	Lead - Total	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	CB-2(4-5)_080218	SL	G	—	—	8/2/18	1040		5	2					2	1		X	X			023
2	CB-3(2-4)_080218	SL	G	—	—	8/2/18	0900		5	2					2	1		X	X			024
3	CB-3(4-5)_080218	SL	G	—	—	8/2/18	0900		5	2					2	1		X	X			027
4	CB-4(2-4)_080218	SL	G	—	—	8/2/18	0950		5	2					2	1		X	X			028
5	CB-4(5.5-7.5)_080218	SL	G	—	—	8/2/18	0950		5	2					2	1		X	X			029
6	TB-080218	WT	G	—	—	8/2/18	—		2				2					X				~~025~~ MM 8/3/18
7																						
8																						
9																						
10																						
11																						
12																						

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Jeff Spradlin / Arcadis	8/2/18	1240	Zachary Pair / Arcadis	8/2/18	1240				
	Zachary Pair / Arcadis	8/2/18	13:20	PACE	8/2/18	13:20				
	PACE	8/2/18	17:00	Alyssa Muchoney PACE	8/3/18	0920	4.9	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Spradlin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 080218

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Arcadis   Project # 30261182

Label	KW
LIMS Login	BW

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other ______

Tracking #: 772885490914

Custody Seal on Cooler/Box Present: ☑ yes ☐ no   Seals intact: ☑ yes ☐ no

Thermometer Used: 10   Type of Ice: (Wet) Blue None

Cooler Temperature   Observed Temp 4.1 °C   Correction Factor: +0.1 °C   Final Temp: 4.2 °C

Temp should be above freezing to 6°C

pH paper Lot# N/A

Date and Initials of person examining contents: KW 8/3/18

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID Matrix: SL				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:	✓			8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.			✓	16.
All containers needing preservation are found to be in compliance with EPA recommendation.				
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: KW / Date/time of preservation: / Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr			✓	Initial when completed: / Date:

Client Notification/ Resolution:

Person Contacted: ______ Date/Time: ______ Contacted By: ______

Comments/ Resolution: No TB received

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-7 16Feb2018)

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