

Chevron Environmental Management Company

Soil Excavation Report

Former Chevron Facility 92114 3350 College Road Fairbanks, Alaska ADEC File Number 100.26.097

December 20, 2012

ARCADIS

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Acronyms and Abbreviations

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Acronyms and Abbreviations

ADEC Alaska Department of Environmental Conservation

BTEX benzene, toluene, ethylbenzene, and xylenes

Chevron EMC Chevron Environmental Management Company

CL cleanup level

DRO diesel range organics

GRO gasoline range organics

mg/kg milligrams per kilogram

PAHs polynuclear aromatic hydrocarbons

PID photo ionization detector

RPD relative percent difference

USEPA United States Environmental Protection Agency

UST underground storage tank

VOC volatile organic compound



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1. Introduction

On behalf of Chevron Environmental Management Company (Chevron), ARCADIS U.S., Inc. (ARCADIS) has prepared this *Soil Excavation Report* for former Chevron Facility 92114, located at 3350 College Road in Fairbanks, Alaska (the site). The site and surrounding area are shown on **Figure 1**.

This report summarizes field activities and results of the soil excavation and soil stockpile sampling requested by ADEC in their letter dated July 16, 2012. The work summarized in this report was completed September 3 through September 5 and October 5, 2012 in accordance with the *Soil and Groundwater Management Plan* (ARCADIS 2012) submitted to the Alaska Department of Environmental Conservation (ADEC) on August 29, 2012 (the *Work Plan*) and approved by ADEC in an email on August 30, 2012.

The work was conducted in accordance with ADEC's guidance document *Draft Field Sampling Guidance* dated May 2010 (ADEC 2010) and under the direction of ARCADIS employees whom meet the criteria for a "qualified person" [18 AAC 75. 990 (100), and 18 AAC 78.995 (118)] (ADEC 2008a and 2008b).



2. Site Description

The Site is located in Fairbanks in the Fairbanks North Star Borough, Alaska, approximately 0.5 miles east of the intersection of University Avenue and College Road (**Figure 2**). The Site is located on Lot 6, Block 13 Parcel Assessor Number (PAN) 0260649 in the North Shanley Subdivision, and is currently owned by Teresa Gross and Nadav Weiss.

3. Environmental Investigation Summary

The site facilities are known to have included six underground storage tanks (USTs) and one above ground storage tank (AST). Current site features and site boundary are shown on Figure 2. In 1986, a Chevron subcontractor removed the USTs and buildings associated with the Chevron facility were removed. In 2001, during overexcavation of the pump islands, a previously unknown UST and a buried and partially crushed AST were discovered and removed. The UST was in good condition and contained approximately 20 gallons of weathered gasoline. The AST was empty, but UST labels indicated that it contained gasoline at one time. Approximately 800 tons of hydrocarbon-impacted soil were excavated and removed from around the former USTs and pump islands. Excavation reports indicate that not all impacted soil was removed due to equipment limitations. Several confirmation borings were advanced around the excavation area. Analytical data from these borings show concentrations in impacted soil remained above Alaska Department of Environmental Conservation (ADEC) Method 2 soil cleanup levels for migration to groundwater at sites receiving less than 40 inches of rain per year. (ARCADIS 2010) These cleanup levels are obtained from Table B1 and Table B2 of ADEC guidance (ADEC 2009).

A dual phase extraction (DPE) system operated for short periods beginning in September, 2002. The system was taken offline on June 24, 2003, pending receipt of a wastewater discharge permit. Full-time operation of the DPE system began on September 24, 2004. The groundwater extraction (GWE) portion of the remediation system was initially shut down on June 23, 2005, was restarted several times briefly, but was permanently shut down August 2005. The soil vapor extraction (SVE) portion of the system was permanently shut down in February 2007 due to frozen influent SVE lines. Reported gasoline range organics (GRO), and benzene, toluene, ethylbenzene and total xylenes (BTEX) mass removal from the SVE system was estimated at 3,455 pounds (lbs) and 244 lbs respectively. The estimated mass removal calculated from



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the GWE portion of the system for diesel range organics (DRO), GRO and BTEX was 7 lbs, 12 lbs, and 4 lbs respectively.

Beginning in June 2009, an air sparge/soil venting (AS/SV) system was installed at the site to address petroleum hydrocarbon related impacts to soil and groundwater stemming from historical site operations. Installation activities were split into two phases. Phase one included utility clearance, borehole clearance, drilling, and temporary completion of 17 AS wells and one SV well. Phase two included removal of the existing DPE system, trenching and piping activities, well head completion, aboveground system installation, start-up, and testing. The AS/SV system was shut down for rebound testing on August 25, 2010, after dissolved phase constituent of concern (COC) in samples collected from compliance monitoring wells had decreased below ADEC clean-up levels (CLs) and effluent photoionization detector (PID) readings and analytical data indicated asymptotic mass removal rates were reached. Following groundwater sampling of compliance monitoring wells on September 21, 2010 and June 7, 2011, the system was restarted on August 10, 2011. The system was shut down in December 2011 to observe rebound conditions onsite. As of the latest system operational report (Fourth Quarter 2011), the cumulative mass of GRO removed from the subsurface since startup is approximately 1,335 lbs.

In a letter dated July 16, 2012, ADEC requested preparation of a soil vapor investigation work plan in advance of the proposed development of a permanent restaurant building located to the east of the AS/SV system enclosure. On August 11 and 12, 2012, ARCADIS and AK Pipeliner conducted borehole clearance activities and installed multilevel soil vapor probes at three locations within the proposed footprint of the permanent restaurant building. Soil vapor sampling of the temporary probes was conducted by ARCADIS on August 14, 2012. A report detailing the results of this investigation will be submitted to ADEC under separate cover.

In the same letter dated July 16, 2012, ADEC requested the preparation of the *Work Plan*, described in **Section 1** above.



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4. Soil Excavation Oversight

Soil excavation oversight was conducted between September 3 and September 5, 2012, in advance of the construction of the proposed, permanent restaurant building onsite. Excavated soils were screened, sampled, and stockpiled onsite according to the soil sampling plan protocols outlined in the *Work Plan*, and are described in further detail below. Field notes from the soil excavation oversight are attached in **Appendix A**.

4.1 Soil Screening

During soil excavation oversight, excavated soil was screened for the potential of hydrocarbon impact through visible attributes and through direct measurement with a photoionization detector (PID).

The soil screening procedure was conducted as follows: soil was collected directly from the excavation excavator bucket (freshly-removed soil from the excavation), and immediately placed in a re-sealable polyethylene bag at a level of approximately one-third to one-half full. The soil was agitated in the polyethylene bag for approximately 15 seconds and then let sit for approximately 10 to 20 minutes to allow any headspace vapor present to develop. The PID was then inserted into a small opening of the plastic bag and used to read the concentration of volatile organic compounds (VOCs) in the bag. The VOC readings were immediately recorded in the field book.

4.2 Soil Stockpile Segregation

Soil stockpile segregation followed the segregation protocol outlined in the *Work Plan*. Any soil exhibiting evidence of hydrocarbon impact, or suspected of having hydrocarbon impact, was segregated into a separate stockpile and soil samples from the separate stockpile were collected for laboratory analysis.

Two separate soil stockpiles were established onsite. The primary soil stockpile, identified as Stockpile 1, was established based on the body of screening criteria above and identified as soil not containing hydrocarbon impact based on the screening criteria. The secondary soil stockpile, identified as Stockpile 2, was established based on the suspicion of having hydrocarbon impact, through visual observation of soil being removed from the excavation. Soil stockpile sample collection protocol and naming convention are detailed below.



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4.3 Soil Stockpile Sample Collection

The soil stockpile sample collection matrix is as follows:

Soil Stockpile ID	Estimated volume (in cubic yards)	Number of PID screening samples	Screening criteria utilized	Number of laboratory samples
Stockpile 1	Approximately 275-300	40	Visual, PID	13
Stockpile 2	<10	4	Visual, PID	2

The soil stockpile naming protocol is as follows: soil stockpile abbreviation – soil stockpile number – sample number (unique to the stockpile of origin) – collection date (YYYYMMDD, where Y=year, M=month, and D=day). One example of the naming method is SP-1-4-20120903.

As stated in **Section 4.1**, the screening criteria included visual attributes of the soil, olfactory attributes of the soil, and PID measurements of freshly removed soil from the excavator bucket. According to the *Work Plan*, at a minimum, soil was segregated into separate stockpiles based on suspicion of hydrocarbon impact.

4.4 Soil Analytical Methods

Soil sample analysis was conducted by Lancaster Laboratories, Inc. (Lancaster) in Lancaster, Pennsylvania. Soil stockpile sample analyses were requested for the quickest turnaround time available (24 hours). The laboratory sample bottles and preservatives required to complete this project are listed in the table below.



Analyte	Laboratory sample bottle	Laboratory Method
GRO, BTEX	One 125 mL wide mouth amber glass jar (MeOH with surrogate preservative)	GRO = Alaska Method AK 101 BTEX = EPA Method 8021B
DRO	One 125 mL wide-mouth amber glass jar (unpreserved)	Alaska Method AK 102
PAHs	One 125 mL wide-mouth amber glass (unpreserved)	USEPA Method 8270D
Soil Moisture	One 125 mL wide-mouth amber glass (unpreserved)	SM20 2540G

Notes:

GRO = Gasoline range organics

BTEX = Benzene, toluene, ethylbenzene, and total xylenes

DRO = Diesel range organics

PAHs = Polynuclear aromatic hydrocarbons

SM = Standard Method

USEPA = United States Environmental Protection Agency

mL = Milliliter

MeOH = Methanol

5. Soil Analytical Results

Soil stockpile samples were reported on a dry weight basis. Soil analytical results are presented on **Table 1** and **Table 2**. Soil analytical results are compared to migration to groundwater, under 40 inch zone (ADEC 2009b).

On September 14, 2012, a directive was submitted from ADEC to the site owner stating prior ADEC approval must be obtained before excavated soil is transported offsite. This directive is attached in **Appendix D**.

Based on the soil analytical results obtained through soil stockpile sampling activities at the site, excavated soil was approved for soil re-use on the property and for offsite disposal by the site owner at The Woodway, located at 1830 RJ Loop, Fairbanks, Alaska. This approval was sent via email by ADEC on October 12, 2012 and is attached in **Appendix E**.

On October 14, 2012, approximately 200 cubic yards of soil from Soil Stockpile 1 were hauled offsite to The Woodway. The remaining soil from Soil Stockpile 1 was reused



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onsite. Soil Stockpile 2 has not been reused onsite or removed from the site (Gross 2012).

5.1 GRO, DRO, BTEX, and Moisture

GRO was not detected above the ADEC soil cleanup level (SCL) of 300 milligrams per kilogram (mg/kg) in the soil stockpile samples collected.

DRO was not detected above the ADEC SCL of 250 mg/kg in the soil stockpile samples collected.

Benzene was not detected above the ADEC SCL of 0.025 mg/kg in the soil stockpile samples collected; however, a blind duplicate sample collected from the parent sample SP-1-8-20120903 had a detected benzene concentration of 0.28 mg/kg. Follow-up communication with Lancaster Laboratories regarding the discrepancy of the parent/duplicate sample results is detailed in **Section 6.6**.

Toluene, ethylbenzene, and total xylenes were not detected above their ADEC SCLs of 6.5 mg/kg, 6.9 mg/kg, and 63 mg/kg, respectively, in the soil stockpile samples analyzed.

Moisture values are reported in percent moisture (%). Moisture results in the soil stockpile samples ranged between 8.7% (SP-1-7-20120903) and 17.1% (SP-1-12-20120904).

5.2 PAHs

PAHs were not detected above their respective ADEC SCL in the soil stockpile samples collected.

6. Laboratory Data Quality Assurance Summary

As required by the ADEC (2009a), ARCADIS completed a laboratory data review checklist for the Lancaster reports from the soil stockpile sampling. The laboratory analytical reports are included in **Appendix B** and the ADEC data review checklists are included in **Appendix C**.



6.1 Accuracy

The data meet accuracy objectives by the laboratory control sample (LCS) for laboratory reports, with the exceptions identified below:

- Lancaster Laboratory Report 1333954: LCSD was outside acceptable recovery window at 73% for DRO. A GRO surrogate was outside the acceptable recovery window for SP-2-1-20120905, SP-1-12-20120904, SP-1-13-20120905, and BD-1 collected on September 4, 2012 and BD-1 collected on September 5, 2012. It was noted that the surrogate trifluorotoluene-F also had low surrogate recoveries for the GRO samples above, but was inside the acceptable surrogate recovery window. Due to sample foaming, reporting limits were raised in samples SP-1-11-20120904, SP-1-12-20120904, and SP-2-2-20120905. In SP-2-2-20120905, the MDL for benzene was raised above the SCL.
- Lancaster Laboratory Report 1333266: A DRO surrogate (orthoterphenyl) was outside the acceptable recovery window for SP-1-6-20120903.

6.2 Precision

The data meet precision objectives, with the exceptions identified below:

- Lancaster Laboratory Report 1333954: The RPD for soil was in excess of 50% for DRO between parent and duplicate sample SP-1-9-20120904 and BD-1 collected on September 4, 2012. The RPD for soil was in excess of 50% for Benzo(b)fluoranthene and chrysene between parent and duplicate sample SP-1-13-20120905 and BD-1 collected on September 5, 2012.
- Lancaster Laboratory Report 1333266: The MSD % recovery for DRO was under the acceptable range of 60-140% at 55%. The MS % recovery was within acceptable limits. The RPD for soil was in excess of 50% for GRO, benzene, toluene, ethylbenzene, total xylenes, benzo(a)anthracene, benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Chrysene, and Indeno(1,2,3cd)pyrene between parent and duplicate sample SP-1-8-20120903 and BD-1 collected on September 3, 2012.

RPDs were calculated using the following formula:



$$RPD = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2} \right)} \times 100 \right|$$

Where:

RPD = relative percent difference (%)

 R_1 = sample concentration (mg/kg, μ g/L, ppbv or %)

 R_2 = field duplicate concentration (mg/kg, μ g/L, ppbv or %)

6.3 Representativeness

The data appear to be representative of site conditions and are consistent with the expected impacts to soil.

6.4 Comparability

The laboratory reports are presented in the same units as previous reports to allow for comparison between reports.

6.5 Completeness

With the exception of the results obtained from the parent and duplicate samples SP-1-8-20120903 and BD-1 collected on September 3, 2012, benzene results for SP-2-2-20120905, the results appear to be valid and usable.

6.6 Sensitivity

The sensitivity of the analyses was adequate for the samples, as the method detection limits (MDLs) were less than the ADEC SCLs, with the following exceptions:

For benzene for soil sample SP-2-2-20120905 in laboratory report 1333954, the concentration of benzene in these samples are less than the MDL, but the MDL exceed the SCL for benzene at 0.025 mg/kg. The laboratory stated the reporting limits were raised due to sample foaming. For benzene, trichloroethene, tetrachlorethene, vinyl chloride, 1,2-dibromoethane for soil samples SP-2-1-20121005 and SP-2-2-20121005 in laboratory report 1341541, the concentrations are less than the MDL, and the MDL exceeded the respective SCL.



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Based on personal communication with Lancaster Laboratory on September 14, 2012, the duplicate sample BD-1 for the parent sample SP-1-8-20120903 may have compromised sensitivity due to a possible methanol leak between sample collection and analysis, which the laboratory explained may have caused an increase in detected concentrations of GRO and BTEX (Parker 2012).

7. Summary

On September and 3 through September 5, 2012 and October 5, 2012, soil stockpile sampling and screening were conducted in accordance with the *Soil and Groundwater Management Plan*.

Based on the soil analytical results obtained through soil stockpile sampling activities at the site, excavated soil was approved for soil re-use on the property and for offsite disposal by the site owner at The Woodway, located at 1830 RJ Loop, Fairbanks, Alaska.

On October 14, 2012, approximately 200 cubic yards of soil from Soil Stockpile 1 were hauled offsite to The Woodway. The remaining soil from Soil Stockpile 1 was reused onsite. Soil Stockpile 2 has not been reused onsite or removed from the site (Gross 2012).

If you have any questions or would like to discuss this further, please contact ARCADIS at 714.508.3138.

8. References

ADEC. 2010. *Draft Field Sampling Guidance*. ADEC Division of Spill Prevention and Response Contaminated Sites Program. May.

ADEC. 2009a. Environmental Laboratory Data and Quality Assurance Requirements.

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Parker, J. 2012. Telephone and email conversation with representative of Lancaster Laboratories, Inc. September 14.

Gross, T. 2012. Telephone conversation with site owner regarding details of offsite soil disposal activities. December 19.

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Tables

TABLE 1

Soil Analytical Data - Polynuclear Aromatic Hydrocarbons Former Chevron Facility 92114 3350 College Rd Fairbanks, Alaska

Location	Sample Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a) anthracene	Benzo (a) pyrene	Benzo (b) fluoranthene	Benzo (g, h, i) perylene	Benzo (k) fluoranthene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1, 2, 3-cd) pyrene	Naphthalene	Phenathrene	Pyrene
ADEC Soil Cleanu	p Levels ¹	180	180	3,000	3.6	2.1	12	38,700	120	360	4.0	1,400	220	41	20	3,000	1,000
SP-1-1-20120903	09/03/12	<0.004	<0.004	<0.004	<0.004	0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.004	<0.004	<0.004	0.012	0.004	0.006
SP-1-2-20120903	09/03/12	< 0.004	<0.004	<0.004	<0.004	<0.004	0.004	<0.004	<0.004	<0.004	<0.004	0.004	<0.004	<0.004	0.008	0.006	0.008
SP-1-3-20120903	09/03/12	< 0.004	<0.004	<0.004	0.007	< 0.004	0.010	0.012	<0.004	0.007	<0.004	0.008	<0.004	0.004	0.044	0.010	0.012
SP-1-4-20120903	09/03/12	<0.004	<0.004	<0.004	0.006	<0.004	0.008	0.006	<0.004	0.007	<0.004	0.007	<0.004	<0.004	0.044	0.009	0.012
SP-1-5-20120903	09/03/12	< 0.004	<0.004	<0.004	0.008	0.005	0.009	0.012	<0.004	0.008	<0.004	0.006	<0.004	0.006	0.035	0.008	0.010
SP-1-6-20120903	09/03/12	< 0.004	<0.004	0.004	0.008	< 0.004	< 0.004	0.011	<0.004	0.008	<0.004	0.010	<0.004	0.005	0.040	0.013	0.015
SP-1-7-20120903	09/03/12	<0.004	<0.004	0.008	0.008	0.005	0.014	<0.004	<0.004	0.010	<0.004	0.019	0.005	<0.004	0.10	0.028	0.024
SP-1-8-20120903	09/03/12	< 0.004	<0.004	<0.004	0.004	0.006	0.009	0.018	<0.004	0.007	<0.004	< 0.004	<0.004	0.005	0.053	0.007	0.014
BD-1	09/03/12	< 0.004	<0.004	<0.004	<0.004	<0.004	0.005	0.009	<0.004	<0.004	<0.004	< 0.004	<0.004	<0.004	0.034	0.005	0.01
SP-1-9-20120904	09/04/12	< 0.004	<0.004	<0.004	<0.004	< 0.004	< 0.004	<0.004	<0.004	<0.004	<0.004	< 0.004	<0.004	<0.004	0.004	<0.004	< 0.004
BD-1	09/04/12	<0.004	<0.004	<0.004	<0.004	<0.004	< 0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.005	<0.004	<0.004
SP-1-10-20120904	09/04/12	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.010	0.005	<0.004
SP-1-11-20120904	09/04/12	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
SP-1-12-20120904	09/04/12	<0.004	<0.004	<0.004	0.005	0.005	0.016	<0.004	0.004	0.013	<0.004	0.009	<0.004	<0.004	0.047	0.014	0.017
SP-1-13-20120903	09/05/12	<0.004	<0.004	<0.004	<0.004	<0.004	0.005	<0.004	<0.004	<0.004	<0.004	0.005	<0.004	<0.004	0.015	0.004	0.01
BD-1	09/05/12	<0.004	<0.004	<0.004	<0.004	<0.004	0.009	<0.004	<0.004	0.010	<0.004	0.005	<0.004	<0.004	0.018	0.005	0.01
SP-2-1-20120905	09/05/12	<0.004	<0.004	<0.004	<0.004	<0.004	0.008	0.009	<0.004	0.005	<0.004	0.005	<0.004	<0.004	0.012	<0.004	0.007
SP-2-2-20120905	09/05/12	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.007	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.014	0.005	0.006

Notes:

All results are reported in milligrams per kilogram (mg/kg).

Polynuclear aromatic hydrocarbons (PAHs) were analyzed by USEPA Method 8270D.

Highlighted cell indicates the concentration exceeds the respective soil cleanup level.

Table presents PAH compounds with detections only.

- -- = not applicable/not available.
- < = not detected greater than the laboratory reporting limit indicated.</p>

ADEC = Alaska Department of Environmental Conservation

BD = Blind Duplicate of preceding soil sample

USEPA = United States Environmental Protection Agency

¹ ADEC Soil Cleanup Levels (SCLs), in mg/kg, per 18 AAC 75.355, Table B1. Register 188, January 2009, & Technical Memorandum 02-006 (Migration to groundwater).

TABLE 2

Soil Analytical Data - GRO, DRO, BTEX and Moisture Former Chevron Facility 92114 3350 College Road Fairbanks, Alaska

Location	Sample Date	GRO	DRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Moisture %
ADEC Soil Cle	anup Levels ¹	300	250	0.025	6.5	6.9	63	N/A
SP-1-1-20120903	09/03/12	<0.7	11	<0.0068	0.043	0.0084	0.044	11.4
SP-1-2-20120903	09/03/12	<0.6	20	<0.0060	0.021	<0.0060	<0.018	10.9
SP-1-3-20120903	09/03/12	<0.6	44	<0.0059	0.024	< 0.0059	0.024	11.6
SP-1-4-20120903	09/03/12	<0.6	61	<0.0060	0.024	<0.0060	<0.018	9.1
SP-1-5-20120903	09/03/12	<0.7	33	<0.0068	0.018	<0.0068	0.020	11.7
SP-1-6-20120903	09/03/12	<0.6	170	<0.0058	0.014	<0.0058	<0.017	8.9
SP-1-7-20120903	09/03/12	<0.5	42	<0.0055	0.017	<0.0055	<0.016	8.7
SP-1-8-20120903	09/03/12	<0.6	52	<0.0061	0.010	<0.0061	<0.018	10.2
BD-1	09/03/12	120	77	0.28	2.6	2.9	11	13.1
SP-1-9-20120904	09/04/12	<0.6	<4.5 ²	<0.0057	0.0070	< 0.0057	<0.017	10.9
BD-1	09/04/12	<0.6	47 ²	<0.0060	0.0063	< 0.0060	<0.0060	10.8
SP-1-10-20120904	09/04/12	0.9	13 ²	<0.0058	0.012	<0.0058	<0.017	10.4
SP-1-11-20120904	09/04/12	2.4 ³	89 ²	<0.023 3	<0.023 3	<0.023 3	<0.070 3	13.4
SP-1-12-20120904	09/04/12	<6.0 ³	29 ²	<0.060 3	<0.060 3	<0.060 ³	<0.18 3	17.1
SP-1-13-20120905	09/05/12	<0.6	45 ²	< 0.0063	< 0.0063	< 0.0063	<0.019	13.4
BD-1	09/05/12	<0.6	<4.6 ²	<0.0064	0.0068	< 0.0064	< 0.0064	13.3
SP-2-1-20120905	09/05/12	0.8	48 ²	<0.0067	0.012	< 0.0067	<0.020	14.3
SP-2-2-20120905	09/05/12	<2.5 ³	47 ²	<0.025 3	<0.025 3	<0.025 3	<0.074 3	15.7
SP-2-1-20121005 ⁴	10/05/12							10.9
SP-2-2-20121005 ⁴	10/05/12							9.1
Trip Blank	09/03/12	1		< 0.0050	< 0.0050	< 0.0050	0.034	

Notes:

All results are reported in milligrams per kilogram (mg/kg).

Gasoline range organics (GRO) analyzed by AK Method 101.

Diesel range organics (DRO) analyzed by AK Method 102.

Benzene, toluene, ethylbenzene, and total xylenes (BTEX) analyzed by USEPA Method 8021B.

Lead analyzed by EPA Method 6020 (Total Lead).

Highlighted cell indicates detected concentration exceeds respective soil cleanup level.

- -- = Not applicable/not available
- < = Not detected at concentration greater than the laboratory reporting limit indicated.

ADEC = Alaska Department of Environmental Conservation

BD = Blind Duplicate of preceding soil sample

USEPA = United States Environmental Protection Agency

Since the recovery is within our statistically derived limits the data is reported.

¹ ADEC Soil Cleanup Levels (SCLs) per 18 AAC 75.355, Table B1, Register 188, January 2009, and Technical Memorandum 02-006 (Migration to groundwater).

² The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the method acceptance limits as noted on the QC Summary.

³ Reporting limit raised due to sample foaming.

⁴ See Table 3 for selected VOC analyses results.

Table 3

Soil Analytical Data- Volatile Organic Compounds Former Chevron Facility 92114 3350 College Road Fairbanks, Alaska

Location	Sample Date	Acetone	Benzene	1,2-Dibromoethane	Ethylbenzene	Isopropylbenzene	Methyl -tertiary-butyl-ether	Naphthalene	Tetrachloroethene	Toluene	1,2,3 Trichlorobenzene	1,2,4 Trichlorobenzene	Trichloroethene	Vinyl Chloride	m+p-Xylene	o-Xylene	Total Xylenes	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	tert-Butylbenzene	p-IsopropyItoluene	Methylene Chloride
ADEC Soil Clean	up Levels ¹	88	0.025	0.00016	6.9	51	1.3	20	0.024	6.5	NE	0.85	0.020	0.0085	NE	NE	63 ²	23	23	15	15	12	12	NE	0.21
SP-2-1-20121005	10/05/12	<1.0	< 0.072	<0.14	<0.14	<0.14	< 0.072	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.20J	<0.14	0.20 J	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.29
SP-2-1-20121005	10/05/12	<0.49	< 0.035	< 0.071	< 0.071	< 0.071	< 0.035	< 0.071	< 0.071	0.15J	< 0.071	< 0.071	< 0.071	< 0.071	0.11J	< 0.071	0.11 J	< 0.071	<0.071	< 0.071	< 0.071	< 0.071	<0.071	<0.071	<0.14

All results reported in milligrams per kilogram (mg/kg).
Highlighted values indicate an exceedance of the ADEC SCL.

NE = not established

Volatile organic compounds were analyzed by EPA Method 8260 B.

< = not detected greater than the laboratory reporting limit indicated

J = Estimated value-The result is >/= the MDL and < the Limit of Quantitation.

¹ Alaska Department of Environmental Conservation (ADEC) Soil Cleanup Levels (SCLs) per 18 AAC 75.355, Table B1. Register 188, October 2008, & Technical Memorandum 02-006 (Migration to groundwater)

 $^{^2}$ Exceedence based on ADEC SCL for total xylenes = m+p Xylenes + o-Xylenes (63 mg/kg).

ARCADIS

Figures

BY: RICHARDS,

PLOTTED: 12/11/2012 6:16 PM

PLTFULL.CTB

18.1S (LMS TECH)

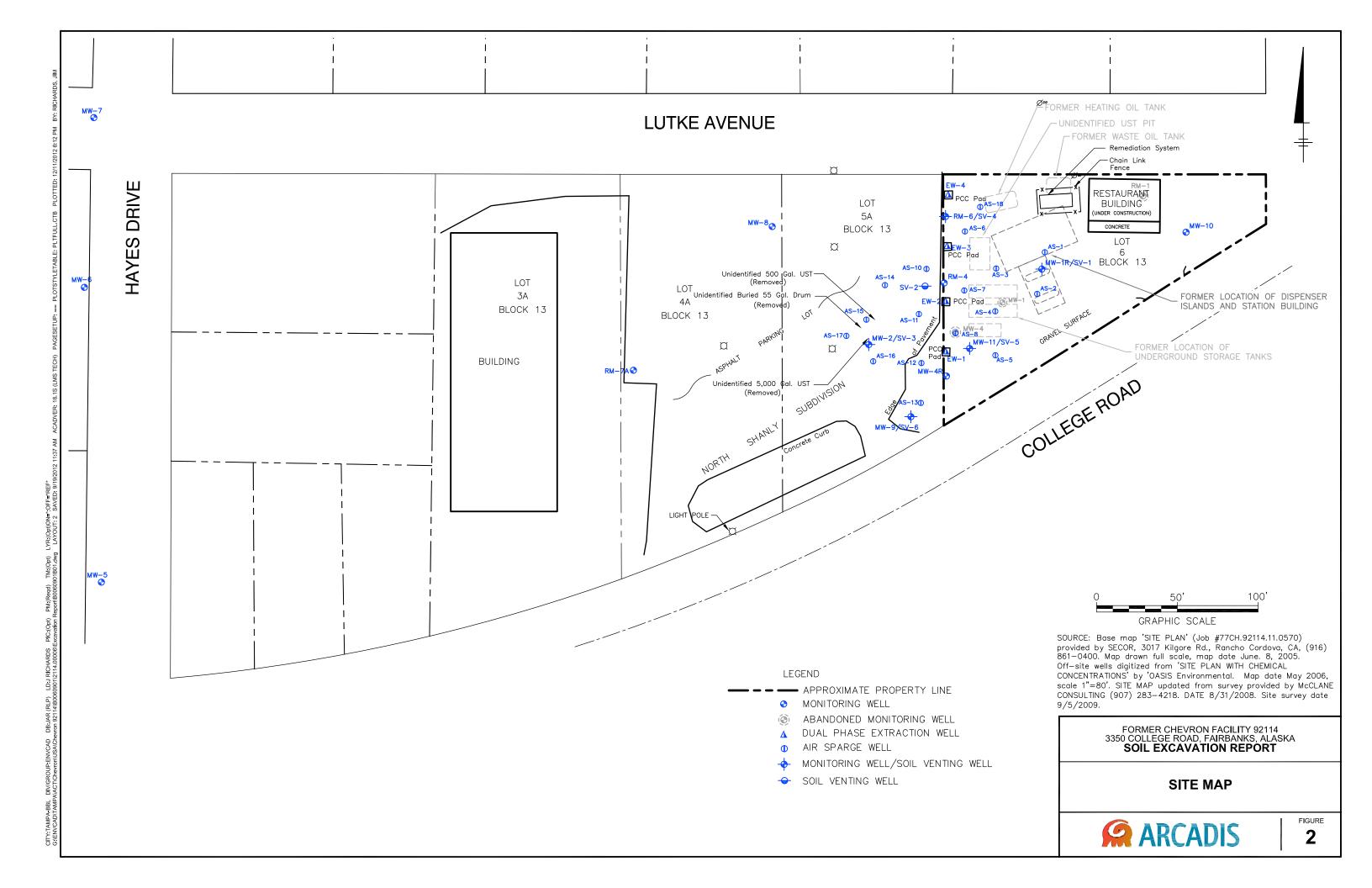
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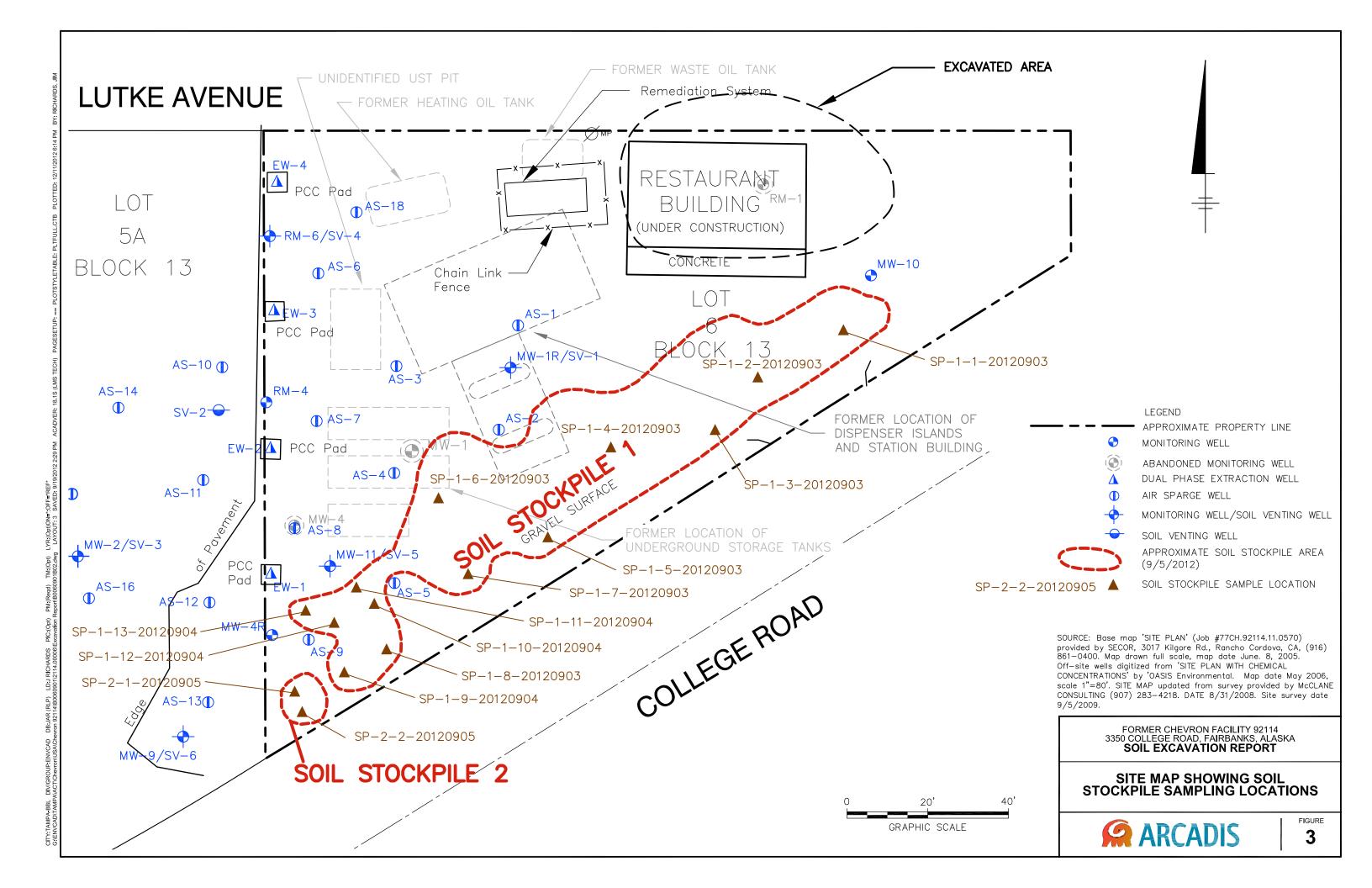
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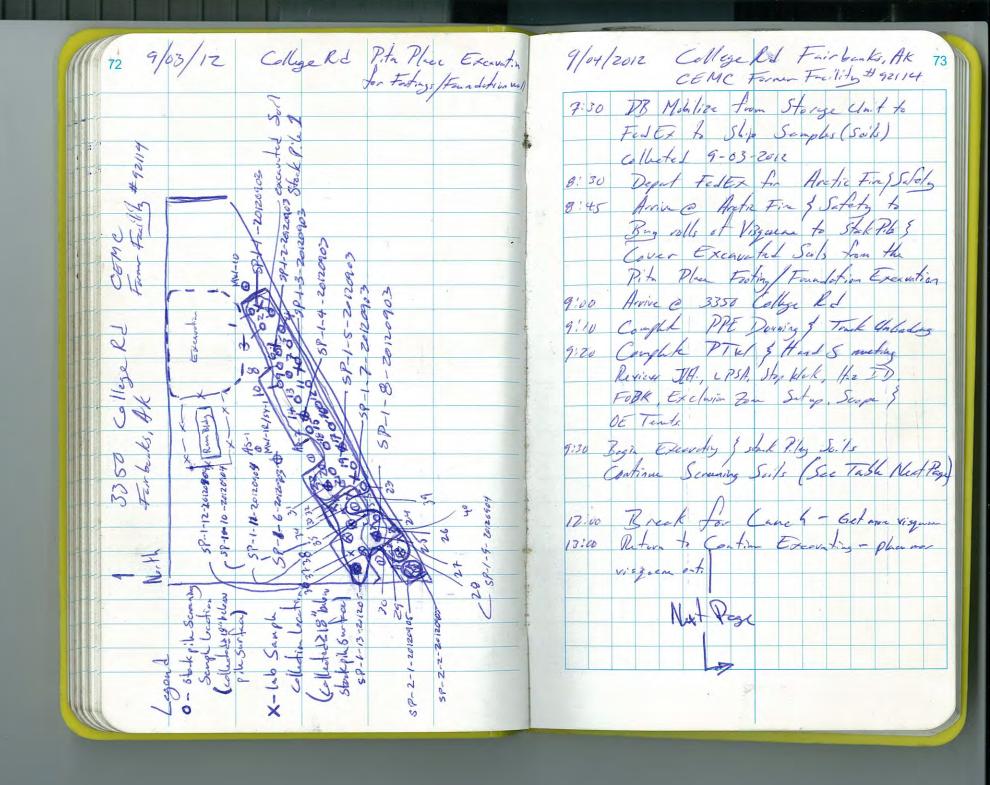


Appendix A

Field Notes

	70					
والمدود	9/63/	1/2 Callege	e RL	92/14		
	/ '	P.A	Place	Excer	Lon	Contid.
	13:40		round (ex	cavation)	of le	each Duly
	13:50	Conglete 12 mar	al of S	phie dos	'n p.x	a to leachfield
		Contin Es	ccarafin /	Starke !	ing /	Scorente
		Saugh ID	So-Hither	Feet E	AST	PID
	Tim	Manker X	So the togs	Li. ege	(~)	117
	16:15	13 - North Central	~ 30'	~ 30	5.5	0.0
-	16:25	14 - West Cent	~ 6'	n 45°	5.5	0.0
	16:35	15 - East Central	~ 25'	n 10'	5.5	0.0
	16:45	16-So-th Cents	12.	~ 45-1	5.5	0-0
	16:55	12 - North E Com	~ 3'	~ 50'	5	8.0
	17:10	15-SE Come	~6'	~ 451	5	0.0
	17:30	19- East SiL	N 22	n 20	5	0.0
	14:40	20- NE Corne	~ 30	N 45	5.5	0.0
	17:50	21 - N Central	~25	N30	5.5	0.0
	18:00	22 - W Cartal	~35	~ 25	6'	0.0
	18:10	23-E Central	~ 25	~ 45	6	0-0
	18:20	24 - Certer	~ 25	N 30	6	0-0
	18:30	25 - Center	~ 20	140	6	0-0
	18:40	26 - Centr	N 15.	N 25	6'	0.0
	18:50	27-5 W	~ 15	N 15	4	0.0
	19:00	28-541	~ 15	~ 15	5	0.0
-	19:10	29-5W	210'	1-10'	6	0.0
	XI	nelade genra	1 Lescri	ptin "	f ar	en m
1				bils wer		veved from

	, ,		11
9/03/12	Callege K	1 92114	
	9		
10/10/		-1.	1
P. ta Pla	a txc	wation - Footings et	-5
	aples -	Sadwithed for	
00/ 00	apks -) a s m. 1/22 / 2-	
1 4 4 4 5 4 5 4	A /	sis Table	
	1 7	η	
Date I'm	5P-1-1-2012 und	H-clasis	-
9/03/12 11:05	31-1-1-2012090	Moistur BIEX 802	IR
7 7		DRO HKIOZ	
	57-1-2-20120903	PAN 8270D Moisture	
9/03/12 12:40		GRO AKION ETEX SOI	213
,		DRG AKIOZ PAH 98200	
9/03/12 1300	SP-1-3-20120905	Mostre	
1/00/12 1300		SRO BTEX 802	-13
	5	PAH 82700	
9/03/12 13 40	57-1-4-20120903	Moistone BTEX &	2173
7/	1	DRE ALIOZ	
	5P-1-5-20120903	PA 4 8270D	
9/03/12 14:30	2/2/-3 20120 102	GROSPOAKICI BIEX 80	ZiB
/ / ,	to be a training	DEO AKIOZ PAH 8270D	-
9/03/12 1600	57-1-6-20,20903	W	
1100/12 1000		10 AK 101 3 TOTA 8	121B
	A see Jan 1	BRO AKIOZ PAH BZ707	
9/63/12 16:40	57-1-7-20120903	GRO AKLOI BYEN &	20
11/		BRO AKOI BTEN &	
7		Partie Company Company of the Compan	
9/03/17 18:45	SP-1-8-2012099	GRO ALIOI BTEN 8	BOILE
1 /		DRD AKIOT	
		7AH 8270D	

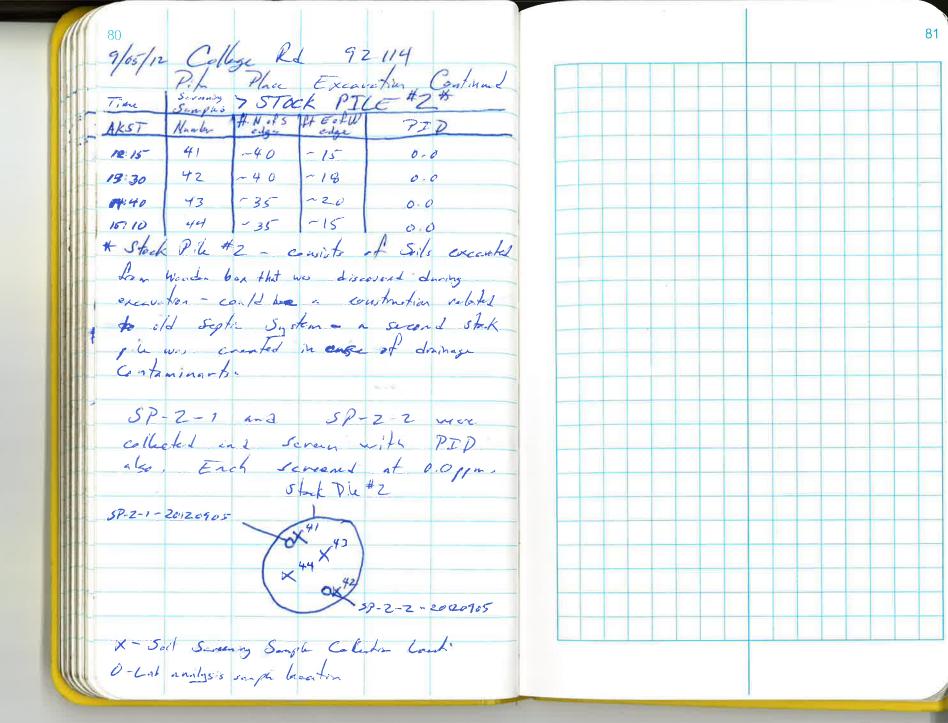


	76	9					
	9/04/12	Call	e Rd	92114	,		
-	1/04/12	Pil	D/ /	Execut	- Con	41	
-					Table		
Ī	7. 1	Screened	Ft. Noof Selection		Approxidant	PID (ppn)	
	Time	30	~ 20	~ 25	6'	0.0	
		1 20 1	n 25	~ 35	5.5'	0.0	
+1	11:00	3/	2 15	~ 25	6	0.0	
-1	11:40	32	2 28	~ 20	6.5'	0.0	
4	13:15	33	~ 25	- 5	6'	0.0	
H	14:00	34	2 25	~ 10	6.5	0.0	
1	18:00	35	~ 15	~ Z	7.5'	0.0	
+	(01:30	36	28	~/2	2.5'	0.0	
-	11:20	37	~ 42	~10	8'	0.0	
-	13:10	38	- 45	1 2	8	0.0	ŀ
	14:00	39	~ 45	2 5	81	0.0	١
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1		box 3	280crafe	1 Soils	1 21	411/10	1
-	18:20	Cove	20	2 5	25 //	Toblice of	-
-		site			-	77 7 1	
	+ Son	ples So	cresne 2	9/05/1:	2		1
7				1			

9/04/20	Coll	esald	92114	1
			ration Car	
Soil	Jam	phs Sa	Smitted	tem 11
L-60.	rators	Analysi.	5 Table.	Contd
Dite	Time	ID	Hne	1515
9/04/12	9:45	3P-1-9-201	20909 PAH,	PRO, PRO
9/04/12	11:15	57-1-10-20	20904 PAH,	GRO DRO
9/04/12	15:45	57-1-11-20	120904 174H. M	eiota DRO
9/04/12	18:05	SP-1-12 - 20	I KIEN!	loister .
9/04/12		BD-1	BIEX	620
9/05/12	16:15	57-1-13-20	0120905 BIEX, 6	leister DEO
9/05/12	11:30	57-2-1-2	DIZOGOT PAIT M	leiste
9/05/12	14210	59-2-2-2	122x 6	re. Dro
9/05/12	r.	BD-1		× GRO
'	1-	141	Sough Col	Whin -
Empty	Trus !			
,				
-				
		DEB		

9/05/12 College Rd 92/14 Place Execution Continued - Execution - Caphie PTW 0800 H& Safety - Seope discussion Centinue Screening Excavated Sils 0930 Encounted another wooden Streeten 10:50 East of hollow one previously encountered- Called Russ 11:15 Continued Execution - D Beandon Requested z nd Stock Pile be started for Continued Ex at Soile ramoved from Warden top Structures vacinity. - No signs of hydrocark impact. 12:00 - 12:40 Conifinued 1300 1330 were uf Grown Fill - compacted Sils

9/05/12 College Rd Electrical Inguitor acris 14:40 on site - Questioning Nonday ou regulation a - 1450 offsita 1500 SW corner Scouning / Sorphy 16:00 - Ne impact det Carplet 1700 17-1900 - Secured Sid of site to storage with 19:10 uplife Unloading 20:00 Ship Somples





Appendix B

Laboratory Analytical Reports



2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

REVISED

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Lancaster Laboratories 2425 New Holland Pike Lancaster, PA 17605-2425 Arcadis U.S., Inc. Suite 100 630 Plaza Drive Highlands Ranch CO 80129

September 19, 2012

Project: 92114

Submittal Date: 09/05/2012 Group Number: 1333266 SDG: LSU27 PO Number: B0060901.2114.00003 State of Sample Origin: AK

Lancaster Labs (LLI) #
6777403
6777404
6777405
6777406
6777407
6777408
6777409
6777410
6777411
6777412

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC	Arcadis	Attn: David Beaudoin
COPY TO		
ELECTRONIC	Arcadis	Attn: Russ Greisler
COPY TO		
ELECTRONIC	Arcadis	Attn: Dana Ramquist
COPY TO		
ELECTRONIC	ARCADIS	Attn: Michael MacDaniel
COPY TO		
1 COPY TO	Data Package Group	



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REVISED

Respectfully Submitted,

fill M. Parker
Senior Specialist

(717) 556-7262



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Page 1 of 2

Sample Description: SP-1-1-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777403

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 11:05 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-1 SDG#: LSU27-01

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor	
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg		
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1	
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1	
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1	
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.019	1	
10726	Benzo(a)pyrene		50-32-8	0.004	0.004	0.019	1	
10726	Benzo(b)fluoranthen	е	205-99-2	N.D.	0.004	0.019	1	
10726	Benzo(g,h,i)perylen	е	191-24-2	N.D.	0.004	0.019	1	
10726	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.004	0.019	1	
10726	Chrysene		218-01-9	N.D.	0.004	0.019	1	
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1	
10726	Fluoranthene		206-44-0	0.004	0.004	0.019	1	
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1	
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.019	1	
10726	Naphthalene		91-20-3	0.012	0.004	0.019	1	
10726	Phenanthrene		85-01-8	0.004	0.004	0.019	1	
10726	Pyrene		129-00-0	0.006	0.004	0.019	1	
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg		
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.7	6.8	30.25	
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg		
08179	Benzene		71-43-2	N.D.	0.0068	0.027	30.25	
08179	Ethylbenzene		100-41-4	0.0084	0.0068	0.027	30.25	
08179	Toluene		108-88-3	0.043	0.0068	0.027	30.25	
08179	Total Xylenes		1330-20-7	0.044	0.020	0.068	30.25	
GC Pet	croleum	AK 102	/AK 103	mg/kg	mg/kg	mg/kg		
Hydrod	carbons	04/08/0)2					
01742	TPH-DRO AK soil C10	-C25	n.a.	11	4.5	13	1	
Wet Ch	nemistry	SM20 25	540 G	8	8	%		
00111	Moisture		n.a.	11.4	0.50	0.50	1	
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.								

General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.



Account

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Page 2 of 2

Sample Description: SP-1-1-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

10847

LLI Sample # SW 6777403 LLI Group # 1333266

Project Name: 92114

Collected: 09/03/2012 11:05 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-1 SDG#: LSU27-01

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor		
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	11:47	Linda M Hartenstine	1		
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1		
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31A	09/07/2012	13:02	Laura M Krieger	30.25		
08179	BTEX by 8021	SW-846 8021B	1	12250A31A	09/07/2012	13:02	Laura M Krieger	30.25		
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	11:05	Client Supplied	1		
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/10/2012	22:23	Nicholas R Rossi	1		
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1		
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1		



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Page 1 of 2

Sample Description: SP-1-2-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777404

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 12:40 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-2 SDG#: LSU27-02

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b) fluoranthen	е	205-99-2	0.004	0.004	0.019	1
10726	Benzo(g,h,i)perylen	е	191-24-2	N.D.	0.004	0.019	1
10726	Benzo(k) fluoranthen	e	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	N.D.	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.004	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.019	1
10726	Naphthalene		91-20-3	0.008	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.006	0.004	0.019	1
10726	Pyrene		129-00-0	0.008	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	6.0	26.88
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0060	0.024	26.88
08179	Ethylbenzene		100-41-4	N.D.	0.0060	0.024	26.88
08179	Toluene		108-88-3	0.021	0.0060	0.024	26.88
08179	Total Xylenes		1330-20-7	N.D.	0.018	0.060	26.88
GC Pet	roleum	AK 102,	/AK 103	mg/kg	mg/kg	mg/kg	
Hydrod	arbons	04/08/0	02				
01742	TPH-DRO AK soil C10	-C25	n.a.	20	4.5	13	1
Wet Ch	nemistry	SM20 25	540 G	%	%	%	
00111	Moisture		n.a.	10.9	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees Cas-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Page 2 of 2

Sample Description: SP-1-2-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777404

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 12:40 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-2 SDG#: LSU27-02

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	13:02	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	00:02	Marie D John	26.88
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	00:02	Marie D John	26.88
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	12:40	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/10/2012	23:49	Nicholas R Rossi	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1



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Sample Description: SP-1-3-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED
LLI Sample # SW 6777405

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 13:00 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-3 SDG#: LSU27-03

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	0.007	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b)fluoranthen	е	205-99-2	0.010	0.004	0.019	1
10726	Benzo(g,h,i)perylen	е	191-24-2	0.012	0.004	0.019	1
10726	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.007	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.008	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.004	0.004	0.019	1
10726	Naphthalene		91-20-3	0.044	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.010	0.004	0.019	1
10726	Pyrene		129-00-0	0.012	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	5.9	25.93
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0059	0.023	25.93
08179	Ethylbenzene		100-41-4	N.D.	0.0059	0.023	25.93
08179	Toluene		108-88-3	0.024	0.0059	0.023	25.93
08179	Total Xylenes		1330-20-7	0.024	0.018	0.059	25.93
GC Pet	croleum	AK 102	/AK 103	mg/kg	mg/kg	mg/kg	
Hydrod	carbons	04/08/0	02				
01742	TPH-DRO AK soil C10	-C25	n.a.	44	4.5	13	1
Wet Ch	nemistry	SM20 25	540 G	%	%	%	
00111	Moisture		n.a.	11.6	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees C as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: SP-1-3-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED
LLI Sample # SW 6777405

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 13:00 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-3 SDG#: LSU27-03

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	.me	Analyst	Dilution Factor		
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	13:27	Linda M Hartenstine	1		
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1		
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	00:38	Marie D John	25.93		
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	00:38	Marie D John	25.93		
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	13:00	Client Supplied	1		
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/11/2012	00:17	Nicholas R Rossi	1		
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1		
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1		



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Sample Description: SP-1-4-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777406

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 13:40 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Submitted: 09/05/2012 09:20 Reported: 09/19/2012 08:45

Highlands Ranch CO 80129

SP1-4 SDG#: LSU27-04

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	0.006	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b)fluoranthen	е	205-99-2	0.008	0.004	0.019	1
10726	Benzo(g,h,i)perylen	е	191-24-2	0.006	0.004	0.019	1
10726	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.007	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.007	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.019	1
10726	Naphthalene		91-20-3	0.044	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.009	0.004	0.019	1
10726	Pyrene		129-00-0	0.012	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	6.0	27.45
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0060	0.024	27.45
08179	Ethylbenzene		100-41-4	N.D.	0.0060	0.024	27.45
08179	Toluene		108-88-3	0.024	0.0060	0.024	27.45
08179	Total Xylenes		1330-20-7	N.D.	0.018	0.060	27.45
GC Pet	croleum	AK 102/	/AK 103	mg/kg	mg/kg	mg/kg	
Hydrod	carbons	04/08/0)2				
01742	TPH-DRO AK soil C10		n.a.	61	4.4	13	1
Wet Ch	nemistry	SM20 25	540 G	%	%	%	
00111	Moisture		n.a.	9.1	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees C as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: SP-1-4-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777406

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 13:40 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-4 SDG#: LSU27-04

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

		Labora	ory Sa	mple Analysi	s Record			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	13:52	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	01:14	Marie D John	27.45
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	01:14	Marie D John	27.45
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	13:40	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/11/2012	00:46	Nicholas R Rossi	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1



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Sample Description: SP-1-5-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777407

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 14:30 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-5 SDG#: LSU27-05

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	0.008	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	0.005	0.004	0.019	1
10726	Benzo(b)fluoranthen	.e	205-99-2	0.009	0.004	0.019	1
10726	Benzo(g,h,i)perylen	.e	191-24-2	0.012	0.004	0.019	1
10726	Benzo(k)fluoranthen	.e	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.008	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.006	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.006	0.004	0.019	1
10726	Naphthalene		91-20-3	0.035	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.008	0.004	0.019	1
10726	Pyrene		129-00-0	0.010	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.7	6.8	29.83
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0068	0.027	29.83
08179	Ethylbenzene		100-41-4	N.D.	0.0068	0.027	29.83
08179	Toluene		108-88-3	0.018	0.0068	0.027	29.83
08179	Total Xylenes		1330-20-7	0.020	0.020	0.068	29.83
GC Pet	roleum	AK 102/	AK 103	mg/kg	mg/kg	mg/kg	
Hydro	carbons	04/08/0	2				
-	TPH-DRO AK soil C10		n.a.	33	4.5	13	1
Wet Cl	nemistry	SM20 25	40 G	%	%	%	
00111	-		n.a.	11.7	0.50	0.50	1
00111	"Moisture" represen 103 - 105 degrees C as-received basis.		s in weight of th	ne sample afte	er oven drying at	0.50	1

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: SP-1-5-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6777407 LLI Group # 1333266

Account # 10847

Project Name: 92114

Collected: 09/03/2012 14:30 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-5 SDG#: LSU27-05

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	14:17	Linda M Hartenstine	1			
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1			
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	04:14	Marie D John	29.83			
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	04:14	Marie D John	29.83			
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	14:30	Client Supplied	1			
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/11/2012	01:14	Nicholas R Rossi	1			
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1			
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1			



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Sample Description: SP-1-6-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777408

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 16:00 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-6 SDG#: LSU27-06

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	0.004	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	0.008	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b)fluoranthen	е	205-99-2	N.D.	0.004	0.019	1
10726	Benzo(g,h,i)perylen	е	191-24-2	0.011	0.004	0.019	1
10726	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.008	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.010	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.005	0.004	0.019	1
10726	Naphthalene		91-20-3	0.040	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.013	0.004	0.019	1
10726	Pyrene		129-00-0	0.015	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	5.8	26.52
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0058	0.023	26.52
08179	Ethylbenzene		100-41-4	N.D.	0.0058	0.023	26.52
08179	Toluene		108-88-3	0.014	0.0058	0.023	26.52
08179	Total Xylenes		1330-20-7	N.D.	0.017	0.058	26.52
GC Pet	roleum	AK 102/	AK 103	mg/kg	mg/kg	mg/kg	
Hydro	carbons	04/08/0	2				
-	TPH-DRO AK soil C10		n.a.	170	22	66	5
Wet Cl	nemistry	SM20 25	40 G	%	%	%	
00111	•		n.a.	8.9	0.50	0.50	1
00111	"Moisture" represen 103 - 105 degrees C as-received basis.		s in weight of th	ne sample afte	er oven drying at	0.30	<u>-</u>

General Sample Comments

State of Alaska Lab Certification No. UST-061



Account

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 •717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

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REVISED

Sample Description: SP-1-6-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

LLI Sample # SW 6777408 LLI Group # 1333266

10847

Project Name: 92114

Collected: 09/03/2012 16:00 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-6 SDG#: LSU27-06

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

		Labor	atory Sa	mple Analys	is Record			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	14:42	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	04:50	Marie D John	26.52
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	04:50	Marie D John	26.52
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	16:00	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/11/2012	03:08	Nicholas R Rossi	5
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1



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Sample Description: SP-1-7-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777409

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 16:40 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-7 SDG#: LSU27-07

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	0.008	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	0.008	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	0.005	0.004	0.019	1
10726	Benzo(b) fluoranthen	e	205-99-2	0.014	0.004	0.019	1
10726	Benzo(g,h,i)perylen	e	191-24-2	N.D.	0.004	0.019	1
10726	Benzo(k)fluoranthen	9	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.010	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.019	0.004	0.019	1
10726	Fluorene		86-73-7	0.005	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.019	1
10726	Naphthalene		91-20-3	0.10	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.028	0.004	0.019	1
10726	Pyrene		129-00-0	0.024	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.5	5.5	24.92
GC Vol	atiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0055	0.022	24.92
08179	Ethylbenzene		100-41-4	N.D.	0.0055	0.022	24.92
08179	Toluene		108-88-3	0.017	0.0055	0.022	24.92
08179	Total Xylenes		1330-20-7	N.D.	0.016	0.055	24.92
GC Pet	roleum	AK 102/	/AK 103	mg/kg	mg/kg	mg/kg	
Hvdro	arbons	04/08/0)2				
01742	TPH-DRO AK soil C10		n.a.	42	4.4	13	1
Wet Ch	nemistry	SM20 25	540 G	%	%	%	
00111	Moisture		n.a.	8.7	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees C as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: SP-1-7-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6777409 LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 16:40 by DB Arcadis U.S., Inc.

SM20 2540 G 1

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

09/06/2012 16:38 Scott W Freisher

SP1-7 SDG#: LSU27-07

00111 Moisture

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor	
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	15:07	Linda M Hartenstine	1	
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1	
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	05:26	Marie D John	24.92	
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	05:26	Marie D John	24.92	
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	16:40	Client Supplied	1	
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/11/2012	01:42	Nicholas R Rossi	1	
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1	

12250820001A



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Page 1 of 2

Sample Description: SP-1-8-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777410

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 18:45 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-8 SDG#: LSU27-08

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846 8	3270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	0.004	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	0.006	0.004	0.019	1
10726	Benzo(b)fluoranthen	.e	205-99-2	0.009	0.004	0.019	1
10726	Benzo(g,h,i)perylen	.e	191-24-2	0.018	0.004	0.019	1
10726	Benzo(k)fluoranthen	.e	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.007	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	N.D.	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	0.005	0.004	0.019	1
10726	Naphthalene		91-20-3	0.053	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.007	0.004	0.019	1
10726	Pyrene		129-00-0	0.014	0.004	0.019	1
GC Vo	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	6.1	27.31
GC Vo	latiles	SW-846 8	3021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0061	0.024	27.31
08179	Ethylbenzene		100-41-4	N.D.	0.0061	0.024	27.31
08179	Toluene		108-88-3	0.010	0.0061	0.024	27.31
08179	Total Xylenes		1330-20-7	N.D.	0.018	0.061	27.31
GC Pet	troleum	AK 102/A	K 103	mg/kg	mg/kg	mg/kg	
Hydro	carbons	04/08/02					
-	TPH-DRO AK soil C10		n.a.	52	4.4	13	1
** ~*		area = = = 4	0.0	%	8	%	
	nemistry	SM20 254		-	•	-	
00111			n.a.	10.2	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees C as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: SP-1-8-20120903 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6777410 LLI Group # 1333266

Account # 10847

Project Name: 92114

Collected: 09/03/2012 18:45 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-8 SDG#: LSU27-08

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	15:32	Linda M Hartenstine	1			
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1			
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	06:02	Marie D John	27.31			
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	06:02	Marie D John	27.31			
06119	GC - Field Preserved (AK-101)	AK 101	1	201224928703	09/03/2012	18:45	Client Supplied	1			
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/11/2012	02:11	Nicholas R Rossi	1			
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1			
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1			



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Page 1 of 2

Sample Description: BD-1 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6777411

LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

BD--1 SDG#: LSU27-09FD

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.020	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.020	1
10726	Anthracene		120-12-7	N.D.	0.004	0.020	1
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.020	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.020	1
10726	Benzo(b)fluoranthen	e	205-99-2	0.005	0.004	0.020	1
10726	Benzo(g,h,i)perylen	e	191-24-2	0.009	0.004	0.020	1
10726	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.004	0.020	1
10726	Chrysene		218-01-9	N.D.	0.004	0.020	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.020	1
10726	Fluoranthene		206-44-0	N.D.	0.004	0.020	1
10726	Fluorene		86-73-7	N.D.	0.004	0.020	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.020	1
10726	Naphthalene		91-20-3	0.034	0.004	0.020	1
10726	Phenanthrene		85-01-8	0.005	0.004	0.020	1
10726	Pyrene		129-00-0	0.01	0.004	0.020	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	120	5.8	58	252.79
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	0.28	0.058	0.23	252.79
08179	Ethylbenzene		100-41-4	2.9	0.058	0.23	252.79
08179	Toluene		108-88-3	2.6	0.058	0.23	252.79
08179	Total Xylenes		1330-20-7	11	0.17	0.58	252.79
GC Pet	croleum	AK 102	/AK 103	mg/kg	mg/kg	mg/kg	
Hydrod	carbons	04/08/0	02				
01742	TPH-DRO AK soil C10	-C25	n.a.	77	4.6	14	1
Wet Ch	nemistry	SM20 25	540 G	%	8	%	
00111	Moisture		n.a.	13.1	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees C as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: BD-1 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6777411 LLI Group # 1333266 Account # 10847

Project Name: 92114

Collected: 09/03/2012 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

BD--1 SDG#: LSU27-09FD

Submitted: 09/05/2012 09:20

Reported: 09/19/2012 08:45

Laboratory Sample Analysis Record

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12249SLB026	09/06/2012	15:58	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12249SLB026	09/06/2012	02:15	Sherry L Morrow	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31B	09/08/2012	01:50	Marie D John	252.79
08179	BTEX by 8021	SW-846 8021B	1	12250A31B	09/08/2012	01:50	Marie D John	252.79
06119	GC - Field Preserved (AK-101)	AK 101	1	201225028707	09/03/2012	00:00	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122490019A	09/11/2012	02:39	Nicholas R Rossi	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122490019A	09/06/2012	11:30	Denise L Trimby	1
00111	Moisture	SM20 2540 G	1	12250820001A	09/06/2012	16:38	Scott W Freisher	1



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Page 1 of 1 **REVISED**

LLI Sample # G5 6777412

Sample Description: Trip Blank Soil

Facility# 92114

LLI Group # 1333266 3350 College Rd - Fairbanks, AK Account # 10847

Project Name: 92114

Collected: 09/03/2012 Arcadis U.S., Inc.

Suite 100

Submitted: 09/05/2012 09:20 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 09/19/2012 08:45

TB--1 SDG#: LSU27-10TB*

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil	C6-C10	n.a.	1	0.5	5.0	25
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0050	0.020	25
08179	Ethylbenzene		100-41-4	N.D.	0.0050	0.020	25
08179	Toluene		108-88-3	N.D.	0.0050	0.020	25
08179	Total Xylenes		1330-20-7	0.034	0.015	0.050	25

General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
01451	TPH-GRO AK soil C6-C10	AK 101	1	12250A31A	09/07/2012	00:44	Laura M Krieger	25
08179	BTEX by 8021	SW-846 8021B	1	12250A31A	09/07/2012	00:44	Laura M Krieger	25
06119	GC - Field Preserved (AK-	AK 101	1	201224928703	09/03/2012	00:00	Client Supplied	1



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Group Number: 1333266

Reported: 09/19/12 at 08:45 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank MDL**	Blank <u>LOO</u>	Report <u>Units</u>	LCS %REC	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: 12249SLB026	Sample numb	per(s): 67	77403-677	7411					
Acenaphthene	N.D.	0.003	0.017	mg/kg	105		83-111		
Acenaphthylene	N.D.	0.003	0.017	mg/kg	111		83-127		
Anthracene	N.D.	0.003	0.017	mg/kg	105		83-111		
Benzo(a)anthracene	N.D.	0.003	0.017	mq/kq	101		73-123		
Benzo(a) pyrene	N.D.	0.003	0.017	mg/kg	109		80-123		
Benzo(b) fluoranthene	N.D.	0.003	0.017	mg/kg	115		76-124		
Benzo(q,h,i)perylene	N.D.	0.003	0.017	mq/kq	102		77-122		
Benzo(k) fluoranthene	N.D.	0.003	0.017	mg/kg	102		71-135		
Chrysene	N.D.	0.003	0.017	mg/kg	94		73-119		
Dibenz(a,h)anthracene	N.D.	0.003	0.017	mq/kq	109		67-129		
Fluoranthene	N.D.	0.003	0.017	mg/kg	104		80-113		
Fluorene	N.D.	0.003	0.017	mg/kg	104		81-117		
Indeno(1,2,3-cd)pyrene	N.D.	0.003	0.017	mg/kg	102		64-128		
Naphthalene	N.D.	0.003	0.017	mg/kg	99		77-115		
Phenanthrene	N.D.	0.003	0.017	mg/kg	97		77-113		
Pyrene	N.D.	0.003	0.017	mg/kg	105		80-121		
ryrene	N.D.	0.003	0.017	ilig/ kg	103		00-121		
Batch number: 12250A31A	Sample numb	per(s): 67	77403.677	7412					
Benzene	N.D.	0.0050	0.020	mq/kq	103	113	76-118	9	3.0
Ethylbenzene	N.D.	0.0050	0.020	mg/kg	100	108	77-115	7	30
Toluene	N.D.	0.0050	0.020	mg/kg	98	107	80-120	8	30
TPH-GRO AK soil C6-C10	N.D.	0.5	5.0	mg/kg	87	86	60-120	2	20
Total Xylenes	N.D.	0.015	0.050	mg/kg	98	106	78-115	8	30
Total Nylenes	11.12.	0.015	0.050	g/ 11g	50	100	70 113	Ü	30
Batch number: 12250A31B	Sample numb	per(s): 67	77404-677	7411					
Benzene	N.D.	0.0050	0.020	mg/kg	103	113	76-118	9	30
Ethylbenzene	N.D.	0.0050	0.020	mg/kg	100	108	77-115	7	30
Toluene	N.D.	0.0050	0.020	mq/kq	98	107	80-120	8	30
TPH-GRO AK soil C6-C10	N.D.	0.5	5.0	mq/kq	87	86	60-120	2	20
Total Xylenes	N.D.	0.015	0.050	mg/kg	98	106	78-115	8	30
1				5, 5					
Batch number: 122490019A	Sample numb	per(s): 67	77403-677						
TPH-DRO AK soil C10-C25	N.D.	4.0	12	mg/kg	83	91	75-125	10	50
Batch number: 12250820001A	Sample numb	per(s): 67	77403-677	7411			00 101		
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

*- Outside of specification

- **-This limit was used in the evaluation of the final result for the blank
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Group Number: 1333266

Reported: 09/19/12 at 08:45 AM

Reported. 03/13/12 de 00	MS MS	MSD	MS/MSD		RPD	BKG	DUP	DUP	Dup RPD
Analysis Name	%REC	%REC	Limits	RPD	MAX	Conc	Conc	RPD	Max
D 1 1 100 100 100 1	~ 7	1 /	\						
Batch number: 12249SLB026						PK: 6777403			
Acenaphthene	89	104	33-140	15	30				
Acenaphthylene	90	108	47-137	18	30				
Anthracene	83	101	40-147	20	30				
Benzo(a)anthracene	75	93	32-150	22	30				
Benzo(a)pyrene	82	105	30-150	25	30				
Benzo(b)fluoranthene	85	104	29-150	21	30				
Benzo(g,h,i)perylene	82	107	31-152	26	30				
Benzo(k)fluoranthene	75	99	35-148	27	30				
Chrysene	69	86	33-142	22	30				
Dibenz(a,h)anthracene	87	113	37-151	26	30				
Fluoranthene	77	95	30-151	21	30				
Fluorene	86	100	36-140	15	30				
Indeno(1,2,3-cd)pyrene	82	104	31-154	23	30				
Naphthalene	92	100	35-141	9	30				
Phenanthrene	78	96	34-147	21	30				
Pyrene	80	100	29-148	22	30				
Batch number: 122490019A	Sample	number (c) . 6777403	2-67774	11 IINICE	K: 6777403			
TPH-DRO AK soil C10-C25	79	55*	60-140	24	50	K: 6///403			
IFII-DIO AN BOIL CIU-CZS	19	JJ"	00-140	44	50				
Batch number: 12250820001A	Sample	number(s): 6777403	8-67774	11 BKG	: P777915			
Moisture	-					17.5	17.3	1	13

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: SVOA 8270D (microwave)

Batch number: 12249SLB026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
6777403	93	94	101
6777404	93	91	90
6777405	94	101	105
6777406	94	96	100
6777407	93	98	103
6777408	94	95	104
6777409	95	103	106
6777410	94	100	102
6777411	97	98	104
Blank	91	94	113
LCS	96	101	111
MS	91	89	88
MSD	100	103	106
Limits:	45-123	47-126	46-143

Analysis Name: TPH-GRO AK soil C6-C10

Batch number: 12250A31A

Trifluorotoluene-P Trifluorotoluene-P

6777403 81 86

*- Outside of specification

- **-This limit was used in the evaluation of the final result for the blank
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Reported: 09/19/12 at 08:45 AM			Group Number: 1333266						
керогс	su. 05/15/12 a	C 00.45 AM	Surrogate Quality Control						
6777412 Blank LCS LCSD	84 96 96 93	95 103 96 93							
Limits:	60-120	73-117							
	Name: TPH-GRO AK mber: 12250A31B Trifluorotoluene-F	soil C6-C10 Trifluorotoluene-P							
	73 71 78 78 78 78 77 78 80 76 93 96 93 60-120 Name: TPH-DRO AK mber: 122490019A Orthoterphenyl	80 78 83 83 83 93 87 75 99 96 93 73-117 soil C10-C25							
6777403 6777404 6777405 6777406 6777407 6777408 6777410 6777411 Blank LCS LCSD MS MSD	103 87 97 77 110 157* 119 99 78 93 92 101 88								

Limits: 50-150

^{*-} Outside of specification

^{**-}This limit was used in the evaluation of the final result for the blank

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Case Narrative



Project Name: 92114 LLI Group #: 1333266

General Comments:

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client. The compliance signature is located on the cover page of the Analysis Reports.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

AK 102/AK 103 04/08/02, GC Petroleum Hydrocarbons

Batch #: 122490019A (Sample number(s): 6777403-6777411 UNSPK: 6777403)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: TPH-DRO AK soil C10-C25

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6777408

Chevron Generic Analysis Request/Chain of Custody

& eurofins Lancaster Laboratorio	es	Acct	#	1084	7	Group In:	# For	233 s on rev	aster 3 2 6 verse sid	Labora 6 le corres	atorie: Samį spond w	s use o ple # ith circled	nly I numbers		740	3-1	9			
1) Client Info	mation			4)	Matrix	ζ		5)			Ana	llyses	Req	uest	ed			SCR#:		
92 114 NWTR		ant DIS CA Cted Time 11:05 12:40 13:40 14:30 16:00 16:40	3) Grap (S) (X) (X) (X) (X) (X) (X) (X) (X) (X) (X		Potable		イでいる。 ない Total Number of Containers		8260 full scan	Oxygenates Oxygenates		X	EPH Method	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	된			Results in Dry We J value reporting r Must meet lowest limits possible for compounds 8021 MTBE Confi Confirm MTBE + I Confirm all hits by Run oxy's Run oxy's	needed detection 8260 rmation Naphthalene it by 8260 8260 on highest h	it
7 Turnaround Time Requested Standard 5 day 72 hour 48 hour	(TAT) (please cir	rcle)	Relinquis	hed by	B		フ.	Date 9/2 Date	04/	/z	Fime	00		eived by				Date	Time	9
Data Package Options (plea		-		iished b	y Comme	erical C		_	Oth	ner			- 1	eived by	H Gr	<u> </u>		Date 9/5/12	Time	<u> </u>
Type I - Full Type VI (Raw Data	a) Alaska/Ty	pe III			erature				l	ß	°(С			dy Seal		ct?	(es)	No	

Environmental Sample Administration Receipt Documentation Log

Client/	Project: 😃	neuran A		Shippin	g Containe	er Sealed: (YES) NO					
Date of	f Receipt: _			Custody Seal Present *: XES N								
Time o	f Receipt:	0921	<u> </u>	* Custody seal was intact unless otherwise noted in the discrepancy section								
Source	e Code:	50		Package	Chilled	Not Chilled						
			Temperature of	Shipping Contai	ners							
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments					
1	429951	1299SI 1.8 TB		WI Y		B						
2												
3												
4												
5							_					
6												
	•	_	IOT listed on chain	of custody:		Ø						
							····					
Unnac	ker Signature	e/Emp#:	Patut all	3472	Date/Ti	me: 9/5/12	0950					



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

_		•	=
RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	E	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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REVISED

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Lancaster Laboratories 2425 New Holland Pike Lancaster, PA 17605-2425 Arcadis U.S., Inc. Suite 100 630 Plaza Drive Highlands Ranch CO 80129

September 19, 2012

Project: 92114

Submittal Date: 09/07/2012 Group Number: 1333954 SDG: LSU31 PO Number: B0060901.2114.00003 State of Sample Origin: AK

Client Sample Description	Lancaster Labs (LLI) #
SP-1-9-20120904 Grab Soil	6780470
SP-1-10-20120904 Grab Soil	6780471
SP-1-11-20120904 Grab Soil	6780472
SP-1-12-20120904 Grab Soil	6780473
SP-2-1-20120905 Grab Soil	6780474
SP-2-2-20120905 Grab Soil	6780475
SP-1-13-20120905 Grab Soil	6780476
BD-1 Grab Soil	6780477
BD-1 Grab Soil	6780478

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC	Arcadis	Attn: David Beaudoin
COPY TO		
ELECTRONIC	Arcadis	Attn: Russ Greisler
COPY TO		
ELECTRONIC	Arcadis	Attn: Dana Ramquist
COPY TO		
ELECTRONIC	ARCADIS	Attn: Michael MacDaniel
COPY TO		
1 COPY TO	Data Package Group	



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REVISED

Respectfully Submitted,

fill M. Parker
Senior Specialist

(717) 556-7262



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Page 1 of 2

Sample Description: SP-1-9-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780470

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 09:45 by DB Arcadis U.S., Inc.

Suite 100

Submitted: 09/07/2012 09:30 630 Plaza Drive

Highlands Ranch CO 80129 Reported: 09/19/2012 08:46

SP1-9 SDG#: LSU31-01

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor			
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg				
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1			
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1			
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1			
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.019	1			
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1			
10726	Benzo(b) fluoranthen	е	205-99-2	N.D.	0.004	0.019	1			
10726	Benzo(g,h,i)perylen	9	191-24-2	N.D.	0.004	0.019	1			
10726	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.004	0.019	1			
10726	Chrysene		218-01-9	N.D.	0.004	0.019	1			
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1			
10726	Fluoranthene		206-44-0	N.D.	0.004	0.019	1			
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1			
10726	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.004	0.019	1			
10726	Naphthalene		91-20-3	0.004	0.004	0.019	1			
10726	Phenanthrene		85-01-8	N.D.	0.004	0.019	1			
10726	Pyrene		129-00-0	N.D.	0.004	0.019	1			
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg				
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	5.7	25.52			
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg				
08179	Benzene		71-43-2	N.D.	0.0057	0.023	25.52			
08179	Ethylbenzene		100-41-4	N.D.	0.0057	0.023	25.52			
08179	Toluene		108-88-3	0.0070	0.0057	0.023	25.52			
08179	Total Xylenes		1330-20-7	N.D.	0.017	0.057	25.52			
	croleum	AK 102/		mg/kg	mg/kg	mg/kg				
_	carbons	04/08/0								
01742	TPH-DRO AK soil C10		n.a.	N.D.	4.5	13	1			
	The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the method acceptance limits as noted on the QC Summary. Since the recovery is within our statistically derived limits the data is reported.									
Wet Cl	nemistry	SM20 25	540 G	8	%	%				
00111	Moisture		n.a.	10.9	0.50	0.50	1			
	"Moisture" represent 103 - 105 degrees Co as-received basis.									

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Page 2 of 2

Sample Description: SP-1-9-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780470

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 09:45 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP1-9 SDG#: LSU31-01

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	09:51	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16A	09/11/2012	10:31	Marie D John	25.52
08179	BTEX by 8021	SW-846 8021B	1	12254A16A	09/11/2012	10:31	Marie D John	25.52
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/04/2012	09:45	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	11:02	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1



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Page 1 of 2

Sample Description: SP-1-10-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780471

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 11:15 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

P-110 SDG#: LSU31-02

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor			
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg				
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1			
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1			
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1			
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.019	1			
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1			
10726	Benzo(b)fluoranthen	е	205-99-2	N.D.	0.004	0.019	1			
10726	Benzo(g,h,i)perylen	е	191-24-2	N.D.	0.004	0.019	1			
10726	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.004	0.019	1			
10726	Chrysene		218-01-9	N.D.	0.004	0.019	1			
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1			
10726	Fluoranthene		206-44-0	N.D.	0.004	0.019	1			
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1			
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.019	1			
10726	Naphthalene		91-20-3	0.010	0.004	0.019	1			
10726	Phenanthrene		85-01-8	0.005	0.004	0.019	1			
10726	Pyrene		129-00-0	N.D.	0.004	0.019	1			
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg				
01451	TPH-GRO AK soil C6-	C10	n.a.	0.9	0.6	5.8	25.79			
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg				
08179	Benzene		71-43-2	N.D.	0.0058	0.023	25.79			
08179	Ethylbenzene		100-41-4	N.D.	0.0058	0.023	25.79			
08179	Toluene		108-88-3	0.012	0.0058	0.023	25.79			
08179	Total Xylenes		1330-20-7	N.D.	0.017	0.058	25.79			
	croleum carbons	AK 102/2		mg/kg	mg/kg	mg/kg				
01742	TPH-DRO AK soil C10	-C25	n.a.	13	4.5	13	1			
	The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the method acceptance limits as noted on the QC Summary. Since the recovery is within our statistically derived limits the data is reported.									
Wet Cl	nemistry	SM20 25	40 G	8	%	%				
00111	Moisture		n.a.	10.4	0.50	0.50	1			
	"Moisture" represen 103 - 105 degrees C as-received basis.									

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: SP-1-10-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780471

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 11:15 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

P-110 SDG#: LSU31-02

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	11:06	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16A	09/11/2012	19:56	Marie D John	25.79
08179	BTEX by 8021	SW-846 8021B	1	12254A16A	09/11/2012	19:56	Marie D John	25.79
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/04/2012	11:15	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	12:27	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1



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Page 1 of 2

Sample Description: SP-1-11-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780472

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 15:45 by DB Arcadis U.S., Inc.

Suite 100

Submitted: 09/07/2012 09:30 630 Plaza Drive

Reported: 09/19/2012 08:46 Highlands Ranch CO 80129

P-111 SDG#: LSU31-03

CAT				Deve	Dry Method	Dry Limit of	Dilution
No.	Analysis Name		CAS Number	Dry Result	Detection Limit*	Quantitation	Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	0.004	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b) fluoranthen	е	205-99-2	N.D.	0.004	0.019	1
10726	Benzo(g,h,i)perylen	е	191-24-2	0.004	0.004	0.019	1
10726	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.005	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.007	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.004	0.019	1
10726	Naphthalene		91-20-3	0.008	0.004	0.019	1
10726	Phenanthrene		85-01-8	N.D.	0.004	0.019	1
10726	Pyrene		129-00-0	0.014	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	2.4	2.3	23	101.33
Repo	rting limits were rai	sed due t	to sample foaming.				
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.023	0.094	101.33
08179	Ethylbenzene		100-41-4	N.D.	0.023	0.094	101.33
08179	Toluene		108-88-3	N.D.	0.023	0.094	101.33
08179	Total Xylenes		1330-20-7	N.D.	0.070	0.23	101.33
Repo:	rting limits were rai	sed due t	to sample foaming.				
GC Pet	roleum	AK 102,	/AK 103	mg/kg	mg/kg	mg/kg	
Hydrod	carbons	04/08/0	02				
01742	TPH-DRO AK soil C10 The recovery for a coutside the method a	target an	e limits as noted	on the QC Sur	mmary. Since the	14	1
	recovery is within	our stati	stically derived l	limits the da	ta is reported.		
Wet Ch	nemistry	SM20 25	540 G	%	8	8	
00111	Moisture		n.a.	13.4	0.50	0.50	1
	"Moisture" represen	ts the lo	ss in weight of th	ne sample afte	er oven drying at		
	103 - 105 degrees C						
	as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061



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Sample Description: SP-1-11-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6780472 LLI Group # 1333954

Account # 10847

Project Name: 92114

Collected: 09/04/2012 15:45 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

P-111 SDG#: LSU31-03

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	ime	Analyst	Dilution Factor	
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	11:31	Linda M Hartenstine	1	
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1	
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16A	09/11/2012	20:33	Marie D John	101.33	
08179	BTEX by 8021	SW-846 8021B	1	12254A16A	09/11/2012	20:33	Marie D John	101.33	
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/04/2012	15:45	Client Supplied	1	
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	12:56	Tyler O Griffin	1	
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1	
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1	



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Page 1 of 2

Sample Description: SP-1-12-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780473

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 18:05 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

P-112 SDG#: LSU31-04

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.020	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.020	1
10726	Anthracene		120-12-7	N.D.	0.004	0.020	1
10726	Benzo(a)anthracene		56-55-3	0.005	0.004	0.020	1
10726	Benzo(a)pyrene		50-32-8	0.005	0.004	0.020	1
10726	Benzo(b) fluoranthen		205-99-2	0.016	0.004	0.020	1
10726	Benzo(g,h,i)perylen		191-24-2	N.D.	0.004	0.020	1
10726	Benzo(k)fluoranthen	Э	207-08-9	0.004	0.004	0.020	1
10726	Chrysene		218-01-9	0.013	0.004	0.020	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.020	1
10726	Fluoranthene		206-44-0	0.009	0.004	0.020	1
10726	Fluorene		86-73-7	N.D.	0.004	0.020	1
10726	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.004	0.020	1
10726	Naphthalene		91-20-3	0.047	0.004	0.020	1
10726	Phenanthrene		85-01-8	0.014	0.004	0.020	1
10726	Pyrene		129-00-0	0.017	0.004	0.020	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	6.0	60	247.75
Repo	rting limits were rai	sed due t	to sample foaming.				
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.060	0.24	247.75
08179	Ethylbenzene		100-41-4	N.D.	0.060	0.24	247.75
08179	Toluene		108-88-3	N.D.	0.060	0.24	247.75
08179	Total Xylenes		1330-20-7	N.D.	0.18	0.60	247.75
Repo:	rting limits were rai	sed due t	to sample foaming.				
GC Pet	croleum	AK 102	/AK 103	mg/kg	mg/kg	mg/kg	
Hydrod	carbons	04/08/0	02				
01742	TPH-DRO AK soil C10	-C25	n.a.	29	4.8	14	1
	The recovery for a	target an	alyte(s) in the La	aboratory Con	trol Spike(s) is		
	outside the method a recovery is within						
Wet Ch	nemistry	SM20 2	540 G	%	%	%	
00111	Moisture		n.a.	17.1	0.50	0.50	1
00111	"Moisture" represen	ts the lo				0.50	-
	103 - 105 degrees Co						
	as-received basis.		JIDUALO ICBAIO	. Icporced ab	0.0 10 011 011		

General Sample Comments

State of Alaska Lab Certification No. UST-061



Account

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Sample Description: SP-1-12-20120904 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6780473 LLI Group # 1333954

10847

Project Name: 92114

Collected: 09/04/2012 18:05 by DB Arcadis U.S., Inc.

SM20 2540 G

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

12251820004B 09/07/2012 17:25 Scott W Freisher

P-112 SDG#: LSU31-04

00111 Moisture

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	11:56	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16B	09/12/2012	03:19	Marie D John	247.75
08179	BTEX by 8021	SW-846 8021B	1	12254A16B	09/12/2012	03:19	Marie D John	247.75
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/04/2012	18:05	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	13:24	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1



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Page 1 of 2

Sample Description: SP-2-1-20120905 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780474

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/05/2012 11:30 by DB Arcadis U.S., Inc.

Suite 100

Submitted: 09/07/2012 09:30 630 Plaza Drive

Reported: 09/19/2012 08:46 Highlands Ranch CO 80129

SP2-1 SDG#: LSU31-05

CAT	No. 2 mail a Warra		GLG Worth	Dry	Dry Method Detection Limit*	Dry Limit of Ouantitation	Dilution					
No.	Analysis Name		CAS Number	Result	Detection Himit.	Quantitation	Factor					
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg						
10726	Acenaphthene		83-32-9	N.D.	0.004	0.020	1					
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.020	1					
10726	Anthracene		120-12-7	N.D.	0.004	0.020	1					
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.020	1					
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.020	1					
10726	Benzo(b)fluoranthen	205-99-2	0.008	0.004	0.020	1						
10726	Benzo(g,h,i)perylen	191-24-2	0.009	0.004	0.020	1						
10726	Benzo(k)fluoranthen	207-08-9	N.D.	0.004	0.020	1						
10726	Chrysene		218-01-9	0.005	0.004	0.020	1					
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.020	1					
10726	Fluoranthene		206-44-0	0.005	0.004	0.020	1					
10726	Fluorene		86-73-7	N.D.	0.004	0.020	1					
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.020	1					
10726	Naphthalene		91-20-3	0.012	0.004	0.020	1					
10726	Phenanthrene		85-01-8	N.D.	0.004	0.020	1					
10726	Pyrene		129-00-0	0.007	0.004	0.020	1					
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg						
01451	TPH-GRO AK soil C6-	C10	n.a.	0.8	0.7	6.7	28.67					
GC Volatiles SW-846 8021B mg/kg mg/kg mg/kg												
08179	Benzene		71-43-2	N.D.	0.0067	0.027	28.67					
08179	Ethylbenzene		100-41-4	N.D.	0.0067	0.027	28.67					
08179	Toluene		108-88-3	0.012	0.0067	0.027	28.67					
08179	Total Xylenes		1330-20-7	N.D.	0.020							
GC Pet	roleum	AK 102/	AK 103	mg/kg	mg/kg	mg/kg						
	carbons	04/08/02										
01742	TPH-DRO AK soil C10			4.0	4.7	1.4	1					
01/42			n.a.	48	4.7	14	1					
	The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the method acceptance limits as noted on the OC Summary. Since the											
	recovery is within											
Wet Chemistry SM20 2540 G % % %												
	-	2MZ0 Z2.		-	-	-	1					
00111			n.a.	14.3	0.50	0.50	1					
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.												

General Sample Comments

State of Alaska Lab Certification No. UST-061



Account

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REVISED

10847

Sample Description: SP-2-1-20120905 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

LLI Sample # SW 6780474 LLI Group # 1333954

Project Name: 92114

Collected: 09/05/2012 11:30 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP2-1 SDG#: LSU31-05

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record

			_	_				
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	12:20	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16A	09/11/2012	12:24	Marie D John	28.67
08179	BTEX by 8021	SW-846 8021B	1	12254A16A	09/11/2012	12:24	Marie D John	28.67
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/05/2012	11:30	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	13:53	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1



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Page 1 of 2

Sample Description: SP-2-2-20120905 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780475

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/05/2012 14:10 by DB Arcadis U.S., Inc.

Suite 100

Submitted: 09/07/2012 09:30 630 Plaza Drive

Reported: 09/19/2012 08:46 Highlands Ranch CO 80129

SP2-2 SDG#: LSU31-06

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.020	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.020	1
10726	Anthracene		120-12-7	N.D.	0.004	0.020	1
	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.020	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.020	1
10726	Benzo(b)fluoranthen		205-99-2	N.D.	0.004	0.020	1
	Benzo(g,h,i)perylen		191-24-2	0.007	0.004	0.020	1
10726	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.004	0.020	1
10726	Chrysene		218-01-9	N.D.	0.004	0.020	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.020	1
10726	Fluoranthene		206-44-0	N.D.	0.004	0.020	1
10726			86-73-7	N.D.	0.004	0.020	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.020	1
10726	Naphthalene		91-20-3	0.014	0.004	0.020	1
10726	Phenanthrene		85-01-8	0.005	0.004	0.020	1
10726	Pyrene		129-00-0	0.006	0.004	0.020	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	2.5	25	103.34
Repo	rting limits were ra	ised due t	to sample foaming.				
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.025	0.098	103.34
08179	Ethylbenzene		100-41-4	N.D.	0.025	0.098	103.34
08179	Toluene		108-88-3	N.D.	0.025	0.098	103.34
	Total Xylenes		1330-20-7	N.D.	0.074	0.25	103.34
Repo	rting limits were ra	ised due t	to sample foaming.				
GC Pet	roleum	AK 102	/AK 103	mg/kg	mg/kg	mg/kg	
Hydrod	carbons	04/08/0	02				
01742	TPH-DRO AK soil C10	-C25	n.a.	47	4.7	14	1
	The recovery for a	target an	alyte(s) in the La	aboratory Conf	trol Spike(s) is		
	outside the method	acceptanc	e limits as noted	on the QC Sur	mmary. Since the		
	recovery is within	our stati	stically derived l	limits the dat	ta is reported.		
Wet Ch	nemistry	SM20 25	540 G	%	%	%	
00111	Moisture		n.a.	15.7	0.50	0.50	1
	"Moisture" represen	ts the lo					
	103 - 105 degrees C						
	as-received basis.			_			

General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.



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Sample Description: SP-2-2-20120905 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780475

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/05/2012 14:10 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

SP2-2 SDG#: LSU31-06

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

		Labor	atory Sa	ample Analys	is Record			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	.me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	12:45	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16B	09/12/2012	00:09	Marie D John	103.34
08179	BTEX by 8021	SW-846 8021B	1	12254A16B	09/12/2012	00:09	Marie D John	103.34
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/05/2012	14:10	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	14:21	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1



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Page 1 of 2

Sample Description: SP-1-13-20120905 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780476

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/05/2012 16:15 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

P-113 SDG#: LSU31-07

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b) fluoranthen	9	205-99-2	0.005	0.004	0.019	1
10726	Benzo(g,h,i)perylen	9	191-24-2	N.D.	0.004	0.019	1
10726	Benzo(k)fluoranthen	9	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	N.D.	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.005	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyre	ene	193-39-5	N.D.	0.004	0.019	1
10726	Naphthalene		91-20-3	0.015	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.004	0.004	0.019	1
10726	Pyrene		129-00-0	0.01	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	6.3	27.36
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0063	0.025	27.36
08179	Ethylbenzene		100-41-4	N.D.	0.0063	0.025	27.36
08179	Toluene		108-88-3	N.D.	0.0063	0.025	27.36
08179	Total Xylenes		1330-20-7	N.D.	0.019	0.063	27.36
	croleum	AK 102		mg/kg	mg/kg	mg/kg	
-	carbons	04/08/0)2				
01742	TPH-DRO AK soil C10		n.a.	45	4.6	14	1
	The recovery for a coutside the method recovery is within	acceptanc	e limits as noted	on the QC Sur	mmary. Since the		
Wet Cl	nemistry	SM20 25	540 G	%	%	%	
00111	Moisture		n.a.	13.4	0.50	0.50	1
	"Moisture" represent 103 - 105 degrees Co as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.



2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 •717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

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Sample Description: SP-1-13-20120905 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED LLI Sample # SW 6780476

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/05/2012 16:15 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

P-113 SDG#: LSU31-07

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	13:10	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16A	09/11/2012	13:39	Marie D John	27.36
08179	BTEX by 8021	SW-846 8021B	1	12254A16A	09/11/2012	13:39	Marie D John	27.36
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/05/2012	16:15	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	14:50	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1



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Page 1 of 2

Sample Description: BD-1 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6780477 LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/05/2012 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

114D1 SDG#: LSU31-08FD

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b)fluoranthen	е	205-99-2	0.009	0.004	0.019	1
10726	Benzo(g,h,i)perylen	е	191-24-2	N.D.	0.004	0.019	1
10726	Benzo(k)fluoranthen	e	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	0.010	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	0.005	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.019	1
10726	Naphthalene		91-20-3	0.018	0.004	0.019	1
10726	Phenanthrene		85-01-8	0.005	0.004	0.019	1
10726	Pyrene		129-00-0	0.01	0.004	0.019	1
GC Vol	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	6.4	27.62
GC Vol	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179	Benzene		71-43-2	N.D.	0.0064	0.025	27.62
08179	Ethylbenzene		100-41-4	N.D.	0.0064	0.025	27.62
08179	Toluene		108-88-3	0.0068	0.0064	0.025	27.62
08179	Total Xylenes		1330-20-7	N.D.	0.019	0.064	27.62
	troleum carbons	AK 102	/AK 103	mg/kg	mg/kg	mg/kg	
01742	TPH-DRO AK soil C10		n.a.	N.D.	4.6	14	1
01712	The recovery for a outside the method recovery is within	target ar acceptano	nalyte(s) in the Lace limits as noted	aboratory Cont on the QC Sur	trol Spike(s) is mmary. Since the		-
Wet Cl	nemistry	SM20 2	540 G	8	%	%	
00111	Moisture		n.a.	13.3	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees C as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.



Account

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Sample Description: BD-1 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

10847

LLI Sample # SW 6780477 LLI Group # 1333954

Project Name: 92114

Collected: 09/05/2012 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

114D1 SDG#: LSU31-08FD

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	13:35	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16A	09/11/2012	15:32	Laura M Krieger	27.62
08179	BTEX by 8021	SW-846 8021B	1	12254A16A	09/11/2012	15:32	Laura M Krieger	27.62
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/05/2012	00:00	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	15:18	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1



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Sample Description: BD-1 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED
LLI Sample # SW 6780478

LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Reported: 09/19/2012 08:46 Highlands Ranch CO 80129

114D2 SDG#: LSU31-09FD*

Submitted: 09/07/2012 09:30

CAT				Dry	Dry Method	Dry Limit of	Dilution
No.	Analysis Name		CAS Number	Result	Detection Limit*	Quantitation	Factor
GC/MS	Semivolatiles	SW-846	8270D	mg/kg	mg/kg	mg/kg	
10726	Acenaphthene		83-32-9	N.D.	0.004	0.019	1
10726	Acenaphthylene		208-96-8	N.D.	0.004	0.019	1
10726	Anthracene		120-12-7	N.D.	0.004	0.019	1
10726	Benzo(a)anthracene		56-55-3	N.D.	0.004	0.019	1
10726	Benzo(a)pyrene		50-32-8	N.D.	0.004	0.019	1
10726	Benzo(b)fluoranthen	е	205-99-2	N.D.	0.004	0.019	1
10726	Benzo(g,h,i)perylen	е	191-24-2	N.D.	0.004	0.019	1
10726	Benzo(k)fluoranthen	е	207-08-9	N.D.	0.004	0.019	1
10726	Chrysene		218-01-9	N.D.	0.004	0.019	1
10726	Dibenz(a,h)anthrace	ne	53-70-3	N.D.	0.004	0.019	1
10726	Fluoranthene		206-44-0	N.D.	0.004	0.019	1
10726	Fluorene		86-73-7	N.D.	0.004	0.019	1
10726	Indeno(1,2,3-cd)pyr	ene	193-39-5	N.D.	0.004	0.019	1
10726	Naphthalene		91-20-3	0.005	0.004	0.019	1
10726	Phenanthrene		85-01-8	N.D.	0.004	0.019	1
10726	Pyrene		129-00-0	N.D.	0.004	0.019	1
GC Vo	latiles	AK 101		mg/kg	mg/kg	mg/kg	
01451	TPH-GRO AK soil C6-	C10	n.a.	N.D.	0.6	6.0	26.54
GC Vo	latiles	SW-846	8021B	mg/kg	mg/kg	mg/kg	
08179		DW-010 (71-43-2		<u> </u>		26 54
08179	Benzene Ethylbenzene		100-41-4	N.D. N.D.	0.0060 0.0060	0.024 0.024	26.54 26.54
08179	Toluene		108-88-3	0.0063	0.0060	0.024	26.54
08179	Total Xylenes		1330-20-7	N.D.	0.0080	0.024	26.54
00179	iotai kylenes		1330-20-7	N.D.	0.010	0.000	20.54
	troleum	AK 102/		mg/kg	mg/kg	mg/kg	
Hydro	carbons	04/08/02	2				
01742	TPH-DRO AK soil C10	-C25	n.a.	47	4.5	13	1
	The recovery for a	target ana	lyte(s) in the La	aboratory Cont	crol Spike(s) is		
	outside the method	acceptance	limits as noted	on the QC Sur	mmary. Since the		
	recovery is within	our Statis	cically defived .	rimits the dat	La is reported.		
Wet Cl	nemistry	SM20 254	40 G	%	%	8	
00111	Moisture		n.a.	10.8	0.50	0.50	1
	"Moisture" represen 103 - 105 degrees C as-received basis.						

General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.



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Sample Description: BD-1 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

REVISED

LLI Sample # SW 6780478 LLI Group # 1333954 Account # 10847

Project Name: 92114

Collected: 09/04/2012 by DB Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

114D2 SDG#: LSU31-09FD*

Submitted: 09/07/2012 09:30

Reported: 09/19/2012 08:46

Laboratory Sample Analysis Record

			-					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
10726	16 PAHs 8270D Soil Microwave	SW-846 8270D	1	12254SLB026	09/11/2012	14:00	Linda M Hartenstine	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12254SLB026	09/11/2012	01:15	Roman Kuropatkin	1
01451	TPH-GRO AK soil C6-C10	AK 101	1	12254A16A	09/11/2012	16:10	Marie D John	26.54
08179	BTEX by 8021	SW-846 8021B	1	12254A16A	09/11/2012	16:10	Marie D John	26.54
06119	GC - Field Preserved (AK-101)	AK 101	1	201225128714	09/04/2012	00:00	Client Supplied	1
01742	TPH-DRO AK soil C10-C25	AK 102/AK 103 04/08/02	1	122540003A	09/12/2012	15:47	Tyler O Griffin	1
11222	AK DRO Soils Extraction	AK 102/AK 103 04/08/02	1	122540003A	09/10/2012	18:10	Sally L Appleyard	1
00111	Moisture	SM20 2540 G	1	12251820004B	09/07/2012	17:25	Scott W Freisher	1



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Group Number: 1333954

Reported: 09/19/12 at 08:46 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank MDL**	Blank <u>LOO</u>	Report <u>Units</u>	LCS %REC	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: 12254SLB026	Sample numb	per(s): 67	80470-678	0478					
Acenaphthene	N.D.	0.003	0.017	mq/kq	101		83-111		
Acenaphthylene	N.D.	0.003	0.017	mg/kg	106		83-127		
Anthracene	N.D.	0.003	0.017	mg/kg	101		83-111		
Benzo(a)anthracene	N.D.	0.003	0.017	mg/kg	100		73-123		
Benzo(a) pyrene	N.D.	0.003	0.017	mq/kq	104		80-123		
Benzo(b) fluoranthene	N.D.	0.003	0.017	mg/kg	109		76-124		
Benzo(q,h,i)perylene	N.D.	0.003	0.017	mq/kq	99		77-122		
Benzo(k) fluoranthene	N.D.	0.003	0.017	mq/kq	94		71-135		
Chrysene	N.D.	0.003	0.017	mq/kq	94		73-119		
Dibenz(a,h)anthracene	N.D.	0.003	0.017	mq/kq	104		67-129		
Fluoranthene	N.D.	0.003	0.017	mq/kq	102		80-113		
Fluorene	N.D.	0.003	0.017	mq/kq	102		81-117		
Indeno(1,2,3-cd)pyrene	N.D.	0.003	0.017	mq/kq	96		64-128		
Naphthalene	N.D.	0.003	0.017	mg/kg	95		77-115		
Phenanthrene	N.D.	0.003	0.017	mg/kg	93		77-119		
Pyrene	N.D.	0.003	0.017	mg/kg	100		80-121		
Tyrono	и.в.	0.005	0.017	g/ 11g	100		00 121		
Batch number: 12254A16A	Sample numb	per(s): 67	80470-678	0472,6780474	1,67804	76-6780	1478		
Benzene	N.D.	0.0050	0.020	mq/kq	100		71-124		
Ethylbenzene	N.D.	0.0050	0.020	mg/kg	99		77-115		
Toluene	N.D.	0.0050	0.020	mg/kg	98		80-120		
TPH-GRO AK soil C6-C10	N.D.	0.5	5.0	mg/kg	110		60-120		
Total Xylenes	N.D.	0.015	0.050	mg/kg	101		78-115		
1				5, 5					
Batch number: 12254A16B	Sample numb	per(s): 67							
Benzene	N.D.	0.0050	0.020	mg/kg	100		71-124		
Ethylbenzene	N.D.	0.0050	0.020	mg/kg	99		77-115		
Toluene	N.D.	0.0050	0.020	mg/kg	98		80-120		
TPH-GRO AK soil C6-C10	N.D.	0.5	5.0	mg/kg	110		60-120		
Total Xylenes	N.D.	0.015	0.050	mg/kg	101		78-115		
Batch number: 122540003A	Sample numb								
TPH-DRO AK soil C10-C25	N.D.	4.0	12	mg/kg	77	73*	75-125	5	50
D-+	G 1 1	(-)	00480 650	0.450					
Batch number: 12251820004B	Sample numb	per(s): 67	80470-678	0478	100		00 101		
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

*- Outside of specification

- **-This limit was used in the evaluation of the final result for the blank
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Reported: 09/19/12 at 08:46 AM Group Number: 1333954

Reported: 09/19/12 at 08	:46 AM	MSD	MS/MSD		RPD	BKG	DUP	DUP	Dup RPD
Analysis Name	%REC	%REC	<u>Limits</u>	RPD	MAX	Conc	Conc	RPD	Max
Batch number: 12254SLB026	Sample	numher(s	.) • 6780470	1-67804	78 IINSI	PK: 6780470			
Acenaphthene	102	99	33-140	2	30	.11. 0700170			
Acenaphthylene	106	104	47-137	1	30				
Anthracene	98	98	40-147	1	30				
Benzo(a) anthracene	95	95	32-150	1	30				
Benzo(a)pyrene	104	102	30-150	1	30				
Benzo(b) fluoranthene	109	93	29-150	14	30				
Benzo(q,h,i)perylene	99	101	31-152	3	30				
Benzo(k) fluoranthene	95	102	35-148	7	30				
Chrysene	90	89	33-142	0	30				
Dibenz(a,h)anthracene	103	106	37-151	4	30				
Fluoranthene	98	99	30-151	2	30				
Fluorene	101	98	36-140	2	30				
Indeno(1,2,3-cd)pyrene	99	99	31-154	2	30				
Naphthalene	94	94	35-141	2	30				
Phenanthrene	90	91	34-147	2	30				
Pyrene	99	97	29-148	1	30				
Batch number: 12254A16A	Campla	numb ox / a	.) . 6780470	. 67004	70 (70)	1474 670047		JNSPK: P7781	4.1
Benzene	109	113	52-135	4	30	14/4,6/604/	0-0/004/0	JNSPK: P//61	41
				=					
Ethylbenzene	109	113	56-132	4	30 30				
Toluene	107	111	59-129	4					
TPH-GRO AK soil C6-C10	110	122*	60-120	10	20				
Total Xylenes	111	115*	66-112	4	30				
Batch number: 12254A16B	Sample	number(s): 6780473	3,67804	75 UNSI	PK: P778141			
Benzene	109	113	52-135	4	30				
Ethylbenzene	109	113	56-132	4	30				
Toluene	107	111	59-129	4	30				
TPH-GRO AK soil C6-C10	110	122*	60-120	10	20				
Total Xylenes	111	115*	66-112	4	30				
Batch number: 122540003A	Sample	number(s	.) • 6780470	1-67804	78 UNSI	PK: 6780470			
TPH-DRO AK soil C10-C25	99	81	60-140	20	50				
Batch number: 12251820004B	Sample	number(s	6780470	0-67804	78 BK0	3· 6780478			
Moisture	24210		, . 0,001,		. 5 210	10.8	10.2	6	13

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: SVOA 8270D (microwave)

Batch number: 12254SLB026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
6780470	83	89	90	83	85	97
6780471				91	95	102
6780472				86	91	99
6780473				86	88	91
6780474				85	88	96
6780475				80	84	89
6780476				85	88	97

- *- Outside of specification
- **-This limit was used in the evaluation of the final result for the blank
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Quality Control Summary

Surrogate Quality Control 91 93	
6780477 91 93	
6780478 74 79	96 88
Blank 91 98 107 94 100 LCS 98 104 102 96 101	117 108
MS 98 104 96 93 97	105
MSD 97 102 94 93 96	104
NDD 57 102 54 55	104
Limits: 42-130 48-136 28-139 45-123 47-126	46-143
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16A	
Trifluorotoluene-F Trifluorotoluene-P	
6780470 71 73	
6780471 71 75	
6780472 79 82	
6780474 63 67*	
6780476 65 65*	
6780477 70 75	
6780478 67 71*	
Blank 86 90	
LCS 87 88	
MS 84 84	
MSD 92 88	
Timita. (0.120 72.117	
Limits: 60-120 73-117	
Analysis Name: TPH-GRO AK soil C6-C10	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B Trifluorotoluene-F Trifluorotoluene-P	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B Trifluorotoluene-F Trifluorotoluene-P 6780473 64 67*	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B Trifluorotoluene-F Trifluorotoluene-P	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B Trifluorotoluene-F Trifluorotoluene-P 6780473 64 67* 6780475 78 79	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B Trifluorotoluene-F Trifluorotoluene-P 6780473 64 67* 6780475 78 79 Blank 84 88	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	
Analysis Name: TPH-GRO AK soil C6-C10 Batch number: 12254A16B	

- *- Outside of specification
- **-This limit was used in the evaluation of the final result for the blank
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Reported: 09/19/12 at 08:46 AM

Group Number: 1333954

Surrogate Quality Control

MSD 84

Limits: 50-150

^{*-} Outside of specification

^{**-}This limit was used in the evaluation of the final result for the blank

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Case Narrative



Project Name: 92114 LLI Group #: 1333954

General Comments:

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client. The compliance signature is located on the cover page of the Analysis Reports.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

AK 101. GC Volatiles

<u>Batch #: 12254A16A (Sample number(s): 6780470-6780472, 6780474, 6780476-6780478</u> UNSPK: P778141)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: TPH-GRO AK soil C6-C10

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6780474, 6780476, 6780478

Batch #: 12254A16B (Sample number(s): 6780473, 6780475 UNSPK: P778141)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: TPH-GRO AK soil C6-C10

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6780473

Sample #s: 6780472, 6780473, 6780475

Reporting limits were raised due to sample foaming.

SW-846 8021B, GC Volatiles

<u>Batch #: 12254A16A (Sample number(s): 6780470-6780472, 6780474, 6780476-6780478</u> UNSPK: P778141)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Total Xylenes

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6780474, 6780476, 6780478

Batch #: 12254A16B (Sample number(s): 6780473, 6780475 UNSPK: P778141)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Total Xylenes

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6780473

Sample #s: 6780472, 6780473, 6780475

Reporting limits were raised due to sample foaming.

AK 102/AK 103 04/08/02, GC Petroleum Hydrocarbons

Batch #: 122540003A (Sample number(s): 6780470-6780478 UNSPK: 6780470)

The recovery(ies) for the following analyte(s) in the LCS and/or LCSD were below the acceptance window: TPH-DRO AK soil C10-C25

<u>Sample #s: 6780470, 6780471, 6780472, 6780473, 6780474, 6780475, 6780476, 6780477, 6780478</u>

The recovery for a target analyte(s) in the Laboratory Control Spike(s) is outside the method acceptance limits as noted on the QC Summary. Since the recovery is within our statistically derived limits the data is reported.

Chevron Generic Analysis Request/Chain of Custody

eurofins	Lancaster Laboratories		Acc	t.# <i>j</i>	1084	7	_Grou	p# nstruction	333 ns on re	95° verse si	de corre	Sam	ple #	cled nu	781 mbers.	P 4	70 -	78		_		
1)	Client Information	n			4)	Matr	X		5)			An	alys	es R	Requ	este	ed		ا ور	D #-		
Facility # 92/14 Site Address 3350 College Chevron PM Kella Ester Consultant/Office	NWTRE-009 RI, Fairba	WBS 2114-1 ks, All Lead Consul	tant		ediment (ners	8260 Naphth				þ	☐ Method		8270 D	22216			R #:Results in Dry We J value reporting Must meet lowest limits possible for compounds	eight needed detection 8260	
Consultant Project Mgr. Russ Grais/ Consultant Phone #	18-0700 Seay doin		ected Time	 Г	Soil N		NPDES C	al Number of Co	BTEX + WTBE 80218 82	8260 full scan	Oxygenates	AKIOI TPHG	AKU L TPHD SHICE	ead Total Diss.	VPH/EPH Method	PAH US EPA	Moisture ASTM			8021 MTBE Conf Confirm MTBE + Confirm highest h Confirm all hits by Run oxy's Run oxy's	Naphthalene it by 8260 v 8260 c on highest hit on all hits	t
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Environmental Sample Administration /333954 **Receipt Documentation Log**

Client/	Project:	Theuron		Shippin	g Containe	er Sealed: YE	s) NO			
Date o	f Receipt: _	9/7/1	ı	Custody	/ Seal Pres	sent*: YE	s) NO			
Time o	f Receipt: _	093	Ö	* Custody	seal was inta	ict unless otherwise				
Source	Code:	50-	(d Packag e	iscrepancy se	ection Chilled	Not Chilled			
			Temperature of	Shipping Contai	ners					
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments			
1	0429951	0.9	TB	ω 1	Y	B				
2										
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Linnasi	Unpacker Signature/Emp#: Description 1000 Date/Time: 9/7/12 / 1000									
Ulipaci	vei Signature	,∟p#. —	U MUSU		_ Dale/III	ile. <u>Utillo</u>	1 1000			



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

_		•	=
RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	E	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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ANALYTICAL RESULTS

Prepared by:

Prepared for:

Lancaster Laboratories 2425 New Holland Pike Lancaster, PA 17605-2425 Arcadis U.S., Inc. Suite 100 630 Plaza Drive Highlands Ranch CO 80129

October 15, 2012

Project: 92114

Submittal Date: 10/11/2012 Group Number: 1341541 SDG: AAK01 PO Number: B0060901.2114.00003 State of Sample Origin: AK

Client Sample Description Lancaster Labs (LLI) #

SP-2-1-20121005 Grab Soil 6819835 SP-2-2-20121005 Grab Soil 6819836

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC Arcadis Attn: David Beaudoin

COPY TO

ELECTRONIC Arcadis Attn: Russ Greisler

COPY TO

ELECTRONIC Arcadis Attn: Dana Ramquist

COPY TO

ELECTRONIC ARCADIS Attn: Michael MacDaniel

COPY TO

1 COPY TO Data Package Group



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Respectfully Submitted,

fill M. Parker
Senior Specialist

(717) 556-7262



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Page 1 of 3

Sample Description: SP-2-1-20121005 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

......

LLI Group # 1341541 Account # 10847

LLI Sample # SW 6819835

Project Name: 92114

Collected: 10/05/2012 14:10 by MM Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

CRF21 SDG#: AAK01-01

Submitted: 10/11/2012 09:15

Reported: 10/15/2012 11:51

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Volatiles SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Acetone	67-64-1	N.D.	1.0	2.9	128.86
10237	t-Amyl methyl ether	994-05-8	N.D.	0.14	0.72	128.86
10237	Benzene	71-43-2	N.D.	0.072	0.72	128.86
10237	Bromobenzene	108-86-1	N.D.	0.14	0.72	128.86
10237	Bromochloromethane	74-97-5	N.D.	0.14	0.72	128.86
10237	Bromodichloromethane	75-27-4	N.D.	0.14	0.72	128.86
10237	Bromoform	75-25-2	N.D.	0.14	0.72	128.86
10237	Bromomethane	74-83-9	N.D.	0.29	0.72	128.86
10237	2-Butanone	78-93-3	N.D.	0.58	1.4	128.86
10237	t-Butyl alcohol	75-65-0	N.D.	2.9	14	128.86
10237	n-Butylbenzene	104-51-8	N.D.	0.14	0.72	128.86
10237	sec-Butylbenzene	135-98-8	N.D.	0.14	0.72	128.86
10237	tert-Butylbenzene	98-06-6	N.D.	0.14	0.72	128.86
10237	Carbon Disulfide	75-15-0	N.D.	0.14	0.72	128.86
10237	Carbon Tetrachloride	56-23-5	N.D.	0.14	0.72	128.86
10237	Chlorobenzene	108-90-7	N.D.	0.14	0.72	128.86
10237	Chloroethane	75-00-3	N.D.	0.29	0.72	128.86
10237	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	0.29	1.4	128.86
10237	Chloroform	67-66-3	N.D.	0.14	0.72	128.86
10237	Chloromethane	74-87-3	N.D.	0.29	0.72	128.86
10237	2-Chlorotoluene	95-49-8	N.D.	0.14	0.72	128.86
10237	4-Chlorotoluene	106-43-4	N.D.	0.14	0.72	128.86
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.29	0.72	128.86
10237	Dibromochloromethane	124-48-1	N.D.	0.14	0.72	128.86
10237	1,2-Dibromoethane	106-93-4	N.D.	0.14	0.72	128.86
10237	Dibromomethane	74-95-3	N.D.	0.14	0.72	128.86
10237	1,2-Dichlorobenzene	95-50-1	N.D.	0.14	0.72	128.86
10237	1,3-Dichlorobenzene	541-73-1	N.D.	0.14	0.72	128.86
10237	1,4-Dichlorobenzene	106-46-7	N.D.	0.14	0.72	128.86
10237	Dichlorodifluoromethane	75-71-8	N.D.	0.29	0.72	128.86
10237	1,1-Dichloroethane	75-34-3	N.D.	0.14	0.72	128.86
10237	1,2-Dichloroethane	107-06-2	N.D.	0.14	0.72	128.86
10237	1,1-Dichloroethene	75-35-4	N.D.	0.14	0.72	128.86
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	0.14	0.72	128.86
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	0.14	0.72	128.86
10237	1,2-Dichloropropane	78-87-5	N.D.	0.14	0.72	128.86
10237	1,3-Dichloropropane	142-28-9	N.D.	0.14	0.72	128.86
10237	2,2-Dichloropropane	594-20-7	N.D.	0.14	0.72	128.86
10237	1,1-Dichloropropene	563-58-6	N.D.	0.14	0.72	128.86
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.14	0.72	128.86
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.14	0.72	128.86
10237	Ethanol	64-17-5	N.D.	14	72	128.86
10237	Ethyl t-butyl ether	637-92-3	N.D.	0.14	0.72	128.86
10237	Ethylbenzene	100-41-4	N.D.	0.14	0.72	128.86
10237	Freon 113	76-13-1	N.D.	0.29	1.4	128.86
10237	Hexachlorobutadiene	87-68-3	N.D.	0.29	0.72	128.86
10237	2-Hexanone	591-78-6	N.D.	0.43	1.4	128.86
10237	di-Isopropyl ether	108-20-3	N.D.	0.14	0.72	128.86
10237	Isopropylbenzene	98-82-8	N.D.	0.14	0.72	128.86
10237	p-Isopropyltoluene	99-87-6	N.D.	0.14	0.72	128.86

^{*=}This limit was used in the evaluation of the final result



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Page 2 of 3

Sample Description: SP-2-1-20121005 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

LLI Sample # SW 6819835

LLI Group # 1341541 Account # 10847

Project Name: 92114

Collected: 10/05/2012 14:10 by MM Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

CRF21 SDG#: AAK01-01

Submitted: 10/11/2012 09:15

Reported: 10/15/2012 11:51

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Volatiles SW-846	8260B	mg/kg	mg/kg	mg/kg	
10237	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.072	0.72	128.86
10237	4-Methyl-2-pentanone	108-10-1	N.D.	0.43	1.4	128.86
10237	Methylene Chloride	75-09-2	N.D.	0.29	0.72	128.86
10237	Naphthalene	91-20-3	N.D.	0.14	0.72	128.86
10237	n-Propylbenzene	103-65-1	N.D.	0.14	0.72	128.86
10237	Styrene	100-42-5	N.D.	0.14	0.72	128.86
10237	1,1,1,2-Tetrachloroethane	630-20-6	N.D.	0.14	0.72	128.86
10237	1,1,2,2-Tetrachloroethane	79-34-5	N.D.	0.14	0.72	128.86
10237	Tetrachloroethene	127-18-4	N.D.	0.14	0.72	128.86
10237	Toluene	108-88-3	N.D.	0.14	0.72	128.86
10237	1,2,3-Trichlorobenzene	87-61-6	N.D.	0.14	0.72	128.86
10237	1,2,4-Trichlorobenzene	120-82-1	N.D.	0.14	0.72	128.86
10237	1,1,1-Trichloroethane	71-55-6	N.D.	0.14	0.72	128.86
10237	1,1,2-Trichloroethane	79-00-5	N.D.	0.14	0.72	128.86
10237	Trichloroethene	79-01-6	N.D.	0.14	0.72	128.86
10237	Trichlorofluoromethane	75-69-4	N.D.	0.29	0.72	128.86
10237	1,2,3-Trichloropropane	96-18-4	N.D.	0.14	0.72	128.86
10237	1,2,4-Trimethylbenzene	95-63-6	N.D.	0.14	0.72	128.86
10237	1,3,5-Trimethylbenzene	108-67-8	N.D.	0.14	0.72	128.86
10237	Vinyl Chloride	75-01-4	N.D.	0.14	0.72	128.86
10237	m+p-Xylene	179601-23-1	0.20 J	0.14	0.72	128.86
10237	o-Xylene	95-47-6	N.D.	0.14	0.72	128.86
Wet Ch	nemistry SM20 25	40 G	%	8	%	
00111	Moisture	n.a.	10.9	0.50	0.50	1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

State of Alaska Lab Certification No. UST-061

The moisture container was collected on 10/9/12 at 13:00.

The sample container for VOCs was received at the lab on 10/09/12 at 09:05.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record Trial# Batch# Analysis

CAT No.	Analysis Name	Method	Trial# Batch#		Analysis Date and Time	Analyst	Dilution Factor
10237	8260 Full List + Sep Xylenes	SW-846 8260B	1	R122861AA	10/12/2012 08:25	Stephanie A Selis	128.86
06119	GC - Field Preserved (AK-101)	AK 101	1	201228529016	10/05/2012 14:10	Client Supplied	1
06119	GC - Field Preserved (AK-101)	AK 101	2	201228529016	10/05/2012 14:10	Client Supplied	1



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Sample Description: SP-2-1-20121005 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

LLI Sample # SW 6819835

LLI Group # 1341541 Account # 10847

Project Name: 92114

Collected: 10/05/2012 14:10 by MM Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

CRF21 SDG#: AAK01-01

Submitted: 10/11/2012 09:15

Reported: 10/15/2012 11:51

Laboratory Sample Analysis Record

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No.					Date and Time		Factor
00111	Moisture	SM20 2540 G	2	12286820002A	10/12/2012 10:28	William C Schwebel	. 1



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Page 1 of 3

Sample Description: SP-2-2-20121005 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

1 age 1 01 3

LLI Sample # SW 6819836 LLI Group # 1341541 Account # 10847

Project Name: 92114

Collected: 10/05/2012 14:15 by MM Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

CRF22 SDG#: AAK01-02*

Submitted: 10/11/2012 09:15

Reported: 10/15/2012 11:51

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Volatiles SW-846 8	3260B	mg/kg	mg/kg	mg/kg	
10237	Acetone	67-64-1	N.D.	0.49	1.4	64.15
10237	t-Amyl methyl ether	994-05-8	N.D.	0.071	0.35	64.15
10237	Benzene	71-43-2	N.D.	0.035	0.35	64.15
10237	Bromobenzene	108-86-1	N.D.	0.071	0.35	64.15
10237	Bromochloromethane	74-97-5	N.D.	0.071	0.35	64.15
10237	Bromodichloromethane	75-27-4	N.D.	0.071	0.35	64.15
10237	Bromoform	75-25-2	N.D.	0.071	0.35	64.15
10237	Bromomethane	74-83-9	N.D.	0.14	0.35	64.15
10237	2-Butanone	78-93-3	N.D.	0.28	0.71	64.15
10237	t-Butyl alcohol	75-65-0	N.D.	1.4	7.1	64.15
10237	n-Butylbenzene	104-51-8	N.D.	0.071	0.35	64.15
10237	sec-Butylbenzene	135-98-8	N.D.	0.071	0.35	64.15
10237	tert-Butylbenzene	98-06-6	N.D.	0.071	0.35	64.15
10237	Carbon Disulfide	75-15-0	N.D.	0.071	0.35	64.15
10237	Carbon Tetrachloride	56-23-5	N.D.	0.071	0.35	64.15
10237	Chlorobenzene	108-90-7	N.D.	0.071	0.35	64.15
10237	Chloroethane	75-00-3	N.D.	0.14	0.35	64.15
10237	2-Chloroethyl Vinyl Ether	110-75-8	N.D.	0.14	0.71	64.15
10237	Chloroform	67-66-3	N.D.	0.071	0.35	64.15
10237	Chloromethane	74-87-3	N.D.	0.14	0.35	64.15
10237	2-Chlorotoluene	95-49-8	N.D.	0.071	0.35	64.15
10237	4-Chlorotoluene	106-43-4	N.D.	0.071	0.35	64.15
10237	1,2-Dibromo-3-chloropropane	96-12-8	N.D.	0.14	0.35	64.15
10237	Dibromochloromethane	124-48-1	N.D.	0.071	0.35	64.15
10237	1,2-Dibromoethane	106-93-4	N.D.	0.071	0.35	64.15
10237	Dibromomethane	74-95-3	N.D.	0.071	0.35	64.15
10237	1,2-Dichlorobenzene	95-50-1	N.D.	0.071	0.35	64.15
10237	1,3-Dichlorobenzene	541-73-1	N.D.	0.071	0.35	64.15
10237	1,4-Dichlorobenzene	106-46-7	N.D.	0.071	0.35	64.15
10237	Dichlorodifluoromethane	75-71-8	N.D.	0.14	0.35	64.15
10237	1,1-Dichloroethane	75-34-3	N.D.	0.071	0.35	64.15
10237	1,2-Dichloroethane	107-06-2	N.D.	0.071	0.35	64.15
10237	1,1-Dichloroethene	75-35-4	N.D.	0.071	0.35	64.15
10237	cis-1,2-Dichloroethene	156-59-2	N.D.	0.071	0.35	64.15
10237	trans-1,2-Dichloroethene	156-60-5	N.D.	0.071	0.35	64.15
10237	1,2-Dichloropropane	78-87-5	N.D.	0.071	0.35	64.15
10237	1,3-Dichloropropane	142-28-9	N.D.	0.071	0.35	64.15
10237	2,2-Dichloropropane	594-20-7	N.D.	0.071	0.35	64.15
10237	1,1-Dichloropropene	563-58-6	N.D.	0.071	0.35	64.15
10237	cis-1,3-Dichloropropene	10061-01-5	N.D.	0.071	0.35	64.15
10237	trans-1,3-Dichloropropene	10061-02-6	N.D.	0.071	0.35	64.15
10237	Ethanol	64-17-5	N.D.	7.1	35	64.15
10237	Ethyl t-butyl ether	637-92-3	N.D.	0.071	0.35	64.15
10237	Ethylbenzene	100-41-4	N.D.	0.071	0.35	64.15
10237	Freon 113	76-13-1	N.D.	0.14	0.71	64.15
10237	Hexachlorobutadiene	87-68-3	N.D.	0.14	0.35	64.15
10237	2-Hexanone	591-78-6	N.D.	0.21	0.71	64.15
10237	di-Isopropyl ether	108-20-3	N.D.	0.071	0.35	64.15
10237	Isopropylbenzene	98-82-8	N.D.	0.071	0.35	64.15
10237	p-Isopropyltoluene	99-87-6	N.D.	0.071	0.35	64.15

^{*=}This limit was used in the evaluation of the final result



Account

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Sample Description: SP-2-2-20121005 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

LLI Sample # SW 6819836 LLI Group # 1341541

10847

Project Name: 92114

Collected: 10/05/2012 14:15 by MM Arcadis U.S., Inc.

Suite 100

Submitted: 10/11/2012 09:15 630 Plaza Drive

Reported: 10/15/2012 11:51 Highlands Ranch CO 80129

CRF22 SDG#: AAK01-02*

CAT No.	Analysis Name		CAS Number	Dry Resul	t	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	mg/kg		mg/kg	mg/kg	
10237	Methyl Tertiary Buty	l Ether	1634-04-4	N.D.		0.035	0.35	64.15
10237	4-Methyl-2-pentanone		108-10-1	N.D.		0.21	0.71	64.15
10237	Methylene Chloride		75-09-2	N.D.		0.14	0.35	64.15
10237	Naphthalene		91-20-3	N.D.		0.071	0.35	64.15
10237	n-Propylbenzene		103-65-1	N.D.		0.071	0.35	64.15
10237	Styrene		100-42-5	N.D.		0.071	0.35	64.15
10237	1,1,1,2-Tetrachloroe		630-20-6	N.D.		0.071	0.35	64.15
10237	1,1,2,2-Tetrachloroe	thane	79-34-5	N.D.		0.071	0.35	64.15
10237	Tetrachloroethene		127-18-4	N.D.		0.071	0.35	64.15
10237	Toluene		108-88-3	0.15	J	0.071	0.35	64.15
10237	1,2,3-Trichlorobenze	ne	87-61-6	N.D.		0.071	0.35	64.15
10237	1,2,4-Trichlorobenze		120-82-1	N.D.		0.071	0.35	64.15
10237	1,1,1-Trichloroethan		71-55-6	N.D.		0.071	0.35	64.15
10237	1,1,2-Trichloroethan	е	79-00-5	N.D.		0.071	0.35	64.15
10237	Trichloroethene		79-01-6	N.D.		0.071	0.35	64.15
10237	Trichlorofluorometha	ne	75-69-4	N.D.		0.14	0.35	64.15
10237	1,2,3-Trichloropropa		96-18-4	N.D.		0.071	0.35	64.15
10237	1,2,4-Trimethylbenze		95-63-6	N.D.		0.071	0.35	64.15
10237	1,3,5-Trimethylbenze	ne	108-67-8	N.D.		0.071	0.35	64.15
10237	Vinyl Chloride		75-01-4	N.D.		0.071	0.35	64.15
10237	m+p-Xylene		179601-23-1	0.11	J	0.071	0.35	64.15
10237	o-Xylene		95-47-6	N.D.		0.071	0.35	64.15
Wet Ch	nemistry	SM20 25	540 G	%		8	%	
00111	Moisture		n.a.	9.1		0.50	0.50	1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

State of Alaska Lab Certification No. UST-061

The moisture container was collected on 10/9/12 at 13:05.

The sample container for VOCs was received at the lab on 10/09/12 at 09:05.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Dilution Date and Time No. 10237 8260 Full List + Sep SW-846 8260B R122861AA 10/12/2012 08:47 Stephanie A Selis 64.15 Xylenes 06119 GC - Field Preserved (AK- AK 101 201228529016 10/05/2012 14:15 Client Supplied 1 101) 10/05/2012 14:15 06119 GC - Field Preserved (AK- AK 101 201228529016 Client Supplied 101)



Account

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Sample Description: SP-2-2-20121005 Grab Soil

Facility# 92114

3350 College Rd - Fairbanks, AK

LLI Sample # SW 6819836 LLI Group # 1341541

10847

Project Name: 92114

Collected: 10/05/2012 14:15 by MM Arcadis U.S., Inc.

Suite 100

630 Plaza Drive

Highlands Ranch CO 80129

CRF22 SDG#: AAK01-02*

Submitted: 10/11/2012 09:15

Reported: 10/15/2012 11:51

Laboratory Sample Analysis Record

CAT	Analysis Name	Analysis Name Method		Batch#	Analysis	Analyst	Dilution	
No.					Date and Time		Factor	
00111	Moisture	SM20 2540 G	2	12286820002B	10/12/2012 10:28	William C Schwebel	l 1	



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Group Number: 1341541

Reported: 10/15/12 at 11:51 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

	Blank	Blank	Blank	Report	LCS	LCSD	LCS/LCSD		
<u>Analysis Name</u>	<u>Result</u>	<u>MDL**</u>	LOO	<u>Units</u>	%REC	%REC	<u>Limits</u>	RPD	RPD Max
Batch number: R122861AA	Cample ni	umber(s): 6	010025 60	10026					
Acetone	N.D.	0.70	2.0	mq/kq	105	107	32-209	2	30
t-Amyl methyl ether	N.D.	0.10	0.50	mg/kg	108	108	63-130	0	30
Benzene	N.D.	0.050	0.50	mq/kq	114	115	80-120	1	30
Bromobenzene	N.D.	0.10	0.50	mq/kq	81	81	79-120	0	30
Bromochloromethane	N.D.	0.10	0.50	mg/kg	112	114	79-124	2	30
Bromodichloromethane	N.D.	0.10	0.50	mq/kq	99	101	75-114	2	30
Bromoform	N.D.	0.10	0.50	mq/kq	86	87	70-120	1	30
Bromomethane	N.D.	0.20	0.50	mq/kq	93	97	32-162	4	30
2-Butanone	N.D.	0.40	1.0	mq/kq	91	94	37-155	3	30
t-Butyl alcohol	N.D.	2.0	10	mg/kg	83	83	60-149	0	30
n-Butylbenzene	N.D.	0.10	0.50	mg/kg	90	87	72-120	3	30
sec-Butylbenzene	N.D.	0.10	0.50	mq/kq	97	94	75-120	4	30
tert-Butylbenzene	N.D.	0.10	0.50	mg/kg	96	95	75-120	2	30
Carbon Disulfide	N.D.	0.10	0.50	mg/kg	117	115	59-129	2	30
Carbon Tetrachloride	N.D.	0.10	0.50	mg/kg	109	111	69-122	1	30
Chlorobenzene	N.D.	0.10	0.50	mg/kg	105	106	80-120	2	30
Chloroethane	N.D.	0.10	0.50	mg/kg	103	108	37-154	5	30
2-Chloroethyl Vinyl Ether	N.D.	0.20	1.0	mg/kg	99	100	27-151	1	30
Chloroform	N.D.	0.10	0.50	mg/kg	107	108	80-120	1	30
Chloromethane	N.D.	0.10	0.50	mg/kg	91	79	49-115	14	30
2-Chlorotoluene	N.D.	0.10	0.50	mg/kg	94	94	78-120	0	30
4-Chlorotoluene	N.D.	0.10	0.50	mg/kg	94	93	79-120	1	30
1,2-Dibromo-3-chloropropane	N.D.	0.20	0.50	mg/kg	71	71	55-128	1	30
Dibromochloromethane	N.D.	0.10	0.50	mg/kg	94	97	77-120	4	30
1,2-Dibromoethane	N.D.	0.10	0.50	mq/kq	97	100	80-120	3	30
Dibromomethane	N.D.	0.10	0.50	mg/kg	103	106	80-120	3	30
1,2-Dichlorobenzene	N.D.	0.10	0.50	mq/kq	88	86	79-120	2	30
1,3-Dichlorobenzene	N.D.	0.10	0.50	mg/kg	89	88	78-120	0	30
1,4-Dichlorobenzene	N.D.	0.10	0.50	mq/kq	88	88	79-120	0	30
Dichlorodifluoromethane	N.D.	0.20	0.50	mq/kq	52	39	20-120	29	30
1,1-Dichloroethane	N.D.	0.10	0.50	mg/kg	114	116	80-120	2	30
1,2-Dichloroethane	N.D.	0.10	0.50	mg/kg	104	105	70-137	0	30
1,1-Dichloroethene	N.D.	0.10	0.50	mq/kq	121	120	73-129	0	30
cis-1,2-Dichloroethene	N.D.	0.10	0.50	mg/kg	115	115	80-120	0	30
trans-1,2-Dichloroethene	N.D.	0.10	0.50	mq/kq	116	118	79-120	1	30
1,2-Dichloropropane	N.D.	0.10	0.50	mq/kq	109	111	77-120	2	30
1,3-Dichloropropane	N.D.	0.10	0.50	mq/kq	98	103	80-120	5	30
2,2-Dichloropropane	N.D.	0.10	0.50	mq/kq	110	110	72-123	0	30
1,1-Dichloropropene	N.D.	0.10	0.50	mg/kg	113	113	77-120	0	30
cis-1,3-Dichloropropene	N.D.	0.10	0.50	mq/kq	115	117	74-120	2	30
trans-1,3-Dichloropropene	N.D.	0.10	0.50	mq/kq	98	101	77-120	3	30
Ethanol	N.D.	10.	50	mq/kq	104	87	45-168	18	30
Ethyl t-butyl ether	N.D.	0.10	0.50	mg/kg	103	108	70-122	5	30
Ethylbenzene	N.D.	0.10	0.50	mg/kg	109	113	80-120	3	30
Freon 113	N.D.	0.20	1.0	mg/kg	114	116	64-137	2	30
		0.20		3 / 3				_	

^{*-} Outside of specification

- **-This limit was used in the evaluation of the final result for the blank
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



T.CGD T.CG/T.CGD

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Quality Control Summary

Client Name: Arcadis U.S., Inc. Group Number: 1341541 Reported: 10/15/12 at 11:51 AM

	Blank	Blank	Blank	Report	LCS	LCSD	LCS/LCSD		
<u>Analysis Name</u>	Result	<u>MDL**</u>	LOQ	<u>Units</u>	%REC	%REC	<u>Limits</u>	RPD	RPD Max
Hexachlorobutadiene	N.D.	0.20	0.50	mg/kg	77	76	46-130	2	30
2-Hexanone	N.D.	0.30	1.0	mg/kg	89	93	37-141	4	30
di-Isopropyl ether	N.D.	0.10	0.50	mg/kg	103	104	68-128	1	30
Isopropylbenzene	N.D.	0.10	0.50	mg/kg	119	120	76-120	0	30
p-Isopropyltoluene	N.D.	0.10	0.50	mg/kg	93	91	75-120	2	30
Methyl Tertiary Butyl Ether	N.D.	0.050	0.50	mg/kg	116	119	74-121	2	30
4-Methyl-2-pentanone	N.D.	0.30	1.0	mg/kg	94	96	61-134	1	30
Methylene Chloride	N.D.	0.20	0.50	mg/kg	119	120	76-124	1	30
Naphthalene	N.D.	0.10	0.50	mg/kg	80	80	59-123	0	30
n-Propylbenzene	N.D.	0.10	0.50	mg/kg	101	100	77-120	1	30
Styrene	N.D.	0.10	0.50	mg/kg	99	101	76-120	2	30
1,1,1,2-Tetrachloroethane	N.D.	0.10	0.50	mg/kg	98	101	80-120	3	30
1,1,2,2-Tetrachloroethane	N.D.	0.10	0.50	mg/kg	82	79	71-123	3	30
Tetrachloroethene	N.D.	0.10	0.50	mg/kg	116	116	78-126	1	30
Toluene	N.D.	0.10	0.50	mg/kg	107	111	80-120	3	30
1,2,3-Trichlorobenzene	N.D.	0.10	0.50	mg/kg	75	73	64-120	2	30
1,2,4-Trichlorobenzene	N.D.	0.10	0.50	mg/kg	78	75	68-113	4	30
1,1,1-Trichloroethane	N.D.	0.10	0.50	mg/kg	109	109	71-125	0	30
1,1,2-Trichloroethane	N.D.	0.10	0.50	mg/kg	98	102	80-120	4	30
Trichloroethene	N.D.	0.10	0.50	mg/kg	111	112	80-120	2	30
Trichlorofluoromethane	N.D.	0.20	0.50	mg/kg	85	84	58-133	1	30
1,2,3-Trichloropropane	N.D.	0.10	0.50	mg/kg	80	80	71-123	0	30
1,2,4-Trimethylbenzene	N.D.	0.10	0.50	mg/kg	97	96	79-120	1	30
1,3,5-Trimethylbenzene	N.D.	0.10	0.50	mg/kg	103	100	78-120	3	30
Vinyl Chloride	N.D.	0.10	0.50	mg/kg	87	80	53-120	9	30
m+p-Xylene	N.D.	0.10	0.50	mg/kg	111	115	80-120	3	30
o-Xylene	N.D.	0.10	0.50	mg/kg	107	109	80-120	2	30
Batch number: 12286820002A	Sample n	umber(s):	6819835						
Moisture	_				100		99-101		
Batch number: 12286820002B	Sample n	umber(s):	6819836						
Moisture					100		99-101		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS <u>%REC</u>	MSD %REC	MS/MSD <u>Limits</u>	<u>RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: 12286820002A Moisture	Sample	number(s)	: 6819835	BKG:	681983	5 10.9	9.7	11	13
Batch number: 12286820002B Moisture	Sample	number(s)	: 6819836	BKG:	681983	6 9.1	9.3	2	13

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

*- Outside of specification

- **-This limit was used in the evaluation of the final result for the blank
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Quality Control Summary

Client Name: Arcadis U.S., Inc. Group Number: 1341541

Reported: 10/15/12 at 11:51 AM

Surrogate Quality Control

Analysis Name: 8260 Ext. Soil Master w/GRO Batch number: R122861AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene	
6819835	107	113	112	119	
6819836	110	115	114	113	
Blank	96	102	103	96	
LCS	106	109	109	108	
LCSD	108	108	112	110	
Limits:	50-141	54-135	52-141	50-131	

^{*-} Outside of specification

^{**-}This limit was used in the evaluation of the final result for the blank

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.



Project Name: 92114 LLI Group #: 1341541

General Comments:

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client. The compliance signature is located on the cover page of the Analysis Reports.

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:

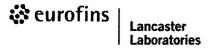
No additional comments are necessary.

Chevron Generic Analysis Request/Chain of Custody

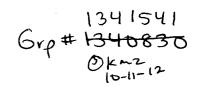
🔅 eurofins	Lancaster Laboratories		Acc	t. # <u>]</u>	08	4-	7	Gi	roup : Ins	# Fo	r Lan	caster	Labo	ratori Sar	es us nple # with ci	e only	68 Imbers.	11-1- 16-	2 55 198	7-	- 5	36	1 of 1
1)	Client Information	<u> </u>				4)	Ma	trix			37 ⑤	1.5	4 [An	alys	es F	Requ	este	d				SCR #:
Facility #		WBS																					OOK#.
92114 Site Address 3350 College Chevron PM Roly Speer Consultant/Office 2300 East-lake A Consultant Project Mgr. Russ Greisky Consultant Phone #	P.A. Fairbomks A ve E Ste 200	Lead Consu	114.00c Itant He, v			Sediment	Ground	Surface	Air 🗌	of Containers	8021 8260 Naphth		Oxygenates	91	ID Silica Gel Cleanup	☐ Diss. ☐ Method	db						Results in Dry Weight J value reporting needed Must meet lowest detection limits possible for 8260 compounds 8021 MTBE Confirmation Confirm MTBE + Naphthalene Confirm highest hit by 8260 Confirm all hits by 8260
714. 508. 3178 Sampler M. Mad Im	ni d			3	Composite	図	Potable	NPDES		Total Number	BTEX + MTBE	8260 full scan	Oxy	ТРНС	ТРНО	Total	VPH/EPH Method	:	ı	ŀ	ì		Run oxy's on highest hit Run oxy's on all hits
	x `	Date	ected Time	Grab	Ĭ	Soil		water	ē	ota	Ë	(8)				Lead	/PH/					ŀ	6) Remarks
Sample Identification		10/5/12	1410	X X		X		<u> </u>		2		X X											&SAMPLE 105
																							PER R. GREISLER KNP 10/11/12
	,											3											
				F																			
7 Turnaround Time Requested (TAT) (please circle) Standard 5 day 4 day					Iquishe M-	d by	1	W	メ			bli	2	Time 90				ived by					Date Time (9)
72 hour 48 hour 24 hour											Date	•		Time		_		ived by					Date Time
Data Package Options (please circle if required)					Reiniquished by Commencial Gamer.					Date Time 10-9-12 0905													
Type I - Full Type VI (Raw Data) Alaska/Type III					Т	emr	perat	ure l	Upoi	n Re	ceip	t	15-	L.4	<u>°</u> °C		С	usto	dy Se	als l	Inta	d?	Yes No

Chevron Generic Analysis Request/Chain of Custody

Standard	eurotins	Lancaster Laboratories		Acct	.# <u>16</u>	<u>84</u> -	7	G	roup #	#13 truction	S ON THE	SY verse si	de corre	San	nple #	rcled nu	Mbers.	83	35-3	36	7			
Secretary Secr	1)	Client Informa	tion			4	Ma	atrix			5			An	alys	es F	₹equ	este	d			SCR#		
Turnaround Time Requested (TAT) (please circle) Standard 5 day 4 day Relinquished by Date Date	acility # 92/14 ite Address 3350 (ollegation of the Address) Chevron PM Pob Speer Consultant/Office Consultant Project Mgr. Possultant Phone # 714.508.7138 Complete Manual of the Address Consultant Phone # 2) Sample Identification Consultant Phone # 2) Sample Identification	Pd. Fair	WBS Bookogos. 21 books Lead Consult ARCADI OL Colle Date 10/09/12	AK Seattle, 98 ected Time	3 Quap (S)	Soil Sediment	Potable Ground	NPDES Surface	Air	of Containers	+ MTBE 8021 8260 Naphth	8260 full scan	Oxygenates		Silica Gel Cleanup 🗌	Total Diss. Method		* Moisture by day weight				Results in Dry W J value reporting Must meet lowes limits possible fo compounds 8021 MTBE Con Confirm MTBE + Confirm all hits b Run oxy Run oxy	needed detection 8260 immation Naphthal it by 8260 s on highe s on all hi	ene) est hit s
Standard 5 day 4 day Relinquished by Turnaround Time Requested (TAT) (please circle) Relinquished by Date Time Received by Date																						KNP 10/11	112	
8 Data Package Options (please circle if required) Type I - Full Type VI (Raw Data) Ataska/Type III Temperature Upon Receipt October Custody Seals Infact? Temperature Upon Receipt October Custody Seals Infact? Temperature Upon Receipt October Custody Seals Infact?	Standard 72 hour 8 Data Package	5 day 48 hour Options (please	4 day 24 hour circle if req	uired)	Relinquis Relinqu	shed by uished		Fe	edEx	<u>X</u>	Date	Oti	her_	Time			Receiv Receiv	red by		- 2n	-(Date 10-11-12		9



Environmental Sample Administration Receipt Documentation Log



Client/Project: Chevron	Shipping Container Sealed: YES NO
Date of Receipt: 15-9-12	Custody Seal Present * : YES NO
Time of Receipt:	* Custody seal was intact unless otherwise noted in the discrepancy section
Source Code: 50-1	Package: Chilled Not Chilled

			Temperature of	Shipping Contai	ners		
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments
1	429951	1.40	TB	WI	7	В	
2		1.0°					
3		0.90					
4		0.5°					
5	4	0.80	1	V	1	1	
6							

Number of Trip Blanks received <u>NOT</u> listed on chain of custody:									
Paperwork Discrepancy/Unpacking Problems:									
Unpacker Signature/Emp#: Kristi Urg 2123 Date/Time: 10-9-12 V	010								

Issued by Dept. 6042 Management

Grp#1341541

Environmental Sample Administration Receipt Documentation Log

Olio m4/	Dunio etc	Chevi	Como	Objection		- 0 1 1 CVE) 				
Client	Project:		-	Shippin	g Containe	er Sealed: YE	S) NO				
Date o	f Receipt: _	10-11	1-12	Custody	/ Seal Pres	sent*: (YE	s) NO				
Time o	f Receipt: _	09	15		seal was inta	act unless otherwise	noted in the				
Source	e Code:	50-	-1	Package	Chilled	Not Chilled					
	Temperature of Shipping Containers										
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments				
1	429951	1.0°	TB	W١	Y	В					
2											
3											
4											
5											
6											
	Number of Trip Blanks received NOT listed on chain of custody: Paperwork Discrepancy/Unpacking Problems:										
			· · · · · · · · · · · · · · · · · · ·								
Unpacker Signature/Emp#: Kinitin Zij 2123 Date/Time: 10-11-12 0955											

Issued by Dept. 6042 Management



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

_		•	=
RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	E	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions, and Lancaster hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



Appendix C

ADEC Data Review Checklists

Laboratory Data Review Checklist

Completed by:	Russell Greis	ler			
Title:	Staff Geolog	ist		Date:	9/19/12
CS Report Name	: Soil Excav	ration Report		Report Date	9/19/12
Consultant Firm:	ARCADIS	U.S., Inc.			
Laboratory Name: Laborator	y Eurofins I	ancaster Laboratories	Report	Number:	1333266
ADEC File Num	ber: 100.26.	097 A	DEC Rec	Key Number:	1992310013301
Yes b. If the labora	Yes No samples were atory, was the l	NA (Please explain.)	etwork" la	Comments:	ub-contracted to an alternate oproved?
		t transferred to another la	nb.)	Comments.	
	information co	mpleted, signed, and dat NA (Please explain.)	ed (includ	ding released/r Comments:	received by)?
b. Corre	ct analyses req Yes No	uested? NA (Please explain.)		Comments:	
-	le/cooler temp	Documentation erature documented and NA (Please explain.)	within ran	nge at receipt (Comments:	(4° ± 2° C)?
No – rec	ceived at 1.8 d	egrees Celsius			
Volati	le Chlorinated	Solvents, etc.)?	aters, Me	ethanol preserv	ved VOC soil (GRO, BTEX,
Yes	1 es No	NA (Please explain.)		Comments:	
105					

	c.	Sample con Yes	ndition (No	documented – broken, leakii NA (Please explain.)	ng (Methanol), zero headspace (VOC vials)? Comments:	
]	NA – No doc	umenta	tion		
	d.		preserv	-	umented? For example, incorrect sample atside of acceptable range, insufficient or missing Comments:	g
]	No				
	e.	Data qualit	y or usa	ability affected? (Please expl	ain.) Comments:	
	I	Data quality a	and usa	bility does not appear to be a	affected	
4.		Narrative Present and Yes	l unders No	standable? NA (Please explain.)	Comments:	
	_	Yes				
	b.	Discrepanc Yes	ies, erro No	ors or QC failures identified NA (Please explain.)	by the lab? Comments:	
	Г	TPH-DRO an	d that tl		ecoveries were outside the acceptance window for sample 6777408 (identified as SP-1-6-w.	or
	c.	Were all co	orrective No	e actions documented? NA (Please explain.)	Comments:	
				•	overies are confirmed unless attributed to a comment (which it wasn't in this narrative).	
	d.	What is the	effect	on data quality/usability acc	ording to the case narrative? Comments:	
	_	The effect on	the dat	a quality or usability is not	explicitly stated in the case narrative.	
5.	_	les Results Correct and Yes	ilyses p No	erformed/reported as reques NA (Please explain.)	ted on COC? Comments:	
	7	es.				

	licable hol es No	ding times met? NA (Please explain.)	Comments:
Yes		(r ,	
	s reported es No	on a dry weight basis? NA (Please explain.)	Comments:
Yes			
d. Are the	-	QLs less than the Cleanup Lev	vel or the minimum required detection level for t
	es No	NA (Please explain.)	Comments:
1		· · · · · · · · · · · · · · · · · · ·	903 and SP-1-5-20120903 is greater than the CL was not detected above the MDL.
e. Data qu	ality or us	ability affected?	Comments:
The quali	ty or usabi	lity of the data is not expected	to be affected by this.
Yes	es No	NA (Please explain.)	Comments:
	All methodes No	d blank results less than PQL? NA (Please explain.)	Comments:
Yes			
iii.	If above P	QL, what samples are affected	? Comments:
NA			
iv. Y		ected sample(s) have data flags NA (Please explain.)	and if so, are the data flags clearly defined? Comments:
NA - San	nples do no	ot appear to be affected.	
v.	Data quali	ty or usability affected? (Pleas	e explain.) Comments:
Data qual	ity or usah	ility does not appear to be affe	cted.

- b. Laboratory Control Sample/Duplicate (LCS/LCSD)
 - i. Organics One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No NA (Please explain.)

Comments:

Yes

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes N

No NA (Please explain.)

Comments:

NA (No metals/Inorganic analysis requested for submitted samples)

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

Yes

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.)

Comments:

MSD % recovery for TPH-DRO was under the acceptable range of 60-140% at 55%.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The samples affected by this are identified as SP-1-1-20120903, SP-1-2-20120903, SP-1-3-20120903, SP-1-4-20120903, SP-1-5-20120903, SP-1-6-20120903, SP-1-7-20120903, SP-1-8-20120903, and BD-1.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined? Yes No NA (Please explain.) Comments:

Flags are shown in the QC section of the report.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The matrix spike % recovery was within acceptable limits, and although the matrix spike duplicate was outside acceptable limits, data quality or usability is not expected to be impacted by this.

- c. Surrogates Organics Only
 - i. Are surrogate recoveries reported for organic analyses field, QC and laboratory samples?

 ii. Accuracy – All percent recoveries (%R) report And project specified DQOs, if applicable. (All analyses see the laboratory report pages) Yes No NA (Please explain.) 	
All except, 6777408 (SP-1-6-20120903) for Orthoterpho	enyl at 157%.
iii. Do the sample results with failed surrogate rec flags clearly defined?Yes No NA (Please explain.)	coveries have data flags? If so, are the data Comments:
Flags are shown in the QC section of the report.	
iv. Data quality or usability affected? (Use the con	mment box to explain.) Comments:
Data quality may be affected, however it is undetermine concentration in the sample is affected by the surrogate becample.	
 d. Trip blank – Volatile analyses only (GRO, BTEX, Vo Soil i. One trip blank reported per matrix, analysis an (If not, enter explanation below.) Yes No NA (Please explain.) 	
Yes	
ii. Is the cooler used to transport the trip blank an (If not, a comment explaining why must be entyYes No NA (Please explain.)	•
No – the COC does not explicitly call out cooler #, alth is most likely one cooler was used to ship all samples.	ough given the soil jar sizes and number, it
iii. All results less than PQL?Yes No NA (Please explain.)	Comments:
Yes	
iv. If above PQL, what samples are affected?	Comments:
NA	

Comments:

No NA (Please explain.)

Yes

v. Data quality or usability affected? (Please explain.)

Comments:

No, data quality or usability is not affected.

- e. Field Duplicate
 - i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.) Comments:

Yes

ii. Submitted blind to lab?

Yes No NA (Please explain.) Comments:

Yes

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R1 = Sample Concentration $R_2 = Field Duplicate Concentration$

Yes No NA (Please explain.) Comments:

No, the RPD for GRO, benzene, toluene, ethylbenzene, total xylenes, benzo(a)anthracene, benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)perylene, Chrysene, and Indeno(1,2,3-cd)pyrene exceed 50% for parent/duplicate SP-1-8-20120903 and BD-1.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Yes – quality and usability would be affected for the GRO/BTEX analyses. Data quality may be compromised for the listed PAHs; however the usability might not be affected as the concentrations are so low and close to the laboratory MDL. Regarding the duplicate analyses using methanol preservative, the laboratory indicated in an email on September 14, 2012 that methanol possibly leaked sometime after sample receipt and before analysis occurred, which would bias the reported concentrations associated with the methanol preservative. However, it could not be confirmed by the laboratory that this indeed was a testable reason behind the discrepancy in the data between parent and duplicate sample.

f. Decontamination or Equipment Blank (If not used explain why).

NA

		Yes No	NA (Please explain.)	Comments:	
	i.	All results	less than PQL?		
	NA				
	ii.	If above P	QL, what samples are affe	ected?	
				Comments:	
	NA				
	iii.	Data quali	ty or usability affected? (I	Please explain.)	
				Comments:	
	NA				
7. <u>Oth</u>		ags/Qualificed and appro	ers (ACOE, AFCEE, Lab a	Specific, etc.)	
		Yes No	NA (Please explain.)	Comments:	
	Not appa	arent.			

Laboratory Data Review Checklist

Completed by:	Russell Grei	sler			
Title:	Staff Geolog	gist		Date:	9/19/12
CS Report Name	: Soil Exca	vation Report		Report Date	9/19/12
Consultant Firm:	ARCADI	S U.S., Inc.		I	
Laboratory Name: Laborator	Eurofins l	Lancaster Laboratorie	s Report	Number:	1333954
ADEC File Num	ber: 100.26	.097	ADEC Rec	cKey Number:	1992310013301
Yes b. If the	Yes No samples were	NA (Please explain.) transferred to another	· "network" l	Comments:	submitted sample analyses?
	Yes No	laboratory performing NA (Please explain.) ot transferred to another		S ADEC CS ap Comments:	proved?
2. Chain of Cus a. COC	tody (COC)	ompleted, signed, and NA (Please explain.)	dated (inclu	ding released/re Comments:	eceived by)?
Yes					
	ct analyses rec Yes No	quested? NA (Please explain.)		Comments:	
3. <u>Laboratory S.</u> a. Samp		Documentation perature documented a NA (Please explain.)		nge at receipt (Comments:	4° ± 2° C)?
No - rec	ceived at 1.8 d	egrees Celsius			
Volati	-	n acceptable – acidifie d Solvents, etc.)? NA (Please explain.)		ethanol preserv	ed VOC soil (GRO, BTEX,
Yes					
·	·	<u></u>	·	·	

	c. Sample condition documented – broken, leaking (Me Yes No NA (Please explain.)	Comments:
	NA – No documentation	
	d. If there were any discrepancies, were they documented containers/preservation, sample temperature outside comples, etc.? Yes No NA (Please explain.)	
	No	
	e. Data quality or usability affected? (Please explain.)	Comments:
	Data quality and usability does not appear to be affected	d
4. <u>Cas</u>	se Narrative a. Present and understandable? Yes No NA (Please explain.)	Comments:
	Yes	
	b. Discrepancies, errors or QC failures identified by the Yes No NA (Please explain.)	lab? Comments:
	Yes – MS/MSD recoveries, surrogate recoveries, report and LCS recoveries are noted for various samples.	ting limits raised due to sample foaming,
	c. Were all corrective actions documented? Yes No NA (Please explain.)	Comments:
which a	rd corrective actions are documented in the narrative: (e.g are outside of the QC window are confirmed unless attributes Specific Comment below.	
	d. What is the effect on data quality/usability according	to the case narrative? Comments:
	No effect.	
5. <u>San</u>	a. Correct analyses performed/reported as requested on Yes No NA (Please explain.)	COC? Comments:
	Yes.	

	Yes	No	NA (Please explain.)	Comments:
	Yes			
c.	All soils re	eported o	on a dry weight basis?	
	Yes	No	NA (Please explain.)	Comments:
,	Yes			
d.	Are the repproject?	orted P	QLs less than the Cleanup Lev	vel or the minimum required detection level for
	Yes	No	NA (Please explain.)	Comments:
n	- '	P-1-12-2	20120904 at 0.24 mg/kg, for S	0904 is greater than the CL for benzene at 0.09 P-2-1-20120905 at 0.027 mg/kg, and in SP-2-2
e.	Data quali	ty or usa	ability affected?	Community
	•		• 11	Comments: ears to be with SP-1-12-20120904, as benzene
p s n	MDL exceed present above sample foaming/kg, and the	s the CI e or belo ing. In S ne samp	L. As benzene is ND, it cannot ow 0.025 mg/kg in the sample. SP-2-2-20120905, the MDL fo	ears to be with SP-1-12-20120904, as benzene be determined whether benzene would be. The reporting limits had to be raised due to
p s n s	MDL exceed present above sample foaming/kg, and the somewhere became amples Method Bl	s the CI e or beloing. In Sine samp etween	L. As benzene is ND, it cannot ow 0.025 mg/kg in the sample. SP-2-2-20120905, the MDL fo le was non-detect. In none of the MDL and LOQ.	ears to be with SP-1-12-20120904, as benzene be determined whether benzene would be. The reporting limits had to be raised due to r benzene was right at the cleanup level of 0.02 these cases was benzene actually detected
p s n s	MDL exceed present above sample foaming/kg, and the somewhere became amples Method Bl	s the CI e or beloing. In Sine samp etween	L. As benzene is ND, it cannot ow 0.025 mg/kg in the sample. SP-2-2-20120905, the MDL fo le was non-detect. In none of	ears to be with SP-1-12-20120904, as benzene be determined whether benzene would be. The reporting limits had to be raised due to r benzene was right at the cleanup level of 0.02 these cases was benzene actually detected
P s n s	MDL exceed bresent above sample foaming/kg, and the somewhere became amples Method Bl i. On	s the CI e or belo ing. In S ne samp etween ank e metho	L. As benzene is ND, it cannot ow 0.025 mg/kg in the sample. SP-2-2-20120905, the MDL fo le was non-detect. In none of the MDL and LOQ.	ears to be with SP-1-12-20120904, as benzene be determined whether benzene would be. The reporting limits had to be raised due to r benzene was right at the cleanup level of 0.02 these cases was benzene actually detected nalysis and 20 samples?
D Sa a.	MDL exceed bresent above sample foaming/kg, and the somewhere become where become where become with the somewhere become where become where become where the somewhere become where the somewhere become where the somewhere become where the somewhere become with the somewhere become where the somewhere the somew	s the CI e or belo ing. In S ne samp etween ank e metho	L. As benzene is ND, it cannot ow 0.025 mg/kg in the sample. SP-2-2-20120905, the MDL fo le was non-detect. In none of the MDL and LOQ.	ears to be with SP-1-12-20120904, as benzene be determined whether benzene would be. The reporting limits had to be raised due to r benzene was right at the cleanup level of 0.02 these cases was benzene actually detected nalysis and 20 samples?
M p s n s n s c Sa a.	MDL exceed bresent above sample foaming/kg, and the somewhere become where the sound where	s the CI e or belo ing. In S ne samp etween ank e metho No method No	L. As benzene is ND, it cannot ow 0.025 mg/kg in the sample. SP-2-2-20120905, the MDL for le was non-detect. In none of the MDL and LOQ. In the MDL and LOQ.	ears to be with SP-1-12-20120904, as benzene be determined whether benzene would be. The reporting limits had to be raised due to report benzene was right at the cleanup level of 0.02 these cases was benzene actually detected nalysis and 20 samples? Comments:
M p s n s n s c Sa a.	MDL exceed bresent above sample foaming/kg, and the somewhere beamples Method Bl i. On Yes Yes ii. All Yes N/A, Labora	s the CI e or belo ing. In S ne samp etween ank e metho No method No	L. As benzene is ND, it cannot ow 0.025 mg/kg in the sample. SP-2-2-20120905, the MDL for le was non-detect. In none of the MDL and LOQ. In the MDL and LOQ.	cars to be with SP-1-12-20120904, as benzene be determined whether benzene would be. The reporting limits had to be raised due to report benzene was right at the cleanup level of 0.02 these cases was benzene actually detected nalysis and 20 samples? Comments: Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Comments:

NA (Please explain.)

Yes

No

 $NA-Samples \ do \ not \ appear \ to \ be \ affected.$

	v. Dota	, avalit	v on veahility offsatad? (Dla		
	v. Data	ı quanı	y or usability affected? (Ple	Comments:	
Data	quality o	or usabi	lity does not appear to be af	ffected.	
b. La	boratory	Contro	Sample/Duplicate (LCS/L	CSD)	
			One LCS/LCSD reported pr AK methods, LCS require	er matrix, analysis and 20 samples? (LCS/LCSD ed per SW846))
	Yes	No	NA (Please explain.)	Comments:	
Yes					
		als/Inoi ples? No	eganics – one LCS and one so	sample duplicate reported per matrix, analysis an	ıd 20
NA	(No meta	ls/Inorg	ganic analysis requested for	submitted samples)	
	And	projec	t specified DQOs, if applica	R) reported and within method or laboratory limitable. (AK Petroleum methods: AK101 60%-120%; all other analyses see the laboratory QC pages Comments:	%,
LCS	D outside	e recove	ery limits for DRO (73%).		
	labo LCS	ratory l S/LCSD	imits? And project specified	nces (RPD) reported and less than method or d DQOs, if applicable. RPD reported from sample duplicate. (AK Petroleum methods 20%; ages) Comments:	all

Yes

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.) Comments:

Yes

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

The LCSD outside the acceptable window may have some affect on data quality, however the data might still be usable as the LCS and LCSD were within 5% RPD.

c.	Surrogates –	Organics	On]	ly
----	--------------	----------	-----	----

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples? Yes No NA (Please explain.) Comments:

Yes

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No NA (Please explain.)

Comments:

GRO surrogate outside acceptable recovery window for SP-2-1-20120905, SP-1-12-20120904, SP-1-13-20120905, and the two BD-1 samples, one collected on 9/4/2012 and one collected on 9/5/2012.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.)

Comments:

Yes

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Data quality may be affected; however the other surrogate trifluorotoluene-F had low surrogate recoveries for the same samples and all recoveries were within their respective windows. The usability of the data may not be affected.

- d. Trip blank Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>
 - i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No NA (Please explain.)

Comments:

No – trip blank was not submitted

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No NA (Please explain.)

Comments:

NA – trip blank not submitted.

iii. All results less than PQL?

Yes No NA (Please explain.)

Comments:

NA – trip blank not submitted.

iv. If above PQL, what samples are affected?

Comments:

NA

v. Data quality or usability affected? (Please explain.)

Comments:

Quality may be affected for volatile analysis.

- e. Field Duplicate
 - i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.)

Comments:

Yes

ii. Submitted blind to lab?

Yes No NA (Please explain.)

Comments:

Yes

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of:
$$\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R1 = Sample Concentration

 R_2 = Field Duplicate Concentration

Yes No NA (Please explain.)

Comments:

Between SP-1-9-20120904 and BD-1: DRO

Between SP-1-13-20120905 and BD-1: Benzo(b)fluoranthene and Chrysene.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability may be affected for DRO although below cleanup value; low levels of PAHs Benzo(b)fluoranthene and Chrysene may not be affected by the difference in value between parent and duplicate.

f. Decontamination or Equipment Blank (If not used explain why).

Yes No NA (Please explain.)

Comments:

NA

i. All results less than PQL?

NA

	Comments:
NA	
	iii. Data quality or usability affected? (Please explain.)
	Comments:
NA	

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

ii. If above PQL, what samples are affected?

a. Defined and appropriate?

Yes No NA (Please explain.) Comments:

Not apparent.

Laboratory Data Review Checklist

Completed by:	Russell Gre	eisler			
Title:	Staff Geold	ogist		Date:	9/19/12
CS Report Name	: Soil Exc	avation Report		Report Date	2: 10/15/12
Consultant Firm:	ARCAD	IS U.S., Inc.		<u> </u>	
Laboratory Name: Laborator	y Eurofins	Lancaster Laboratories	Report	Number:	1341541
ADEC File Numl	ber: 100.2	6.097	ADEC Red	cKey Number:	1992310013301
	n ADEC CS Yes No	approved laboratory rece NA (Please explain.)	eive and <u>pe</u>	rform all of the Comments:	e submitted sample analyses?
labora	tory, was the Yes No	e transferred to another 'e laboratory performing to NA (Please explain.) not transferred to another	the analyses	•	ub-contracted to an alternate oproved?
,		completed, signed, and d NA (Please explain.)	lated (inclu	ding released/r Comments:	received by)?
Yes					
	ct analyses ro Yes No	equested? NA (Please explain.)		Comments:	
Yes					
a. Sampl		ot Documentation sperature documented an NA (Please explain.)	d within ra	nge at receipt (Comments:	(4° ± 2° C)?
No - rec	eived at 0.5	to 1.4 degrees Celsius			
-	-	on acceptable – acidified ed Solvents, etc.)?	waters, Me	ethanol preserv	ved VOC soil (GRO, BTEX,
,	Yes No	NA (Please explain.)		Comments:	
Yes			_		

C.	Yes	No	NA (Please explain.)	Comments:
1	NA – No doci	umenta	ation	
d.		oreserv		nented? For example, incorrect sample ide of acceptable range, insufficient or missing
	Yes	No	NA (Please explain.)	Comments:
1	No			
e.	Data quality	or us	ability affected? (Please explain	n.) Comments:
Ι	Data quality a	nd usa	bility not affected	
N	NT			
	<u>Narrative</u> Present and	under	standable?	
	Yes	No	NA (Please explain.)	Comments:
	Yes			
	103			
b.	-		ors or QC failures identified by	
	Yes	No	NA (Please explain.)	Comments:
1	No			
	13 7 11	,.	4' 1 4 10	
c.	Were all con Yes	rrective No	e actions documented? NA (Please explain.)	Comments:
d.	What is the	effect	on data quality/usability accord	ling to the case narrative?
			1 7 7	Comments:
1	none			
omn1	los Dosults			
_	les Results Correct ana	lyses n	erformed/reported as requested	on COC?
	Yes	No	NA (Please explain.)	Comments:
7	Yes.			
1				
b.			ding times met?	_
	Yes	No	NA (Please explain.)	Comments:
Γ,	Yes			
	169			

c.	All soils rep Yes	orted o	on a dry weight basis? NA (Please explain.)	Comments:
Г			Transc explain.)	Comments.
	Yes			
d.	Are the repoproject?	orted P	QLs less than the Cleanup Leve	el or the minimum required detection level for the
	Yes	No	NA (Please explain.)	Comments:
C	L for benzen	ne, trich		05 and SP-2-2-20121005 are greater than the inyl chloride, 1,2-dibromoethane and
e.	Data quality	y or usa	bility affected?	
	1 .	,	•	Comments:
C	L. In none of	f these	* *	listed VOCs, the MDL exceeds the respective actually detected above the MDL, or
\[\sigma	i. One Yes	metho No	d blank reported per matrix, an NA (Please explain.)	alysis and 20 samples? Comments:
	1 68			
	ii. All Yes	method No	blank results less than PQL? NA (Please explain.)	Comments:
1	N/A, Laborat	ory rep	orted results to the MDL – non	detect to the MDL, which is less than the PQL.
	iii. If at	oove P(QL, what samples are affected?	Comments:
1	NA			
	iv. Do t Yes	the affe No	cted sample(s) have data flags NA (Please explain.)	and if so, are the data flags clearly defined? Comments:
1	NA – Sample	s do no	t appear to be affected.	
	v. Data	a qualit	y or usability affected? (Please	e explain.) Comments:
Г	Data quality o	or usahi	lity does not appear to be affect	eted.
	1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		.,	

	Yes No	er AK methods, LCS require NA (Please explain.)	Comments:
Yes			
	ii. Metals/Ino samples?	organics – one LCS and one	sample duplicate reported per matrix, analysis and
	Yes No	NA (Please explain.)	Comments:
NA	(No metals/Inor	ganic analysis requested for	submitted samples)
	And project	ct specified DQOs, if application	R) reported and within method or laboratory limits? able. (AK Petroleum methods: AK101 60%-120%, %; all other analyses see the laboratory QC pages) Comments:
Yes			
	laboratory LCS/LCSI	limits? And project specifie	ences (RPD) reported and less than method or ed DQOs, if applicable. RPD reported from /sample duplicate. (AK Petroleum methods 20%; always) Comments:
Yes			
	v. If %R or R	PD is outside of acceptable	limits, what samples are affected? Comments:
NA			
	vi. Do the affe	ected sample(s) have data floor NA (Please explain.)	ags? If so, are the data flags clearly defined? Comments:
NA	– no exceedance	es	
	vii. Data qualit	ty or usability affected? (Us	e comment box to explain.) Comments:
NA			
. St	ırrogates – Orga	nics Only	
	_		organic analyses – field, QC and laboratory samples
	Yes No	NA (Please explain.)	Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

	ii.	And	projec	specified DQOs, if applic	oR) reported and within method or laboratory limits? cable. (AK Petroleum methods 50-150 %R; all other
	,	analy Yes	yses se No	e the laboratory report pag NA (Please explain.)	ges) Comments:
Yes				, (r ,	
103					
		flags	clearly	defined?	rogate recoveries have data flags? If so, are the data
	`	Yes	No	NA (Please explain.)	Comments:
NA	– no	o exce	edance	S	
	iv.	. Data	qualit	y or usability affected? (U	se the comment box to explain.) Comments:
NA					
d. Tr <u>Sc</u>	-	olank –	- Volati	le analyses only (GRO, B	TEX, Volatile Chlorinated Solvents, etc.): Water and
	i.		-	nk reported per matrix, ar r explanation below.)	nalysis and for each cooler containing volatile samples?
	7	Yes	No	NA (Please explain.)	Comments:
No -	– tri	p blan	k was 1	not submitted	
	ii.			r used to transport the trip mment explaining why m	blank and VOA samples clearly indicated on the COC
		Yes	No	NA (Please explain.)	Comments:
NT A	4	1.1	.1 4	-1	
NA	– tri	ip biai	ik not s	ubmitted.	
				ess than PQL?	
	•	Yes	No	NA (Please explain.)	Comments:
NA	– tri	ip blar	nk not s	ubmitted.	
	_				
	iv.	. If ab	ove PC	L, what samples are affec	eted?
			Ì	1	Comments:
NA					
		D.	11.	1.114 CC / 10 /DI	1
	V.	Data	ı qualıt	y or usability affected? (Pl	lease explain.) Comments:
Ona	lity	may h	ne affec	ted for volatile analysis.	
Qua	.11t y	may t	, arrec	tea for volutile analysis.	

e. Fi	eld Duplicate			
	i. One field de Yes No	uplicate submitted po NA (Please explain	•	sis and 10 project samples? Comments:
No				
	ii. Submitted b Yes No	olind to lab? NA (Please explain	ı.)	Comments:
No				
		All relative percent anded: 30% water, 50%		D) less than specified DQOs?
	RPD (%) =	Absolute value of:	$\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 1$	00
		R1 = Sample Concen $R_2 = Field Duplicate$ NA (Please explain)	Concentration	Comments:
NA	– no trip blank.			
	iv. Data quality	y or usability affected	d? (Use the com	nment box to explain why or why not.)
				Comments:
NA.				
f. De	econtamination o	r Equipment Blank (If not used expl	ain why).
	Yes No	NA (Please explain	n.)	Comments:
NA				
	i. All results l	ess than PQL?		
NA				
	ii. If above PQ	L, what samples are	affected?	
				Comments:
NA				

Comments:

iii. Data quality or usability affected? (Please explain.)

NA

7	Other Data	Flags/C	Qualifiers (ACOF	Δ ECFF	I ah S	necific	etc `
/ .	Ouici Data	Tags/	Juanincis (ACOL,	AI CLL,	Lau 5	pecific,	cic.

a. Defined and appropriate?

Yes No NA (Please explain.) Comments:

Not apparent.