B&L Woodwaste Site

West Boundary Soil Investigation Report

Prepared for

B&L Custodial Trust
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October 2020

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LIMITATIONS

This report has been prepared for the exclusive use of the B&L Woodwaste Site Custodial Trust, its authorized agents, and regulatory agencies. It has been prepared following the described methods and information available at the time of the work. No other party should use this report for any purpose other than that originally intended, unless Floyd|Snider agrees in advance to such reliance in writing. The information contained herein should not be utilized for any purpose or project except the one originally intended. Under no circumstances shall this document be altered, updated, or revised without written authorization of Floyd|Snider.

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List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
2008 CAP	2008 Cleanup Action Plan
bgs	Below ground surface
CUL	Cleanup level
Ecology	Washington State Department of Ecology
mg/kg	Milligrams per kilogram
MTCA	Model Toxics Control Act
Site	B&L Woodwaste Site
UCL	Upper confidence limit
USEPA	U.S. Environmental Protection Agency
Work Plan	West Boundary Soil Investigation Work Plan

1.0 Introduction

This report presents the results of a soil investigation at the B&L Woodwaste Site (Site), in Pierce County, Washington, shown on Figure 1.1. The Site includes a former woodwaste landfill and surrounding areas affected by arsenic contamination from copper smelter slag that was placed in the former landfill. The B&L Woodwaste Custodial Trust is currently implementing the long-term operations and monitoring phase of the 2008 Cleanup Action Plan (2008 CAP) at the Site following implementation of active remediation phases of the 2008 CAP under the terms of Consent Decree No. 082106107 (Ecology 2008).

As summarized in the West Boundary Soil Investigation Work Plan (Work Plan; Floyd|Snider 2020), remediation has included excavation of arsenic-impacted ditch sediments and bank soils in the west ditch, excavation and shallow soil mixing of arsenic-impacted soil in the agricultural field in 2012, and a 2015 ditch bank excavation of two areas that exceeded the Site cleanup level (CUL) of 20 milligrams per kilogram (mg/kg) after the 2012 cleanup. One of these ditch bank areas was located on the agricultural field side of the ditch on the western edge of the landfill, as shown on Figure 1.2. Verification sampling results demonstrate compliance with the CUL under the Model Toxics Control Act (MTCA), with a small number of soil samples representing soil left in place that exceed the arsenic CUL of 20 mg/kg and one sample left in place to protect groundwater recovery infrastructure that will be removed when these remedial components are removed from the Washington State Department of Transportation property.

The 2020 investigation consisted of soil boring advancement and sample collection to investigate the concentration of arsenic in soil along the west boundary of the B&L Woodwaste landfill east of the ditch and a limited area in the agricultural field adjacent to the landfill. The purpose of this investigation was to determine if soil with elevated concentrations of arsenic is present that may be acting as source material for groundwater contamination that still exists near the west boundary of the landfill, in particular between monitoring wells D-7A and D-8A, and near the monitoring well MW-33 in the agricultural field to the west of the landfill.

The results are expected to be used to assess whether an additional soil removal action would be beneficial in reducing arsenic concentrations in groundwater.

2.0 Soil Boring and Sampling Activities

This soil investigation was completed between August 12 and 18, 2020, by collecting soil samples with direct-push drilling methods. Boring locations are shown on Figure 1.2. Boring logs are included in Appendix A.

Property access, utility clearance, boring advancement, and sample collection and analysis were conducted in accordance with the Work Plan (Floyd|Snider 2020) and the procedures described in the Sampling and Analysis Plan/Quality Assurance Project Plan (Appendix B to the Groundwater Remediation Work Plan; Floyd|Snider and AMEC 2009) with minor deviations discussed in Sections 2.1 and 2.2.

2.1 WESTERN BOUNDARY AREA

Between August 12 and 18, 2020, 15 direct-push borings (B-1 through B-15) were advanced along the western boundary of the landfill on the berm between the fence line and stormwater pond. The borings were spaced approximately 20 feet apart between monitoring wells D-7A and D-8A. Soil samples were collected in 1- to 2-foot intervals from 7 to 13 feet below ground surface (bgs). Soil samples collected from 7 to 8 feet bgs, 9 to 10 feet bgs, and 12 to 13 feet bgs were submitted to Friedman & Bruya, Inc., for analysis of arsenic by U.S. Environmental Protection Agency (USEPA) Method 6020B. In coordination with the Washington State Department of Ecology (Ecology), additional samples were collected from 8 to 9 feet bgs and 10 to 12 feet bgs and archived for potential follow-up analysis.

Soil borings along the western boundary were advanced through the top 4 or 5 feet bgs with no soil collection in order to push through the stormwater pond berm, which is approximately 6 feet of low permeability fill. The native soil below the fill consists of poorly graded sands. Soils were observed for the presence of wood waste or slag, but neither were observed in any boring. Naturally occurring wood was noted at 8 feet bgs in boring B-5 and at 10 to 11 feet bgs in boring B-7. Photographs of soil borings are included in Appendix B.

Direct push drilling was originally attempted at borings B-1 through B-6 with a 54LT drill rig; however, the subsurface was more gravelly than anticipated, which limited soil recovery. A larger drill rig (Geoprobe 7822D) was used to complete the remaining borings, which improved recovery of the borings. However, soil recovery was still limited at locations B-1 and B-3 when they were redrilled with the larger drill rig, so the sample intervals were modified based on recovered soil. Multiple attempts were made to maximize recovery. Refer to the boring logs in Appendix A for specific recovery information. There were no other deviations to the Work Plan during sampling activities at the western boundary of the landfill.

2.2 MW-33 AREA

On August 18, 2020, four direct-push borings (B-16 through B-19) were advanced directly adjacent to and around monitoring well MW-33 in the agricultural field west of the landfill. One boring was advanced within 5 feet of MW-33 and the other three borings were advanced

approximately 25 feet to the west, east, and south of MW-33. Soil samples were collected in 1- to 2-foot intervals from 0 to 6 feet bgs. Per the Work Plan, soil samples were collected from 0 to 1 foot bgs, 2 to 3 feet bgs, and 5 to 6 feet bgs and submitted to Friedman & Bruya, Inc., for analysis of arsenic by USEPA Method 6020B.

Soil borings were advanced continuously from 0 to 6 feet bgs. Soil in this area consists of fine sand overlain by silty, clayey, and peaty deposits. No slag or wood waste associated with the landfill was observed in any boring. Photographs of soil borings are included in Appendix B.

In coordination with Ecology, additional samples were collected from 1 to 2 feet bgs and 3 to 5 feet bgs at borings B-16 through B-19 and archived for potential follow-up analysis. There were no other deviations to the Work Plan during sampling activities at the MW-33 area.

3.0 Results

3.1 DATA VALIDATION

A Compliance Screening (Stages 1 & 2A) data quality review was performed on arsenic data resulting from laboratory analysis. The analytical data were validated in accordance with the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017).

A total of 102 soil samples were submitted in one sample delivery group, 008266, to Friedman & Bruya, Inc., for chemical analysis by USEPA 6020B. A total of 63 samples were analyzed, and the remaining 39 were archived. The analytical holding times were met, and the method blanks had no detections. The matrix spike, matrix spike duplicate, and laboratory control sample recoveries and matrix spike/matrix spike duplicate relative percent differences all met USEPA requirements.

No qualifiers were added to the analytical results based on the data quality review. Data are determined to be of acceptable quality for use as reported by the laboratory, with some laboratory qualifiers being updated to conform to the final qualifiers used for data table reporting and database storage.

3.2 SOIL SAMPLING RESULTS

Analytical results for arsenic concentrations in soil are presented in Table 3.1 and Figure 1.2. Of the 63 total samples analyzed, only five samples resulted in low-level exceedances of the Site CUL of 20 mg/kg. The analytical laboratory report is included in Appendix C.

3.2.1 Western Boundary Area

Fifty-one soil samples were analyzed for arsenic from the western boundary of the landfill generally between monitoring wells D-7A and D-8A. Detected arsenic concentrations ranged from 1.15 to 26.5 mg/kg. The highest detection (26.5 mg/kg) was collected from 7 to 8 feet bgs at boring B-9 and is the only sample from the western boundary area that exceeded the arsenic CUL of 20 mg/kg.

The 7- to 8-foot-bgs sample interval is near the native soil contact with the berm fill material, and it is approximately equivalent to the elevation of the bottom of the West Ditch. Location B-9 is across the West Ditch from the ditch bank area that was excavated in 2015 to remove elevated concentrations of arsenic in shallow soil (refer to Figure 1.2). The single exceedance of the CUL at B-9 may be associated with the edge of this former “hotspot” area. The results from surrounding western boundary area locations, however, are consistent with the prior verification sampling indicating that the area has been sufficiently remediated. The results provide no indication of a local soil source for arsenic contamination in groundwater at D-8A or D-7A, although the soil between the property boundary and the barrier wall was not investigated.

3.2.2 MW-33 Area

Twelve soil samples were analyzed for arsenic from the four borings advanced in the MW-33 area, B-16, B-17, B-18, and B-19. Detected arsenic concentrations ranged from 2.36 to 29.5 mg/kg. Four samples, the surficial soil sample from each boring that was collected from between 0 to 1 foot bgs, exceeded the Site CUL of 20 mg/kg. Concentrations of the exceedances ranged from 20.9 to 29.5 mg/kg.

Based on the pattern of higher concentrations in shallow soil and no exceedances at depths corresponding to the adjacent ditch sidewalls and bottom, these results suggest that the source of the elevated arsenic was deposition of sediment during flooding events. This area of the agricultural field frequently floods during the wet season, and contamination was likely transferred from the ditch into the field prior to ditch remediation completed in 2012. The ditch sediments are no longer a source of arsenic contamination to shallow soils in the agricultural field. As shown on Figure 1.2, these four soil borings showing low-level exceedances of the CULs in shallow soil appear to represent an area between the previous verification sampling locations and are generally consistent with the results of verification sampling indicating that the area has been sufficiently remediated.

4.0 Conclusions

The results of this investigation provide further confirmation that remediation has sufficiently removed elevated arsenic from soil in accordance with Site CULs and MTCA requirements described in in WAC 173-340-740(7)(c)(iv)(A). The addition of five low-level exceedances and 58 samples with concentrations less than CULs support the outcome of the previous statistical demonstration of compliance under MTCA, which found that the 95% upper confidence limit (UCL) for arsenic was 10.3 mg/kg, which is less than the 20 mg/kg CUL (Floyd|Snider 2016). An updated 95% UCL for soil arsenic, calculated using MTCAStat with inclusion of the 2020 results, is calculated to be 7.3 mg/kg. The 2020 soil results are also consistent with other applicable MTCA conditions for demonstrating compliance: None of the five exceedances are more than 2 times the CUL, and the total number of exceedances (five new exceedances plus six prior exceedances) does not exceed 10% of the total number of samples (63 new samples and 65 previous samples total 128 samples). Updated statistical evaluation output is provided in Appendix D.

The results suggest several factors to be considered in assessing the potential effect of removing additional soil on groundwater arsenic concentrations. These include the relatively low arsenic concentrations, the limited extent of exceedances, the shallow depth of the exceedances, and the overall limited potential for transfer of arsenic to groundwater. The majority of the samples in the agricultural field, ditch bank, and western boundary area are considerably less than the CUL and apparently consistent with natural background concentrations for the area. As summarized on Figure 1.2, with the exception of B-9 and WD-400', exceedances of arsenic in soil are limited to the upper 12 inches in the vicinity of MW-33 and the upper 24 inches in the vicinity of MW-42/R-15 and R-14. The elevated arsenic left in place at WD-25'N-C is the highest arsenic concentration (69.7 mg/kg) and deepest (18 to 24 inches bgs) of the samples, and the impacted soil will be removed during decommissioning of the groundwater recovery wells in the agricultural field.

Decreasing groundwater arsenic concentrations in agricultural field monitoring wells and the lack of elevated arsenic concentrations in soil below the surface samples both suggest there is limited transfer of arsenic by infiltration from the areas in which shallow soil exceeds CULs to groundwater. The remaining excess mass of arsenic in soil may contribute to exceedances of the 5 micrograms per liter groundwater CUL, but the plume beneath the agricultural field originated at the landfill and is expected to continue to attenuate over time.

5.0 References

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Table

Table 3.1
August 2020 Soil Arsenic Results

			Analyte	Arsenic
			Unit	mg/kg
			Site Cleanup Level	20
Location Name	Field Sample ID	Sample Date	Depth Range (feet)	
Western Boundary				
B-1	B-1-7-7.5	08/12/2020	7–7.5	2.08
	B-1-8-9	08/18/2020	8–9	--
	B-1-9-10	08/18/2020	9–10	1.15
	B-1-10-12	08/18/2020	10–12	--
	B-1-11-12	08/12/2020	11–12	--
	B-1-12-13	08/12/2020	12–13	1.33
	B-101-12-13	08/18/2020	12–13	1.55
B-2	B-2-7-8	08/12/2020	7–8	2.39
	B-2-8-9	08/12/2020	8–9	--
	B-2-9-10	08/12/2020	9–10	1.64
	B-2-10-11	08/12/2020	10–11	--
	B-2-11-12	08/12/2020	11–12	1.00 U
B-3	B-3-7.5-8	08/12/2020	7.5–8	2.08
	B-3-8-9	08/12/2020	8–9	--
	B-103-8-9	08/18/2020	8–9	--
	B-3-9-10	08/12/2020	9–10	2.38
	B-3-10-12	08/12/2020	10–12	--
	B-3-12-13	08/12/2020	12–13	1.38
B-4	B-4-7.5-8	08/17/2020	7.5–8	8.53
	B-4-8-9	08/17/2020	8–9	--
	B-4-9-10	08/17/2020	9–10	2.36
	B-4-10-12	08/17/2020	10–12	--
	B-4-12-13	08/17/2020	12–13	1.00 U
B-5	B-5-7-8	08/12/2020	7–8	1.65
	B-5-8-9	08/12/2020	8–9	--
	B-5-9-10	08/12/2020	9–10	2.89
	B-5-10-12	08/12/2020	10–12	--
	B-5-12-13	08/12/2020	12–13	2.30
B-6	B-6-7-8	08/17/2020	7–8	5.65
	B-6-8-9	08/17/2020	8–9	--
	B-6-9-10	08/17/2020	9–10	3.87
	B-6-10-12	08/17/2020	10–12	--
	B-6-12-13	08/17/2020	12–13	5.19
B-7	B-7-7-8	08/17/2020	7–8	3.21
	B-7-8-9	08/17/2020	8–9	--
	B-7-9-10	08/17/2020	9–10	1.52
	B-7-11-12	08/17/2020	11–12	--
	B-107-11-12	08/17/2020	11–12	--
	B-7-12-13	08/17/2020	12–13	2.01
	B-107-12-13	08/17/2020	12–13	2.01

Table 3.1
August 2020 Soil Arsenic Results

			Analyte	Arsenic
			Unit	mg/kg
			Site Cleanup Level	20
Location Name	Field Sample ID	Sample Date	Depth Range (feet)	
Western Boundary (cont.)				
B-8	B-8-7-8	08/17/2020	7–8	2.35
	B-8-8-9	08/17/2020	8–9	--
	B-8-9-10	08/17/2020	9–10	5.24
	B-8-10-11	08/17/2020	10–11	--
	B-8-12-13	08/17/2020	12–13	1.34
B-9	B-9-7-8	08/17/2020	7–8	26.5
	B-9-8-9	08/17/2020	8–9	7.57
	B-9-9-10	08/17/2020	9–10	3.22
	B-109-9-10	08/17/2020	9–10	2.99
	B-9-10-12	08/17/2020	10–12	1.31
	B-9-12-13	08/17/2020	12–13	1.32
B-10	B-10-7-8	08/17/2020	7–8	3.27
	B-10-8-9	08/17/2020	8–9	--
	B-10-9-10	08/17/2020	9–10	1.54
	B-10-10-12	08/17/2020	10–12	--
	B-10-12-13	08/17/2020	12–13	2.00
B-11	B-11-7-8	08/18/2020	7–8	5.51
	B-11-8-9	08/18/2020	8–9	--
	B-11-9-10	08/18/2020	9–10	1.18
	B-11-10-12	08/18/2020	10–12	--
	B-11-12-13	08/18/2020	12–13	1.34
B-12	B-12-7-8	08/18/2020	7–8	12.2
	B-112-7-8	08/18/2020	7–8	16.8
	B-12-8-9	08/18/2020	8–9	--
	B-12-9-10	08/18/2020	9–10	1.78
	B-12-10-12	08/18/2020	10–12	--
	B-12-12-13	08/18/2020	12–13	1.25
B-13	B-13-7-8	08/18/2020	7–8	1.97
	B-13-8-9	08/18/2020	8–9	--
	B-13-9-10	08/18/2020	9–10	1.00 U
	B-13-10-12	08/18/2020	10–12	--
	B-13-12-13	08/18/2020	12–13	1.47
B-14	B-14-7-8	08/18/2020	7–8	6.00
	B-14-8-9	08/18/2020	8–9	--
	B-14-9-10	08/18/2020	9–10	2.56
	B-14-10-12	08/18/2020	10–12	--
	B-14-12-13	08/18/2020	12–13	2.56
B-15	B-15-7-8	08/18/2020	7–8	5.64
	B-15-8-9	08/18/2020	8–9	--
	B-15-9-10	08/18/2020	9–10	4.36
	B-15-10-12	08/18/2020	10–12	--
	B-15-12-13	08/18/2020	12–13	2.41

Table 3.1
August 2020 Soil Arsenic Results

			Analyte	Arsenic
			Unit	mg/kg
			Site Cleanup Level	20
Location Name	Field Sample ID	Sample Date	Depth Range (feet)	
MW-33 Area				
B-16	B-16-0-1	08/18/2020	0–1	23.5
	B-16-1-2	08/18/2020	1–2	--
	B-16-2-3	08/18/2020	2–3	2.53
	B-16-3-5	08/18/2020	3–5	--
	B-16-5-6	08/18/2020	5–6	2.36
B-17	B-17-0-1	08/18/2020	0–1	29.5
	B-17-1-2	08/18/2020	1–2	--
	B-17-2-3	08/18/2020	2–3	2.56
	B-17-3-5	08/18/2020	3–5	--
	B-17-5-6	08/18/2020	5–6	1.00 U
B-18	B-18-0-1	08/18/2020	0–1	23.5
	B-18-1-2	08/18/2020	1–2	--
	B-18-2-3	08/18/2020	2–3	2.87
	B-18-3-5	08/18/2020	3–5	--
	B-18-5-6	08/18/2020	5–6	2.80
B-19	B-19-0-1	08/18/2020	0–1	20.9
	B-19-1-2	08/18/2020	1–2	--
	B-19-2-3	08/18/2020	2–3	4.39
	B-19-3-5	08/18/2020	3–5	--
	B-19-5-6	08/18/2020	5–6	6.76

Notes:

All results rounded to three significant figures.

Sample result exceeds site cleanup level of 20 mg/kg.

italics Field duplicate.

-- No data. Sample was archived.

Abbreviation:

mg/kg Milligrams per kilogram

Qualifier:

U Analyte was not detected at the given reporting limit.

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Figures

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Figure 1.1
Vicinity Map

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10/20/2020

Legend

- August 2020 Soil Sample Location Where Arsenic >20 mg/kg
- August 2020 Soil Sample Location Where Arsenic ≤20 mg/kg
- Previous Soil Sample Location Where Arsenic >20 mg/kg
- Previous Soil Sample Location Where Arsenic ≤20 mg/kg
- Upper Sand Aquifer Monitoring Location
- Lower Sand Aquifer Monitoring Location
- Recovery Well Location
- Ditch Bank (2015) or Agricultural Field (2012) Excavation Extent; Ditch Excavations Not Shown
- Approximate Location of Barrier Wall
- Property Fenceline
- Property Boundary (Tax Parcel Data)

Soil Label Key

Location ID → **WD-400'** (Soil) ← Soil Result Designation
Depth Range → 0-6in: 28.6 ← Result (mg/kg)

Groundwater Label Key

Location ID → **MW-34** (GW) ← Groundwater Result Designation
Sample Date (month/year) → 4/20: 7.10 ← Result (µg/L)

Notes:
- Groundwater results are reported in µg/L.
- Soil results are reported in mg/kg; only exceedances are displayed.
- Most recent groundwater result shown for reference.
- Refer to Phase 2 Part 2 Construction Completion Report (Floyd|Snider and AMEC 2013) and Ditch Bank Excavation Construction Completion Report (Floyd|Snider 2016) for soil results.
- Orthoimagery obtained from Nearmap, March 2020.

Abbreviations:
ft = Feet
GW = Groundwater
in = Inches
µg/L = Micrograms per liter
mg/kg = Milligrams per kilogram

N
0 30 60 120
Scale in Feet

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Figure 1.2
August 2020 Soil Arsenic Results

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10/20/2020

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Appendix A
Boring Logs

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PROJECT: B+L	LOCATION: NW corner of landfill east of D-7	WELL ID: B-1	
LOGGED BY: P. Osterhout	COORDINATE SYSTEM:		
DRILLED BY: Cascade - Scott	NORTHING:	EASTING:	
DRILLING EQUIPMENT: 54LT	Approximate ground surface elevation = 19 ft NAVD88		
DRILLING METHOD: DP	TOTAL DEPTH (ft bgs): 15' bgs	DEPTH TO WATER (ft bgs): 7	
SAMPLING METHOD: 4' x 2" disposable liner	BORING DIAMETER: 2"	DRILL DATE: 8/12/20	

Depth (feet)	USCS	Description	Drive	Recovery	#of Blows	PID (ppm)	Sample ID
0		Gravel ground surface					
1							
2		No recovery					
3							
4							
5	SM-GRAVEL	Brown to gray silty/gravelly SAND to sandy/gravelly SILT dry to moist (sample collected from bottom of drive 4-7.5'					
6							
7							B-1-7-7.5 @ 10:36
8		No recovery (7.5-11' bgs)					
9							
10							
11	SP	Gray SAND, saturated s-f gravel-trace f-vf sand					
12							B-1-11-12 @ 1035 Archive
13	SP	Dark brown SAND fine, trace gravel, wet, red sand grains abundant					B-1-12-13 @ 1050
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES: Moved over and re-drilled to re-attempt ~7-11 ft drive (only recovered 4")

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PROJECT: B+L
LOCATION:
WELL ID: B-1
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade - Scott
NORTHING:
EASTING:
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): 8.5
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of Blows	PID (ppm)	Sample ID
0		Gravel ground surface					
5	SW-SM	Gray gravelly, silty SAND dry to moist					
8	▽						(Sample 7-7.5 collected on 8/12)
9	SM	Brown very fine SAND w/ silt, wet trace organics					B-1-8-9 @ 11:05
10		SAA					B-1-9-10 @ 11:07
11	SP	grades to fine SAND, saturated.					B-1-10-12 @ 11:15
12							B-101-12-13 @ 11:17 (Sample 12-13' collected on 8/12)
15		Bottom of boring = 15' bgs					

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▽ = denotes groundwater table

NOTES: 10:50 Decompressed soil for sample interval
Redrill (original on 8/12)

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PROJECT: B+L
LOGGED BY: P. Osterhout
LOCATION: Inside landfill adjacent to D-7
COORDINATE SYSTEM:
WELL ID: B-2

DRILLED BY: Cascade - Scott
NORTHING:
EASTING:

DRILLING EQUIPMENT: 54LT
approx. ground surface elevation = 19 Ft NAVD 88

DRILLING METHOD: DP
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs):

SAMPLING METHOD: 4' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/12/20

Depth (feet)	USCS	Description	Drive	Recovery	# of Blows	PID (ppm)	Sample ID
0		Gravel ground surface					
1							
2		Driller reported very difficult drilling in top 2 ft (likely due to gravel/fill)					
3							
4							
5							
6							
7	SW-SM/SP	Gray silty/gravelly SAND (well graded) black chunk of wood present.					B-2-7-8 @ 1238
8		Becomes a reddish-gray v. fine SAND, saturated.					B-2-8-9 @ 1240
9							B-2-9-10 @ 1242
10							B-2-10-11 @ 1418
11		SAA					Second attempt resulted in same Recovery
12		pushed large gravel in shoe. Low recovery					B-2-11-12 @ 1420
13							
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES:

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PROJECT: BTL	LOCATION: ~30' South of D-7	WELL ID: B-3
LOGGED BY: P. Osterhout	COORDINATE SYSTEM:	
DRILLED BY: Cascade - Scott	NORTHING:	EASTING:
DRILLING EQUIPMENT: 5HLT		
DRILLING METHOD: DP	TOTAL DEPTH (ft bgs): 15.5	DEPTH TO WATER (ft bgs): 8'
SAMPLING METHOD: 4' x 2" disposable liner	BORING DIAMETER: 2"	DRILL DATE: 8/12/18

Depth (feet)	USCS	Description	Drive	Recovery	#of blows	PID (ppm)	Sample ID
0		Gravel ground surface					
4	SW-SM	Brown silty/gravelly w-g SAND, dry to wet, dense (Fill)					
6		Becomes gray (Fill)					B-3-7.5-8 @ 15:12
8	▽	Wet at bottom of core					
9		Highly Saturated gravelly SAND, likely a lot of Stuff				Possibly Stuff	B-3-8-9 @ 15:15 B-3-9-10 @ 15:17
11		~~SP ~4" of~~					B-3-10-12 @ 15:19 (archive)
12	SP	~4" of consolidated material (reddish-gray fine SAND) at bottom of core liner, saturated					B-3-12-13 @ 15:21
13		SAA, trace gravel					
16		Bottom of drive = 15.5' bgs					

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▽ = denotes groundwater table

NOTES:

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PROJECT: BtL	LOCATION: ~20' south of D7	WELL ID: B-3
LOGGED BY: P. Osterhout	COORDINATE SYSTEM:	
DRILLED BY: Cascade - Scott	NORTHING:	EASTING:
DRILLING EQUIPMENT: Geoprobe 7822		
DRILLING METHOD: D.P.	TOTAL DEPTH (ft bgs): 10'	DEPTH TO WATER (ft bgs): 8'
SAMPLING METHOD: 5' x 2" disposable liner	BORING DIAMETER: 2"	DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of Blows	PID (ppm)	Sample ID
0		Gravel ground surface					
1							
2		berm (FILL)					
3							
4							
5							
6	SW-SC	Gray gravelly/clayey SAND w/ silt dry to moist					
7							
8		▽ wet					~~B-3-8~~
9	SM	Brown very fine SAND w/ silt, wet					B103-8-9 @ 11:42
10		Lost ~1' from liner Bottom of drive = 10' bgs					~~B-3~~ original 8-9' sample collected on 8/12 likely stuff and should be discarded
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES: 11:20 Re-drill (original on 8/12)

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PROJECT: BtL
LOCATION:
WELL ID: B-4
LOGGED BY: P.Ost
COORDINATE SYSTEM:
DRILLED BY: Cascade - Scott
NORTHING:
EASTING:
DRILLING EQUIPMENT: ~~SHLT~~ 7822
DRILLING METHOD: DP
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): ~8'
SAMPLING METHOD: ~~4' x 2"~~ disposable liner 5' x 2"
BORING DIAMETER: 2"
DRILL DATE: 8/12/20 - 8/17/20

Depth (feet)	USCS	Description	Drive	Recovery	# of blows	PID (ppm)	Sample ID
0							
1							
2							
3							
4		Hit refusal at 4.5'. Will reattempt w/ larger rig on Monday					
5							
6	SW-SM	Gray gravelly/silty SAND w/ clay, dry					
7	fill	to moist, dense (FILL)					
8	SP	Reddish brown fine SAND, wet					B-4-7.5-8 @ 0912
9							B-4-8-9 @ 0914
10		trace organics (reed?) (stuff)					B-4-9-10 @ 0916
11		Same as above (Soil extruded from liner)					B-4-10-12 @ 0924
12		soil has slight sulfury odor					B-4-12-13 @ 0923
13							
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES:

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PROJECT: B+L	LOCATION: NW berm	WELL ID: B-5	
LOGGED BY: P. Osterhout	COORDINATE SYSTEM:		
DRILLED BY: Cascade – Scott	NORTHING:	EASTING:	
DRILLING EQUIPMENT: 54 LT	approx. ground surface elevation at 19 ft NAVD88		
DRILLING METHOD: DP	TOTAL DEPTH (ft bgs):	DEPTH TO WATER (ft bgs): 8'	
SAMPLING METHOD: 4' x 2" disposable liner	BORING DIAMETER: 2"	DRILL DATE: 8/12/20	

Depth (feet)	USCS	Description	Drive	Recovery	#of Blows	PID (ppm)	Sample ID
0							
1							
2							
3							
4	SW-SM	Brown silty/gravelly SAND, loose, dry					
5		Becomes gray + damp					
6							
7	SM	Becomes brown again and siltier					B-5-7-8 @ 16:15
8 ▽		Chunk of wood at bottom of core.					B-5-8-9 @ 16:28
9	SP	Gray-brown fine SAND, saturated					B-5-9-10 @ 16:30
10							B-5-10-12 @ 16:32
11							
12		SAA, fine to very fine SAND					B-5-12-13 @ 16:47
13							
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▽ = denotes groundwater table

NOTES:

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PROJECT: B+L
LOGGED BY: P. Osterhout
LOCATION: west berm East of R-14
COORDINATE SYSTEM:
WELL ID: B-6
DRILLED BY: Cascade
NORTHING:
EASTING:
DRILLING EQUIPMENT: 7822
DRILLING METHOD: DP
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): 8'
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/17/20

Depth (feet)	USCS	Description	Drive	Recovery	#/6 Blows	PID (ppm)	Sample ID
0							
1							
2							
3							
4							
5	SW-SC	Gray gravelly/silty SAND w/ clay dry (FILL)					
6							
7		becomes wet					B-6-7-8 @ 0952
8							B-6-8-9 @ 0954
9	SP	Reddish brown fine SAND, wet					B-6-9-10 @ 0956
10							
11		SAA, saturated					B-6-10-12 @ 1002
12							
13							B-6-12-13 @ 1004
14							
15		Bottom of boring = 15'					
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES: decompressed recovered soil for sample intervals

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PROJECT: BTL
LOCATION: ~20-25' south of B-6
WELL ID: B-7
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade
NORTHING:
EASTING:
DRILLING EQUIPMENT: 7822 geoprobe
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): 7.5'
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/17/20

Depth (feet)	USCS	Description	Drive	Recovery	#of blows	PID (ppm)	Sample ID
0							
1							
2							
3							
4							
5	SW-SC	Gray gravelly/silty (w-g) SAND w/clay, dry					
6							
7		becomes moist					
8	SP	Dark gray/brown fine SAND, wet to saturated					
9							
10	Wood	Brown to black wood w/ decomposing-like odor possibly fill, unclear if wood waste or tree.					
11	SP	Dark gray/brown fine SAND, Saturated (SMA)					
12							
13							
14							
15							
16							
17							
18							
19							
20							

First att
Second attempt

B-7-7-8 @ 11:09
B-7-8-9 @ 11:11
B-7-9-10 @ 11:13
B-7-10-12 @ 11:00
B-107-11-12 @ 11:02
B-7-12-13 @ 11:05
B-107-12-13 @ 11:07

ABBREVIATIONS:
ft bgs = feet below ground surface
USCS = Unified Soil Classification System
ppm = parts per million
▼ = denotes groundwater table

NOTES: "107" samples are field duplicates

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PROJECT: B+L
LOCATION:
WELL ID: B-8
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade
NORTHING:
EASTING:
DRILLING EQUIPMENT: 7822 geoprobe
DRILLING METHOD: DP
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs):
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/17/20

Depth (feet)	USCS	Description	Drive	Recovery	#of Blows	PID (ppm)	Sample ID
0							
1							
2							
3							
4							
5	SW-SM	Brown gravelly/silty SAND, dry, loose					
6		poor recovery (void in core), saturated					
7	SM/SP	Dark gray fine SAND, saturated					B-8-7-8 @ 1228
8	SP	Brown, coarse SAND, trace fines/gravel, wet,					B-8-8-9 @ 1230
9	SP	then sharp contact to dark reddish/gray fine SAND, saturated					B-8-9-10 @ 1232
10							B-8-10-11 @ 1238
11							
12							B-8-12-13 @ 12:40
13							↳ sample depth approx. Collected from top 9" of core that was still intact (10'-13' blocks like staff/poor recovery).
14		SAA					
15		Bottom of boring					
16							
17							
18							
19							
20							

First attempt / Second attempt

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES: poor recovery / liner jammed in core barrel during first attempt.

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PROJECT: B+L
LOCATION:
WELL ID: B-9
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade
NORTHING:
EASTING:
DRILLING EQUIPMENT: 7822
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): ~~6.5'~~ 7' (8/17)
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/17/20

Depth (feet)	USCS	Description	Drive	Recovery	# of blows	PID (ppm)	Sample ID
0							
1							
2							
3							
4							
5	SW SC	Gray to brown gravelly/clayey SAND w-g. dry to moist					
6							
7		Becomes wet					
	SP	Reddish-dark brown fine SAND, wet trace wood/organic debris at contact					B-9-7-8@1350
8							B-9-8-9@1352
9		Becomes saturated					B-9-9-10@1354
10							B-109-9-10@1420
11		SAT, trace silt					B-9-10-12@1415
12							
13		(Liner splintered, lost ~14-14.5' on ground)					B-9-12-13@1417
14							
15		Bottom of boring = 15' bgs					
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
USCS = Unified Soil Classification System
ppm = parts per million
▼ = denotes groundwater table

NOTES:
13:30

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PROJECT: B+L	LOCATION:	WELL ID: B-10
LOGGED BY: P. Osterhout	COORDINATE SYSTEM:	
DRILLED BY: Cascade	NORTHING:	EASTING:
DRILLING EQUIPMENT: 7822 geoprobe		
DRILLING METHOD: D.P.	TOTAL DEPTH (ft bgs): 15'	DEPTH TO WATER (ft bgs): 7'
SAMPLING METHOD: 5' x 2" disposable liner	BORING DIAMETER: 2"	DRILL DATE: 8/17/20

Depth (feet)	USCS	Description	Drive	Recovery	#of blows	PID (ppm)	Sample ID
0							
1							
2							
3							
4							
5	SW-SM	Brown to gray gravelly/silty SAND (w-g) dry to moist					
6							
7 ▽		Becomes wet					
8	SP	Reddish-dark brown, fine SAND, saturated					B-10-7-8 @ 1436
9							B-10-8-9 @ 1438
10							B-10-9-10 @ 1440
11		SAA (soil extruded from core liner, depths are approximate). trace organic detoris (reeds/rootlets)					B-10-10-12 @ 1456
12							
13							B-10-12-13 @ 1458
14							
15		Bottom of boring = 15' bgs					
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES: decompressed recovered core for sampling intervals.
14:20

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PROJECT: B+L
LOCATION:
WELL ID: B-11
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade
NORTHING:
EASTING:
DRILLING EQUIPMENT: Geoprobe 7822
ground surface elevation approx. 19 ft NAVD88
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): 7'
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	#of blows	PID (ppm)	Sample ID
0		Gravel ground surface					
1		Drilled passed 0-5' (Fill/berm)					
2							
3							
4							
5	SW-SC	Gray gravelly, clayey SAND w/ silt, dry to moist (FILL)					
6							
7		▽ becomes wet					
8	SP	Reddish-dark brown fine SAND, wet trace organics (grass?)					B-11-7-8 @ 0805
9							B-11-8-9 @ 0807
10		SAA, saturated					B-11-9-10 @ 0809
11							B-11-10-12 @ 0814
12							
13							B-11-12-13 @ 0816
14							
15		Bottom of boring = 15' bgs.					
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
USCS = Unified Soil Classification System
ppm = parts per million
▼ = denotes groundwater table

NOTES:
0740

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PROJECT: B+L
LOCATION:
WELL ID: B-12
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade
NORTHING:
EASTING:
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs):
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of Blows	PID (ppm)	Sample ID
0		Gravel ground surface					
1							
2							
3							
4							
5	GM	Gray silty GRAVEL w/ sand (w-g) moist					
6							
7	SW-SC	Gray gravelly/clayey SAND w/ silt (w-g) moist to wet (FILL)					(Field duplicate) B-112-7-8 @ 0825 B-12-7-8 @ 0828
8	SP						
9		Dark brown fine SAND, wet, trace organics					B-12-8-9 @ 0830
10							B-12-9-10 @ 0832
11		SAA, saturated					B-12-10-12 @ 0840
12							
13							B-12-12-13 @ 0842
14							
15		Bottom of boring = 15' bgs					
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
USCS = Unified Soil Classification System
ppm = parts per million
▼ = denotes groundwater table

NOTES:
0815

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PROJECT: B+L
LOCATION:
WELL ID: B-13
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade
NORTHING:
EASTING:
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): 7'
SAMPLING METHOD: 9' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	~~# of Blows~~	~~PID (ppm)~~	Sample ID
0		Gravel					
1							
2		Fill					
3							
4							
5							
6	SW-SC	Gray gravelly, clayey SAND (w-g) w/ silt, moist to wet					
7							
8							B-13-7-8 @ 0905
9	SP	Dark brown fine SAND, wet, trace organics, (rootlets, grass), trace silt					B-13-8-9 @ 0907
10							B-13-9-10 @ 0909
11		SAA, Saturated					B-13-10-12 @ 0911
12							
13							B-13-12-13 @ 0913
14							
15		Bottom of boring = 15' bgs.					
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES:
0840

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PROJECT: B+L
LOGGED BY: P. Osterhout
LOCATION: on berm east of D-8
WELL ID: B-14
COORDINATE SYSTEM:
NORTHING:
EASTING:
DRILLED BY: Cascade - Scott B.
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: Direct push
SAMPLING METHOD: 5' x 2" disposable liner
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): 6.5'
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of Blows	PID (ppm)	Sample ID
0		Gravel ground surface					
5	SW-SC	Gray gravelly, clayey SAND (w-g), dry to moist					
7		Becomes wet					B-14-7-8 @ 0940
8	SP	Dark brown fine SAND, wet					B-14-8-9 @ 0942
9							B-14-9-10 @ 0944
10		SAA, saturated					B-14-10-12 @ 0949
11							
12		Lense of CLAY, plastic, wet					
13	SW	Dark brown SAND f-c w/ gravel (fine) Saturated, trace fines.					B-14-12-13 @ 0951
14							
15		Bottom of boring = 15' bgs					
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES: decompressed soil for sample intervals
0930

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PROJECT: FS+L
LOCATION:
WELL ID: B-15
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade - Scott
NORTHING:
EASTING:
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 15'
DEPTH TO WATER (ft bgs): 7'
SAMPLING METHOD: 5' x 2" disposable liner
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of Blows	PID (ppm)	Sample ID
5	SW-SC	Gray gravelly, clayey SAND (w-g), dry to moist, dense.					
7 ▽		wet					
8	SP	Dark brown fine SAND, wet, trace organics					B-15-7-8 @ 10:08
9							B-15-8-9 @ 10:10
10		trace gravel					B-15-9-10 @ 10:12
11		SAA					B-15-10-12 @ 10:16
12	SW	grades to med SAND w/ some fine-coarse sand and trace gravel to 10% gravel					
13							B-15-12-13 @ 10:18
15		Bottom of boring = 15' bgs					

ABBREVIATIONS:
ft bgs = feet below ground surface
USCS = Unified Soil Classification System
ppm = parts per million
▼ = denotes groundwater table

NOTES: 0956 Decompressed soil for sample intervals

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PROJECT: B+L	LOCATION: 3' away from MW-33	WELL ID: B-16
LOGGED BY: P. Osterhout	COORDINATE SYSTEM:	
DRILLED BY: Cascade - Scott	NORTHING:	EASTING:
DRILLING EQUIPMENT: Geoprobe 7822		
DRILLING METHOD: D.P.	TOTAL DEPTH (ft bgs): 6'	DEPTH TO WATER (ft bgs): 4.5'
SAMPLING METHOD: 5' x 2" disposable liner w/ 1' rod extension	BORING DIAMETER: 2"	DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	~~# of Blows~~	~~PID (ppm)~~	Sample ID
0							
1	ML	Brown, organic-rich SILT, moist					B-16-0-1 @ 1352
2	CH	grades to gray-brown silty CLAY w/ organics (reeds/grass)					B-16-1-2 @ 1353
3		peaty clay to clayey peat, moist, soft					B-16-2-3 @ 1354
4	SP	grades to v.fine SAND, wet					B-16-3-5 @ 1355
5		coarsens down to fine SAND					B-16-5-6 @ 1356
6		-Bottom of boring = 6' bgs					
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface USCS = Unified Soil Classification System
ppm = parts per million ▼ = denotes groundwater table

NOTES: 1330 Decompressed soil for sample intervals

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PROJECT: B+L
LOCATION: ~25' east of MW-33
WELL ID: B-17
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade - Scott
NORTHING:
EASTING:
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 6'
DEPTH TO WATER (ft bgs): 3.5'
SAMPLING METHOD: 5' x 2" disposable liner w/ 1' rod extension
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of Blows	PID (ppm)	Sample ID
0							
1	ML	Brown, organic-rich SILT, moist					B-17-0-1 @ 1414
2	CL	Gray-brown silty CLAY w/ organics, moist					B-17-1-2 @ 1415
3	Pt	clayey PEAT to peaty CLAY					B-17-2-3 @ 1416
4	SP	Dark brown very fine SAND, wet at 3.5'					B-17-3-5 @ 1417
5		Grades to fine SAND					B-17-5-6 @ 1418
6		Bottom of boring = 6' bgs					
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES: 1345 Decompressed soil for sampling
10" = 1'

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PROJECT: B+L
LOGGED BY:
LOCATION: ~25' west of MW-25
COORDINATE SYSTEM:
WELL ID: B-18

DRILLED BY: Cascade - Scott
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: D.P.
SAMPLING METHOD: 5' x 2" disposable liner w/ 1' rod extension

NORTHING:
EASTING:
TOTAL DEPTH (ft bgs): 6'
DEPTH TO WATER (ft bgs): 3.25
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of blows	PID (ppm)	Sample ID
0							
1	ML	Brown, organic-rich SILT, moist rootlets					B-18-0-1 @ 1442
2	CL	Gray silty CLAY w/organics, moist					B-18-1-2 @ 1443
3 ▽		Lense of peat w/ clay, soft, moist					B-18-2-3 @ 1444
4	SP	Grades to very fine SAND, wet – Darkbrown to black					B-18-3-5 @ 1445
5		v. fine sand grades to fine, then medium SAND, w/ trace silt, wet.					
6		– Bottom of boring = 6' bgs					B-18-5-6 @ 1446
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

ABBREVIATIONS:
ft bgs = feet below ground surface
ppm = parts per million
USCS = Unified Soil Classification System
▼ = denotes groundwater table

NOTES: Decompressed soil for sampling interval
1430 1' = 9"

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PROJECT: B+L
LOCATION: ~20' South of MW-33
WELL ID: B-19
LOGGED BY: P. Osterhout
COORDINATE SYSTEM:
DRILLED BY: Cascade - Scott
NORTHING:
EASTING:
DRILLING EQUIPMENT: Geoprobe 7822
DRILLING METHOD: D.P.
TOTAL DEPTH (ft bgs): 6'
DEPTH TO WATER (ft bgs): 4'
SAMPLING METHOD: 5' x 2" disposable liner w/ 1' extension
BORING DIAMETER: 2"
DRILL DATE: 8/18/20

Depth (feet)	USCS	Description	Drive	Recovery	# of blows	PID (ppm)	Sample ID
0		Grassy ground surface					
1	ML	Brown, organic-rich SILT, dry, rootlets					B-19-0-1 @ 1508
2	CL	Gray-brown silty CLAY w/ organics					B-19-1-2 @ 1509
	PT	Peat lense ~2" thick, soft					B-19-2-3 @ 1510
3	SM	Gray brown silty SAND, moist					B-19-3-5 @ 1511
4	SP	Grades from very fine SAND (dark gray brown) to medium SAND, wet					
5		Becomes black					B-19-5-6 @ 1512
6		Bottom of boring = 6' bgs					
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

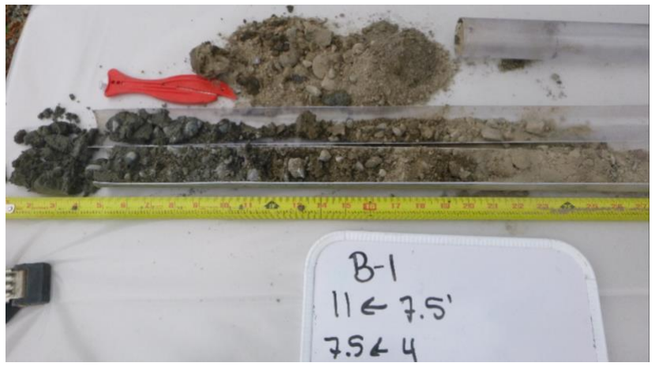
ABBREVIATIONS:
ft bgs = feet below ground surface
USCS = Unified Soil Classification System
ppm = parts per million
▼ = denotes groundwater table

NOTES: 14:40 Decompressed soil for sample intervals
10" = 1'

B&L Woodwaste Site

West Boundary
Soil Investigation Report

Appendix B
Soil Boring Photographs



Photograph 1: B-1.

Photograph 2: B-1.

Photograph 3: B-1.

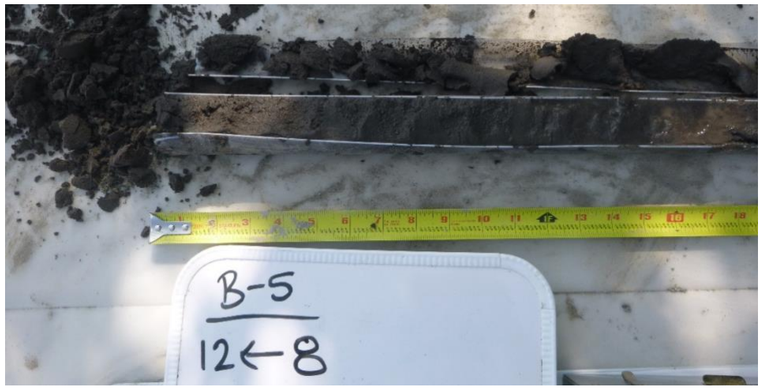
Photograph 4: B-1 re-attempt with 7822D drill rig.

Photograph 5: B-2.

Photograph 6: B-3.

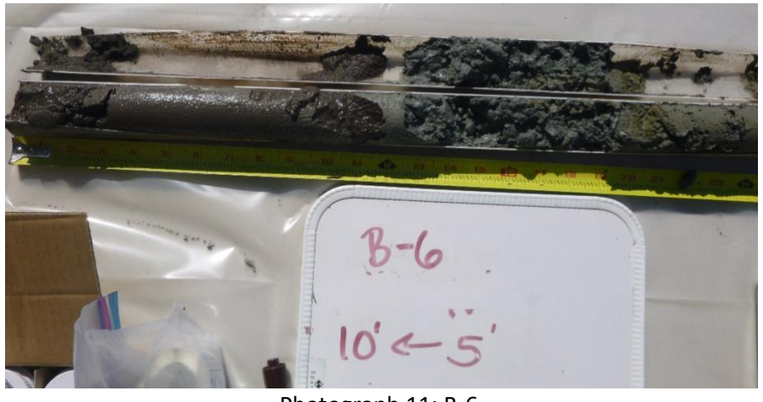
Photograph 7: B-4.

Photograph 8: B-5.



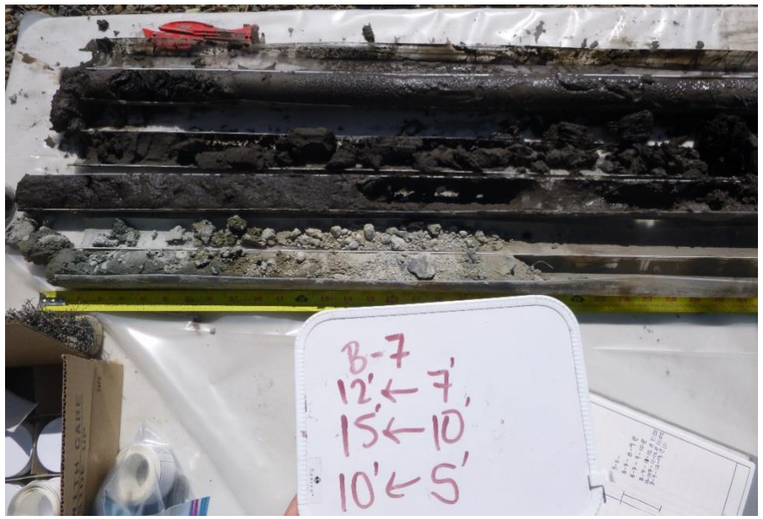
Photograph 9: B-5.

Photograph 10: B-5.

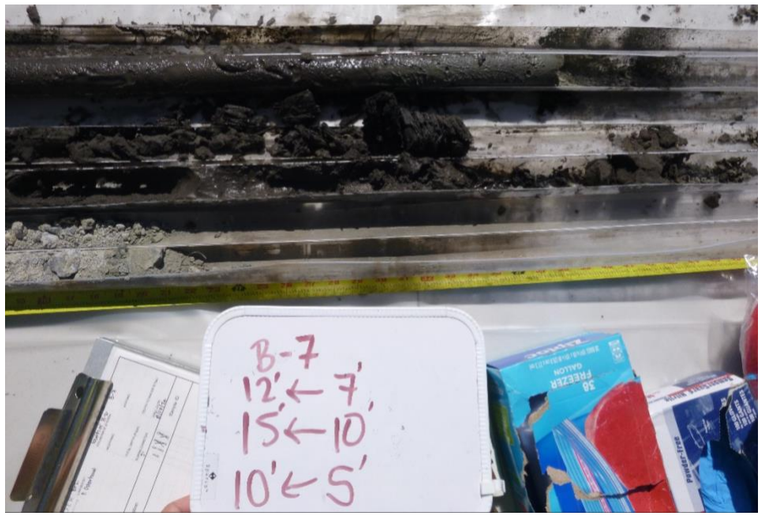


Photograph 11: B-6.

Photograph 12: B-6.



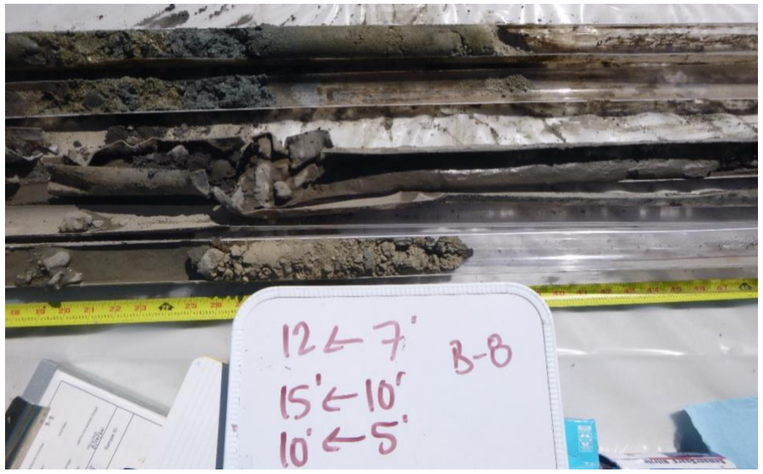
Photograph 13: B-7.



Photograph 14: B-7.

Photograph 15: B-9.

Photograph 16: B-8.

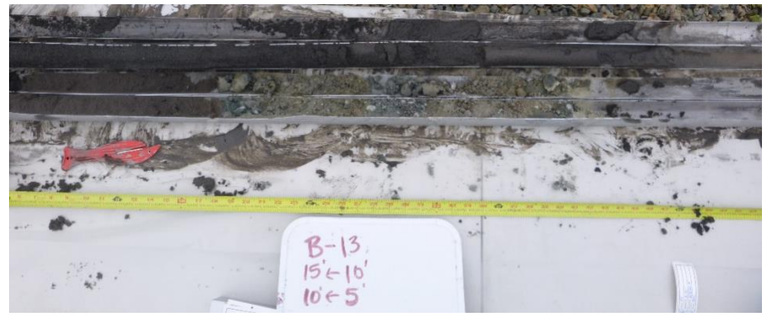


Photograph 17: B-8.

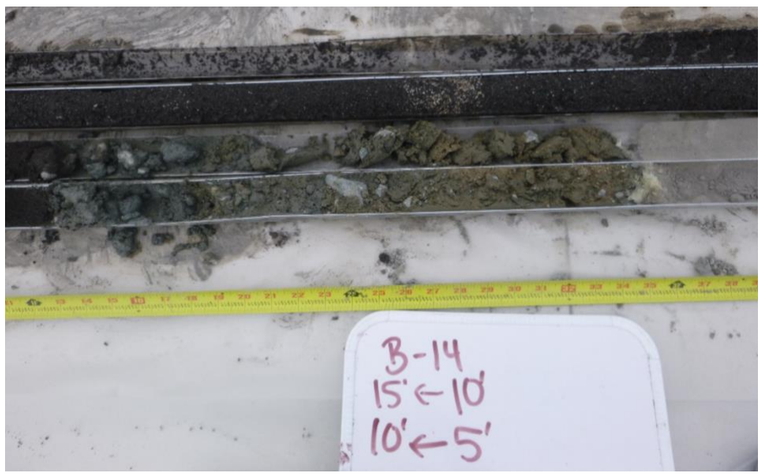
Photograph 18: B-10.

Photograph 19: B-11.

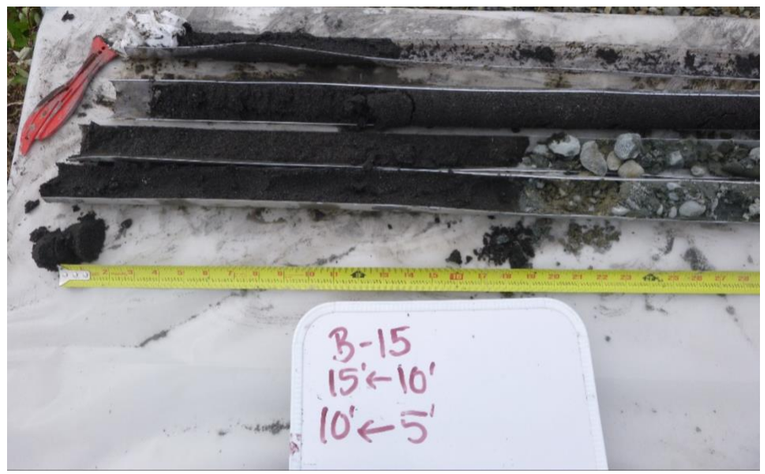
Photograph 20: B-12.



Photograph 21: B-13.



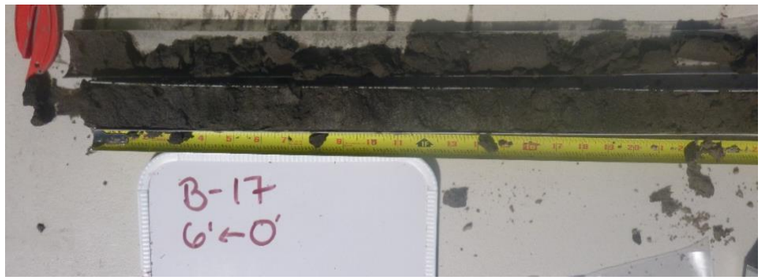
Photograph 22: B-14.



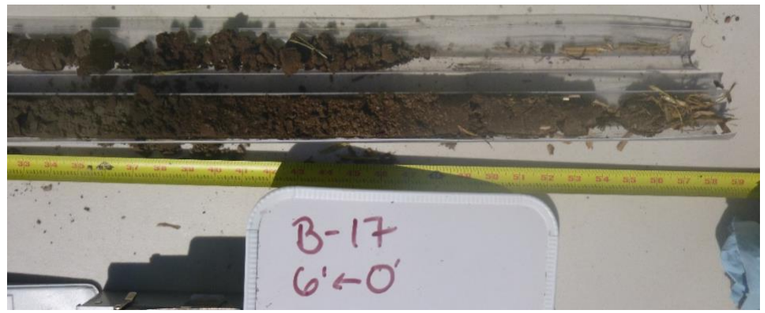
Photograph 23: B-15.

Photograph 24: B-16.

Photograph 25: B-16.



Photograph 26: B-17.



Photograph 27: B-17.

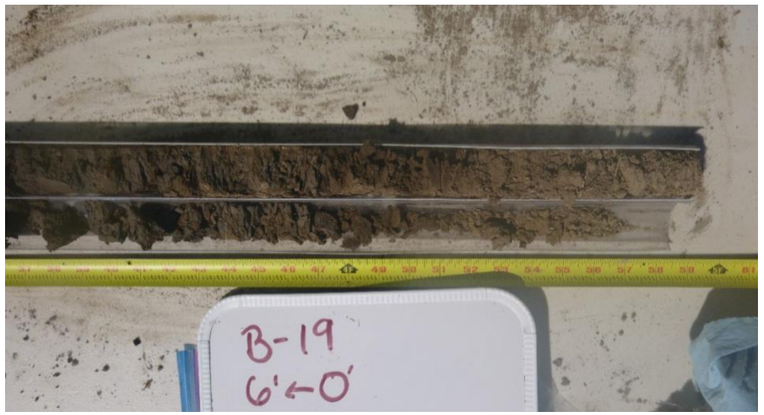
Photograph 28: B-18.

Photograph 29: B-18.

Photograph 30: B-18.

Photograph 31: B-19.

Photograph 32: B-19.



Photograph 33: B-19.

B&L Woodwaste Site

West Boundary
Soil Investigation Report

Appendix C
Analytical Laboratory Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 25, 2020

Brett Beaulieu, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Beaulieu:

Included are the results from the testing of material submitted on August 18, 2020 from the B+L, F&BI 008266 project. There are 73 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
FDS0825R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 18, 2020 by Friedman & Bruya, Inc. from the Floyd-Snider B+L, F&BI 008266 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
008266 -01	B-1-7-7.5
008266 -02	B-1-11-12
008266 -03	B-1-12-13
008266 -04	B-2-7-8
008266 -05	B-2-8-9
008266 -06	B-2-9-10
008266 -07	B-2-10-11
008266 -08	B-2-11-12
008266 -09	B-3-7.5-8
008266 -10	B-3-8-9
008266 -11	B-3-9-10
008266 -12	B-3-10-12
008266 -13	B-3-12-13
008266 -14	B-5-7-8
008266 -15	B-5-8-9
008266 -16	B-5-9-10
008266 -17	B-5-10-12
008266 -18	B-5-12-13
008266 -19	B-4-7.5-8
008266 -20	B-4-8-9
008266 -21	B-4-9-10
008266 -22	B-4-10-12
008266 -23	B-4-12-13
008266 -24	B-6-7-8
008266 -25	B-6-8-9
008266 -26	B-6-9-10
008266 -27	B-6-10-12
008266 -28	B-6-12-13
008266 -29	B-7-7-8
008266 -30	B-7-8-9
008266 -31	B-7-9-10
008266 -32	B-7-11-12
008266 -33	B-107-11-12
008266 -34	B-7-12-13
008266 -35	B-107-12-13

CASE NARRATIVE (Continued)

Laboratory ID	Floyd-Snider
008266 -36	B-8-7-8
008266 -37	B-8-8-9
008266 -38	B-8-9-10
008266 -39	B-8-10-11
008266 -40	B-8-12-13
008266 -41	B-9-7-8
008266 -42	B-9-8-9
008266 -43	B-9-9-10
008266 -44	B-9-10-12
008266 -45	B-9-12-13
008266 -46	B-109-9-10
008266 -47	B-10-7-8
008266 -48	B-10-8-9
008266 -49	B-10-9-10
008266 -50	B-10-12-12
008266 -51	B-10-12-13
008266 -52	B-11-7-8
008266 -53	B-11-8-9
008266 -54	B-11-9-10
008266 -55	B-11-10-12
008266 -56	B-11-12-13
008266 -57	B-112-7-8
008266 -58	B-12-7-8
008266 -59	B-12-8-9
008266 -60	B-12-9-10
008266 -61	B-12-10-12
008266 -62	B-12-12-13
008266 -63	B-13-7-8
008266 -64	B-13-8-9
008266 -65	B-13-9-10
008266 -66	B-13-10-12
008266 -67	B-13-12-13
008266 -68	B-14-7-8
008266 -69	B-14-8-9
008266 -70	B-14-9-10

CASE NARRATIVE (Continued)

Laboratory ID	Floyd-Snider
008266 -71	B-14-10-12
008266 -72	B-14-12-13
008266 -73	B-15-7-8
008266 -74	B-15-8-9
008266 -75	B-15-9-10
008266 -76	B-15-10-12
008266 -77	B-15-12-13
008266 -78	B-1-8-9
008266 -79	B-1-9-10
008266 -80	B-1-10-12
008266 -81	B-101-12-13
008266 -82	B-103-8-9
008266 -83	B-16-0-1
008266 -84	B-16-1-2
008266 -85	B-16-2-3
008266 -86	B-16-3-5
008266 -87	B-16-5-6
008266 -88	B-17-0-1
008266 -89	B-17-1-2
008266 -90	B-17-2-3
008266 -91	B-17-3-5
008266 -92	B-17-5-6
008266 -93	B-18-0-1
008266 -94	B-18-1-2
008266 -95	B-18-2-3
008266 -96	B-18-3-5
008266 -97	B-18-5-6
008266 -98	B-19-0-1
008266 -99	B-19-1-2
008266 -100	B-19-2-3
008266 -101	B-19-3-5
008266 -102	B-19-5-6

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-1-7-7.5	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-01
Date Analyzed:	08/20/20	Data File:	008266-01.080
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.08

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-1-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-03
Date Analyzed:	08/20/20	Data File:	008266-03.083
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.33

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-2-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-04
Date Analyzed:	08/20/20	Data File:	008266-04.084
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.39

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-2-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-06
Date Analyzed:	08/20/20	Data File:	008266-06.085
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.64

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-2-11-12	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-08
Date Analyzed:	08/20/20	Data File:	008266-08.086
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-3-7.5-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-09
Date Analyzed:	08/20/20	Data File:	008266-09.087
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.08

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-3-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-11
Date Analyzed:	08/20/20	Data File:	008266-11.090
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.38

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-3-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-13
Date Analyzed:	08/20/20	Data File:	008266-13.091
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.38

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-5-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-14
Date Analyzed:	08/20/20	Data File:	008266-14.092
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.65

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-5-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-16
Date Analyzed:	08/20/20	Data File:	008266-16.093
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.89

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-5-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-18
Date Analyzed:	08/20/20	Data File:	008266-18.094
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.30

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-4-7.5-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-19
Date Analyzed:	08/20/20	Data File:	008266-19.095
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.53

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-4-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-21
Date Analyzed:	08/20/20	Data File:	008266-21.096
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.36

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-4-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-23
Date Analyzed:	08/20/20	Data File:	008266-23.097
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-6-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-24
Date Analyzed:	08/20/20	Data File:	008266-24.098
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.65

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-6-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-26
Date Analyzed:	08/20/20	Data File:	008266-26.099
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.87

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-6-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-28
Date Analyzed:	08/20/20	Data File:	008266-28.129
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.19

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-7-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-29
Date Analyzed:	08/20/20	Data File:	008266-29.130
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.21

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-7-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-31
Date Analyzed:	08/20/20	Data File:	008266-31.131
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.52

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-7-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-34
Date Analyzed:	08/20/20	Data File:	008266-34.136
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.01

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-107-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-35
Date Analyzed:	08/20/20	Data File:	008266-35.137
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.01

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-8-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-36
Date Analyzed:	08/20/20	Data File:	008266-36.140
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.35

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-8-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-38
Date Analyzed:	08/20/20	Data File:	008266-38.141
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.24

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-8-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-40
Date Analyzed:	08/20/20	Data File:	008266-40.142
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.34

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-9-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-41
Date Analyzed:	08/20/20	Data File:	008266-41.143
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	26.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-9-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-43
Date Analyzed:	08/20/20	Data File:	008266-43.146
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.22

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-9-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-45
Date Analyzed:	08/20/20	Data File:	008266-45.147
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.32

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-109-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-46
Date Analyzed:	08/20/20	Data File:	008266-46.148
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.99

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-10-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-47
Date Analyzed:	08/20/20	Data File:	008266-47.149
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.27

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-10-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-49
Date Analyzed:	08/20/20	Data File:	008266-49.150
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.54

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-10-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-51
Date Analyzed:	08/20/20	Data File:	008266-51.151
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.00

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-11-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-52
Date Analyzed:	08/20/20	Data File:	008266-52.152
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.51

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-11-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-54
Date Analyzed:	08/20/20	Data File:	008266-54.153
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.18

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-11-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-56
Date Analyzed:	08/20/20	Data File:	008266-56.154
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.34

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-112-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-57
Date Analyzed:	08/20/20	Data File:	008266-57.155
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	16.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-12-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-58
Date Analyzed:	08/20/20	Data File:	008266-58.158
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	12.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-12-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-60
Date Analyzed:	08/20/20	Data File:	008266-60.159
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.78

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-12-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-62
Date Analyzed:	08/20/20	Data File:	008266-62.160
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.25

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-13-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-63
Date Analyzed:	08/20/20	Data File:	008266-63.161
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.97

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-13-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-65
Date Analyzed:	08/21/20	Data File:	008266-65.062
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-13-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-67
Date Analyzed:	08/21/20	Data File:	008266-67.063
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.47

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-14-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-68
Date Analyzed:	08/21/20	Data File:	008266-68.066
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	6.00

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-14-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-70
Date Analyzed:	08/21/20	Data File:	008266-70.067
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.56

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-14-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-72
Date Analyzed:	08/21/20	Data File:	008266-72.068
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.56

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-15-7-8	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-73
Date Analyzed:	08/21/20	Data File:	008266-73.085
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.64

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-15-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-75
Date Analyzed:	08/21/20	Data File:	008266-75.086
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.36

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-15-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-77
Date Analyzed:	08/21/20	Data File:	008266-77.087
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.41

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-1-9-10	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-79
Date Analyzed:	08/21/20	Data File:	008266-79.088
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.15

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-101-12-13	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-81
Date Analyzed:	08/21/20	Data File:	008266-81.089
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.55

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-16-0-1	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-83
Date Analyzed:	08/21/20	Data File:	008266-83.090
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	23.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-16-2-3	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-85
Date Analyzed:	08/21/20	Data File:	008266-85.091
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.53

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-16-5-6	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-87
Date Analyzed:	08/21/20	Data File:	008266-87.094
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.36

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-17-0-1	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-88
Date Analyzed:	08/21/20	Data File:	008266-88.095
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	29.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-17-2-3	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-90
Date Analyzed:	08/21/20	Data File:	008266-90.096
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.56

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-17-5-6	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-92
Date Analyzed:	08/21/20	Data File:	008266-92.097
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-18-0-1	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-93
Date Analyzed:	08/21/20	Data File:	008266-93.098
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	23.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-18-2-3	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-95
Date Analyzed:	08/21/20	Data File:	008266-95.099
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.87

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-18-5-6	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-97
Date Analyzed:	08/21/20	Data File:	008266-97.100
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.80

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-19-0-1	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-98
Date Analyzed:	08/21/20	Data File:	008266-98.101
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	20.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-19-2-3	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-100
Date Analyzed:	08/20/20	Data File:	008266-100.162
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.39

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-19-5-6	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	008266-102
Date Analyzed:	08/20/20	Data File:	008266-102.195
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	6.76

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	I0-483 mb
Date Analyzed:	08/20/20	Data File:	I0-483 mb.078
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	I0-484 mb
Date Analyzed:	08/20/20	Data File:	I0-484 mb.134
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	I0-485 mb
Date Analyzed:	08/21/20	Data File:	I0-485 mb.060
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	B+L, F&BI 008266
Date Extracted:	08/20/20	Lab ID:	I0-486 mb
Date Analyzed:	08/20/20	Data File:	I0-486 mb.070
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Date of Report: 08/25/20
Date Received: 08/18/20
Project: B+L, F&BI 008266

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 008266-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	1.85	90	91	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	85	80-120

Date of Report: 08/25/20
Date Received: 08/18/20
Project: B+L, F&BI 008266

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 008266-35 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	1.53	90	85	75-125	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	87	80-120

Date of Report: 08/25/20
Date Received: 08/18/20
Project: B+L, F&BI 008266

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 008266-67 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	1.15	84	83	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	85	80-120

Date of Report: 08/25/20
Date Received: 08/18/20
Project: B+L, F&BI 008266

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 008266-100 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	3.20	86	88	75-125	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	86	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

008266

SAMPLE CHAIN OF CUSTODY

ME 08/18/26 BIY

Page # 1 of 11

Report To Brett Beaulieu
Company Floyd Snider
Address 601 Union St, Ste 1600
City, State, ZIP Seattle, WA 98101
Phone 292-2070 Email Brett.Beaulieu@FloydSnider.com

SAMPLERS (signature) Pamela Osterhout

PROJECT NAME: B+L
PO #:

REMARKS:
Project specific RLs? - Yes / No

INVOICE TO:

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- [ ] Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Total Arsenic	Archive			Notes
B-1-7-7.5	01	8/12/20	10:36	S	1								X				
B-1-11-12	02		10:35	S	1									X			
B-1-12-13	03		10:50	S	1								X				
B-2-7-8	04		1238	S	1								X				
B-2-8-9	05		1240	S	1									X			
B-2-9-10	06		1242	S	1								X				
B-2-10-11	07		1418	S	1									X			
B-2-11-12	08		1420	S	1								X				
B-3-7.5-8	09		1512	S	1								X				
B-3-8-9	10		1515	S	1									X			

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Pamela Osterhout	Pamela Osterhout	FLS	8/18/20	1805
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:					

Samples received at 4 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

008266

SAMPLE CHAIN OF CUSTODY

ME 08/18/20

BTL

Page # 2 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature) P. Osterhout

PROJECT NAME: BTL

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- (Default: Dispose after 30 days)

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-3-9-10	11	8/12/20	1517	S	1								X				
B-3-10-12	12		1519	S	1									X			
B-3-12-13	13		1521	S	1								X				
B-5-7-8	14		1615	S	1								X				
B-5-8-9	15		1628	S	1									X			
B-5-9-10	16		1630	S	1								X				
B-5-10-12	17		1632	S	1									X			
B-5-12-13	18		1647	S	1								X				
B-4-7.5-8	19	8/17/20	0912	S	1								X				
B-4-8-9	20	8/17/20	0914	S	1									X			

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P. Osterhout	P. Osterhout	FIS	8/18	1915
Received by:	RZ	Bisrat Tadesse	FBI	1	1
Relinquished by:					
Received by:			Samples received at	4 °C	

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20 BIY

Page # 3 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [X] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- (Default: Dispose after 30 days)

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-4-9-10	21	8/17/20	0916	S	1								X				
B-4-10-12	22		0921		1									X			
B-4-12-13	23		0923		1								X				
B-6-7-8	24		0952		1								X				
B-6-8-9	25		0954		1									X			
B-6-9-10	26		0956		1								X				
B-6-10-12	27		1002		1									X			
B-6-12-13	28		1004		1								X				
B-7-7-8	29		1109		1								X				
B-7-8-9	30		11:11		1									X			

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	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	F/S	8/18	1815
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

008266

SAMPLE CHAIN OF CUSTODY

ME 08/18/20

Page # 4 of 11

BTY

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-7-9-10	31	8/17/20	11:13	S	1								X				
B-7-11-12	32		11:00		1									X			
B-107-11-12	33		11:02		1									X			
B-7-12-13	34		11:05		1								X				
B-107-12-13	35		11:07		1								X				
B-8-7-8	36		1228		1								X				
B-8-8-9	37		1230		1									X			
B-8-9-10	38		1232		1								X				
B-8-10-11	39		1238		1									X			
B-8-12-13	40	↓	1240	↓	1								X				

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhaut	FS	8/19	1915
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20 BIY

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Report To Brett Beaulieu

Company Floyd Snider

Address

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Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-9-7-8	41	8/17/20	1350	S	1								X				
B-9-8-9	42		1352		1									X			
B-9-9-10	43		1354		1								X				
B-9-10-12	44		1415		1									X			
B-9-12-13	45		1417		1								X				
B-109-9-10	46		1420		1								X				
B-10-7-8	47		1436		1								X				
B-10-8-9	48		1438		1									X			
B-10-9-10	49		1440		1								X				
B-10-12-12	50	↓	1456	↓	1									X			

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	F/S	8/18	1815
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20

Page # 6 of 11 BTY

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-10-12-13	51	8/17/20	1458	S	1								X				
B-11-7-8	52	8/18/20	0805		1								X				
B-11-8-9	53		0807		1									X			
B-11-9-10	54		0809		1								X				
B-11-10-12	55		0814		1									X			
B-11-12-13	56		0816		1								X				
B-112-7-8	57		0825		1								X				
B-12-7-8	58		0828		1								X				
B-12-8-9	59		0830		1									X			
B-12-9-10	60		0832		1								X				

ANALYSES REQUESTED

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P Osterhout	P. Osterhout	F/S	8/18	1815
Received by:		Biskat Tadesse	FBI	"	1
Relinquished by:					
Received by:			Samples received at	4 °C	

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20 BIY

Page # 7 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: BTL

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [X] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-12-10-12	61	8/18/20	0840	S	1									X			
B-12-12-13	62		0842		1								X				
B-13-7-8	63		0905		1								X				
B-13-8-9	64		0907		1									X			
B-13-9-10	65		0909		1								X				
B-13-10-12	66		0911		1									X			
B-13-12-13	67		0913		1								X				
B-14-7-8	68		0940		1								X				
B-14-8-9	69		0942		1									X			
B-14-9-10	70	↓	0944	↓	1								X				

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	F/S	8/18	1815
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20

BIY

Page # 8 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*) P. Osterhout

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- X Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- (Default) Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-14-10-12	71	8/18/20	0949	S	1									X			
B-14-12-13	72		0951		1								X				
B-15-7-8	73		1008		1								X				
B-15-8-9	74		1010		1									X			
B-15-9-10	75		1012		1								X				
B-15-10-12	76		1016		1									X			
B-15-12-13	77		1018		1								X				
B-1-8-9	78		1105		1									X			
B-1-9-10	79		1107		1								X				
B-1-10-12	80		1115		1									X			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: P. Osterhout	P. Osterhout	F/S	8/18	1815
Received by:	BISRAT TADESSE	FBI	1	1
Relinquished by:				
Received by:		Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20 BDY

008266

Page # 9 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [X] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- (Default): Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-101-12-13	81	8/18/20	1117	S	1								X				
B-103-8-9	82		1142		1									X			
B-16-0-1	83		1352		1								X				
B-16-1-2	84		1353		1									X			
B-16-2-3	85		1354		1								X				
B-16-3-5	86		1355		1									X			
B-16-5-6	87		1356		1								X				
B-17-0-1	88		1414		1								X				
B-17-1-2	89		1415		1									X			
B-17-2-3	90		1416		1								X				

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	FIS	8/18	1015
Received by:		BISHAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

008766

ME 08/18/20 BZY

Page # 10 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature) P. Osterhout

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
						ANALYSES REQUESTED											
B-17-3-5	91	8/18/20	1417	S	1									X			
B-17-5-6	92		1418		1								X				
B-18-0-1	93		1442		1								X				
B-18-1-2	94		1443		1									X			
B-18-2-3	95		1444		1								X				
B-18-3-5	96		1445		1									X			
B-18-5-6	97		1446		1								X				
B-19-0-1	98		1508		1								X				
B-19-1-2	99		1509		1									X			
B-19-2-3	100		1510		1								X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: P. Osterhout	P. Osterhout	F/S	8/18	1815
Received by:	BISRAT TADESSE	FBI	1	1
Relinquished by:				
Received by:		Samples received at 4 °C		

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008266

SAMPLE CHAIN OF CUSTODY

ME 08/18/20

BIY

Page # 11 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature)

PROJECT NAME: BtL

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [X] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-19-3-5	101	8/18/20	1511	S	1									X			
B-19-5-6	102	8/18/20	1512	S	1								X				

PO

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P. Osterhout	F/S	8/18	1815
Received by:	BRAT TARSE	FBI	1	1
Relinquished by:				
Received by:		Samples received at 4 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
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Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 8, 2020

Brett Beaulieu, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Mr Beaulieu:

Included are the additional results from the testing of material submitted on August 18, 2020 from the B+L, F&BI 008266 project. There are 8 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
FDS0908R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 18, 2020 by Friedman & Bruya, Inc. from the Floyd-Snider B+L, F&BI 008266 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
008266 -01	B-1-7-7.5
008266 -02	B-1-11-12
008266 -03	B-1-12-13
008266 -04	B-2-7-8
008266 -05	B-2-8-9
008266 -06	B-2-9-10
008266 -07	B-2-10-11
008266 -08	B-2-11-12
008266 -09	B-3-7.5-8
008266 -10	B-3-8-9
008266 -11	B-3-9-10
008266 -12	B-3-10-12
008266 -13	B-3-12-13
008266 -14	B-5-7-8
008266 -15	B-5-8-9
008266 -16	B-5-9-10
008266 -17	B-5-10-12
008266 -18	B-5-12-13
008266 -19	B-4-7.5-8
008266 -20	B-4-8-9
008266 -21	B-4-9-10
008266 -22	B-4-10-12
008266 -23	B-4-12-13
008266 -24	B-6-7-8
008266 -25	B-6-8-9
008266 -26	B-6-9-10
008266 -27	B-6-10-12
008266 -28	B-6-12-13
008266 -29	B-7-7-8
008266 -30	B-7-8-9
008266 -31	B-7-9-10
008266 -32	B-7-11-12
008266 -33	B-107-11-12
008266 -34	B-7-12-13
008266 -35	B-107-12-13
008266 -36	B-8-7-8

CASE NARRATIVE (continued)

Laboratory ID	Floyd-Snider
008266 -37	B-8-8-9
008266 -38	B-8-9-10
008266 -39	B-8-10-11
008266 -40	B-8-12-13
008266 -41	B-9-7-8
008266 -42	B-9-8-9
008266 -43	B-9-9-10
008266 -44	B-9-10-12
008266 -45	B-9-12-13
008266 -46	B-109-9-10
008266 -47	B-10-7-8
008266 -48	B-10-8-9
008266 -49	B-10-9-10
008266 -50	B-10-12-12
008266 -51	B-10-12-13
008266 -52	B-11-7-8
008266 -53	B-11-8-9
008266 -54	B-11-9-10
008266 -55	B-11-10-12
008266 -56	B-11-12-13
008266 -57	B-112-7-8
008266 -58	B-12-7-8
008266 -59	B-12-8-9
008266 -60	B-12-9-10
008266 -61	B-12-10-12
008266 -62	B-12-12-13
008266 -63	B-13-7-8
008266 -64	B-13-8-9
008266 -65	B-13-9-10
008266 -66	B-13-10-12
008266 -67	B-13-12-13
008266 -68	B-14-7-8
008266 -69	B-14-8-9
008266 -70	B-14-9-10
008266 -71	B-14-10-12
008266 -72	B-14-12-13
008266 -73	B-15-7-8
008266 -74	B-15-8-9
008266 -75	B-15-9-10

CASE NARRATIVE (continued)

Laboratory ID	Floyd-Snider
008266 -76	B-15-10-12
008266 -77	B-15-12-13
008266 -78	B-1-8-9
008266 -79	B-1-9-10
008266 -80	B-1-10-12
008266 -81	B-101-12-13
008266 -82	B-103-8-9
008266 -83	B-16-0-1
008266 -84	B-16-1-2
008266 -85	B-16-2-3
008266 -86	B-16-3-5
008266 -87	B-16-5-6
008266 -88	B-17-0-1
008266 -89	B-17-1-2
008266 -90	B-17-2-3
008266 -91	B-17-3-5
008266 -92	B-17-5-6
008266 -93	B-18-0-1
008266 -94	B-18-1-2
008266 -95	B-18-2-3
008266 -96	B-18-3-5
008266 -97	B-18-5-6
008266 -98	B-19-0-1
008266 -99	B-19-1-2
008266 -100	B-19-2-3
008266 -101	B-19-3-5
008266 -102	B-19-5-6

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-9-8-9	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	09/03/20	Lab ID:	008266-42
Date Analyzed:	09/03/20	Data File:	008266-42.170
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	7.57

Analysis For Total Metals By EPA Method 6020B

Client ID:	B-9-10-12	Client:	Floyd-Snider
Date Received:	08/18/20	Project:	B+L, F&BI 008266
Date Extracted:	09/03/20	Lab ID:	008266-44
Date Analyzed:	09/03/20	Data File:	008266-44.171
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.31

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	B+L, F&BI 008266
Date Extracted:	09/03/20	Lab ID:	I0-513 mb2
Date Analyzed:	09/03/20	Data File:	I0-513 mb2.108
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1

Date of Report: 09/08/20
Date Received: 08/18/20
Project: B+L, F&BI 008266

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 009022-41 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	9.40	91	98	75-125	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	87	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

008266

SAMPLE CHAIN OF CUSTODY

ME 08/18/20 BIY

Page # 1 of 11

Report To Brett Beaulieu
Company Floyd Snider
Address 601 Union St, Ste 1600
City, State, ZIP Seattle, WA 98101
Phone 206 292-2078 Email Brett.Beaulieu@FloydSnider.com

SAMPLERS (signature) [signature]

PROJECT NAME: B+L

PO #:

REMARKS:

Project specific RLs? - Yes / No

INVOICE TO:

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
(Default): Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Total Arsenic	Archive			Notes
B-1-7-7.5	01	8/12/20	10:36	S	1								X				
B-1-11-12	02	"	10:35	S	1									X			
B-1-12-13	03	"	10:50	S	1								X				
B-2-7-8	04	"	1238	S	1								X				
B-2-8-9	05	"	1240	S	1									X			
B-2-9-10	06	"	1242	S	1								X				
B-2-10-11	07	"	1418	S	1									X			
B-2-11-12	08	"	1420	S	1								X				
B-3-7.5-8	09	"	1512	S	1								X				
B-3-8-9	10	"	1515	S	1									X			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Pamela Osterhout	F|S	8/18/20	1805
Received by: [signature]	BISRAT TADESSE	FBI	1	1
Relinquished by:				
Received by:				

Samples received at 4 °C

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20

BTL

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Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature) P. Osterhout

PROJECT NAME: BTL

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- (Default: Dispose after 30 days)

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-3-9-10	11	8/12/20	1517	S	1								X				
B-3-10-12	12		1519	S	1									X			
B-3-12-13	13		1521	S	1								X				
B-5-7-8	14		1615	S	1								X				
B-5-8-9	15		1628	S	1									X			
B-5-9-10	16		1630	S	1								X				
B-5-10-12	17		1632	S	1									X			
B-5-12-13	18		1647	S	1								X				
B-4-7.5-8	19	8/17/20	0912	S	1								X				
B-4-8-9	20	8/17/20	0914	S	1									X			

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P. Osterhout	P. Osterhout	FS	8/18	1915
Received by:	R Z	Bisrat Tadesse	FS	1	1
Relinquished by:					
Received by:			Samples received at	4 °C	

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20

BIY

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Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature)

PROJECT NAME: BtL

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- X Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
						ANALYSES REQUESTED											
B-4-9-10	21	8/17/20	0916	S	1								X				
B-4-10-12	22		0921		1									X			
B-4-12-13	23		0923		1								X				
B-6-7-8	24		0952		1								X				
B-6-8-9	25		0954		1									X			
B-6-9-10	26		0956		1								X				
B-6-10-12	27		1002		1									X			
B-6-12-13	28		1004		1								X				
B-7-7-8	29		1109		1								X				
B-7-8-9	30	↓	11:11	↓	1									X			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P. Osterhout	F/S	8/18	1015
Received by:	BISRAT TADESSE	FBI	1	1
Relinquished by:				
Received by:		Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20

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BTY

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- [ ] Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-7-9-10	31	8/17/20	11:13	S	1								X				
B-7-11-12	32		11:00		1									X			
B-107-11-12	33		11:02		1									X			
B-7-12-13	34		11:05		1								X				
B-107-12-13	35		11:07		1								X				
B-8-7-8	36		1228		1								X				
B-8-8-9	37		1230		1									X			
B-8-9-10	38		1232		1								X				
B-8-10-11	39		1238		1									X			
B-8-12-13	40	↓	1240	↓	1								X				

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	F/S	8/19	1915
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20 BIY

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Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*) P. Osterhout

PROJECT NAME: BTL

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [X] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-9-7-8	41	8/17/20	1350	S	1								X				
B-9-8-9	42		1352		1								(X)	X			(X) - per BB 9/2/20 ME
B-9-9-10	43		1354		1								X				
B-9-10-12	44		1415		1								(X)	X			
B-9-12-13	45		1417		1								X				
B-109-9-10	46		1420		1								X				
B-10-7-8	47		1436		1								X				
B-10-8-9	48		1438		1									X			
B-10-9-10	49		1440		1								X				
B-10-12-12	50	↓	1456	↓	1									X			

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	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P. Osterhout	P. Osterhout	F/S	8/18	1815
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20

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Report To Brett Beaulieu

Company Floyd Snider

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Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-10-12-13	51	8/17/20	1458	S	1								X				
B-11-7-8	52	8/18/20	0805		1								X				
B-11-8-9	53		0807		1									X			
B-11-9-10	54		0809		1								X				
B-11-10-12	55		0814		1									X			
B-11-12-13	56		0816		1								X				
B-112-7-8	57		0825		1								X				
B-12-7-8	58		0828		1								X				
B-12-8-9	59		0830		1									X			
B-12-9-10	60	↓	0832	↓	1								X				

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhaut	FIS	8/18	1815
Received by:		BISKAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at	4 °C	

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SAMPLE CHAIN OF CUSTODY

ME 08/18/20 BIY

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Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [X] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-12-10-12	61	8/18/20	0840	S	1									X			
B-12-12-13	62		0842		1								X				
B-13-7-8	63		0905		1								X				
B-13-8-9	64		0907		1									X			
B-13-9-10	65		0909		1								X				
B-13-10-12	66		0911		1									X			
B-13-12-13	67		0913		1								X				
B-14-7-8	68		0940		1								X				
B-14-8-9	69		0942		1									X			
B-14-9-10	90	↓	0944	↓	1								X				

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	F/S	8/18	1815
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
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008266

SAMPLE CHAIN OF CUSTODY

ME 08/18/20

BIY

Page # 8 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (*signature*)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- (Default) Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-14-10-12	71	8/18/20	0949	S	1									X			
B-14-12-13	72		0951		1								X				
B-15-7-8	73		1008		1								X				
B-15-8-9	74		1010		1									X			
B-15-9-10	75		1012		1								X				
B-15-10-12	76		1016		1									X			
B-15-12-13	77		1018		1								X				
B-1-8-9	78		1105		1									X			
B-1-9-10	79		1107		1								X				
B-1-10-12	80	↓	1115	↓	1									X			

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	F/S	8/18	1815
Received by:		Polsrat Tadesse	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

0082266 ME 08/18/20 BZ4

Page # 9 of 11

Report To Brett Beaulieu
Company Floyd Snider
Address
City, State, ZIP see page 1
Phone Email

SAMPLERS (signature)
PROJECT NAME: B+L
PO #
REMARKS
Project specific RLs? - Yes / No
INVOICE TO

TURNAROUND TIME
X Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-101-12-13	81	8/18/20	1117	S	1								X				
B-103-8-9	82		1142		1									X			
B-16-0-1	83		1352		1								X				
B-16-1-2	84		1353		1									X			
B-16-2-3	85		1354		1								X				
B-16-3-5	86		1355		1									X			
B-16-5-6	87		1356		1								X				
B-17-0-1	88		1414		1								X				
B-17-1-2	89		1415		1									X			
B-17-2-3	90		1416		1								X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P. Osterhaut	FIS	8/18	1605
Received by:	BIKRAM TAMRAKAR	FBI	1	1
Relinquished by:				
Received by:		Samples received at 4 °C		

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SAMPLE CHAIN OF CUSTODY

008266

ME 08/18/20 BIY

Page # 10 of 11

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-17-3-5	91	8/18/20	1417	S	1									X			
B-17-5-6	92		1418		1								X				
B-18-0-1	93		1442		1								X				
B-18-1-2	94		1443		1									X			
B-18-2-3	95		1444		1								X				
B-18-3-5	96		1445		1									X			
B-18-5-6	97		1446		1								X				
B-19-0-1	98		1508		1								X				
B-19-1-2	99		1509		1									X			
B-19-2-3	100		1510		1								X				

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		P. Osterhout	F/S	8/18	1815
Received by:		BISRAT TADESSE	FBI	1	1
Relinquished by:					
Received by:			Samples received at 4 °C		

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Seattle, WA 98119-2029
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0082766

SAMPLE CHAIN OF CUSTODY

ME 08/18/20

BEH

Page # 1 of 1

Report To Brett Beaulieu

Company Floyd Snider

Address

City, State, ZIP see page 1

Phone Email

SAMPLERS (signature)

PROJECT NAME: B+L

PO #

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic	Archive			Notes
B-19-3-5	101	8/18/20	1511	S	1									X			
B-19-5-6	102	8/18/20	1512	S	1								X				

PO

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	P. Osterhout	F/S	8/18	1815
Received by:	BRAT TABBE	FBI	1	1
Relinquished by:				
Received by:		Samples received at	4 °C	

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B&L Woodwaste Site

West Boundary
Soil Investigation Report

Appendix D
Statistical Evaluation Output

1 SD-50’-C-2 In Situ Arsenic Concentrations in vicinity of South and West Ditch
1 WD-13.5’-W-4
1 WD-25’-W-4
1 B-2-11-12
1 B-4-12-13
1 B-13-9-10
1 B-17-5-6
1.01 WD-13.5'-C-
1.07 SD-183’-N-E
1.15 B-1-9-10
1.18 B-11-9-10
1.23 SD-225'-C
1.25 B-12-12-13
1.31 B-9-10-12
1.32 B-9-12-13
1.33 B-1-12-13
1.34 B-8-12-13
1.34 B-11-12-13
1.38 B-3-12-13
1.47 B-13-12-13
1.52 B-7-9-10
1.54 B-10-9-10
1.55 B-101-12-13
1.64 B-2-9-10
1.65 B-5-7-8
1.71 SD-183’-N-5
1.78 SD-250'-C
1.78 B-12-9-10
1.84 AV-20-3-4
1.88 AV-19-3-4
1.97 SD-10'-S
1.97 B-13-7-8
2 B-10-12-13
2.01 B-7-12-13
2.01 B-107-12-13
2.06 SD-133’-N-B
2.08 B-1-7-7.5
2.08 B-3-7.5-8
2.2 WD-125'-C
2.21 SD-200'-C
2.24 WD-13.5'-W-2
2.24 SD-158’-N-5
2.3 B-5-12-13
2.35 B-8-7-8
2.36 B-4-9-10
2.36 B-16-5-6
2.38 B-3-9-10
2.39 B-2-7-8
2.41 B-15-12-13
2.45 SD-133’-N-5
2.52 SD-150'-C
2.53 SD-125'-C
2.53 WD-75'-C
2.53 B-16-2-3
2.56 B-14-9-10
2.56 B-14-12-13
2.56 B-17-2-3

Number of samples		Uncensored values		
Uncensored	128	Mean	6.59	
Censored	2	Lognormal mean	6.13	
Detection limit or PQL	1	Std. devn.	9.00593383	
Method detection limit	1	Median	2.95	
TOTAL	130	Min.	1	
		Max.	69.7	

Lognormal distribution?		Normal distribution?	
r-squared is:	0.960	r-squared is:	0.614

Recommendations:
Use lognormal distribution.

UCL (Land's method) is 7.2632364728833

Simple substitution used with censored values.

2.75 SD-158’-N-B
2.8 B-18-5-6
2.87 B-18-2-3
2.89 B-5-9-10
2.9 SD-108’-N-5
2.91 SD-300'-C
2.95 SD-175'-C
2.95 SD-308’-N
2.97 SD-275'-C
2.99 B-109-9-10
3.21 B-7-7-8
3.22 B-9-9-10
3.27 B-10-7-8
3.29 SD-83’-N-B
3.34 WD-125'-E
3.46 WD-25'-C
3.54 WD-25a'-C
3.54 SD-208’-N
3.87 B-6-9-10
4.08 WD-75'-W
4.27 WD-25'-E
4.36 SD-283’-N
4.36 B-15-9-10
4.39 B-19-2-3
4.62 WD-25'-W-2
4.84 SD-350'-C
4.97 WD-75'-E
4.98 WD-125'-W
5.19 B-6-12-13
5.24 B-8-9-10
5.51 B-11-7-8
5.61 WD-25'-W
5.64 B-15-7-8
5.65 B-6-7-8
6 B-14-7-8
6.11 SD-375'-W
6.24 SD-258’-N
6.53 SD-240'-S
6.76 B-19-5-6
6.87 WD-145'-S
7.57 B-9-8-9
7.8 SD-290'-S
7.89 SD-340'-S
8.41 SD-233’-N
8.53 B-4-7.5-8
8.64 SD-11’-N-20
9.32 SD-75'-C
9.95 WD-50'-E
11.8 SD-100'-C
12.2 B-12-7-8
12.8 SD-10'-C2
13.5 WD-50'-W
13.7 WD-50'-C
14.8 SD-165'-S
15.3 AV-20-5-6
15.5 SD-108’-N-B
15.6 SD-315'-S

15.9 AV-19-5-6
16.8 B-112-7-8
17.9 SD-265'-S
20.3 SD-358’-N
20.9 B-19-0-1
21.3 SD-0'-E
22.4 SD-333’-N
23.5 B-16-0-1
23.5 B-18-0-1
26.5 B-9-7-8
29.5 B-17-0-1
33.1 SD-325'-C
35 SD-30'-C2
69.7 WD-25'-C-2