



October 10, 2016

Bruce Wanstall, Project Manager
 State of Alaska, Alaska Department of Environmental Conservation
 Division of Spill Prevention and Response, Contaminated Sites Program
 410 Willoughby Ave, Suite 303
 PO Box 111800. Juneau, AK 99801

Re: Chilkoot Lumber Company- Fall 2016 Stockpile Characterization Report
 ADEC File 1508.38.009

Mr. Bruce Wanstall,

Stockpile characterization workplan was approved August 19 and sampling performed August 21. Two composite samples and one field duplicate was performed for the upper 2 feet. One composite was performed for the bottom foot of the stockpile. Each composite was comprised of 6 sources collected to represent the stockpile. Composite 1 and 2 characterizing the upper 2 feet had PID results of 88ppm and 20ppm. A duplicate performed for Composite 1 was 86ppm for and RPD% of 2.3%. PID result for the deepest soil at composite 3 was 204ppm. Refer to table for results.

Samples were shipped August 21 and arrived at the lab August 22, 1938 at 3°C. Laboratory Report 608388 was provided September 13. While SPLP was called for in the workplan, TCLP preparation was unintentionally instead performed. This discrepancy has been discussed with ADEC and does not deter from the usability of the data for the intended purpose to delineate a lift. This method is more sensitive because it uses an acid instead of water to perform the leachate extraction. Refer to attached Data Quality Review Checklist. A field duplicate was prepared for composite 1 featuring replication of the field sampling methods for acquisition of subsamples and homogenization. RPD % for field duplicate was 26.4%. One DRO soil sample was prepared for Composite 3 and was flagged “ip” because recovery fell outside control limits. Compounds in the sample matrix interfered with the quantitation of the analyte but data is still considered usable for its intended purpose.

Subsample	Composite 1	Composite 1	Composite 2	Composite 3	Cleanup Standard
1	light	light	no	moderate	
2	light	light	light	moderate	
3	light	light	light	moderate	
4	light	light	light	strong	
5	light	light	light	strong	
6	light	light	no	moderate	
Homogenized PID Result	88ppm	86ppm	20ppm	204ppm	
TCLP DRO Result (Incl. RRO)	0.69ppm	0.9ppm	1.3ppm	7.5ppm	1.5ppm
DRO Soil	NA	NA	NA	2,200ppm ip	
% moisture	NA	NA	NA	8%	

320 yds³ soil total remains within the containment and the upper 1.5 to 2 feet estimated at 150 yds³ has been demonstrated to satisfy cleanup goals for stabilization. PID results did not provide the desired resolution to delineate the lift. This is to be anticipated because of low VOC content in the weathered DRO contaminated soil. The lower foot of soil is visibly darker from moisture and has a distinct petroleum odor. Additionally, sheen test reliably identified the soil that requires further treatment as demonstrated in the table above.

Chilkat Environmental recommends performance of a lift Fall of 2016. The lift should be performed in compliance with the 2014 stabilization plan and capped with clean fill at the approved location akin to previous lifts. Chilkat will be present to delineate the lift. After the lift, remaining soil requiring treatment should be mixed and re-contained within about a third of the original footprint. The stockpile liner and cover should be modified to reshape the stockpile to remain dry and allow easy removal of the lid such that moisture can evaporate during subsequent uncovering events. Elevation of the remaining soil will permit coverage that sheds water and advances drainage into the recovery system to encourage treatment of the final 15% of the original stockpile. Some repairs of the lid and liner will be required to achieve reliable containment for winter 2016-2017. Uncovering the stockpile during dry weather is recommended for Spring and Summer 2017 and characterization for final lift is recommended for Late Summer of Fall 2017.

Signature of Qualified Environmental Professional:

Elijah Donat MS PMP prepared this 2-page report with 16-page attached Laboratory Report 608388 and Data Quality Review Checklist.



Elijah Donat
October 10, 2016
Principal Investigator

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 13, 2016

Elijah Donat, Project Manager
Chilkat Environmental
PO Box 865
Haines, AK 99827

Dear Mr Donat:

Included are the results from the testing of material submitted on August 22, 2016 from the CLC Stockpile Fall 2016, F&BI 608388 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. 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
CHL0913R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 22, 2015 by Friedman & Bruya, Inc. (ADEC laboratory approval number UST-007) from the Chilkat Environmental CLC Stockpile Fall 2016, F&BI 608388 project. The samples were received at 3 °C and were refrigerated upon receipt. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Chilkat Environmental</u>	<u>Date Sampled</u>
608388 -01	C-1	08/21/16
608388 -02	C-2	08/21/16
608388 -03	C-2 dup	08/21/16
608388 -04	C-3	08/21/16
608388 -05	C-3	08/21/16

The samples were analyzed as follows.

DRO (soil) - Analysis Method AK 102, Extraction Method 3550B

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/13/16
Date Received: 08/22/16
Project: CLC Stockpile Fall 2016, F&BI 608388
Date Extracted: NA
Date Analyzed: 08/31/16

**RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES
FOR PERCENT MOISTURE
USING ASTM D2216-98**

<u>Sample ID</u> Laboratory ID	<u>% Moisture</u>
C-3 608388-01	9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/13/16
Date Received: 08/22/16
Project: CLC Stockpile Fall 2016, F&BI 608388
Date Extracted: 08/29/16
Date Analyzed: 08/29/16

**RESULTS FROM THE ANALYSIS OF TCLP SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL
USING METHOD AK102**

Extended to Include Motor Oil Range Compounds

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Extended</u> (C ₁₀ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 41-152)
C-1 608388-01	690	92
C-2 608388-02	900	92
C-2 dup 608388-03	1,300	95
C-3 608388-04	7,500	92
Method Blank 06-1781 MB2	<250	101

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/13/16

Date Received: 08/22/16

Project: CLC Stockpile Fall 2016, F&BI 608388

Date Extracted: 08/30/16

Date Analyzed: 09/07/16

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL
USING METHOD AK 102**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 60-120)
C-3 608388-05	2,200	ip
Method Blank 06-1776 MB	<5	115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/13/16

Date Received: 08/22/16

Project: CLC Stockpile Fall 2016, F&BI 608388

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF TCLP SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL
USING METHOD AK 102**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel	ug/L (ppb)	2,500	84	87	75-125	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/13/16

Date Received: 08/22/16

Project: CLC Stockpile Fall 2016, F&BI 608388

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL
USING METHOD AK 102**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel	mg/kg (ppm)	500	97	93	75-125	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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 compound 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. Compounds in the sample matrix interfered with the quantitation of the analyte.

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.

SAMPLE CHAIN OF CUSTODY

ME 08/22/16 1 of 1 A22

Report To Elijah Doynt
 Company Drillat Environmental
 Address PO Box 805
 City, State, ZIP Avines, AK. 99827
 Phone 907/303-7899 Email elijah@drillatenvironmental.com

SAMPLERS (signature) [Signature]
 PROJECT NAME CLC Stakepile Fall 2016
 PO # _____
 REMARKS _____
 INVOICE TO _____

TURNAROUND TIME
 Standard Turnaround
 RUSH
 Rush charges authorized by: _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	TCLP/DRO	DRO soil				
C-1	D1	8.21.16	1500	Soil	1													
C-2	D2	8.21.16	1600	Soil	1								X					
C-2 dup	D3	8.21.16	1600	Soil	1								X					
C-3	D4	8.21.16	1730	Soil	1								X					
C-3	D5	8.21.16	1730	Soil	1								X					

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
<u>[Signature]</u>	<u>Elijah Doynt</u>	<u>Drillat Environmental</u>	<u>8.21.16</u>	<u>1858</u>			
<u>[Signature]</u>	<u>Megan Pham</u>	<u>Fe BT</u>	<u>8/22/16</u>	<u>19:38</u>			
Received by:		Samples received at	<u>3</u>	°C			

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

Laboratory Data Review Checklist

Completed by:

Title: Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

ADEC File Number: ADEC RecKey Number:

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No NA (Please explain) Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No NA (Please explain) Comments:

b. Correct analyses requested?

Yes No NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

Yes No NA (Please explain) Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No NA (Please explain) Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

Yes No NA (Please explain) Comments:

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

Comments:

No affect

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA (Please explain) Comments:

ip for DRO sample

c. Were all corrective actions documented?

Yes No NA (Please explain) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Data Usable

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA (Please explain)

Comments:

b. All applicable holding times met?

Yes No NA (Please explain)

Comments:

c. All soils reported on a dry weight basis?

Yes No NA (Please explain)

Comments:

Dryweight reported for single soil sample

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No NA (Please explain)

Comments:

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

Comments:

No affect

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No NA (Please explain)

Comments:

No preservation blanks were performed

ii. All method blank results less than PQL?

Yes No NA (Please explain)

Comments:

No method blank

iii. If above PQL, what samples are affected?

Comments:

no affect

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

Yes No NA (Please explain) Comments:

DRO results flagged ip

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

No affect

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

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

no metals

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

Yes No NA (Please explain) Comments:

Composite 3 for soil DRO failed and is flagged "ip"

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

Yes No NA (Please explain) Comments:

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

Comments:

No affect

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

Yes No NA (Please explain) Comments:

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

Comments:

No Affect

c. Surrogates - Organics Only

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

Yes No NA (Please explain) Comments:

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

Yes No NA (Please explain) Comments:

Composite sample 3 for soil DRO fell outside control limits

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

Yes No NA (Please explain) Comments:

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

Comments:

No affect

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No NA (Please explain.) Comments:

No volatiles

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

Yes No NA (Please explain.) Comments:

No volatiles

iii. All results less than PQL?

Yes No NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

None

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

Comments:

No Affect

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain)

Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain.)

Comments:

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

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain)

Comments:

RPD for field duplicate was 26.4%

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

Yes No NA (Please explain)

Comments:

f. Decontamination or Equipment Blank (if applicable)

Yes No NA (Please explain)

Comments:

i. All results less than PQL?

Yes No NA (Please explain)

Comments:

ii. If above PQL, what samples are affected?

Comments:

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

Comments:

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

a. Defined and appropriate?

Yes No NA (Please explain)

Comments:

Reset Form