Sampling and Analysis Report (2018)
Haines Sawmill Site: Stockpile B
File: 1508.38.009; Hazard ID 2378

Prepared for:

The Estate of Edward Paleyri
P.O. Box 1469
Haines, AK 99827

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Appendices:

1.0 Acronyms and Abbreviations

ADEC	Alaska Department of Environmental Conservation
CSM	Conceptual Site Model
DL	Detection Limit
DRO	Diesel Range Organics
Kai Environmental	Kai Environmental Consulting Services, LLC
LDRC	Laboratory Data Review Checklist
LOQ	Limits of Quantification
mg/Kg	Milligram per Kilogram
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
RL	Reporting limit
RRO	Residual Range Organics
SPLP	Synthetic Precipitation Leaching Procedure

2.0 Executive Summary

The Haines Sawmill Site (File 1508.38.009, Hazard ID 2378) is located on property referred to as the Chilkoot Lumber Company and managed by the Estate of Edward Lapeyri. While various clean-up efforts have occurred at the site over time, this current report deals only with petroleum contaminated soils that were stockpiled at the Haines Sawmill Site for remediation. More specifically, this report includes sampling analyses and next step recommendations for the management of Stockpile B. The first 0-2 feet of soil in the stockpile was approved for removal and landspreading at an on-site location, but the removal has not occurred to date.

Composite samples from the next two feet across 12 test holes were sampled on October 24, 2018. Sample results did not exceed Alaska Department of Environmental Conservation (ADEC) Clean-up levels for Synthetic Precipitation Leaching Procedure (SPLP) Diesel Range Organics (DRO) and SPLP Residual Range Organics (RRO). Standard DRO level in soils were 1290 mg/kg, which exceeded the ADEC Migration to Groundwater Clean-up level (230 mg/kg). Standard RRO level in soils did not exceed ADEC Migration to Groundwater Clean-up level. With the exception of the first two feet, soils within the stockpile are not ready for soil stabilization at the approved on-site location.

The 2019 maintenance plan for the stockpile includes performing the 0-2 foot deep lift and stabilizing the soil by landspreading at the approved on-site location, treating and removing standing water that is within the stockpile and perched above the liner, and aerating the stockpile over the 2019 field season during dry sunny weather. In the fall of 2019, Kai Environmental will perform confirmation sampling to determine if soils are ready for stabilization.

3.0 Introduction

3.1 Objectives

The objective of this site characterization is to provide results from a 2018 sampling event on a stockpile of contaminated soils located at the Haines Sawmill site in Haines, Alaska. In addition, recommendations of next steps towards obtaining closure of the site from the ADEC Contaminated Sites Database will be presented.

3.2 Site History for Petroleum Contaminated Soil Stockpile at Haines Sawmill Site

Petroleum contaminated soils were stockpiled at the Chilkoot Lumber Company Haines Sawmill Site during various clean-up activities since the mill closed in the late 1990s. A chronology of site clean-up, as recorded in the ADEC Contaminated Sites Database, may be found in Appendix A. A plan for the final remedy of the two stockpiles, one to the northside of the property referred to as Stockpile A and one to the southside of the property referred to as Stockpile B, was requested by ADEC in December of 2012 (Appendix A). In this current document, the site history begins from this point. Further, this report only refers to Stockpile B on the southside of the property, as soils in Stockpile A met cleanup standards and were subsequently landspread in an approved reuse area (Chilkat Environmental, 2014).

From December 2012 until June 2014, the records only show that ADEC accompanied Chilkat Environmental on site visits to inspect the stockpiles and discuss plans for soil stabilization and final placement. Then, on June 4, 2014 ADEC approved a plan from Chilkat Environmental to treat excess water in Stockpile B by filtering with through granulated activated carbon (Appendix A). It was not documented how much water was treated, but subsequent documentation indicate the treatment occurred.

On June 16, 2014 ADEC approved a plan from Chilkat Environmental to characterize Stockpile B. In a letter dated June 20, 2014, Chilkat Environmental submitted field screening results to ADEC and indicated that the upper 66-75% of the stockpile was likely appropriate for stabilization and removal (pending laboratory results). Laboratory results were submitted to ADEC on August 9, 2014 and on September 16, 2014 ADEC agreed the results had concentrations of petroleum there were marginally greater than migration to groundwater cleanup levels. At that time, ADEC requested a formal plan to landspread the soils from the upper portion of Stockpile B (Appendix A).

On October 6, 2014 ADEC approved Chilkat Environmental's plan for soil stabilization. Site work was performed on October 28, 2014. On that date, 240 gallons of contaminated water was removed by filtering through granulated activated carbon from Stockpile B (Chilkat Environmental, 2014). A lift was performed on Stockpile B, and soil was removed and landspread in an approved location on-site. The report does not document how many cubic yards of material were removed, but it was estimated 350 cubic yards remained in Stockpile B (Chilkat Environmental, 2014). In January of 2015, ADEC approved the maintenance plan for Stockpile B, as outlined in the "Chilkoot Lumber Company: Stockpile Stabilization (Report) and Maintenance Plan (Plan)" as prepared by Chilkat Environmental in December of 2014.

There is a gap in records from the January 2015 plan approval until early 2016, due to the property site manager changing. It is unclear if any maintenance of Stockpile B occurred in 2015. On May 16, 2016 ADEC approved a plan submitted by Chilkat Environmental to perform a 50% lift on Stockpile B (Appendix A). The lift was requested after Chilkat Environmental performed maintenance duties including treatment of 400 gallons of water, repairs to the cover liner, and characterization of the remaining soil (Chilkat Environmental, 2016a). The lift was performed on May 25, 2016, with an estimated 200 cubic yards of soil were removed, and estimated 320 cubic yards remained, which included the berm material (Chilkat Environmental, 2016a). Chilkat Environmental (2016a) recommended maximum ventilation of the pile during the 2016 summer season, and to characterize again in October to determine if another lift could occur.

On August 18, Chilkat Environmental submitted a plan to ADEC to characterize Stockpile B soil in anticipation for performing a lift (Appendix A). The plan included soil sampling for laboratory analysis and the plan was approved on August 19, 2016. On October 10, 2016, Chilkat Environmental submitted a stockpile characterization report to ADEC (Chilkat

Environmental, 2016b). Of the estimated 320 cubic yards of remaining soil in the stockpile, it was estimated that approximately 150 cubic yards met the cleanup goals which were subsequently recommended for soil stabilization (Chilkat Environmental, 2016b). On October 20, 2016 ADEC approved the characterization report and approved the lift of approximately 150 cubic yards for stabilization (Appendix A).

A lien was placed on the property in June of 2017, and the records do not show that any work was performed after the soil characterization report in the fall of 2016. In March of 2018, the estate of Edward Lapeyri retained Kai Environmental Consulting Services to assist the landowner in managing and closing out Stockpile B. After reviewing records, Cathy Needham of Kai Environmental contacted the new ADEC site manager Amy Rodman via telephone and requested that the landowner maintain the stockpile over the summer by uncovering it during warm and dry periods, and then conduct a soil characterization sampling event in the Fall of 2018 in accordance to the 2016 workplan. This was approved in writing on May 18, 2018 (Appendix B).

3.3 Site Description

The Chilkoot Lumber Company Haines Sawmill Site is located in Haines Alaska in Section 9 of Township 30 South Range 59 East of the Copper River Meridian. The site consists of several properties owned by the Chilkoot Lumber Company, which is now managed by the estate of Edward Laperyi. Stockpile B is located in it's entirety in the portion of U.S. Survey 3749 consisting of approximately 2.06 acres and identified as Parcel Tax ID No. C-LTR-05-1400 in the Haines Recording District. The site is located between the shoreline of Lutak Inlet and Lutak Road, just west of the Alaska Marine Highway System ferry terminal, at latitude 59.285481 and longitude -135.480470 in decimal degrees.

The original dimensions of Stockpile B were 73 feet long by 29 feet wide by 16 feet tall (Chilkat Environmental, 2014), equating to approximately 1,255 cubic yards of contaminated soil. Records indicate that an estimated 170-320 cubic yards of soil remain in the stockpile, dependent upon whether or not a lift of 150 cubic yards was performed in the fall of 2016 (Chilkat Environmental, 2016b). It is located on relatively flat ground approximately 200 feet from the shoreline. Photo 1 depicts 2015 Google Earth aerial imagery of the Haines Sawmill site, indicating the location of Stockpile B.

Photo 1. Location of Stockpile B at the Haines Sawmill site in Haines, Alaska.

4.0 Field Methods

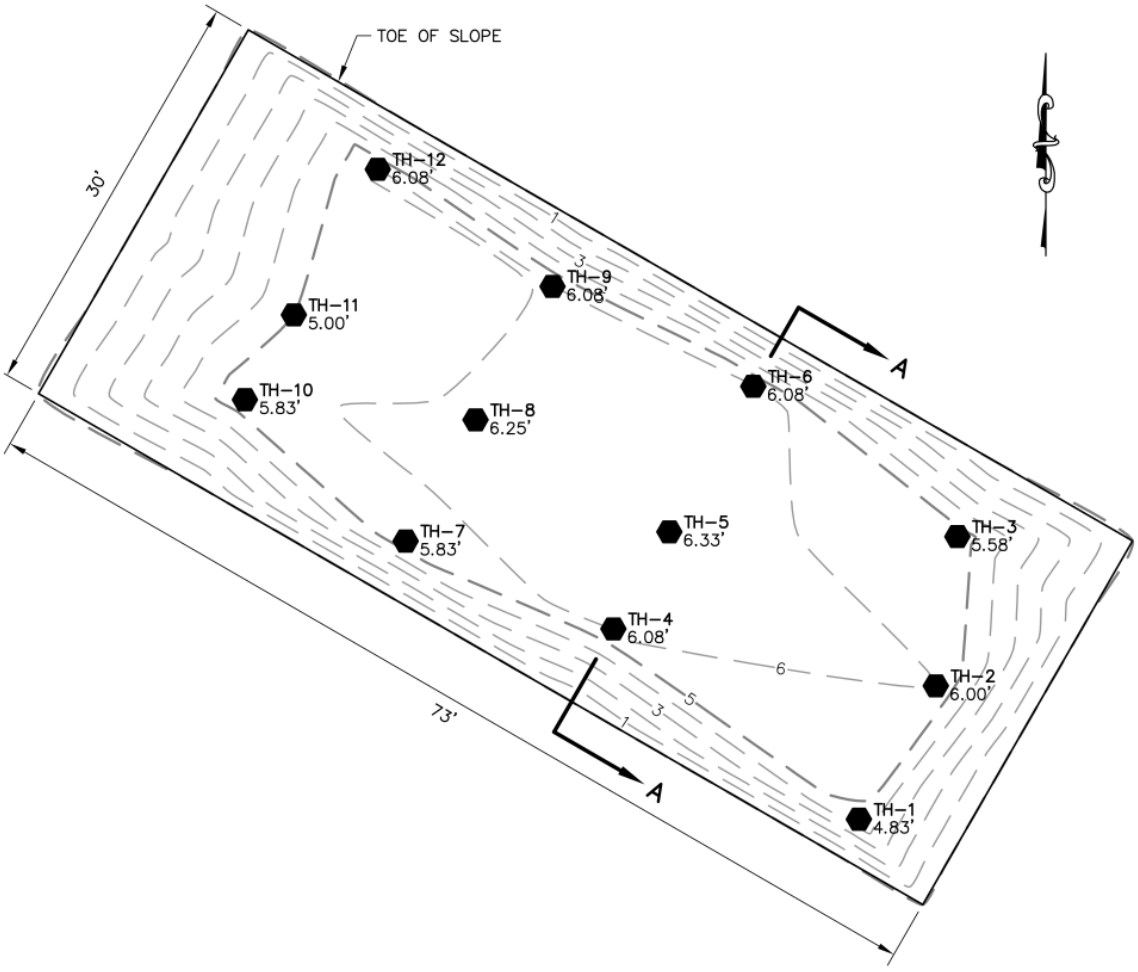
On May 18, 2018, Kai Environmental received permission from ADEC to follow the "*Chilkoot Lumber Company Fall 2016 Stockpile Characterization Workplan*" that had been previously submitted by Chilkat Environmental, Inc. (2016b). Because it was unknown at the time whether or not the stockpile had been aerated/treated since the last lift event in May 2016, it was decided that Lori Smith, who manages the Estate of Ed Lepayri, would utilize the 2018 summer season to uncover the stockpile to allow it to aerate. Confirmation soil sampling was scheduled for the fall of 2018. The stockpile was uncovered on July 23rd, 2018 and recovered on August 12th, 2018 for a period of 21 days during a dry weather event. The stockpile was again uncovered on September 10th, 2018 and recovered on October 4th, 2018 for a period of 24 days.

On October 23, Kai Environmental staff Cathy Needham and Kathryn Erickson arrived in Haines to conduct a site visit, and collect confirmation samples. The stockpile was uncovered, and it was immediately evident that the approved lift of 150 cubic yards in October of 2016 had not occurred. The sample test holes from August 2016 were still present. Ms. Needham contacted Amy Rodman at ADEC, explained the observations and requested approval to not confirmation sample the first two feet of soil because it had already been confirmed to meet the requirements for soil stabilization. This was approved by Ms. Rodman via telephone. Additionally, it was confirmed that Lori Smith would be able to conduct the two foot lift at her next convenience.

On October 24, 2018, a smallexcavator was used to remove the first two feet of soil at 12 sampling locations across the stockpile. During excavation, Kai Environmental staff monitored the soil removal using a photoionization detector (PID) to screen for volatile organics, primarily to assure adequate health and safety standards and that appropriate personal protective equipment (PPE) was used. All of the PID readings during the excavation were 0.0 ppm.

Figure 1 depicts the locations of the 12 sampling pits on the stockpile, with the test holes labeled 1-12. For each sample pit, the field team dug an additional 1-2 feet to obtain sample materials, with hand shovels. Once at the appropriate sample depth, a decontaminated hand trowel was used to remove a layer of soil. Then a decontaminated stainless steel spoon was used to grab the sample and place it in a decontaminated stainless steel bowl. The stainless steel bowl was covered with tinfoil between each test pit, until enough composite soil material was obtained.

Figure 1. Stockpile B at the Haines Sawmill Site in Haines, Alaska. Test holes (TH) indicate where soils was taken along the stockpile, and analyzed for petroleum contamination.



The following is the sample regime that was set forth using the Fall 2016 workplan guidance (Chilkat Environmental, Inc. 2016b):

- Sample 1 (CLC-01) would be a composite across the stockpile. The test holes chosen for this sample were 3, 4, 5, 9, 10, and 11 between 2-4 feet from the stockpile surface (0-2 feet were removed by excavator).
- Sample 2 (CLC-02) would be a composite across the stockpile. The test holes chosen for this sample were 1, 2, 6, 7, 8, and 12 between 2-4 feet from stockpile surface (0-2 feet were removed by excavator).
- Sample 3 (CLC-03) would be a duplicate of CLC-02 and would also include a test for DRO.
- Sample 4 (CLC-04) would be a composite across the stockpile, from test holes that would reach from 4-6 feet from the stockpile surface (0-2 feet were removed by excavator).
- Sample 5 (CLC-05) would be a composite between CLC-01 or CLC-02 with the highest PID reading from heated headspace, and with sample CLC-04.

At each test hold, a field PID reading was taken once the sample depth was reached. Odor was also noted at the same time. Additional field screening included observations for water level in each test hole and if water was present whether or not a sheen was observed.

After the CLC-01 composite soil was collected, the soil was homogenized in the stainless steel bowl with a decontaminated stainless steel spoon. A sample was collected from the homogenate and placed into a pre-labeled laboratory provided sample jar. An additional sample from the homogenate was taken to perform a warm water sheen test and to take a heated headspace PID reading. The same procedure was used for the CLC-02 composite sample, with field decontaminated equipment. A duplicate laboratory sample (CLC-03) was also collected from the CLC-02 homogenate.

The field team was unable to reach the 4-6 foot depth from the stockpile surface, as planned for the CLC-04 sample. This was due to not knowing where the liner was for each test hole and not wanting to puncture it, as well as there being standing water in many test holes. Therefore, the CLC-04 sample was taken from the CLC-02 homogenate and marked for DRO analysis only. And the CLC-05 sample was taken as a composite from the CLC-01 and CLC-02 homogenates.

5.0 Results

5.1 Field Screening

Table 1 represents the field screening results for each test hole. Observations were made for sample depth, in-situ PID reading were taken, the presence of odor was noted, and if there was water in the test hole it was noted as well as observations of a sheen within the test hole. Field notes may be found in Appendix C.

Table 1. Field screening results for 12 test holes on the Chilkoot Lumber Company Stockpile in Haines, Alaska. Sample depths are from stockpile surface, where the first two feet of soil was removed by excavator. Shaded cell are the composite test holes for sample CLC-01, and non-shaded cells are the composite test holes for sample CLC-02.

Test hole	Sample depth (Feet/Inches)	PID reading (ppm)	Odor (Qualitative)	Water (Yes/No)	Sheen (Yes/No)
1	2'9"	0.0	No	Yes	Yes
2	3'	0.0	No	No	No
3	3'	0.0	No	Yes	Caved in
4	3'6"	0.0	No	Yes	Yes
5	3'3"	2.8	Light	No	No
6	3'6"	34.1	Strong	Yes	Yes
7	3'3"	1.6	Light	Yes	Yes
8	3'3"	12.4	Light	No	No
9	3'6"	98.4	Strong	Yes	Caved in
10	3'1"	38.8	Moderate	Yes	No
11	3'6"	0.00	Light	Yes	No
12	3'6"	28.4	Moderate	No	No

All samples collected into laboratory jars were from two separate composites: CLC-01 and CLC-02. The heated space PID reading for CLC-01 was 6.0 ppm and for CLC-02 was 7.5 ppm. The results of the warm water sheen test for both samples was positive.

5.2 Laboratory Soil Sampling Results

Soils from sampling sites CLC-01, CLC-02, CLC-03 and CLC-05 were sampled and tested for SPLP for Diesel and Residual Range Organics (DRO/RRO). Sample CLC-04 was sampled and tested for the standard DRO/RRO test for soils. Laboratory concentrations were compared to ADEC Method II Migration to Groundwater Cleanup levels for an Over 40 Inches Zone. Table 2 indicates the summary results for the laboratory analyses and all laboratory data may be found in Appendix D.

Table 2. Summary of laboratory testing results for five sampling locations associated with the Chilkoot Lumber Company Stockpile in Haines, Alaska..

Sample ID		CLC-01	CLC-02	CLC-03	CLC-04	CLC-05
Sample depth (ft) from stockpile surface						
Analysis	ADEC Cleanup					
SPLP DRO (mg/L)	1.5	0.656	0.544 J	0.472 J	n/a	0.665
SPLP RRO (mg/L)	1.1	0.271 J	0.237 J	0.227 J	n/a	0.296 J
DRO (mg/Kg)	230	n/a	n/a	n/a	**1290**	n/a
RRO (mg/Kg)	9,700	n/a	n/a	n/a	1550	n/a

NOTES

J	Analyte detected above method detection limit (DL) and below laboratory reporting limit (RL), value estimated
Shaded	Analyte found above laboratory LOQ and below ADEC Migration to Groundwater Cleanup Levels
BOLD	Analyte found above ADEC Migration to Groundwater Cleanup Levels

6.0 Data Quality

Laboratory data was validated using the ADEC Laboratory Data Review Checklist (LDRC). The LDRC is included as Appendix E. The sampling goal was to produce data of adequate quality for comparison to 18 AAC 75 Method II Migration to Groundwater Cleanup Levels.

Quality assurance and quality control (QA/QC) tools used for this project included trip blanks and temperature blanks. The laboratory report case narrative was reviewed against the ADEC LDRC for potential laboratory quality control issues. No issues were identified that would negatively affect data quality or usability.

In addition to the LDRC, Limits of Quantification (LOQ) listed in the laboratory report were compared to ADEC Migration to Groundwater Cleanup Levels. None of the LOQ's exceeded the ADEC Migration to Groundwater Cleanup Levels. Any other QC issues, if present, are discussed in the LDRC, located in Appendix E. All data collected during 2018 field efforts to be of sufficient quality to properly characterize the stockpile site.

6.1 Conceptual Site Model

A Conceptual Site Model (CSM) in accordance with ADEC requirements is included as Appendix F. The CSM indicates the mechanism of the release, the impacted and potentially impacted media, and the pathways that contamination may be able to reach receptors at the Site (now or in the future). At the work plan level, the CSM is intended to outline potential pathways without regard to corrective action and/or engineering controls.

Complete exposure pathways at the site are Incidental Ingestion of Soils, Dermal Absorption of Contaminates from Soils, and Inhalation of Outdoor Air. Contamination is present above surface in a stockpile and is confined to a limited area. Human exposure to contaminates via incidental ingestion of soils or dermal absorption of contaminates from soils would be considered minimal, as site access is restricted and the stockpile is contained and covered. As the site is no longer in use and there are no residences near the site, potential human exposure to contaminates via inhalation of outdoor air is also considered minimal.

7.0 Discussion

The 2018 sampling found a concentration of DRO in the CLC-04 composite sample at a level of 1290 mg/kg, which exceeds the ADEC Migration to Groundwater Cleanup Level of 230 mg/kg. The CLC-04 sample was a composite of all test holes samples. All other tests using the SPLP method were below ADEC clean-up standards. Therefore, the soils in the 2-4 feet zone of the stockpile will require further treatment before a lift can be performed and the soils moved and stabilized at the pre-approved on-site location. The 0-2 foot zone of soils may be removed at any time, as they were previously cleared.

Water continues to be held in the bermed stockpile, indicating the bottom liner has maintained it's integrity. Previous maintenance of the site included filtering water through granulated activated carbon, with the last known treatment was in 2016 when 400 gallons was treated and removed. It is unknown how much water is perched above the liner and within the soils, but as Table 1 indicates many of the test holes had water present in them. The drain system did not appear to be intact in order to use the same mechanism for treating water.

8.0 Workplan for 2019 Management of the Stockpile

The following work schedule is recommended for management of Stockpile B at the Chilkoot Lumber Company site for 2019.

1. In Spring of 2019, the Estate of Edward Lapeyri may perform the two foot lift of soils for stabilization at the 2014 approved on-site location adjacent to Lutak Drive (Chilkat Environmental, 2014). Simultaneously, a drainage mechanism for performing water treatment can be inspected for use to perform water treatment.
2. In June of 2019 perform water treatment and drainage of water within the stockpile according to the approved June 4, 2014 plan using granulated activated carbon.
3. During the summer of 2019, the Estate for Edward Lapeyri will uncover the stockpile during warm non-raining days, as they did during the 2018 summer season. Documentation will include site photos, and records of dates the stockpile was uncovered and recovered. The stockpile should only be uncovered during dry weather events.
4. In October of 2019, Kai Environmental will sample the stockpile for laboratory analyses of DRO/RRO to determine if the next 2 foot lift can be performed and to characterize the remaining soil at the stockpile location.

9.0 References

Chilkat Environmental, Inc. (2014). Chilkoot Lumber Company: Stockpile Stabilization and Maintenance Plan, ADEC File 1508.38.009. Prepared for State of Alaska, Department of Environmental Conservation. Prepared by Chilkat Environmental dated December 2014.

Chilkat Environmental, Inc. (2016a). Chilkoot Lumber Company: May 2016 Stockpile Lift, ADEC File 1508.38.009. Prepared for the State of Alaska, Department of Environmental Conservation. Prepared by Chilkat Environmental dated May 26, 2016.

Chilkat Environmental, Inc. (2016b). Chilkoot Lumber Company: Fall 2016 Stockpile Characterization Report. Prepared for the State of Alaska, Department of Environmental Conservation. Prepared by Chilkat Environmental dated October 10, 2016.

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Appendix A

ADEC Contaminated Sites Database Chronology

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Alaska Department of Environmental Conservation

SPILL PREVENTION AND RESPONSE

CONTAMINATED SITES PREVENTION PREPAREDNESS & RESPONSE

RESPONSE FUND ADMIN REPORT A SPILL

SITE NAME: Haines Sawmill

ADDRESS: Mile 5, Lutak Highway, Haines, AK 99827

FILE NUMBER: 1508.38.009

HAZARD ID: 2378

STATUS: Active

STAFF: Amy Rodman, 9074655368 amy.rodman@alaska.gov

LATITUDE: 59.285311

LONGITUDE: -135.479246

HORIZONTAL DATUM: NAD83

We make every effort to ensure the data presented here is accurate based on the best available information curre therefore subject to change as new information becomes available. We recommend contacting the assigned projec based on this information.

Problems/Comments

Site has multiple areas of total petroleum hydrocarbons (TPH) soil contamination, dioxin soil contamination, and several areas of (PCB) soil contamination. Over twenty transformers are stored on site, two of which contain elevated concentrations of PCBs and concentrations of PCBs. Approximately fifty drums of oil, paint solvents are on site. Ed Lepayri is the most recent owner/operator under an agreement with the State of Alaska and operated the mill as Chilkoot Lumber until it was shut down in 1991. The proper Mr. Lepayri and is managed as Chilkoot Lumber by Larry Beck in Haines working from the Captain's Choice Motel.

Action Information

ACTION DATE	ACTION	DESCRIPTION
8/29/1995	Update or Other Action	(Old R:Base Action Code = RECN - Site Reconnaissance (CS)). SE Public Service Ar conducted initial site reconnaissance at former sawmill property. Site access appears unrestricted. Large quantities of various and improperly contained hazardous waste st
9/29/1995	Site Added to Database	PCBs and petroleum contamination.
9/29/1995	Site Ranked Using the AHRM	Initial ranking.
7/18/1996	Update or Other Action	Site visit. Met with PRP to discuss areas of the property needing remediation. Some a petroleum stained soil. No action to be taken until the hazardous waste has been rem Transformers to be tested for PCBs and water treatment chemicals to be overpacked out.
10/22/1997	Site Characterization Workplan Approved	(Old R:Base Action Code = SA2A - Phase II SA Approval / Release Investigation).
11/20/1997	Update or Other Action	EPA-TSCA (Dan Duncan) notified about PCB transformers.
2/21/1998	Update or Other Action	Field screening of the transformers revealed 2 PCB, 5 PCB-contaminated and the rest
5/14/1998	Update or Other Action	Letter sent requesting site update; EPA requested ADEC perform a PCB inspection.
7/16/1999	Update or Other Action	EPA (Andy Hess) performs TSCA inspection.
7/26/1999	Meeting or Teleconference Held	RP requests that DEC/EPA perform cleanup actions and recover costs.
7/27/1999	Update or Other Action	Drum inventory/site inspection.
5/3/2000	Site Characterization Report Approved	Site Characterization Report Approved this date.
6/14/2000	Update or Other Action	Cleanup level options explained to RP.

9/28/2000	Update or Other Action	Petroleum contaminated soil excavated and transported to Mile 34 Haines Highway to owned gravel pit. Transport and stockpiling approval given.
11/2/2000	Update or Other Action	EPA gives the RP a "Notice of Noncompliance" as a result of the 7/99 TSCA inspectio includes 17 violations.
11/18/2000	Update or Other Action	The Yukon Territorial Government beings a Phase II site characterization as part of its diligence as a prospective purchaser.
2/16/2001	Cleanup Level(s) Approved	Method 2 levels approved for dioxin, GRO, DRO, RRO, and PCBs.
2/16/2001	Cleanup Plan Approved	Approved with contingencies: RP must get ADOT&PF approval prior to placing c-soil i Highway roadbed, RP must get City of Haines approval prior to disposing of chemicals system, and transformers must be managed per EPA.
8/17/2001	Update or Other Action	C-soil did not go into the road due to ADOT&PF and SECON resistance. 1300 cubic y remains at Mile 34. Staff sent letter requesting the stockpile meet regulations by 9/10/(plan be submitted by 11/1/01.
9/10/2001	Update or Other Action	Stockpile is still uncovered.
11/5/2001	Update or Other Action	Plan has not been developed. Stockpile is partially covered with plastic, totally covere Ed Lapeyri could not find 8/17 letter, staff faxed another copy.
6/14/2002	Update or Other Action	Staff has conference call with RP and Access (consultants) to discuss draft bioremedi petroleum contaminated soils. Staff sends letter with comments on plan. RP will need permission of the landowner (Haines Borough).
6/24/2002	Cleanup Plan Approved	Cleanup plan for stockpile approved this date.
6/4/2004	Update or Other Action	Site visit to obtain GPS reading and transition site managment to Wanstall
6/4/2004	Site Visit	DEC inspection of the contaminated soil stockpile on Lot 15 Big Boulder Creek Subdiv water-tight cover is intact and the runoff diversion catchment is operational.
7/7/2004	Update or Other Action	Cost Recovery check received for expenses incurred by the State in cleanup project o
7/8/2005	Update or Other Action	Contacted operations foreman Beck who stated that he would inspect the soil stockpil arrange for soil samples to be collected for laboratory analysis. The scrap metal salva on hold during the fishing season. Hog fuel and fly ash waste plans were discussed.
8/4/2006	Update or Other Action	Review EPA hazmat inventory inspection, plat maps, and file for discussion with AAG State owned tideland lease lots adjacent to the Chilkoot Lumber property. Site Summa and published on the CS website.
5/14/2007	Exposure Tracking Model Ranking	EPA TSCA inspection in 1999 found stained sawdust and soil at the tie mill; laboratory found PCB concentrations of 61 ug/kg and 590 ug/kg, just below action levels. Phase Characterization collected 12 soil samples in areas where transformers were handled

		stored; the results were less than instrument detection.
5/16/2007	Exposure Tracking Model Ranking	ETM ranking for the dioxin fly ash source area. Characterization tests indicate that the hazardous waste. A sampling and analysis plan is needed to determine whether sedin has been contaminated as a result of the fly ash precipitate handling and storage. The migration mechanism and pathway is along the roadway and water drainage routes in of the electrostatic precipitator and the fly ash storage container adjacent to Lutak Roa
7/16/2007	Update or Other Action	The ADEC sent a request for environmental status letter to the Chilkoot Lumber Comp current data on the contaminated soil stockpile in the Haines Borough and hazardous stored at the Haines Sawmill contaminated site
9/27/2007	Meeting or Teleconference Held	ADEC accompanied EPA on a Toxic Substances Control Act (TSCA) site inspection of Sawmill property near Lutak Inlet in August 2007. Numerous regulatory violations were EPA Enforcement but most significant was that transformers were found leaking oil.
4/18/2008	Update or Other Action	ADEC letter was sent to the Chilkoot Lumber owner Lapeyri requesting a 2008 Workpl additional site investigation at the Sawmill and status of the stockpiled contaminated m site and off-site.
5/8/2008	Update or Other Action	ADEC letter was mailed certified restricted signature to the Chilkoot Lumber owner Lap State interest letter requests a 2008 Workplan for additional site investigation at the Sa status of the stockpiled contaminated materials on-site and off-site (33.5 mile Haines H
5/30/2008	Update or Other Action	ADEC reviewed a letter from Chilkoot Lumber stating that disposal of the stored hazar materials and demolition of the derelict structures at the Haines Sawmill contaminated currently in development but without a firm deployment schedule. Results were submit letter for an October, 2006, Chilkoot Lumber sampling of the contaminated soil stockpi Haines Highway. The results were DRO 1,400 mg/kg and 4,400 mg/kg RRO.
6/23/2008	Interim Removal Action Approved	Site cleanup planning was coordinated with Chilkat Environmental, chief environmenta investigator at the Haines Sawmill salvage demolition. ADEC approved temporary stoc contaminated material in the shop building. Non-PCB waste oil stored by Chilkoot Lum been delivered to an off-site, RCRA-permitted recycling facility for treatment by inciner
6/30/2008	Update or Other Action	Chilkoot Lumber Company – Haines, Alaska: PCB Cleanup Workplan Approval PCB E Equipment & Transformer Inventory Review: June 2008, EPA TSCA Region 10. The Environmental Protection Agency, Region 10 (EPA) has reviewed your June 26, 2008, Polychlorinated Bi-Phenyl (PCB) Electrical Equipment and Transformer Inventory and Cleanup Workplan for sampling, cleanup, and removal of PCB contamination which re releases of Toxic Substances Control Act (TSCA) regulated PCBs at the Chilkoot Lum Company Site located in Haines, Alaska. Your proposed PCB Cleanup plan as describ June 26, 2008, submittal is acceptable to EPA.
7/2/2008	Update or Other Action	Site Inspection of demolition and hazardous material recovery operations. ADEC mad recommendations on safe recovery of fuels and contaminated soil at pending demoliti the property; including the Power Plant Shop, Generator Building and bulk fuel storage tanks/piping where heavily stained soil is present next to concrete pads. The schedule shipment of waste products for off-site remediation is being prepared; scrap metal will barge in mid-August, 2008.

8/11/2008	Site Visit	ADEC inspected the current status of transformers, hazardous waste (petroleum/ lubri chemicals), fly ash and stockpiled contaminated soil stored on the site. A fish processi is adjacent to areas on the property that are scheduled to be screened for PCBs and c contamination. A meeting was held with the property owner but a firm schedule to resc situation was not reached.
8/18/2008	Update or Other Action	Review and comment to the draft Phase 3 Environmental Site Clean-up Activities Con Specialized Metal Recycling at Chilkoot Lumber Company in Haines, AK prepared for Metal Recycling by Chilkat Environmental and dated August 13, 2008.
8/22/2008	Update or Other Action	ADEC review and comment on the draft 2008 Hogfuel Shed Soil Stockpile Sampling F Summary Report Haines Sawmill Hydrocarbon Contaminated Soil Clean-up dated Apr Operations Plan for the Offsite Treatment of Hydrocarbon Contaminated Soil from the Sawmill dated May 2002 were both prepared and submitted by Access Consulting Gro reference that the bioremediation stockpile at 33.5-mile Haines Highway has a volume cubic yards of soil containing weathered petroleum products in the diesel and residual organics at concentrations of 2,680mg/kg and 6,110mg/kg respectively. A volume of 2(yards of additional soil stockpiled in the hog-fuel barn from the same source area shou similar contamination values.
9/17/2008	Update or Other Action	ADEC reviewed and accepted changes to the approved waste characterization sampli the estimated 90 cubic yards of precipitator ash stored in a dilapidated shipping contai Haines Sawmill contaminated site. The stored material and surface soil beneath and s the old shipping container will be loaded into new shipping containers and transported remediation at a landfill in Arlington, Oregon. Soil surrounding the cleanup will be sam analyzed for PCDD and PCDF to verify the effectiveness of the removal action.
10/27/2008	Update or Other Action	Soil cleanup and fly ash material shipment is delayed until spring 2010. Contaminated that are stockpiled under secure cover on-site at the Haines Sawmill property currentl cubic yards of fly ash at/near the dilapidated connex; a sealed fish-tote of waste oil-sta the Lima Crane site; ~3 cubic yards of hydraulic oil stained soil from the concrete pad; yards of dip tank sludge/soil; 317 cubic yards POL contaminated soil on the former hog concrete pad. Covers consist of weighted multiple layers of 10 mil visqueen.
4/30/2009	Meeting or Teleconference Held	Teleconference was held with EPA TSCA, DEC CSites and Chilkat Environmental to d screening at the Sawmill site for PCB contamination. Although no PCB-containing tran release on-site is documented at any location, it was agreed that confirmation samplin performed on soil beneath sites where transformers were situated before the structura in 2008.
6/4/2009	Update or Other Action	ADEC received a field report update on demolition of the dilapidated fly-ash trailer; 90 of precipitator ash and surrounding soil is being loaded into 5 waste containers (18 cul each) for transport to an off-site remediation facility; 3 cubic yards of sediment from the was also added for off-site shipment. The ash material is distinctive from the rock fill ar debris that are typical on-site. TCLP test on the ash leachate had non-detect results fo metals; DDCD test result is 7.8ppb. The boiler antifreeze expansion tank UST that was to store waste oil is excavated; no contaminated soil was observed to indicate a releas unregulated tank.

6/11/2009	Update or Other Action	The Lima Crane release site investigation was excavated to the limits of soil contamin soil is loaded into a shipping container along with the dip tank sediment, 3 cubic yards shop floor sludge and 12 cubic yards of heavily oiled soil excavated from the sides of t generator building and shop foundation walls that extend six feet below ground surfac drain system containing oil sludge and water was removed with the contaminated soil; investigation will find where the system leads. Clean soil was found at about 6 feet dep pockets of subsurface water were occasionally found.
7/23/2009	Report or Workplan Review - Other	ADEC reviewed and commented on a draft final report for the cleanup of Toxic Substa Act related waste from the Haines Sawmill site.
1/4/2010	Report or Workplan Review - Other	Chilkoot Lumber Company PCB Remedial Action Closure Report is approved by DEC EPA TSCA Program approval, all PCB waste above 1 ppm has been removed from th Lumber Company site and no additional precautions during future modification, renova demolition of the facility is required. Further management of remedial actions is ongoir to address petroleum contamination and other concerns.
8/17/2010	Update or Other Action	The generator shop and powerhouse shop concrete pad contaminated soil sites are e on Chilkoot Lumber property. The concrete pad that remains intact due to its massive necessary to support the 70-foot tall powerhouse boiler is also located on Chilkoot Lur property. No residual petroleum contamination is present on State lease property. The contaminated soil excavated from the under two pad removals is temporarily stored ur on a concrete pad that is located on leased property.
8/18/2010	Report or Workplan Review - Other	ADEC approved Sampling Plan to Characterize Soil at the extent of Excavation for the Powerhouse Shop by Chilkat Environmental Inc. for the Haines Sawmill contaminated concrete pad is adjacent to one sidewall of the excavation and has petroleum contami trapped underneath. The residual soil contamination trapped under the boiler pad will by the confirmation samples collected from the sidewall along the boiler pad that is sha open excavation. Results for this location are not suspected of satisfying clean-up star Samples from the other three sidewalls will confirm approval to backfill with an imperm between residual contamination and clean backfill. Due to persistently wet clay, floor c samples may be unsuitable for collecting laboratory soil samples for petroleum analysi
11/8/2010	Exposure Tracking Model Ranking	Initial ranking with ETM completed for source area id: 78974 name: Above Ground Fu
8/11/2011	Update or Other Action	EPA announced this week that the owner of Chilkoot Lumber Company was fined $9,5 improper storage and failing to repair leaking PCB transformers at the Haines Sawmill Contaminated site in Haines. The Contaminated Sites Program invited EPA to the site the problems, provided oversight through the TSCA regulation site investigation, the d the transformers, and the transfer of hazardous waste to shipping containers for barge through international waters to the Arlington Hazardous Waste Facility in Oregon. The appealed to EPA to reduce the fine to allow Lapeyri to finish the cleanup at the Haines EPA reduced the fine from $145,000 to $9,500. A cleanup plan is currently being deve Chilkat Environmental Inc to excavate and remediate the petroleum contaminated soil.
5/22/2012	Site Visit	DEC site visit with Chilkat Environmental met with Larry Beck to observe an elevated b constructed from clean material where a containment cell will be built to impound the s soil contaminated with weathered petroleum.

11/2/2012	Update or Other Action	The State of Alaska has established an agreement with Chilkoot Lumber Company reg payment of costs incurred by the Contaminated Sites Program in providing regulatory during the cleanup process on the former sawmill property on Lutak Road in Haines.
12/7/2012	Update or Other Action	DEC letter was sent by regular mail to the Larry Beck manager of the Haines Sawmill Lumber Inc and was copied to Steve Winker, manager for the DNR Division of Mining, Water and Sally Schlichting, manager for the CS Program. DEC requested that a plan submitted for approval that will schedule a final cleanup remedy for stockpiled petroleu contaminated soil recovered by site investigation and cleanup of the property. The pur these site activities is to ensure that the pollution is contained and that the migration of contamination is not presenting a risk of exposure that could affect human health and environment, now and in the future.
4/29/2013	Site Visit	DEC performed a site visit today with Chilkoot Lumber consultant Chilkat Environment the condition of the contaminated soil stockpiles. The geotextile covers and liners appe and some progress has been made building up a base at the nearby on-site 'high and where the soil will permanently stabilized.
8/7/2013	Site Visit	DEC accompanied Chilkat Environmental, environmental planning consultant to Chilko to the former sawmill property to inspect the condition of on-site contaminated soil stoc the location of the proposed road bed where geotechnical preparations for final placem soil is in progress.
9/6/2013	Exposure Tracking Model Ranking	A new updated ranking with ETM has been completed for source area 78206 Dioxin F Precipitator. Removal action confirmation sampling analyses at the Fly Ash Precipitato Ash Storage sites confirm that all hazardous material has been successfully transferre shipping containers. Manifest documentation confirm that all fly ash waste has been tr and remediated off-site.
6/4/2014	Report or Workplan Review - Other	DEC approved by letter to manager Larry Beck the Chilkoot Lumber Stockpile Mainter (Plan), dated June 4, 2014. Chilkat Environmental Inc prepared the Plan to treat exces the contaminated soil stockpile containment. The purpose of filtering the water through activated carbon is to remove dissolved petroleum prior to discharge to the surface of on-site. With laboratory analysis in 2011, CEI demonstrated the effectiveness of the ca filtration method to remove dissolved petroleum from water in contaminated soil excav objective of removing any standing water is to facilitate aerobic microbial degradation volatilization of petroleum remaining in the soil.
6/16/2014	Report or Workplan Review - Other	By letter to manager Larry Beck DEC approved Chilkoot Lumber Company Stockpile Characterization Plan (Plan), dated June 13, 2014. Chilkat Environmental Inc (CEI) pr Plan for the Haines Sawmill site. The Plan proposes to collect samples to characterize contamination concentrations in two soil stockpiles located at the former Haines Sawm In accordance with the approved Stockpile Maintenance Plan dated June 6, 2014, CE all excess water from the two stockpiles and filtered the water through granulated activ prior to discharge to the ground on-site. DEC review of this specific work plan is to ens work is done in accordance with State of Alaska environmental conservation laws and In accordance with Title 18 Alaska Administrative Code (AAC) 75.355 – 75.360 CEI, a third party qualified person(s), submitted the Plan for approval in format consistent witl and recommendations for data quality assurance and field sampling methodology in C Sites Program guidance documents. Therefore the proposed Plan is approved in acco

		18 AAC 75.335(b).
6/20/2014	Report or Workplan Review - Other	DEC received a copy of a Fieldwork Memo to Chilkoot Lumber Company manager Lar Based on observation during sampling and the results of field screening core samples North and South on-site contaminated soil stockpiles, Chilkat Environmental concludes the entire North Stockpile and soil in the upper layer of the South Stockpile appears to remediated to the extent of not leaching petroleum. Chemical analysis of samples from sent for laboratory analysis should confirm that. Chilkat also observed that the lower la the South Stockpile was contaminated to an extent that would leach petroleum if not c within the lined stockpile. Based on this information DEC concurred with the Chilkat re change in the approved work plan. Chilkat will not collect a confirmation laboratory sar the bottom of the south stockpile at this time. The sample will be taken at a later date v additional draining and remediation has taken place.
9/16/2014	Report or Workplan Review - Other	On behalf of Chilkoot Lumber, Chilkat Environmental submitted the results of analytica of the two on-site stockpiles. Stockpile A and the upper half of Stockpile B have conce petroleum that are marginally greater than migration to groundwater cleanup levels an leach when exposed to normal rainfall. DEC approved the report results and requested Chilkoot Lumber submit, for DEC approval, a formal plan to landspread the remediated at an elevated location on the property away from drainages to avoid erosion mobilizin petroleum contamination remaining in the soil. Chilkoot Lumber will continue the Soil T Maintenance and Assessment Plan on the remaining lower half of Stockpile B schedul sampling assessment in 2015.
10/6/2014	Report or Workplan Review - Other	DEC has evaluated the Chilkoot Lumber Company Soil Stabilization Plan for quality as and adherence to draft plans previously submitted for DEC comment by Chilkat Enviro (CEI) and on-site inspections and plan reviews by DEC. DEC sent Plan Approval by el mail to Larry Beck for Chilkoot Lumber Company (CLC) and to CEI. The CLC Plan will remediated soil under a new driveway extending into the property from Lutak Road. Th north biocell will be stabilized in road base under the driveway and capped with two fe material. CLC will take a 50% to 70% lift from the top of the south biocell and stabilize remediated soil as road base under the driveway. As the removal extends into the lowe south biocell, CEI will collect field screening samples. The remaining biocell soil will be pumped and filtered, and the cover will be reapplied. CEI will submit to DEC for approv interim removal report with photographs to document containment of remaining soil in biocell.
10/31/2014	Exposure Tracking Model Ranking	A new updated ranking with ETM has been completed for source area 78974 Above G Tanks.
1/6/2015	Report or Workplan Review - Other	DEC has reviewed and approves: Chilkoot Lumber Company: Stockpile Stabilization (Maintenance Plan (Plan), dated December, 2014. Chilkat Environmental Inc. (Chilkat) the Report and Plan for the Chilkoot Lumber Company (CLC) to document recent activ out at the referenced site. The activity performed on October 28, 2014 stabilized treate two on-site stockpiles in a permanent landform creating an improved driveway for the i facility. The Report documents this activity and the Plan presents a management plan maintenance of the small stockpile remaining at the CLC site in Haines, Alaska.
2/16/2016	Update or Other Action	Collaborate with the consultant Chilkat Environmental regarding regulatory and techni associated with the site cleanup, monitoring and reporting schedule now that Larry Be

		longer managing the business.
5/16/2016	Update or Other Action	DEC reviewed and approves a 50% lift from the last stockpile of petroleum contaminat the Chilkoot Lumber Company (CLC) property based on soil odor and color consistent digit photoionization detector readings established in the 2014 Stockpile Maintenance Stabilization Plan. The soil will be transferred to the soil stabilization site on the proper Requested CLC plan on proceeding with the final lift of the sawmill stockpile and dispo 34-mile stockpile later in summer 2016.
5/27/2016	Report or Workplan Review - Other	DEC has reviewed the Spring 2016 CLC Stockpile Status Memo by Chilkat Environme (CEI). DEC concludes field data log and description of performance and maintenance leachate collection and treatment system at the reference site contaminated soil stock acceptable and in accordance with the approved 2014 plan. The Memo/Report is appr accordance with 18 AAC 75.335(d). DEC requested CLC submit for approval a plan to dispose of the off-site CLC bioremediation cell located on City and Borough of Haines located at 34-mile Haines Highway.
8/19/2016	Report or Workplan Review - Other	DEC has reviewed and approved Chilkoot Lumber Company – Fall 2016 Stockpile Characterization Work Plan (Plan), dated August 18, 2016. Chilkat Environmental Inc. the Plan for DEC approval before collecting samples from the remaining stockpiled soi referenced Site. Chilkat proposes to collect 5 composite samples from the stockpiled s synthetic precipitation leaching procedure (SPLP)/diesel (DRO) range hydrocarbon lab The results will be compared to the Table C value for DRO of 1.5 milligrams per liter (n Laboratory results, recommendations, and data quality checklist will be provided to DE results are below the remaining soil will be moved to the stabilization driveway site.
10/20/2016	Report or Workplan Review - Other	DEC letter approves the memo submitted by Chilkat Environmental Inc. regarding a co soil stockpile lift for Chilkoot Lumber Company. Field screening and leachability test in soil meets cleanup levels and will not leach hydrocarbons. Three and one half feet was the last remaining stockpile and was permanently placed in the on-site driveway. The s remains reasonably shaped to survive the winter without retention of water or cover da total volume of approximately 150 cubic yards remains between liners in the on-site st contaminated soil.
6/9/2017	Lien Recorded	Lien against Chilkoot Lumber for costs to the department has been recorded.
6/21/2018	Site Visit	Met RP at site to view stockpiled soil and discuss next step toward site closure.

Contaminant Information

NAME	LEVEL DESCRIPTION	MEDIA	COM

Control Type

TYPE	DETAILS

Requirements

DESCRIPTION	DETAILS

State of Alaska Department of Environmental Conservation

P.O. Box 111800
Juneau, AK 99811-1800
Phone: 907-465-5066
Fax: 907-465-5070
TDD: 800-770-8973
Physical Location: 410 Willoughby

Appendix B

ADEC Sampling Plan Approval

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Cathy Needham

From: Rodman, Amy A (DEC) <amy.rodman@alaska.gov>
Sent: Friday, May 18, 2018 12:02 PM
To: cathy@kaienvironmental.com
Subject: Haines Sawmill site
Attachments: 2016.08.19 Haines Sawmill Fall 2016 Stockpile Characterization WP AL 8.19.16.pdf; 2016.08.18 Haines Sawmill Fall 2016 Stockpile SC WP.pdf

Cathy,

Good morning. I spoke with my supervisor and it should be fine if the contents of the 2016 work plan were followed. Let me know if you have any questions or concerns.

Take care,
Amy

Amy Rodman
Environmental Program Specialist
ADEC Contaminated Sites Program
410 Willoughby Avenue, Suite 303
Juneau, Alaska 99811-1800
Phone: (907) 465-5368
Fax: (907) 465-5218
amy.rodman@alaska.gov

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Appendix C

Field Notes

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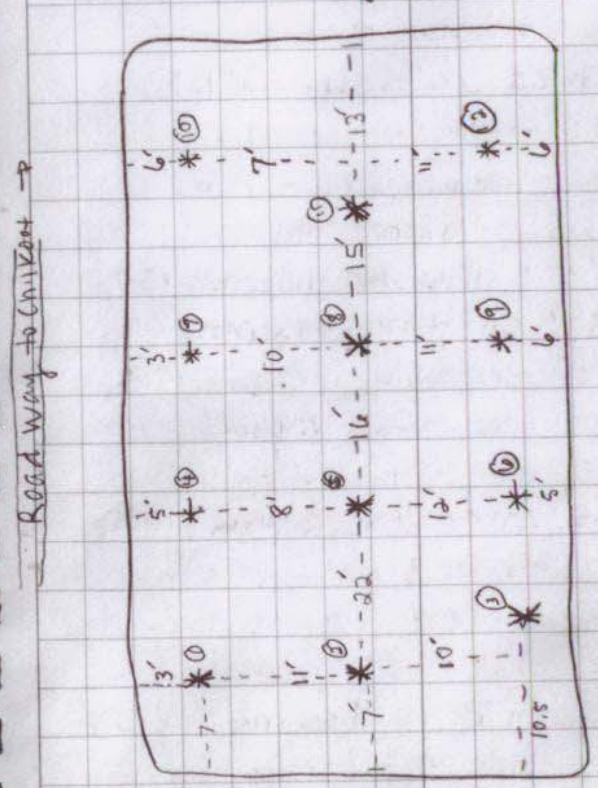
Chilkoot Lumber Stockpile 10/24/18

- PID: Fresh Air Adjustment @ 9:45
- Flaggrd 12 locations across stock pile for excavation. Previous 2' lift did not occur → AR & ADEC gave verbal permission on 10/23/18 to not sample top 2' of material



Rite in the Rain

Chilkoot Lumber stock pile 10/24/18

~~CLC-01~~ Top 2' taken off in all 12 holes PID monitoring occurred at each 12 locations to determine VOC's in first 2'. All 0.0 ppm

- All holes numbered 1-12. Composite 1 will be 3, 4, 5, 9, 10, 11 and Composite 2 will be 1, 2, 6, 7, 8, 12. See grid pg 12

- 3 = dug to 3' no odor, 0 ppm, standing water 12:14p
2 = dug to 3' no odor, 0. ppm,
1X = dug to ~~3'3~~" 2'9" to water; 2'10" to liner; 1507p
4 = dug 3.5' no odor, 0 ppm; 12:37pm
5 = dug 3.25', light odor, 2.8 ppm, 1300p
6 = dug 3.5', strong odor, 34.1 ppm; 1539p
7 = dug 3'3"; slight odor, 1.6 ppm; 1551p
8 = dug 3'3"; slight odor; 12.4 ppm; 1610p
10X = dug 3'1" odor moderate, 38.8 ppm; 1405p
9 ~~10~~ = dug 3.5' odor strong; 98.4 ppm; 1325p
11 = dug 3.5', odor light, 0.0 ppm; 1417p
12 = dug 3.5'; odor moderate, 28.4 ppm; 1625p

- ~~CLC-01~~ CLC 01 - hole 3 = 6 scoops moderate saturated
hole 4 = 7 scoops small unconsolidated
hole 5 = 9 scoops small unconsolidated
hole 9 = 3 scoops (large, wet stick)
hit liner hole 10 = 7 scoops small unconsolidated
standing water 3' hole 11 = 6 scoops moderate saturated

Chilkoot Lumber Stock Pile 10/24/18

CLC-01: warm water sheen 1435 - positive
: PID 6.2 ppm (screen) 10 min
: fill jar 1440

CLC-02: hole 1: no odor, 0.0 ppm; 8 scoops moderate saturated
#1 hit liner hole 2: ~~no~~ 8 scoops; moderate, unconsolidated
hole 6: 9 scoops; moderate, saturated
hole 7: 8 scoops; moderate, mixed saturated w/ unconsolidated
hole 8: 10 scoops, small, unconsolidated
hole 12: 11 scoops, small, slightly saturated

CLC-02: warm water sheen 1640 - positive
PID 7.5 ppm screen 10 min
jar fill 1655p

Holes 11 - water - no sheen
10 - water - no sheen
7 - water - slight sheen
6 - water - sheen
4 - water - sheen
~~hit~~ 1 - water - sheen
3 - water - fill in / cave
9 - water - fill in / cave
The rest were dry

CLC-03: Duplicate of CLC-02
CLC-04: DRO of CLC-02.
CLC-05: Composite CLC 01 & CLC-02

Appendix D

Laboratory Data Package

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Laboratory Report of Analysis

To: Kai Environmental
9000 Glacier Hwy, Ste 302
Juneau, AK 99801
(907)723-4426

Report Number: **1186152**

Client Project: **Chilkoot Lumber Stockpile**

Dear Cathy Needham,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

_____

Justin Nelson Date
Project Manager
Justin.Nelson@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Kai Environmental**
SGS Project: **1186152**
Project Name/Site: **Chilkoot Lumber Stockpile**
Project Contact: **Cathy Needham**

Refer to sample receipt form for information on sample condition.

LCS for HBN 1788578 [XXX/40839 (1486379) LCS

AK102/103 - Surrogate recovery in the LCS for n-triacontane does not meet QC criteria; however, the surrogate recoveries in the samples are within criteria.

SPW for HBN 1788502 [TCLP/9795 (1486124) SPW

AK102/103 - DRO/RRO is detect in the SPW greater than one half the DL, but less than the LOQ.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
CLC-01	1186152001	10/24/2018	10/26/2018	Solid/Soil (Wet Weight)
CLC-02	1186152002	10/24/2018	10/26/2018	Solid/Soil (Wet Weight)
CLC-03	1186152003	10/24/2018	10/26/2018	Solid/Soil (Wet Weight)
CLC-04	1186152004	10/24/2018	10/26/2018	Soil/Solid (dry weight)
CLC-05	1186152005	10/24/2018	10/26/2018	Solid/Soil (Wet Weight)

Method	Method Description
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
SM21 2540G	Percent Solids SM2540G
AK102	Synthetic TCLP Diesel/Residual Range Org
AK103	Synthetic TCLP Diesel/Residual Range Org

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Detectable Results Summary

Client Sample ID: **CLC-01**
Lab Sample ID: 1186152001

	Parameter	Result	Units
Semivolatile Organic Fuels Department (SPLP	Diesel Range Organics	0.656	mg/L
	Residual Range Organics	0.271J	mg/L

Client Sample ID: **CLC-02**
Lab Sample ID: 1186152002

	Parameter	Result	Units
Semivolatile Organic Fuels Department (SPLP	Diesel Range Organics	0.544J	mg/L
	Residual Range Organics	0.237J	mg/L

Client Sample ID: **CLC-03**
Lab Sample ID: 1186152003

	Parameter	Result	Units
Semivolatile Organic Fuels Department (SPLP	Diesel Range Organics	0.472J	mg/L
	Residual Range Organics	0.227J	mg/L

Client Sample ID: **CLC-04**
Lab Sample ID: 1186152004

	Parameter	Result	Units
Semivolatile Organic Fuels	Diesel Range Organics	1290	mg/Kg
	Residual Range Organics	1550	mg/Kg

Client Sample ID: **CLC-05**
Lab Sample ID: 1186152005

	Parameter	Result	Units
Semivolatile Organic Fuels Department (SPLP	Diesel Range Organics	0.665	mg/L
	Residual Range Organics	0.296J	mg/L

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Results of **CLC-01**

Client Sample ID: **CLC-01**
Client Project ID: **Chilkoot Lumber Stockpile**
Lab Sample ID: 1186152001
Lab Project ID: 1186152

Collection Date: 10/24/18 14:40
Received Date: 10/26/18 16:29
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels Department (SPLP)**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.656		0.652	0.196	mg/L	1		11/05/18 16:54
Surrogates								
5a Androstane (surr)	101		50-150		%	1		11/05/18 16:54

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 11/05/18 16:54
Container ID: 1186152001-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 920 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.271	J	0.543	0.163	mg/L	1		11/05/18 16:54
Surrogates								
n-Triacontane-d62 (surr)	114		50-150		%	1		11/05/18 16:54

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 11/05/18 16:54
Container ID: 1186152001-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 920 mL
Prep Extract Vol: 1 mL

Print Date: 11/16/2018 4:00:13PM

J flagging is activated

Results of **CLC-02**

Client Sample ID: **CLC-02**
Client Project ID: **Chilkoot Lumber Stockpile**
Lab Sample ID: 1186152002
Lab Project ID: 1186152

Collection Date: 10/24/18 16:55
Received Date: 10/26/18 16:29
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels Department (SPLP)**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.544	J	0.625	0.188	mg/L	1		11/05/18 17:04
Surrogates								
5a Androstane (surr)	96.4		50-150		%	1		11/05/18 17:04

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 11/05/18 17:04
Container ID: 1186152002-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 960 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.237	J	0.521	0.156	mg/L	1		11/05/18 17:04
Surrogates								
n-Triacontane-d62 (surr)	112		50-150		%	1		11/05/18 17:04

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 11/05/18 17:04
Container ID: 1186152002-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 960 mL
Prep Extract Vol: 1 mL

Print Date: 11/16/2018 4:00:13PM

J flagging is activated

Results of **CLC-03**

Client Sample ID: **CLC-03**
Client Project ID: **Chilkoot Lumber Stockpile**
Lab Sample ID: 1186152003
Lab Project ID: 1186152

Collection Date: 10/24/18 16:55
Received Date: 10/26/18 16:29
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels Department (SPLP)**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.472	J	0.612	0.184	mg/L	1		11/05/18 17:14
Surrogates								
5a Androstane (surr)	102		50-150		%	1		11/05/18 17:14

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 11/05/18 17:14
Container ID: 1186152003-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 980 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.227	J	0.510	0.153	mg/L	1		11/05/18 17:14
Surrogates								
n-Triacontane-d62 (surr)	120		50-150		%	1		11/05/18 17:14

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 11/05/18 17:14
Container ID: 1186152003-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 980 mL
Prep Extract Vol: 1 mL

Print Date: 11/16/2018 4:00:13PM

J flagging is activated

Results of **CLC-04**

Client Sample ID: **CLC-04**
Client Project ID: **Chilkoot Lumber Stockpile**
Lab Sample ID: 1186152004
Lab Project ID: 1186152

Collection Date: 10/24/18 16:55
Received Date: 10/26/18 16:29
Matrix: Soil/Solid (dry weight)
Solids (%):87.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1290		22.7	7.05	mg/Kg	1		11/01/18 13:59
Surrogates								
5a Androstane (surr)	99.9		50-150		%	1		11/01/18 13:59

Batch Information

Analytical Batch: XFC14772
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 11/01/18 13:59
Container ID: 1186152004-A

Prep Batch: XXX40815
Prep Method: SW3550C
Prep Date/Time: 10/28/18 10:46
Prep Initial Wt./Vol.: 30.098 g
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	1550		22.7	7.05	mg/Kg	1		11/01/18 13:59
Surrogates								
n-Triacontane-d62 (surr)	97.3		50-150		%	1		11/01/18 13:59

Batch Information

Analytical Batch: XFC14772
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 11/01/18 13:59
Container ID: 1186152004-A

Prep Batch: XXX40815
Prep Method: SW3550C
Prep Date/Time: 10/28/18 10:46
Prep Initial Wt./Vol.: 30.098 g
Prep Extract Vol: 5 mL

Print Date: 11/16/2018 4:00:13PM

J flagging is activated

Results of **CLC-05**

Client Sample ID: **CLC-05**
Client Project ID: **Chilkoot Lumber Stockpile**
Lab Sample ID: 1186152005
Lab Project ID: 1186152

Collection Date: 10/24/18 16:58
Received Date: 10/26/18 16:29
Matrix: Solid/Soil (Wet Weight)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels Department (SPLP)**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.665		0.619	0.186	mg/L	1		11/05/18 17:25
Surrogates								
5a Androstane (surr)	108		50-150		%	1		11/05/18 17:25

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 11/05/18 17:25
Container ID: 1186152005-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 970 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.296	J	0.515	0.155	mg/L	1		11/05/18 17:25
Surrogates								
n-Triacontane-d62 (surr)	127		50-150		%	1		11/05/18 17:25

Batch Information

Analytical Batch: XFC14780
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 11/05/18 17:25
Container ID: 1186152005-A

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/02/18 09:02
Prep Initial Wt./Vol.: 970 mL
Prep Extract Vol: 1 mL

Print Date: 11/16/2018 4:00:13PM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1788369 [SPT/10671]
Blank Lab ID: 1485497

Matrix: Soil/Solid (dry weight)

QC for Samples:
1186152004

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10671
Analytical Method: SM21 2540G
Instrument:
Analyst: E.M
Analytical Date/Time: 10/28/2018 3:31:00PM

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Duplicate Sample Summary

Original Sample ID: 1186146004
Duplicate Sample ID: 1485498
QC for Samples:
1186152004

Analysis Date: 10/28/2018 15:31
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	88.1	87.8	%	0.37	(< 15)

Batch Information

Analytical Batch: SPT10671
Analytical Method: SM21 2540G
Instrument:
Analyst: E.M

Print Date: 11/16/2018 4:00:16PM

Duplicate Sample Summary

Original Sample ID: 1186154001
Duplicate Sample ID: 1485499
QC for Samples:
1186152004

Analysis Date: 10/28/2018 15:31
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	89.8	90.4	%	0.77	(< 15)

Batch Information

Analytical Batch: SPT10671
Analytical Method: SM21 2540G
Instrument:
Analyst: E.M

Print Date: 11/16/2018 4:00:16PM

Method Blank

Blank ID: MB for HBN 1788363 [XXX/40815]
Blank Lab ID: 1485471

Matrix: Soil/Solid (dry weight)

QC for Samples:
1186152004

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	101	60-120		%

Batch Information

Analytical Batch: XFC14769
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 10/31/2018 9:54:00AM

Prep Batch: XXX40815
Prep Method: SW3550C
Prep Date/Time: 10/28/2018 10:46:06AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

Print Date: 11/16/2018 4:00:18PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1186152 [XXX40815]
Blank Spike Lab ID: 1485472
Date Analyzed: 10/31/2018 10:04

Spike Duplicate ID: LCSD for HBN 1186152 [XXX40815]
Spike Duplicate Lab ID: 1485473
Matrix: Soil/Solid (dry weight)

QC for Samples: 1186152004

Results by **AK102**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	833	903	108	833	829	100	(75-125)	8.50	(< 20)
Surrogates									
5a Androstane (surr)	16.7	115	115	16.7	107	107	(60-120)	8.00	

Batch Information

Analytical Batch: **XFC14769**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **CMS**

Prep Batch: **XXX40815**
Prep Method: **SW3550C**
Prep Date/Time: **10/28/2018 10:46**
Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1788363 [XXX/40815]
Blank Lab ID: 1485471

Matrix: Soil/Solid (dry weight)

QC for Samples:
1186152004

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	6.74J	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	107	60-120		%

Batch Information

Analytical Batch: XFC14769
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 10/31/2018 9:54:00AM

Prep Batch: XXX40815
Prep Method: SW3550C
Prep Date/Time: 10/28/2018 10:46:06AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

Print Date: 11/16/2018 4:00:21PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1186152 [XXX40815]
Blank Spike Lab ID: 1485472
Date Analyzed: 10/31/2018 10:04

Spike Duplicate ID: LCSD for HBN 1186152 [XXX40815]
Spike Duplicate Lab ID: 1485473
Matrix: Soil/Solid (dry weight)

QC for Samples: 1186152004

Results by **AK103**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	833	844	101	833	782	94	(60-120)	7.60	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	16.7	115	115	16.7	103	103	(60-120)	11.00	

Batch Information

Analytical Batch: **XFC14769**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **CMS**

Prep Batch: **XXX40815**
Prep Method: **SW3550C**
Prep Date/Time: **10/28/2018 10:46**
Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1788578 [XXX/40839]
Blank Lab ID: 1486378

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1186152001, 1186152002, 1186152003, 1186152005

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	100	60-120		%

Batch Information

Analytical Batch: XFC14776
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: VDL
Analytical Date/Time: 11/2/2018 5:04:00PM

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/2/2018 9:02:56AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Method Blank

Blank ID: SPW for HBN 1788502 [TCLP/9795
Blank Lab ID: 1486124

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1186152001, 1186152002, 1186152003, 1186152005

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.386J	0.638	0.191	mg/L

Batch Information

Analytical Batch: XFC14776
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: VDL
Analytical Date/Time: 11/2/2018 5:15:00PM

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/2/2018 9:02:56AM
Prep Initial Wt./Vol.: 940 mL
Prep Extract Vol: 1 mL

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t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1186152 [XXX40839]
Blank Spike Lab ID: 1486379
Date Analyzed: 11/02/2018 16:44

Spike Duplicate ID: LCSD for HBN 1186152 [XXX40839]
Spike Duplicate Lab ID: 1486380
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1186152001, 1186152002, 1186152003, 1186152005

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	5	4.84	97	5	4.99	100	(75-125)	3.00	(< 20)
Surrogates									
5a Androstane (surr)	0.1	108	108	0.1	111	111	(60-120)	2.80	

Batch Information

Analytical Batch: **XFC14776**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **VDL**

Prep Batch: **XXX40839**
Prep Method: **SW3520C**
Prep Date/Time: **11/02/2018 09:02**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1788578 [XXX/40839]
Blank Lab ID: 1486378

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1186152001, 1186152002, 1186152003, 1186152005

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	118	60-120		%

Batch Information

Analytical Batch: XFC14776
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: VDL
Analytical Date/Time: 11/2/2018 5:04:00PM

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/2/2018 9:02:56AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Method Blank

Blank ID: SPW for HBN 1788502 [TCLP/9795
Blank Lab ID: 1486124

Matrix: Solid/Soil (Wet Weight)

QC for Samples:
1186152001, 1186152002, 1186152003, 1186152005

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.160J	0.532	0.160	mg/L

Batch Information

Analytical Batch: XFC14776
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: VDL
Analytical Date/Time: 11/2/2018 5:15:00PM

Prep Batch: XXX40839
Prep Method: SW3520C
Prep Date/Time: 11/2/2018 9:02:56AM
Prep Initial Wt./Vol.: 940 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1186152 [XXX40839]
Blank Spike Lab ID: 1486379
Date Analyzed: 11/02/2018 16:44

Spike Duplicate ID: LCSD for HBN 1186152 [XXX40839]
Spike Duplicate Lab ID: 1486380
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1186152001, 1186152002, 1186152003, 1186152005

Results by **AK103**

	Blank Spike (mg/L)				Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)		Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	5	5.01	100		5	5.20	104	(60-120)	3.80	(< 20)
Surrogates										
n-Triacontane-d62 (surr)	0.1	121	121	*	0.1	119	119	(60-120)	2.00	

Batch Information

Analytical Batch: **XFC14776**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **VDL**

Prep Batch: **XXX40839**
Prep Method: **SW3520C**
Prep Date/Time: **11/02/2018 09:02**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

Print Date: 11/16/2018 4:00:27PM

SGS

REVIEWED MC

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1186152

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: Kai Environmental Consulting Services

CONTACT: Cathy Needham PHONE NO: 907-723-4426

PROJECT NAME: Chilkoot lumber Stockpile PROJECT/ PWSID/ PERMIT#:

REPORTS TO: Cathy Needham E-MAIL: cathy@kaienvironmental.com

INVOICE TO: Cathy Needham QUOTE #:

P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incre-mental Soils	Preservative: SPLP DRO/RRO 1312, AK102/103	Preservative: AK 102/103 DRO	REMARKS/ LOC ID
(1)A	CLC-01	10/24/18	14:40	Soil	1	C	X		
(2)A	CLC-02		16:55		1	C	X		
(3)A	CLC-03		16:55		1	C	X		
(4)A	CLC-04		16:55		1	C		X	
(5)A	CLC-05		16:58		1	C	X		

Section 5

	Date	Time	
Relinquished By: (1) Cathy Needham	10/26/18	0800	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 10/26/18	Time 16:29	Received For Laboratory By: Nic Copp

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements: N/A

Requested Turnaround Time and/or Special Instructions: TAT

Temp Blank °C: 2.2 DII

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) IF IB

INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

1186152

SGS

SGS North America Inc.

200 W. Potter Dr., Anchorage, AK 99518 (ph) 907-562-2343, (fax) 907-561-5301

3180 Peger Rd. Ste. 190, Fairbanks, AK 99709 (ph) 907-474-8656

Sample Kit Reque

☐ **Client pickup Date:** _____ **Time:** _____

Be sure to ask if client will ship by ground (DOT) or air carrier (IATA)

☐ **Deliver to client:**

☑ **Ship by/Air Carrier:** UPS - use SGS Account

Airbill Number:

Date to ship by: 10/3/2018

Notes:

Does a Profile exist in LIMS? **If not, please send a request for new profile build.**

Client Name: Kai Environmental

Ordered By: Kathryn Erickson **Phone #:**

Email: kathryn@kaienvironmental.com

Project Name: Haines Soil **Project/Permit#:**

Quote #: **Profile #:**

Delivery Address: Kai Environmental Consulting Services
9000 Glacier Highway Suite 302
Juneau, AK 99801

Kit request taken by: JAN **Date:** October 1, 2018

Kit prepared by: EJA **Date:** 10-1-18

Kit *(including lid tightness for pres'd bottles)* checked by: JKV **Date:** 10/2/18

Kit packed & shipped by: EJA **Date:** 10/2/18

Filename: SKIT_Kai Environmental_Haines Soil_2018-10-01 ***Required Items**

No. Samples	Matrix	Analysis	Container Size & Type		Pres.	Bottle Lot #	Preservative Lot #	Hold Time	# QC Bottles	Total Bottles
10	Soil	1312, AK102/103 - SPLP DRO/RRO	1 x 8 oz.	Amber	None			14 d	0	10

☐ Pack for Shipping via ***ground*** (DOT)
☑ Pack for Shipping via ***air carrier*** (IATA)
☑ Temperature Blank (***circle one:*** 120-ml OR 500-ml)
☐ Soil VOA Trip Blank - Lot#:
☐ Water VOA Trip Blank - Lot#:
☐ 524 VOA Trip Blank - Lot#:
☐ Low Level Mercury Trip Blank- Lot#:
☑ Coolers
☑ Gel Ice
☑ Bubble Wrap
☑ Labels
☑ Custody Seals
☑ SGS COCs - ***Circle req'd forma*** ☑ Blank COC ☐ DW COC ☐ COC initiated by PM (attached)
☐ Send additional instructions/documents (***Note to PM:*** *Be sure to attach copy of requested form.)*

☐ Total # includes bottles for % Solids
☐ Track all Lot#? (Required for DOD)
☐ Foreign Soil

Other Notes/Reminders for Kit Prep:

Attention Client/Sampler:

1. Do not rinse container; be aware of any acid preservative in container.
2. Fill container, but do not overfill (except volatile waters).
3. Label the container with your sample ID as well as the date/time of collection.
4. Fill out the Chain of Custody.
5. Add frozen gel packs or ice to your cooler & pack to prevent breakage.

Charges may be invoiced for bottles which are unused or improperly used.
If you have any questions concerning this sample kit, please contact your Project Manager for assistance. *Thank you.*

***This will email a copy of this form for confirmation to the client email and save the form to the network. This should not be**

027 JNU 3573 8345 027-3573 8345

Shipper's Name and Address	Shipper's Account Number	Not Negotiable
Kathryn Erickson 1062 Arctic Circle Juneau, AK 99801 USA Tel: 907-988-6372	Customer's ID Number 49649	**Air Waybill** Issued By Alaska. AIR CARGO P.O. BOX 68900 SEAT 800-225-2752 ALAS 1186152
Consignee's Name and Address	**Consignee's Account Number**	**Also notify**
SGS CT and ENVIRONM 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	27400215947	Tel:
Issuing Carrier's Agent and City		**Accounting Information** 49649 Kathryn Erickson 1062 Arctic Circle Juneau, AK 99801 USA
Agent's IATA Code	**Account No.**	
Airport of Departure (Addr. of First Carrier) and Requested Routing		GoldStreak
Juneau		

To	By First Carrier	To / By	To / By	Currency	WT/VAL	Other	Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD PX	X	X	NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 065/26		XXX

Handling Information

KEEP COOL
NOA SGS 907-562-2343

SCI

No of Pieces	Gross Weight	kg lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	20.0	L		20.0		AS AGREED	SOIL SAMPLES Dims: 16 x 11 x14 x 1 GSX
1	20.0					AS AGREED	Volume: 1.426

Prepaid	Weight Charge	Collect	Other Charges
AS AGREED			XBC 0.00
Valuation Charge			
Tax			
Total Other Charges Due Agent			
Total Other Charges Due Carrier			
Total Prepaid	Total Collect		
AS AGREED			

Shipper certifies that the particulars on the face hereof are correct and that **insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.**

For: Kathryn Erickson

Signature of Shipper or his Agent

KC THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

26 Oct 2018 08:23 Juneau Alaska Airlines

Executed On (Date) at (Place) Signature of Issuing Carrier or its Agent

027-3573 8345

Alert Expeditors Inc. **#389321**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 10 26

From Kathy

To SGS

Collect ❐	Prepay ❐ Account ❐	Advance Charges ❐
Job #	PO#	

35738345

1186152

Shipped Signature

Total Charge

Received By: [signature] 10-29

e-Sample Receipt Form

SGS Workorder #: **1186152**

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		n/a Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	yes	1-front 1-back
COC accompanied samples?	yes	
n/a **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	yes	Cooler ID: 1 @ 2.2 °C Therm. ID: D11
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
If >6°C, were samples collected <8 hours ago?	n/a	
If <0°C, were sample containers ice free?	n/a	
If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	yes	
		n/a ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	n/a	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	n/a	
Were all soil VOAs field extracted with MeOH+BFB?	n/a	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1186152001-A	No Preservative Required	OK			
1186152002-A	No Preservative Required	OK			
1186152003-A	No Preservative Required	OK			
1186152004-A	No Preservative Required	OK			
1186152005-A	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

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Appendix E

Laboratory Data Review Checklist

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Laboratory Data Review Checklist

Completed By:

Cathy A. Needham

Title:

Environmental Scientist

Date:

1/10/2019

CS Report Name:

Haines Sawmill Site

Report Date:

11/16/2018

Consultant Firm:

Kai Environmental Consulting Services, LLC

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1186152

ADEC File Number:

1508.38-009

Hazard Identification Number:

2378

1186152

1. Laboratory

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

   (●) Yes ( ) No 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 Comments:

   N/A – laboratory samples were not transferred to another laboratory

2. Chain of Custody (CoC)

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

   (●) Yes ( ) No Comments:

   b. Correct Analyses requested?

   (●) Yes ( ) No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   (●) Yes ( ) No Comments:

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

   ( ) Yes ( ) No Comments:

   N/A other than temperature, no sample preservation was required

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

   (●) Yes ( ) No Comments:

   Sample condition was documented and all conditions were marked "yes", representing "ok".

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

○ Yes ○ No Comments:

N/A – there were no sample discrepancies

e. Data quality or usability affected?

Comments:

Data quality and usability not affected

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

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

◉ Yes ○ No Comments:

The surrogate recovery in the LCS for n-triacontane did not meet the QC Criteria.

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

Surrogate recoveries in the samples were within the criteria.

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

Comments:

Data quality and usability are not affected

5. Samples Results

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

◉ Yes ○ No Comments:

b. All applicable holding times met?

◉ Yes ○ No Comments:

c. All soils reported on a dry weight basis?

○ Yes ◉ No Comments:

Samples analyzed using SPLP were reported as wet weight. All others reported as dry weight. The SPLP wet weight analysis is appropriate. Data quality and usability are not affected.

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

◉ Yes ○ No Comments:

e. Data quality or usability affected?

○ Yes ◉ No Comments:

6. QC Samples

a. Method Blank

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

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

N/A all method blank results below LOQ

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

○ Yes ○ No Comments:

N/A all method blank results below LOQ

v. Data quality or usability affected?

Comments:

Data quality and usability are not affected

1186152

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 Comments:

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

( ) Yes ( ) No Comments:

N/A – Metals/Inorganics not requested

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 Comments:

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

(•) Yes ( ) No Comments:

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

Comments:

%R do not exceed limits on samples analyzed

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

( ) Yes ( ) No Comments:

N/A

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

Comments:

Data quality and usability not affected

c. Surrogates – Organics Only

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

(•) Yes ( ) No 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 Comments:

Surrogate recovery for n-triacontane for SPLP RRO was 121% (>120%). All other LCS/LCSD surrogate recoveries and surrogate recoveries in the samples met the criteria, therefore data quality and usability were not affected.

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

(•) Yes ( ) No Comments:

The data have an "*", as well as reported in the case narrative

iv. Data quality or usability affected?

Comments:

Data quality or usability are not affected

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 Comments:

N/A – Volatile analysis not requested

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 Comments:

N/A – Volatile analysis not requested

iii. All results less than LOQ?

( ) Yes ( ) No Comments:

N/A – Volatile analysis not requested

iv. If above LOQ, what samples are affected?

Comments:

N/A – Volatile analysis not requested

v. Data quality or usability affected?

Comments:

N/A – Volatile analysis not requested

e. Field Duplicate

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

○ Yes ◉ No Comments:

One field duplicate for SPLP DRO, but no duplicate for DRO soil sample

ii. Submitted blind to lab?

◉ Yes ○ No Comments:

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

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

◉ Yes ○ No Comments:

SPLP DRO RPD = 14%; SPLP RRO RPD = 4.3%

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

Comments:

Field duplicate was performed for water, but not soil. Only one duplicate for the sampling event was planned in the ADEC approved plan. Data quality and usability are not affected.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

○ Yes ○ No ◉ Not Applicable

i. All results less than LOQ?

○ Yes ○ No Comments:

N/A – equipment blanks were not requested

ii. If above LOQ, what samples are affected?

Comments:

N/A – equipment blanks were not requested

iii. Data quality or usability affected?

Comments:

N/A – equipment blanks were not requested

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

a. Defined and appropriate?

◉ Yes ○ No Comments:

"U" and "J" flags were used appropriately.

Appendix F

Sit Conceptual Model

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Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Haines Sawmill Site: Stockpile B

File Number: 1508.38.099

Completed by: Cathy A. Needham

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Petroleum contaminate stockpile

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☐ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☒ Other: Stockpile of contaminated soil from site remediation

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☐ Air
- ☐ Sediment
- ☐ Groundwater
- ☐ Surface water
- ☐ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☐ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☐

If the box is checked, label this pathway complete: Complete

Comments:

The stockpile is stored within a liner and above ground. The site is light industrial in nature, ingestion of soils are unlikely.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☐

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

The stockpile access is restricted, and covered with a liner.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☐

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

The stockpile is protected from entry to groundwater by a liner barrier

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Surface waters are not present on or around the site

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☐

If all of the boxes are checked, label this pathway complete: Incomplete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☐

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☐

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Incomplete

Comments:

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

Print Form

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Haines Sawmill Site: Stockpile B

Completed By: Cathy Needham

Date Completed: 2/25/19

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.*

Media	Transport Mechanisms	
☑ Surface Soil (0-2 ft bgs)	Direct release to surface soil	check soil
	☐ Migration to subsurface	check soil
	☐ Migration to groundwater	check groundwater
	☐ Volatilization	check air
	☐ Runoff or erosion	check surface water
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	
☐ Subsurface Soil (2-15 ft bgs)	Direct release to subsurface soil	check soil
	☐ Migration to groundwater	check groundwater
	☐ Volatilization	check air
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	
☐ Ground-water	Direct release to groundwater	check groundwater
	☐ Volatilization	check air
	☐ Flow to surface water body	check surface water
	☐ Flow to sediment	check sediment
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	
☐ Surface Water	Direct release to surface water	check surface water
	☐ Volatilization	check air
	☐ Sedimentation	check sediment
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	
☐ Sediment	Direct release to sediment	check sediment
	☐ Resuspension, runoff, or erosion	check surface water
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	

(3) *Check all exposure media identified in (2).*

(4) *Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.*

Current & Future Receptors

Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ soil	☑ Incidental Soil Ingestion		C/F	C/F	C/F			
	☑ Dermal Absorption of Contaminants from Soil		C/F	C/F	C/F			
	☐ Inhalation of Fugitive Dust							
☐ groundwater	☐ Ingestion of Groundwater							
	☐ Dermal Absorption of Contaminants in Groundwater							
	☐ Inhalation of Volatile Compounds in Tap Water							
☑ air	☑ Inhalation of Outdoor Air		C/F	C/F	C/F			
	☐ Inhalation of Indoor Air							
	☐ Inhalation of Fugitive Dust							
☐ surface water	☐ Ingestion of Surface Water							
	☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Inhalation of Volatile Compounds in Tap Water							
☐ sediment	☐ Direct Contact with Sediment							
☐ biota	☐ Ingestion of Wild or Farmed Foods							

2/25/2019