



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

**Department of  
Environmental Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE  
Contaminated Sites Program

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File: 740.38.012

September 12, 2017

Sent via Electronic Mail Only

Heidi Long  
DERP Project Manager  
CEMML  
PO Box 5800  
JBER, AK 99505

Re: Decision Document: AKARNG Fort Yukon FSA  
Cleanup Complete Determination

Dear Ms. Long:

The Alaska Department of Environmental Conservation, Contaminated Sites Program (ADEC) has completed a review of the environmental records associated with the Alaska Army National Guard (AKARNG) Fort Yukon Federal Scout Armory (FSA) located at 3<sup>rd</sup> Avenue and Hill Street in Fort Yukon. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment and no further remedial action will be required unless new information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the AKARNG Fort Yukon FSA, which is located in the ADEC office in Juneau, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

**Site Name and Location:**  
AKARNG Fort Yukon FSA  
3<sup>rd</sup> and Hill Street  
Fort Yukon, AK

**Name and Mailing Address of Contact Party:**  
Heidi Long  
DERP Project Manager  
CEMML  
PO Box 5800  
JBER, AK 99505

**DEC Site Identifiers:**  
File No.: 740.38.012  
Hazard ID.: 3072

**Regulatory Authority for Determination:**  
18 AAC 75

### Site Description and Background

The Fort Yukon Federal Scout Armory (FSA) is located at 3<sup>rd</sup> Avenue and Hill Street in Fort Yukon. The FSA is in the central portion of the community southeast of the airstrip and north of the Yukon River. The Fort Yukon School is located 150 feet west of the facility. Fort Yukon is located on the Yukon Flats which is characterized by meandering channels, oxbow lakes, sloughs, thaw lakes, and sinkholes. The area surrounding the facility is generally flat and is covered with grass, brush, and spruce trees. Fort Yukon has about 660 residents. The climate in Fort Yukon is continental arctic with nearly continuous permafrost which can be found at 2-5 feet below ground surface. Residents of Fort Yukon get their drinking water from two groundwater wells. The depths of these is unknown.

The Fort Yukon FSA is currently inoperable and consists of a 1,500-gallon, double-walled aboveground storage tank (AST), a 20 by 60 foot prefabricated building, and a hazardous material storage shed. The FSA operated in its current location from about 1960 to 1993.

According to the *Preliminary Assessment/Site Investigation*, dated January 1998, prepared by Ogden Environmental and Energy Services Co., Inc. on behalf of the Alaska Army National Guard (AKARNG), there were no documented petroleum releases found in their records search. However, the vegetation surrounding the AST was either dead or severely stressed and there was a strong petroleum odor at the southern end of the drainage ditch near the culvert. The Fort Yukon FSA was added to the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Database in January 1998 following receipt of the aforementioned report.

### Contaminants of Concern

During the site investigation and cleanup activities at this site, samples were collected from soil and analyzed for diesel range organics (DRO), gasoline range organics (GRO), residual range organics (RRO), polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH), and benzene, toluene, ethylbenzene, xylenes (BTEX). Based on these analyses, the following contaminants were detected in soil above their respective cleanup levels and are considered Contaminants of Concern at this site:

- DRO
- 1-Methylnaphthalene
- 2-Methylnaphthalene

### Cleanup Levels

Site-specific soil cleanup levels for the site were documented in the *Fort Yukon Federal Scout Readiness Center Record of Decision for Petroleum Contamination* dated August 2013 and are listed in Table 1 below. The Hydrocarbon Risk Calculator (HRC) was used to input site-specific data and calculate a cleanup level for 1-methylnaphthalene and 2-methylnaphthalene of 280 milligrams per kilogram (mg/kg) each. The site-specific cleanup level approved for DRO was 10,000 mg/kg for DRO aliphatics; 4,100 mg/kg for DRO aromatics; and 11,512 mg/kg for total DRO. However, due to the complexities and long turnaround time for having aliphatic and aromatic fractions extracted by the laboratory, the AKARNG requested to use a cleanup level for total DRO of 10,250 mg/kg, using Alaska Method 102. This change made the final field effort less time consuming because the laboratory was able to provide data sooner, allowing the field work to continue and/or for excavation(s) to be backfilled sooner. ADEC approved this revised cleanup level for DRO on March 25, 2016 via a letter. On September 19, 2013, the ADEC and AKARNG concurred that the limited supra-permafrost groundwater on site is not considered a current nor reasonably potential future drinking

water source as defined by 18 AAC 75.350 and, therefore, is not subject to cleanup levels established under 18 AAC 75.345(b)(1).

**Table 1 – Approved Cleanup Levels**

Contaminant	Soil (mg/kg)
DRO	10,250
1-Methylnaphthalene	280
2-Methylnaphthalene	280

mg/kg = milligrams per kilogram

### Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the ADEC began in 1998 following a site investigation conducted the same year by Ogden Environmental and Energy Services Co., Inc. (Ogden) under contract for the AKARNG documented in the *Preliminary Assessment/Site Investigation* dated January 1998. Ogden collected ten field screening soil samples and five (5) analytical soil samples from the FSA in August of 1996. These samples were collected from three (3) areas of concern: the AST, the drum storage area, and the culvert. Soil was field screened using a field-portable infrared spectrophotometer and analytical samples were analyzed for DRO and TPH. Select samples were additionally analyzed for GRO and BTEX. The results of the investigation found that there was petroleum contamination at all 3 areas investigated. Contamination at the AST was found at up to 19,000 mg/kg DRO and 16,000 mg/kg TPH. Lower concentrations (up to 1,000 mg/kg TPH and 370 TPH) were found near the culvert and drum storage area. None of the GRO and BTEX components were detected.

A *Targeted Brownfield Assessment* (TBA) was completed in August 1999 and dated August 2000 by Ecology and Environment under contract for the Environmental Protection Agency (EPA). The scope of the TBA was the FSA in addition to the community water system, the old territorial school, a suspected pesticide spraying area, a drum storage area near the power supply building, the power supply building, and sewage lagoon No. 1. At the FSA, three (3) soil pits were excavated to a depth of 2-3 feet below ground surface at the AST and south and east of it. Permafrost prevented digging deeper. Two (2) soil samples were collected from each pit and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, GRO, BTEX, DRO, and RRO. No pesticides, PCBs, or metals were detected above current ADEC Method 2 cleanup levels outlined in 18 AAC 75.340. However, petroleum contamination was identified above ADEC cleanup levels in samples collected from the south end of the AST. Exceedances were observed for naphthalene, 1,3,5-trimethylbenzene, GRO, DRO, and RRO. Pentachlorophenol was also present at the south end of the AST at a concentration (4.1 mg/kg) which was lower than the respective cleanup level for the site.

North Wind Inc. conducted a secondary site characterization at the site in September 2008 on behalf of the AKARNG. This investigation was documented in the report *Secondary Site Characterization Report, Federal Scout Armory, Ft. Yukon, Alaska*, dated October 2008. During the investigation 76 soil borings were advanced to a depth of five (5) feet below ground surface (the permafrost interface) and field screening was conducted at multiple depths. These borings were largely made along the assumed edge of contamination. A total of 22 soil samples were analyzed for DRO and the highest DRO concentration found was 1,580 mg/kg.

In July 2011, a data gap investigation on behalf of the AKARNG was completed by CH2M Hill and is documented in the report *Fort Yukon Federal Scout Readiness Center Data Gap Investigation Report* dated March 2013. The purpose of the data gap investigation was to delineate the extent of contamination on site. Seven soil borings were advanced to refusal (3-5 feet below ground surface). Nineteen soil samples were collected after field screening and analyzed for DRO and with select samples also being analyzed for BTEX, PAHs, EPH, and VPH. The results of the analyses indicated that DRO, 1-methylnaphthalene, and 2-methylnaphthalene were the only COCs present above the most stringent of ADEC cleanup levels. The ADEC-approved Hydrocarbon Risk Calculator (HRC) was used to evaluate cumulative risk at the site. Using the HRC, the report concluded that approximately 29 cubic yards (cy) of contaminated soil would have to be removed to meet a risk-based cleanup level for DRO of 11,512 mg/kg.

In October 2013, a Record of Decision (ROD) was signed which established site-specific cleanup levels for the site and subsequent remedial action (source removal). These were 11,512 mg/kg for DRO and 280 mg/kg for both 1-methylnaphthalene and 2-methylnaphthalene.

A remedial action was performed by Brice Environmental on behalf of the AKARNG in September 2016. This action is documented in the report *Remedial Action Report Fort Yukon Federal Scout Readiness Center (FSRC)*, dated November 2016. According to the report, there were two (2) locations requiring excavation due to DRO and methylnaphthalenes concentrations exceeding the cleanup level established in the ROD. Excavation 1 was located adjacent to the FSRC building near the former location of the AST and Excavation 2 was southeast of the FSRC building near a culvert. Excavation of contaminated soil at both locations was guided by a photoionization detector (PID). Post-excavation confirmation samples were collected from field screening samples having the highest PID readings. At Excavation 1, approximately 14 cy of contaminated soil was removed to a maximum depth of about 5.2 feet below ground surface. A total of 37 PID samples were collected and seven (7) confirmation samples and a duplicate were collected and analyzed for DRO, 1-methylnaphthalene, and 2-methylnaphthalene. Final DRO concentrations in Excavation 1 ranged from non-detect to 6,000 mg/kg. The remaining concentration of 1-methylnaphthalene ranged from non-detect to 3.8 mg/kg and from non-detect to 2.7 mg/kg for 2-methylnaphthalene.

Excavation 2 was located near a culvert and 32 PID samples were collected during the excavation of approximately two (2) cy of contaminated soil. The excavation was at a maximum depth of about five (5) feet below ground surface. Final confirmation samples from the excavation had DRO concentrations ranging from 1,600-6,600 mg/kg, 1-methylnaphthalene was not detected, and 2-methylnaphthalene was 0.024-0.071 mg/kg.

The clean overburden (10 cy) from the excavations was also field analyzed (15 PID readings) and two (2) samples were submitted for DRO and PAH analyses. The resulting DRO concentrations (790-6,300 mg/kg) were below cleanup levels as were the concentrations of 1 and 2-methylnaphthalenes (0.04-2.6 mg/kg). This clean overburden was used for backfill.

Approximately 19 cy of contaminated soil was transported to Organic Incineration Technology Inc. (OIT) in North Pole for treatment. Certificates of thermal treatment for this soil were received by ADEC on September 7, 2017. After this remedial action, as demonstrated by the confirmation samples, the remaining soils on site meet the cleanup levels established in the ROD.

### Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways. Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations meet the human health cumulative risk criteria for residential land use.

### Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using ADEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

**Table 2 – Exposure Pathway Evaluation**

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Remaining DRO contamination in soil is less than or equal to 6,000 mg/kg which is less than the ADEC cleanup level for the ingestion and inhalation exposure pathways for the under-40 inch precipitation zone (10,250 and 12,500 mg/kg, respectively).
Sub-Surface Soil Contact	De-Minimis Exposure	Remaining DRO contamination in soil is less than or equal to 6,000 mg/kg which is less than the ADEC cleanup level for the ingestion and inhalation exposure pathways for the under-40 inch precipitation zone (10,250 and 12,500 mg/kg, respectively).
Inhalation – Outdoor Air	De-Minimis Exposure	DRO contamination remains in the soil, but is below the inhalation cleanup level of 12,500 mg/kg.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Soil concentrations of DRO are less than the inhalation exposure pathway cleanup level.
Groundwater Ingestion	Pathway Incomplete	Limited supra-permafrost water is present but determined not to be a current or future drinking water source.
Surface Water Ingestion	Pathway Incomplete	DRO contamination did not affect surface water in the area.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contaminants of concern do not have the potential to bioaccumulate in plants or animals.
Exposure to Ecological Receptors	Pathway Incomplete	Ecological receptors on site are limited and are not expected to be affected by residual contamination.

**Notes to Table 2:** “De-Minimis Exposure” means that in ADEC’s judgment receptors are unlikely to be adversely affected by the minimal volume or concentration of remaining contamination. “Pathway Incomplete” means that in ADEC’s judgment contamination has no potential to contact receptors. “Exposure Controlled” means there is an

institutional control in place limiting land or groundwater use and there may be a physical barrier in place that prevents contact with residual contamination.

### **ADEC Decision**

Soil contamination at the site has been cleaned up to concentrations below the approved site-specific cleanup levels. This site will receive a "Cleanup Complete" designation on the Contaminated Sites Database, subject to the following standard conditions.

### **Standard Conditions**

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325(i). A "site", as defined by 18 AAC 75.990 (115), means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. (See attached site figure.)
2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

This determination is in accordance with 18 AAC 75.380 and does not preclude ADEC from requiring additional assessment and/or cleanup action if future information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to the environment.

### **Appeal**

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 555 Cordova Street, Anchorage, Alaska 99501-2617, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, P.O. Box 111800, Juneau, Alaska 99811-1800, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions about this closure decision, please feel free to contact me at (907) 465-5207, or email at [Danielle.Duncan@alaska.gov](mailto:Danielle.Duncan@alaska.gov).

Sincerely,



Danielle Duncan  
Project Manager

cc: Spill Prevention and Response, Cost Recovery Unit  
Anne Marie Palmieri, Environmental Program Specialist IV, ADEC, via electronic mail

Note: This letter is being transmitted to you in electronic format only. If you require a paper copy, let us know and we will be happy to provide one to you. In the interest of reducing file space, the Division of SPAR/Contaminated Sites Program is transitioning to electronic transmission of project correspondence.

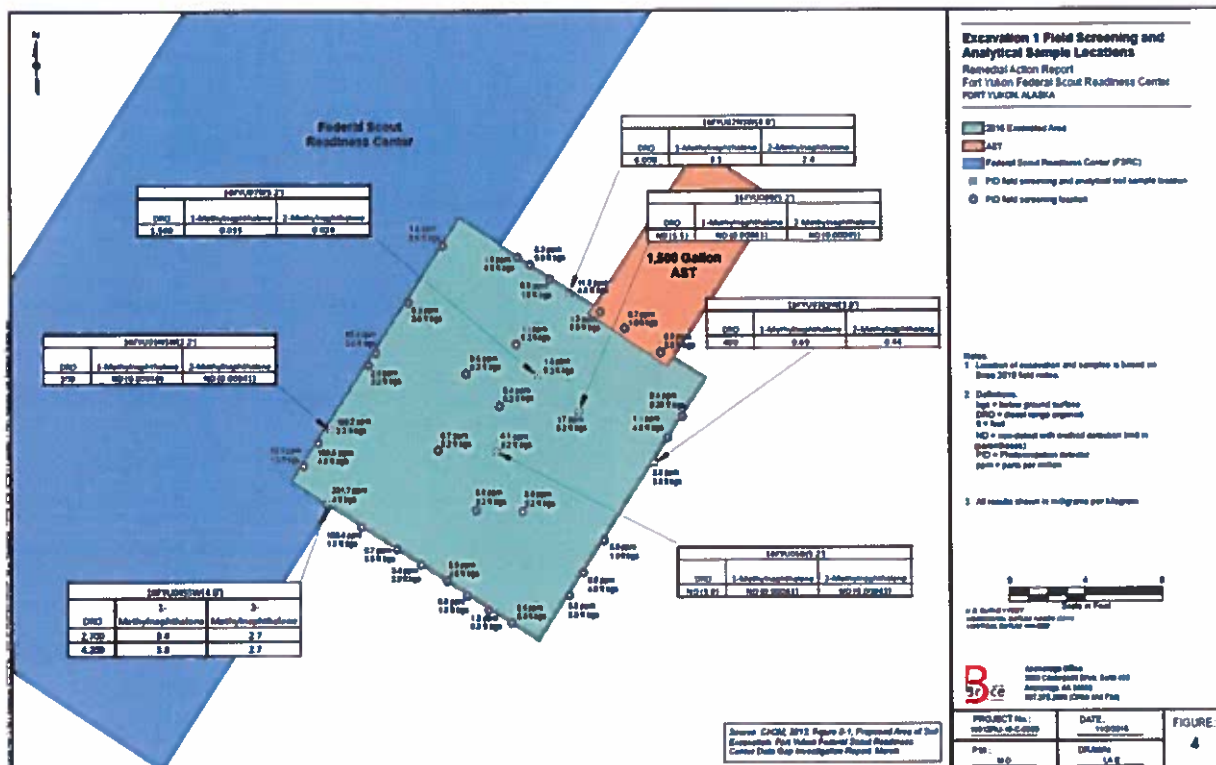


Figure 1: Locations and concentrations of remaining DRO soil concentrations on site at Excavation 1 at the Fort Yukon Alakanuk FSA. Figure copied from the draft Fort Yukon Remedial Action Report prepared by Brice Environmental, dated November 2, 2016.





