



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: 740.38.011

February 7, 2017

Lance Raymore
Federal Aviation Administration
Alaska Region Technical Operations
222 W. 7th Avenue, #14
Anchorage, AK 99513

Re: Decision Document: FAA Fort Yukon Quarters Facility Bldg 102 - Yukon Flats Health Clinic
USTs 9-C-9 & 9-C-10, Cleanup Complete Determination

Dear Mr. Raymore:

The Alaska Department of Environmental Conservation, Contaminated Sites Program (ADEC) has completed a review of the environmental records associated with the FAA Fort Yukon Quarters Facility Bldg 102 - Yukon Flats Health Clinic (YFHC) USTs 9-C-9 & 9-C-10, located at Fort Yukon, Alaska. 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 FAA Fort Yukon Quarters Facility which is located in the ADEC office in Fairbanks, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

Site Name and Location:

FAA Fort Yukon Quarters Facility
BLDGS 100 & 102
USTs 9-C-7, 9-C-9 & 9-C-10
Fort Yukon, AK

Name and Mailing Address of Contact Party:

Federal Aviation Administration (FAA)
Alaska Region Technical Operations
222 W. 7th Avenue, #14
Anchorage, AK 99513

DEC Site Identifiers:

File No.: 740.38.011
Hazard ID.: 25396
Source Area ID: 79563

Regulatory Authority for Determination:

18 AAC 75 & 18 AAC 78

The site files have been reviewed and sample results evaluated to see if the site meets DEC cleanup criteria and to issue this determination letter for site closure. The contaminated sites database entry for this site file

number also deals with the adjacent site (Quarters) Building 100 (Hazard ID: 25396; Source Area ID: 78758) which is not currently considered for closure due to lingering and actionable contamination issues.

Site Description and Background

The FAA's Fort Yukon facilities are located in the City of Fort Yukon in northeastern Alaska, approximately 145 miles northeast of Fairbanks. Fort Yukon is located at the confluence of the Porcupine and Yukon Rivers and is surrounded by the Yukon Flats National Wildlife Refuge.

The FAA facilities are surrounded by relatively flat, vegetated terrain and underlain by discontinuous permafrost that may reach depths of over 300 feet. The average annual precipitation at Fort Yukon is 6.61 inches of rainfall and 42 inches of snow (CH2MH, 2002).

The FAA facilities were constructed on fill material above the native alluvium. The fill material consists of medium- to coarse-grained gravel with varying amounts of silt and sand. The native soil consists of layers of sand, sandy silt, and sandy gravel.

During the HLA 1995 release investigations, groundwater was measured between 10 and 12 feet below ground surface (bgs); however, it was previously measured at depths of 20 to 30 feet bgs. Groundwater levels at this location generally are low between March and April and high between August and October. Groundwater flows toward the Yukon River and then northwest toward the confluence of the Yukon and Porcupine rivers (USGS, 1994).

Multiple releases are known to have occurred due to tank overfill and leaky tank distribution pipes and fittings. These releases are documented in spill reports dated 1995. Building 100 is approximately 40 ft. to the southwest of the YFHC and is an associated site with a similar history of petroleum releases from USTs. The source area (former tank locations) of the contamination at YFHC is on the north side of the clinic (Building 102) and approximately 120 ft. straight-line distance from building 100.

Contaminants of Concern

During the site investigation and cleanup activities at this site, samples were collected from soil and groundwater and analyzed for DRO, RRO, GRO, BTEX, and PAHs. Based on these analyses, the following contaminants were detected above the applicable cleanup levels and are considered Contaminants of Concern at this site:

- Diesel Range Organics (DRO)

Cleanup Levels

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)			Groundwater (mg/L)
	Ingestion	Inhalation	Migration to Groundwater	
DRO	10,250	12,500	250	1.5

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Characterization and Cleanup Activities

Two (2) underground storage tanks were removed in 1995 adjacent to Building 102 (Yukon Flats Health Clinic) as documented in the *Fuel Storage Tank Decommissioning Assessments*, dated 1995. Tank 9-C-10 was a 1000 gallon heating oil tank that was removed along with 30 cubic yards of petroleum-contaminated soil. Six (6) confirmation samples were collected and analytical results showed that diesel-range organics concentrations met DEC's default cleanup levels. Tank 9-C-9 was a 500 gallon heating oil tank that was removed along with 15 cubic yards of petroleum-contaminated soil. Six (6) confirmation samples were collected and analytical results showed that diesel-range organics concentrations up to 22,000 mg/kg remained in place at nine (9) feet below ground surface (bgs).

Three (3) soil borings were advanced during the 1996 Remedial Investigation and showed contamination present by field screening at seven (7) feet bgs, but an analytical result of 130 mg/kg for diesel range organics (DRO) at eight and one-half (8.5) ft. bgs. One of these borings was converted to a monitoring well and the analytical results of the groundwater monitoring showed non-detect. A vapor extraction system was installed in 1996 as described in *Remedial System Installation and Monitoring Report*, dated 1996. The monitoring well was not sampled during operation of the system as no contamination was found prior to system installation, but samples were collected twice in 2001 and analyzed for DRO and GRO/BTEX. DRO was the only petroleum constituent detected with a concentration of 1.1 mg/L in September 2001, and a concentration of 0.76 mg/L in November 2001, as documented in the Annual Report: *Operation, Maintenance, and monitoring of In Situ Bioremediation Systems Year 2001*, dated 2002. The system was shut down in April 2001. Soil samples were also collected in 2001 with a highest concentration of DRO detected of 1500 mg/kg at nine (9) ft. bgs. Soil contamination, above the MTGW threshold, remained in place as evidenced by analytical samples and there was the potential for groundwater contamination to exceed the cleanup levels. The Department (DEC) requested in 2005 that FAA address the remaining petroleum hydrocarbons (DRO contaminated soil) at this former tank location, and that groundwater be monitored.

In 2005, the Department also expressed concern regarding the potential for a complete vapor intrusion pathway affecting YFHC. At that time DEC requested that FAA conduct modeling or soil gas or air monitoring to determine if vapor intrusion was a concern at this building. In 2013, when soil and groundwater were again sampled, two (2) wells and three (3) monitoring points were decommissioned. The 2013 sampling results were very low for VOCs thus there are no longer any YFHC vapor intrusion concerns.

2013 Soil samples for PAHs detected Napthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Fluoranthene, and Pyrene between 7 and 8 ft. bgs. These detections were all below cleanup levels. DRO remains above MTGW soil cleanup levels, with a range in concentrations from 1260 to 5440 mg/kg.

All 2013 groundwater samples from Monitoring Well #1 (MW-1) for PAHs were non-detect except for 2-Methylnaphthalene which was detected well below the DEC cleanup level (0.029 ug/L). The 2013 DRO groundwater samples were non-detect.

Maximum concentrations of DRO contamination remaining on site

Soil	Groundwater
5440 mg/kg	ND (0.140 mg/L)

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

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, Exposure Controlled, 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	Pathway Incomplete	Contamination is not present in surface soil (0 to 2 feet below ground surface).
Sub-Surface Soil Contact	De-Minimis Exposure	Contamination remains in the sub-surface, but is below ingestion cleanup levels.
Inhalation – Outdoor Air	De-Minimis Exposure	Contamination remains in the sub-surface, but is below inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	De-Minimis Exposure	Soil gas data collected near the shop building confirmed that residual concentrations are below residential target levels.
Groundwater Ingestion	De-Minimis Exposure	Groundwater monitoring in the suprapermafrost groundwater over several years has indicated that contamination has not migrated to groundwater above Table C cleanup levels. Sub-permafrost groundwater is found at depths greater than 250 feet and is not impacted by site contamination.
Surface Water Ingestion	Pathway Incomplete	Surface water is not used as a drinking water source in the vicinity of the site.
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	There are no complete exposure pathways for ecological receptors.

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

Petroleum contamination remains in the subsurface soil at concentrations above the migration to groundwater Table B2 Cleanup levels. Several years of groundwater monitoring has indicated that remaining soil contamination will not migrate into the groundwater at concentrations exceeding Table C cleanup levels. Sufficient site characterization has been completed and the contaminated sites program has determined that contaminants in soil have achieved steady-state equilibrium and will not migrate to groundwater. Therefore, soil and groundwater contamination at the site have been cleaned up to concentrations below the approved cleanup levels suitable for residential land use. This site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions.

The “Cleanup Complete” determination is *ONLY* for the Source Area 79563 portion of the site and contamination related the Bldg 102 - Yukon Flats Health Clinic USTs 9-C-9 & 9-C-10. This determination does not affect the portion of the site related to Source Area 78758 and Bldg. 100. The contaminated sites database for entry 740.38.011 will be updated to reflect this in the problem statement and actions sections.

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with [18 AAC 75.325(i) or 18 AAC 78.600(h)]. A “site” [as defined by 18 AAC 75.990 (115) or 18 AAC 78.995(134)] 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.
3. Groundwater throughout Alaska is protected for use as a water supply for drinking, culinary and food processing, agriculture including irrigation and stock watering, aquaculture, and industrial use. Contaminated site cleanup complete determinations are based on groundwater being considered a potential drinking water source. In the event that groundwater from this site is to be used for other purposes in the future, such as aquaculture, additional testing and treatment may be required to ensure the water is suitable for its intended use.

This determination is in accordance with [18 AAC 75.380 or 18 AAC 78.276(f)] 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.

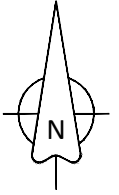
If you have questions about this closure decision, please feel free to contact me at (907) 451-2181, or email at john.obrien@alaska.gov.

Sincerely,

John O'Brien
Project Manager

Enclosure: YFHC Site Figure

Groundwater
Flow Direction



Storage Shed

VE-1
(Location approximate)

FYU13SSH003(7.5-8)	
7.5'-8' bgs	
Soil (mg/kg)	
DRO	1,260
RRO	ND
GRO	ND
BTEX	ND
PAH	*ND

FYU13SSH001(7-8)	
8'-9' bgs	
Soil (mg/kg)	
DRO	5,440
RRO	ND
GRO	46.9
BTEX	ND
PAH	*ND

FYU13WMW1	
Water (mg/L)	
DRO	ND
RRO	16
GRO	ND
BTEX	ND
PAH	*ND

FORMER
MP-1

FORMER
MP-2

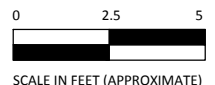
(MP-5)
40' West
45' South

Yukon Flats
Health Clinic

BLDG
102

- Key:**
- bgs Below Ground Surface
 - Existing Structure
 - Former Heating Oil Tank
 - HOT Heating Oil Tank
 - MW-2 Former Monitoring Well
 - mg/kg Milligrams per kilogram
 - Test Pit
 - 2013 Test Pit Soil Sample Location [DRO Result < 250 mg/kg]
 - 2013 Test Pit Soil Sample Location [DRO Result ≥ 250 mg/kg]
 - MP Former Monitoring Point
 - VE-2 Former Vapor Extraction
 - DRO Diesel Range Organics
 - GRO Gasoline Range Organics
 - RRO Residual Range Organics
 - BTEX Benzene Toluene Ethylbenzene Xylenes
 - PAH Polynuclear Aromatic Hydrocarbons

1. Highlighted results indicate concentrations greater than ADEC Method Two Cleanup Levels.
* - All PAH results less than ADEC Method Two Cleanup Levels.



SCALE IN FEET (APPROXIMATE)

Decommissioning and Investigation Report FAA Station Fort Yukon, Alaska



Yukon Flats Health Center - Analytical Sample Locations and Results

Project Number: 20125.059	Figure Number:
Date: 10.17.2013	4
Drawn By: G.R.	