



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

**Department of Environmental
Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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DEC File No: 440.38.001

May 5, 2023

Jenna Van Horn
Environmental Program Manager
Alaska Army National Guard
PO Box 5169
JBER, AK 99505

Re: Decision Document: AKARNG Noatak FSA
Cleanup Complete Determination

Dear Ms. Jenna Van Horn,

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC) has completed a review of the environmental records associated with the AKARNG Noatak FSA site located at Onalik Street in Noatak, 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 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 Noatak FSA maintained by DEC. This decision letter summarizes the site history, cleanup actions and levels, and site closure conditions that apply.

Site Name and Location:

AKARNG Noatak FSA
Onalik Street
Noatak, AK 99761

Name and Mailing Address of Contact Party:

Jenna Van Horn
Alaska Army National Guard
PO Box 5169
JBER, AK 99505

DEC Site Identifiers:

File No.: 440.38.001
Hazard ID.: 2496

Regulatory Authority for Determination:

18 Alaska Administrative Code (AAC) 75

Site Description and Background

The Alaska Army National Guard (AKARNG) Noatak Federal Scout Armory (FSA) is located on Lot 3 of United States Survey 3778 at latitude 67.5°N. AKARNG also owns the adjacent Lot 2. The Old Armory building was constructed on Lot 3 in the early 1960s and the New Armory building was constructed in the 1980s. Both buildings are constructed on a gravel pad and have raised wooden foundations. The gravel pad is 1-2 feet thick underlain by peat and native tundra. The nearest surface water body is the Noatak River, approximately 300 feet east of the site but low areas of exposed tundra and a drainage ditch on the property are often saturated. The location of the Noatak FSA is shown in Figure 1.

During a 1994 preliminary assessment, petroleum staining and hydrocarbon odors were noted extending over Lot 3, Lot 2, and the Onalik St. easement, which is owned by Native Village of Noatak. Several potential sources of contamination were identified in the stained area including two large vertical fuel tanks in the Onalik Street easement operated by the Native Village of Noatak and 21 drums on Lot 3 and the boundary of Lot 2. Outside of the large, stained area on Lot 3, drums, debris, and two aboveground heating oil tanks (a 3,000 gallon and a 1,500 gallon) were observed. Staining, odors, and distressed vegetation were observed beneath both tanks. A 1995 site investigation found concentrations of diesel range organics (DRO) exceeding the most stringent cleanup levels in Area of Concern (AOC) 1, the large, stained area. Samples near the 1,500 gallon tank (AOC 2) and the 3,000 gallon tank (AOC 3) and an unnamed area on the southwest of Lot 3 were analyzed for total petroleum hydrocarbons (TPH), detections of which indicated the presence of contamination. Sheens were observed on water in the drainage ditch and on suprapermafrost water in several shallow borings. AOCs are shown in Figure 2.

Contaminants of Concern

During site characterization activities, samples were collected from soil and groundwater and analyzed for TPH, DRO, gasoline range organics (GRO), polynuclear aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and volatile organic carbons (VOCs). Based on these analyses, the following contaminants were detected above the most stringent cleanup levels of the 18 AAC 75.340 Tables B1 and B2 for soil, and 18 AAC 75.345 Table C for groundwater and are considered Contaminants of Concern (COCs) at this site:

- Diesel Range Organics (DRO)
- Gasoline Range Organics (GRO)
- Benzene
- Toluene
- Ethylbenzene
- Xylenes
- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Naphthalene
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- 1,2-Dibromoethane

Cleanup Levels

Frozen soils, permafrost, and ice lenses have been documented as obstructing soil borings and monitoring well installations in every field event since the first 1994 preliminary assessment. After a permafrost depth study in 2019 and 2020 demonstrated year-round, continuous permafrost at the site, DEC agreed in 2021 that 18 AAC 75.341 Method Two Table B1 and B2 Arctic Zone cleanup levels were appropriate for the site. Suprapermafrost groundwater samples were compared to surface water quality criteria for total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) due to the wetland nature of the environment and proximity to the Noatak River

Table 1 - Approved Cleanup Levels

Contaminant	Soil (mg/kg)	Surface Water (µg/L)
DRO	12,500	-
GRO	1,400	-
Benzene	16	-
Toluene	8,000	-
Ethylbenzene	72	-
Xylenes	710	-
1-Methylnaphthalene	310	-
2-Methylnaphthalene	420	-
Naphthalene	42	-
1,2,4-Trimethylbenzene	43	-
1,3,5-Trimethylbenzene	37	-
1,2-Dibromoethane	0.62	-
Total Aromatic Hydrocarbons (TAH)	-	10
Total Aqueous Hydrocarbons (TAqH)	-	15

Notes to Table 1:

1. All soil contaminant concentrations are presented as milligrams per kilogram (mg/kg).
2. Surface water contaminant concentrations are presented in micrograms per liter (µg/L).
3. TAH is the sum of Benzene, Toluene, Ethylbenzene, Xylenes concentrations.
4. TAqH is the sum of Benzene, Toluene, Ethylbenzene, Xylenes and PAHs concentrations.

Characterization and Cleanup Activities

Following a 1992 Environmental Compliance Assessment (ECAS), mandated by the US Army, a 1994 preliminary assessment identified multiple areas of concern on the AKARNG Noatak FSA.

A site investigation (SI) was conducted in 1995 to investigate and delineate contamination in soil and groundwater at the three AOCs. During the SI, a total of 22 soil borings were drilled in the three AOCs, to varying depths ranging from 6 inches to 4 feet below ground surface (bgs). The soil borings were shallow due to the presence of frozen soils and permafrost. Soil samples were collected and analyzed for TPH, DRO, GRO, and BTEX. Soil samples exceeded the most stringent cleanup level for DRO with a maximum concentration of 1,850 milligrams per kilogram (mg/kg). Suprapermafrost water was observed at depths of less than 1 foot to 3 feet bgs in AOC 1 and 3.

In 2004, samples were collected to further characterize the site and to support development of alternative cleanup levels, those these alternative cleanup levels were later not proposed due to the adoption of Arctic Zone cleanup levels. Soil samples were collected from 6 to 16 inches bgs where permafrost was reportedly encountered. Twelve soil samples and two field duplicates were collected for DRO analysis. Samples were also collected for GRO and BTEX in three locations, for bulk density and grain size in three locations, and total organic carbon (TOC) in seven locations. An additional five soil samples were collected for a leaching assessment. DRO was detected at concentrations in one location at 259 mg/kg, and benzene in another

location at 0.0316 mg/kg. Three well points were installed using a hand auger to depths of approximately 12 to 28 inches bgs, at which depth suprapermafrost water was encountered.

In AOC 1, the suprapermafrost water samples indicated detectable concentrations of petroleum constituents (Figure 2). GRO was detected, and DRO exceeded the ADEC Table C groundwater cleanup level in both well points, however, the suprapermafrost water is being compared to surface water criteria, due to the marshy nature of the site and its proximity to the Notatak River, and there is no applicable cleanup level for GRO or DRO. BTEX concentrations were detected in both well points, benzene at a maximum of 0.962 µg/L, toluene at a maximum of 5.8 µg/L, ethylbenzene at a maximum of 5.83 µg/L, and xylenes at a maximum of 20.5 µg/L. The calculated TAH values exceeded water quality standards (10 µg/L) at NOA-ACL-015 (55.21 µg/L) and at NOA-ACL-016 (28.9 µg/L). There were no detections of any analytes in any other well points, suggesting the suprapermafrost water is not impacting surface water quality in the Noatak River.

In September 2019, a remedial investigation was conducted to study permafrost depth, and evaluate soil and groundwater at the site. Twenty-two soil samples were collected and shipped to the laboratory for analysis. However, during analytical processing, data quality was impacted, and all soil samples were declared unusable. It was determined the site should be resampled in 2020. In July 2020, a second remedial investigation was conducted at the site with the same objectives. Permafrost was observed in all soil boring in 2019 and 2020 at depths ranging from 2 to 8 feet bgs. Twenty soil borings were advanced, with analytical soil samples collected from the most contaminated intervals determined during field screening in each boring. Five of these soil borings were completed as monitoring wells, and samples of suprapermafrost water were collected. All samples were analyzed for GRO, DRO, PAHs, VOCs, and soils were additionally analyzed for Resource Conservation and Recovery Act (RCRA) metals. The analytical results for soil and suprapermafrost water demonstrated detections of DRO, BTEX, and multiple PAHs in several samples, but contaminant concentrations in soil were all below the applicable Arctic Zone cleanup levels, as approved by the DEC in 2021. Suprapermafrost water samples met water quality standards for TAH (10 µg/L) and TAqH (15 µg/L) at all well points except for WP02 (65.8 µg/L for TAH; 66.6 µg/L for TAqH) and WP03 (25 µg/L for TAH; 25.7 µg/L for TAqH), due primarily to elevated benzene levels. Arsenic was detected in every soil sample, with a maximum concentration of 15 (mg/kg) in sample 20NOA-SB109-3-5, located in the southwest corner of the site. There is no known or suspected anthropogenic source for arsenic at this site, so it is considered naturally occurring and not carried forward as a contaminant of concern (COC).

All monitoring wells were decommissioned at the end of 2020 field season.

Remaining Contamination

The maximum concentrations of contaminants remaining at the site are shown in Tables 2a and 2b. These concentrations are all below their respective cleanup levels. Sample locations referred to in Tables 2a and 2b are shown in Figure 3.

Table 2a – Maximum Contaminant Concentrations Remaining in Soil

Contaminant	Soil (mg/kg)	Sample Location	Date Sampled	Sample Depth (inches bgs)
GRO	ND (10.8)	NOA-ACL-009	2005	15
DRO	2,500	20NOA-SB106-0-2	07/2020	0-24
Benzene	0.5	20NOA-SB101-4-6	07/2020	48-60
Toluene	9.3	20NOA-SB101-4-6	07/2020	48-60
Ethylbenzene	0.28*	19NOA-SB112-2-4	06/2019	24-48

Xylenes	0.75*	19NOA-SB118-0-2	06/2019	0-24
1-Methylnaphthalene	2.6*	19NOA-SB118-0-2	06/2019	0-24
2-Methylnaphthalene	3.0*	19NOA-SB118-0-2	06/2019	0-24
Naphthalene	5.1*	19NOA-SB112-2-4	06/2019	24-48
1,2,4-Trimethylbenzene	8.3* QH	19NOA-SB112-2-4	06/2019	24-48
1,3,5-Trimethylbenzene	2.4*	19NOA-SB112-2-4	06/2019	24-48
1,2-Dibromoethane	0.0021 J	20NOA-SB106-0-2	07/2020	0-24

Notes: ND = Not detected
 () = number inside parentheses represents the limit of quantitation
 J = estimated quantitation greater than the detection limit, but below the limit of quantitation
 QH = estimated value below the reporting detection limit, biased high
 * = had a QC issue due to laboratory issue

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 (HI) of 1 across all exposure pathways.

Based on a review of the environmental record, DEC 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 DEC’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	De Minimis Exposure	Contamination is below Method 2 Arctic Zone cleanup levels. Pathway considered de-minimis.
Subsurface Soil Contact	De Minimis Exposure	Contamination is below Method 2 Arctic Zone cleanup levels. Pathway considered de-minimis.
Inhalation – Outdoor Air	De Minimis Exposure	Contamination remains in the subsurface but is below Method 2 Arctic Zone human health soil cleanup levels. Pathway considered de-minimis.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Both armory buildings are constructed on foundations that are elevated above ground. The remaining contamination in the subsurface is below Method 2 Arctic Zone human health soil cleanup levels. Pathway considered incomplete.
Groundwater Ingestion	Pathway Incomplete	Benzene and DRO contaminants were detected in seasonal suprapermafrost water at the site, however the site is in the Arctic Zone and so the migration to groundwater pathway is incomplete.
Surface Water Ingestion	Pathway Incomplete	The nearest surface body water is Noatak River which is 300 feet directly east of the site.

		Contamination still present above surface water quality criteria in the suprapermafrost is not hydrologically connected to the Noatak River and is not expected to migrate.
Wild and Farmed Foods Ingestion	Pathway Incomplete	No wild or farmed foods are found on this site. Pathway is considered incomplete.
Exposure to Ecological Receptors	Pathway Incomplete	Residual contamination remains in the subsurface soil, but is of limited volume and concentrations below cleanup levels, and is located within a developed area unlikely to attract ecological receptors.

Notes:

1. “De Minimis Exposure” means that, in DEC’s judgment, the receptors are unlikely to be adversely affected by the minimal volume or concentration of remaining contamination.
2. “Pathway Incomplete” means that, in DEC’s judgment, the contamination has no potential to contact receptors.
3. “Exposure Controlled” means there is an IC in place limiting land or groundwater use and there may be a physical barrier in place that prevents contact with residual contamination.

DEC Decision

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.

DEC approval is required for movement and disposal of soil and/or groundwater subject to the Site Cleanup Rules, in accordance with 18 AAC 75.325(i). Please contact DEC for information about applicable regulations and requirements. A “site”, as defined by 18 AAC 75.990 means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.

Movement or use of contaminated material in an ecologically sensitive area or in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Furthermore, 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. If, in the future, groundwater from this site is to be used for other purposes, 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 and does not preclude DEC from requiring additional assessment and/or cleanup action if information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to the environment.

Informal Reviews and Adjudicatory Hearings

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC’s “Appeal a DEC Decision” web page <https://dec.alaska.gov/commish/review-guidance/> for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200. Requests must be submitted no later than the deadline specified in 18 AAC 15.

If you have questions about this closure decision, please feel free to contact me at (907) 465-5368, or email at Flannery.Ballard@alaska.gov

Sincerely,

F. Ballard

Flannery Ballard
Project Manager

cc: DEC, Division of Spill Prevention and Response, Cost Recovery Unit, dec.spar.cr@alaska.gov
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Figure 1: Aerial Site Map

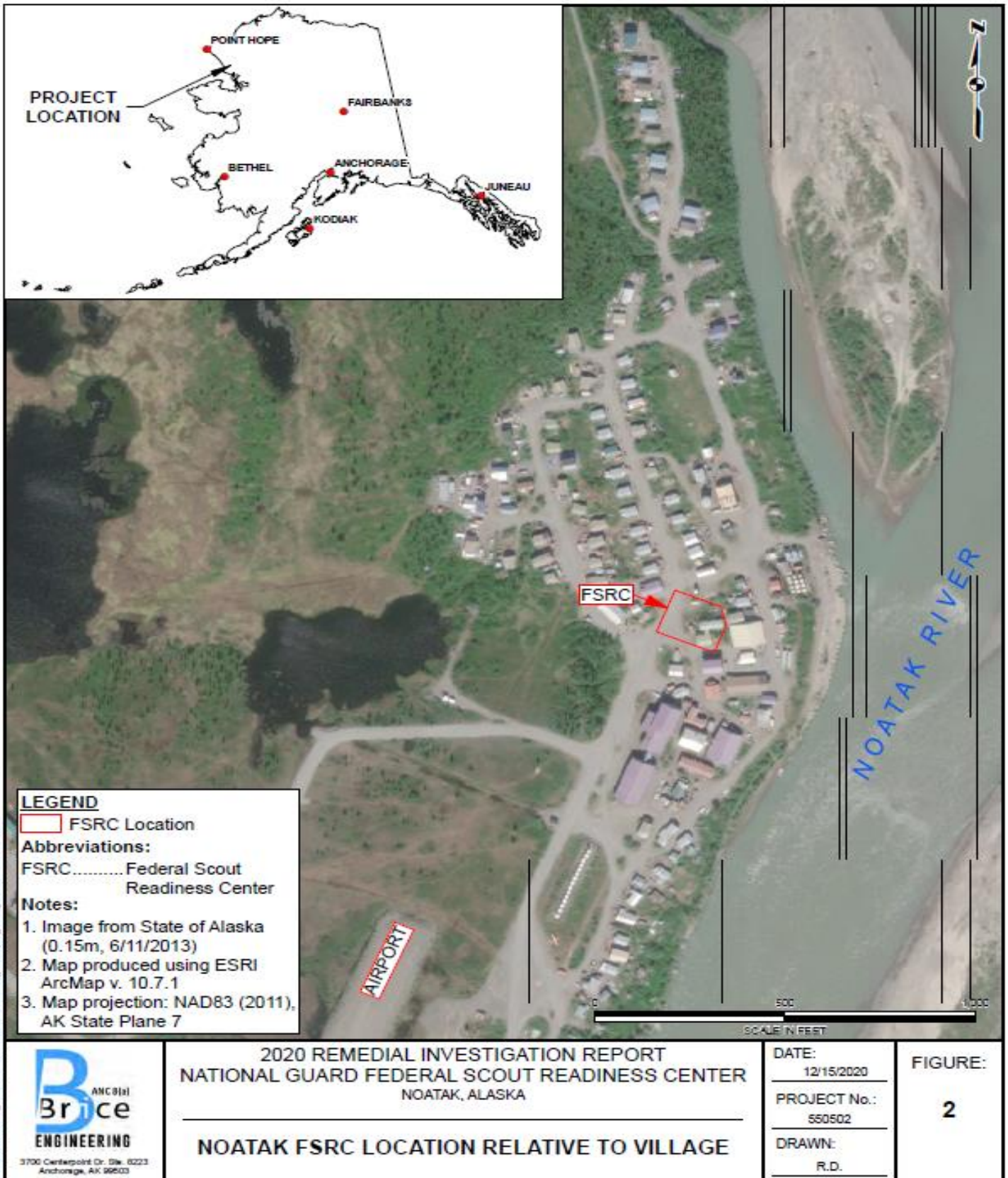


Figure 2: Areas of Concern

