



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: 2430.38.001

April 23, 2017

Sent via electronic mail only

Heidi Long, Ph.D.  
DERP Project Manager  
CEMML  
P.O. Box 5800  
JBER, AK 99505

Re: Decision Document: AKARNG Mountain Village 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) Mountain Village Federal Scout Armory (FSA) located on Beans Avenue in Mountain Village. The FSA does not have a conventional address but is located at 62.085691°N and -163.729718°W at Lot 8 Block 6 of the Mountain Village Subdivision. 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 Mountain Village 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 Mountain Village FSA  
Section 15 of Township 23N,  
Range 79W of the Seward  
Meridian.  
Mountain Village, AK

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

**DEC Site Identifiers:**  
File No.: 2430.38.001

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

Hazard ID.: 3064

### Site Description and Background

Mountain Village is a community on the north bank of the Yukon River about 20 miles west of Saint Mary's. The Mountain Village Federal Scout Armory (FSA) does not have a formal address and is located on Beans Avenue at 62.085691°N and -163.729718°W in Section 15 of Township 23N, Range 79W of the Seward Meridian. The site is further described as Lot 8 Block 6 of the Mountain Village Subdivision. The climate is continental with maritime influences and the vegetation is generally tundra grasses and small willow stands. The soils are primarily gravels, sands, and silts and discontinuous permafrost is present at a depth of near ground surface to 12 feet (ft.) below ground surface (bgs). The community obtains its drinking water from 4 groundwater wells and is treated prior to distribution. The wells are within fractured bedrock at approximately 100-140 ft. bgs. The population is approximately 700 residents and the community is accessible via river boat or aircraft only.

The Mountain Village FSA was built in 1960 and consisted of a single wood framed building that was heated by 2 oil stoves. Heating oil was stored in a 2,000-gallon aboveground storage tank (AST) which fed a 10-gallon day tank. There was also a storage van and an inactive 3,000-gallon AST located outside of the building. According to the historical record, there had been a few heating oil releases. The first recorded release was in December of 1979 due to a broken fuel line on the 3,000-gallon AST. Approximately 2,000-gallons was lost at the time. There was another reported release from the 3,000-gallon AST in 1984 as a result of a break in the pipeline during refilling. Approximately 900-gallons was released to the ground. In 1995, the ADEC was notified of a release of heating oil during fuel delivery. The releases occurred after the secondary containment was accidentally filled with oil and the bung which was inserted incorrectly allowed oil to drip out. Reportedly less than a gallon was lost and the majority was caught in a plastic lined box left by the delivery contractor. In 1996, dripping fuel from the 2,000-gallon AST was discovered during a site visit for their Spill Prevention, Control, and Countermeasure (SPCC) plan. Distressed vegetation at the site of the AST was also noted. The Mountain Village FSA was added to the ADEC Contaminated Sites database in July 1998 following receipt of the *Preliminary Assessment Records Review* dated July 1998 and prepared by ERM – West and Hart Crowser Inc. on behalf of the AKARNG.

### Contaminants of Concern

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

- DRO
- GRO
- Benzene
- 1-methylnaphthalene

### Cleanup Levels

Site-specific alternative soil cleanup levels (ACLs) for the site were approved by the ADEC and documented in the *Mountain Village Federal Scout Readiness Center Record of Decision for Petroleum Contamination* dated September 2013 and are listed in Table 1 below. The Hydrocarbon Risk Calculator (HRC) was used to input site-specific data and calculate an ACL of 10,000 milligrams per kilogram (mg/kg) for DRO aliphatics,

4,100 mg/kg for DRO aromatics, and 11,212 mg/kg for total DRO. The ACL for GRO aliphatics is 1,000 mg/kg; 1,000 mg/kg for GRO aromatics, and 1,400 mg/kg for total GRO. The approved ACL for benzene is 0.22 mg/kg and 6.2 mg/kg for 1-methylnaphthalene. Due to the complexities and long turnaround time for having aliphatic and aromatic fractions extracted by the laboratory, the ADEC approved a more stringent cleanup level for total DRO of 10,250 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.

The HRC was also used to calculate whether or not groundwater on site would meet the groundwater cleanup levels in 18 AAC 75.345 Table C if the site met the ACL and petroleum contamination below the ACL was left in place to naturally attenuate. The modeling results confirmed that hydrocarbon contamination at concentrations below the proposed ACL in the soil that would remain in place would not exceed the groundwater ingestion cleanup levels (18 AAC 75.345 Table C). The results of the modeling are documented in the *Mountain Village Federal Scout Readiness Center Data Gap Investigation Report* dated June 2013, and prepared by CH2MHill.

**Table 1 – Approved Cleanup Levels**

Contaminant	Soil (mg/kg)
DRO	11,212
GRO	1,400
Benzene	0.22
1-Methylnaphthalene	6.2

mg/kg = milligrams per kilogram

### Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the Contaminated Sites Program began in 1998 following a site investigation conducted the same year by ERM West Inc. and Hart Crowser Inc. under contract for the AKARNG and documented in the *Preliminary Assessment Records Review* dated July 1998.

ERM – West and Hart Crowser Inc. performed a follow-up site investigation at the Mountain Village FSA in September 1998 on behalf of the AKARNG. The investigation was documented in the report *Final Site Investigation Army National Guard Scout Armory Mountain Village, Alaska*, dated August 1999. During the investigation, 22 surface and subsurface soil samples were collected from 3 areas: the inactive 3,000-gallon AST, the in service 2,000-gallon AST, and the storage van area. A well point was also installed downgradient of the ASTs, but no water was encountered and the well point was removed. The soil samples were analyzed for diesel range organics (DRO). A subset of the soil samples were also analyzed for gasoline range organics (GRO), residual range organics (RRO), polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, and xylenes (BTEX), nutrient analyses, and physical testing for soil characterization purposes.

GRO, RRO, and PAH concentrations on site were below ADEC cleanup levels. The 3,000-gallon (former) AST area had confirmed DRO contamination up to 59,000 mg/kg. The contamination at the former AST appeared to continue underneath the building. The 2,000-gallon AST area had 10,000 mg/kg DRO, but the contamination appeared to be less than at the larger AST. According to the report, visual observations and

sample results from the storage van area indicated no substantial petroleum impacts in the area, however, a sample collected from the storage van area had 0.22 mg/kg benzene and 110 mg/kg DRO. These values were below the ADEC cleanup levels in effect at the time.

An interim action was performed on behalf of the AKARNG in 2002 by Clearwater Environmental Inc. and is documented in the report *Final Interim Action Report Federal Scout Armory Mountain Village, Alaska*, dated April 2005. The removal action plan was to remove approximately 15 cubic yards (y<sup>3</sup>) of DRO contaminated soil that was identified during *Final Site Investigation Army National Guard Scout Armory Mountain Village, Alaska*, dated August 1999. The excavation occurred at the former 3,000-gallon AST where the DRO contamination was the most extensive. 17.6 tons of contaminated soil was excavated to a depth of 3.5 ft. bgs and placed directly into 15, 1-cubic yard Supersacks which were transported to TPS Technologies in Lakewood, Washington for thermal desorption treatment. The soil was excavated using a jackhammer and hand tools due to the soil being frozen. The soils were field screened during the excavation using a photoionization detector (PID) and PetroFLAG<sup>®</sup>, a quantitative field screening test kit. Confirmation samples were collected from the base and sidewalls of the excavation and analyzed for GRO, DRO, and BTEX. Other analyses conducted for the purpose of cleanup level development were total organic carbon (TOC) and synthetic precipitate leaching procedure (SPLP). The GRO and BTEX data were rejected due to data quality concerns. The results of the DRO analyses were that DRO was present in the base and sidewalls of the excavation at concentrations ranging from 1,100-24,000 mg/kg. The area having 24,000 mg/kg DRO was the western sidewall closest to the location of the former 3,000-gallon AST.

The AKARNG contracted with Hoefler Consulting Group to identify possible ACLs. These are documented in the report *Alternative Cleanup Level Demonstration Mountain Village Federal Scout Armory Alaska Army National Guard Mountain Village, Alaska*, dated December 2005. The effort included limited sample collection for the purpose of characterizing soils on site for the calculation of ACLs. Twelve soil samples were collected using a hand auger and these were analyzed for GRO and DRO. Analyses required for cleanup level calculation that were run were bulk density, TOC, grain size, SPLP-GRO/BTEX, and SPLP-DRO. GRO was not detected above at concentrations above ADEC cleanup levels. Two samples had DRO above ADEC cleanup levels with a maximum concentration of 4,700 mg/kg. This sample was collected from the western edge of the contaminated area at the former AST. Cleanup levels according to ADEC Methods One, Two, and Three were presented in the report.

A data gap investigation was conducted by CH2MHill on behalf of the AKARNG and is documented in the *Mountain Village Federal Scout Readiness Center Data Gap Investigation Report* dated June 2013. The report identified data gaps in the delineation of DRO contamination in soil both vertically and laterally. The field effort to address these data gaps commenced in July of 2011 and August of 2012. In July 2011, 16 soil borings were advanced and in August 2012, an additional 19 borings were made. These borings were advanced at a maximum depth of 14 ft. bgs. During the investigation, wet soil was encountered, but not enough groundwater was found to support a well. A total of 80 soil samples were collected during these field efforts. These samples were first field screened using a PID. Samples were analyzed for DRO and a portion of them were also analyzed for EPH, VPH, BTEX, and PAHs.

The analytical results for DRO were compared to the ADEC Method 2 Cleanup Level for the Migration to Groundwater Pathway for the Under-40 inch precipitation zone for DRO outlined in Table B2 of 18 AAC 75.340 (250 mg/kg). The results were provided on a map which outlined the total contaminated area having DRO concentrations greater than the cleanup level. The area outlined contained the majority of the property. The maximum reported DRO concentration was 83,000 mg/kg and for GRO was 750 mg/kg. BTEX and naphthalenes were also detected above ADEC cleanup levels. Using the maximum detected values, cumulative risk for the site was calculated using the ADEC Hydrocarbon Risk Calculator (HRC).

The cumulative ingestion risk was found to be above the regulatory limit ( $1 \times 10^{-5}$ ) for DRO. The conclusion was that an excavation of petroleum contaminated soil was required.

According to the *Final Remedial Action Report Mountain Village Federal Scout Readiness Center*, prepared by Eagle Eye and dated March 2018, there were 5 areas of contamination slated for excavation. Excavation 1 was located on the southwest side of the FSRC building and continued underneath it after moving it out of the way. This was the former location of a 1,500-gallon aboveground storage tank (AST). Excavation 2 was located north of excavation 1 and was a hot spot that had contamination above cleanup levels. Excavations 3 and 4 converged and were located north of and also below the FSRC building where a 3,000-gallon AST once stood. Excavation 5 was on the eastern fence line where contamination above cleanup levels was found.

A total of 573 yd<sup>3</sup> of petroleum contaminated soil from the 4 excavations was transported to and disposed of at Waste Management in Arlington, Oregon. All of the excavations were field screened with a PID prior to confirmation sampling at the rate specified in the 2017 *ADEC Field Sampling Guidance*. The confirmation samples were analyzed for GRO, DRO, benzene, and 1-methylnaphthalene and met the both the site-specific ACLs and human health cleanup levels. The excavations were backfilled with clean material from a local gravel source. During the excavations, neither permafrost nor groundwater was encountered, although discontinuous permafrost is present on site at a depth of near ground surface to 12 ft. bgs. Groundwater on site is assumed to be present on top or within bedrock at approximately 40-45 ft. bgs – much deeper than the contamination observed on site. The petroleum contamination on site above the ACLs was confined to the top 2-3 ft. below ground and the current excavation was up to 7 ft. belowground. HRC modeling results indicated that the petroleum contamination left in place below the ACLs would not contaminate groundwater above ADEC ingestion criteria (18 AAC 75.345 Table C).

### 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 contamination in surface soil is less than the ADEC cleanup levels for the ingestion exposure pathway for the under-40 inch precipitation zone.
Sub-Surface Soil Contact	De-Minimis Exposure	Remaining contamination in surface soil is less than the ADEC cleanup levels for the ingestion exposure pathway for the under-40 inch precipitation zone.

Inhalation – Outdoor Air	De-Minimis Exposure	DRO contamination remains in the soil, but is below the inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	De-Minimis Exposure	Vapor intrusion is not expected to occur on site.
Groundwater Ingestion	Pathway Incomplete	HRC modeling results indicate that groundwater on site will not be contaminated above the ADEC ingestion criteria.
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 cleanup level suitable for residential land use. 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.
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 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



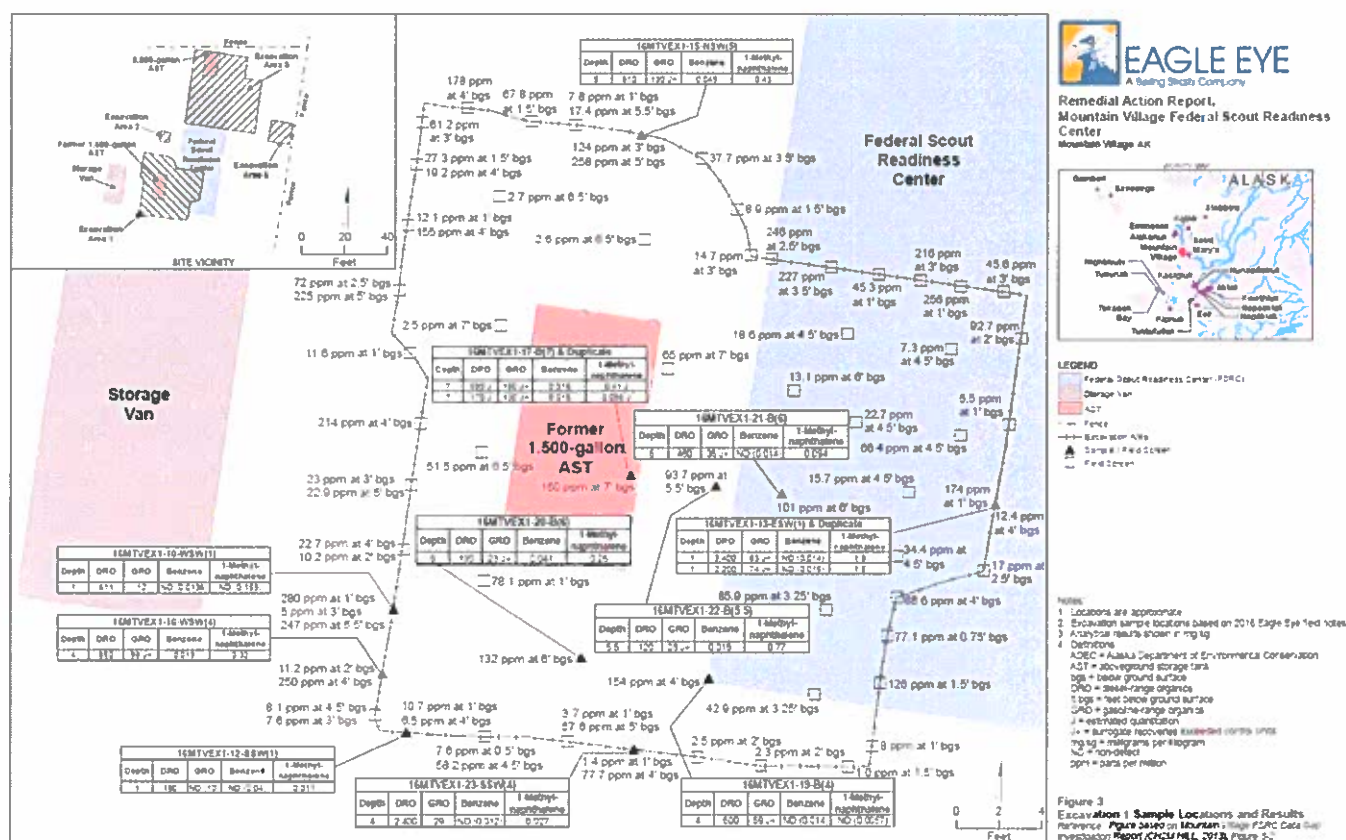


Figure 1: Locations of excavations at the Mountain Village FSA. Figure copied from the *Final Remedial Action Report Mountain Village Federal Scout Readiness Center*, prepared by Eagle Eye and dated March 2018.