

**FINAL**

**Preliminary Assessment Report for  
Aqueous Film-Forming Foam Areas  
Anvil Mountain Radio Relay Station**

**November 2023**

**USACE Contract W911KB20D0002  
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**Prepared for:**



**Air Force Civil Engineer Center  
PACAF Regional Support Center**

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# TABLE OF CONTENTS

<b>ACRONYMS AND ABBREVIATIONS</b> .....	<b>III</b>
<b>1.0 INTRODUCTION</b> .....	<b>1-1</b>
1.1 Purpose and Objectives .....	1-1
1.2 PFAS Background .....	1-2
1.3 Preliminary Assessment Methods .....	1-3
<b>2.0 INSTALLATION BACKGROUND</b> .....	<b>2-1</b>
2.1 Site Location and Description .....	2-1
2.2 Site History.....	2-1
2.3 Climate .....	2-1
2.4 Geology .....	2-2
2.5 Hydrology.....	2-2
2.6 Ecology.....	2-2
2.7 Land Use.....	2-3
2.8 Groundwater and Surface Water Use.....	2-3
<b>3.0 PRELIMINARY ASSESSMENT FINDINGS</b> .....	<b>3-1</b>
3.1 Historical Records Review and Environmental Data Records Search.....	3-1
3.2 Interviews .....	3-2
3.3 Site Visit .....	3-2
<b>4.0 PRELIMINARY CONCEPTUAL SITE MODEL</b> .....	<b>4-1</b>
4.1 Sources and Release Mechanisms .....	4-1
4.2 Impacted Media .....	4-1
4.3 Transport Mechanisms .....	4-1
4.4 Potential Receptors and Exposure Pathways .....	4-2
<b>5.0 FIRE TRAINING AREAS</b> .....	<b>5-1</b>
<b>6.0 NON-FIRE TRAINING AREAS</b> .....	<b>6-1</b>
<b>7.0 CONCLUSIONS AND RECOMMENDATIONS</b> .....	<b>7-1</b>
7.1 Conclusions .....	7-1
7.1.1 Fire Training Areas .....	7-1
7.1.2 Non-Fire Training Areas .....	7-1
7.2 Limitations .....	7-1
7.3 Recommendations .....	7-2
<b>8.0 REFERENCES</b> .....	<b>8-1</b>

## TABLES

Table 1	Training Areas Identified for Potential Aqueous Film-Forming Foam Releases.....	3-2
Table 2	Summary and Recommendations for Potential Aqueous Film-Forming Foam Releases .....	7-2

## TABLE OF CONTENTS (CONTINUED)

### FIGURES

Figure 1	Installation Location – Alaska
Figure 2	Installation and Surrounding Area
Figure 3	Installation Area and Former Site Feature Locations

### APPENDICES

Appendix A	Records Review Summary
Appendix B	Records of Communication
Appendix C	Site Visit Forms
Appendix D	Photograph Index
Appendix E	Preliminary Assessment Form
Appendix F	Response to Comments

## ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AFCEC	Air Force Civil Engineer Center
AFFF	aqueous film-forming foam
amsl	above mean sea level
AST	aboveground storage system
bgs	below ground surface
Brice	Brice Engineering, LLC
CEC	contaminants of emerging concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	Conceptual Site Model
EPA	U.S. Environmental Protection Agency
FTA	fire training area
JBER	Joint Base Elmendorf-Richardson
HA	health advisory
HFPO-DA	hexafluoropropylene oxide dimer acid
mph	miles per hour
NFRAP	No Further Response Action Planned
PA	Preliminary Assessment
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexane sulfonate
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
RI	Remedial Investigation
RRS	Radio Relay Station
SI	Site Inspection
TMO	Traffic Management Office
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
WACS	White Alice Communications System

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## 1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Alaska District has been designated as the service center to implement Preliminary Assessments (PA) for per- and polyfluoroalkyl substances (PFAS) associated with aqueous film-forming foam (AFFF) areas at multiple locations for the Air Force Civil Engineer Center (AFCEC). Brice Engineering, LLC (Brice) conducted a PA for USACE at the Anvil Mountain Radio Relay Station (RRS), Alaska, under Contract W911KB20D0002, Delivery Order W911KB22F0080.

This PA Report was prepared in accordance with the *Work Plan for PFAS Preliminary Assessments at Multiple Installations in Alaska and Hawaii* (USACE 2022) and the guidance and policy outlined in *Management Guidance for the Defense Environmental Restoration Program* (Office of the Deputy Under Secretary of Defense 2001). The team is conducting the PA in accordance with the U.S. Environmental Protection Agency (EPA) document *Guidance for Performing Preliminary Assessments Under Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) (EPA 1991).

The PA evaluates if a potential environmental release of AFFF may have occurred from historical storage or use at fire training areas (FTAs) and other non-FTAs, such as hangars, fire stations, and emergency response locations (e.g., crash sites on or off base). Typically, a PA includes an Administrative Record and other relevant document search, followed by interviews with installation personnel with knowledge of past or current operations involving the site being assessed. Information contained in this PA Report was gathered from the historical records found in the AFCEC Administrative Record, provided by Anvil Mountain RRS personnel through correspondence with the team and identified during interviews.

### 1.1 Purpose and Objectives

The purpose of this PA Report is to present results of assessments conducted to identify locations at the Anvil Mountain RRS, where potential releases of PFAS may have occurred that pose a potential threat to human health and the environment. Although PFAS are not federally regulated under CERCLA or the Resource Conservation and Recovery Act of 1976, PFAS are emerging contaminants resulting from the release of AFFF and may present potential non-carcinogenic risks to human health and the environment. The U.S. Air Force (USAF) follows the CERCLA process in responding to PFAS releases attributable to USAF mission-related activities to fully investigate releases, prioritize responses, and determine appropriate actions based on risk. PFAS are used in numerous industrial applications and products, as described below.

The objective of this PA Report is to identify locations where AFFF may have been stored, used, or released to the environment, provide an initial assessment of potential PFAS migration pathways and receptors, and provide recommendations for no further action or further evaluation in a Site Inspection (SI). Historical locations where AFFF may have been stored, used, or released include FTAs and other non-FTAs such as hangars, fire stations, and emergency response locations (e.g., crash sites on- or off-base).

Non-AFFF sources of PFAS releases, including plating shops, metal finishing shops, electrical and electronic components facilities, photographic shops, landfills, wastewater treatment plant discharge areas, biosolids application areas, auto hobby shops, and carwashes will not be evaluated under this project.

## 1.2 PFAS Background

PFAS are a large group of manmade chemicals that have been used in industry and consumer products worldwide since the 1950s. PFAS are also used in the formulation of AFFF, which was widely used as a firefighting agent used to suppress aircraft and other vehicle fires, and in aircraft hangar fire suppression systems. PFAS are particularly desirable in AFFF because of their unique characteristic of allowing the AFFF to flow across burning petroleum, allowing water to form a layer on top of the burning liquid, which extinguishes the fire.

PFAS analytes have historically been manufactured by two processes: electrochemical fluorination and telomerization. PFAS are highly soluble in water and typically have very low volatility due to their ionic nature. These substances do not readily degrade by most natural processes. They are thermally, chemically, and biologically stable and are resistant to biodegradation, atmospheric photooxidation, direct photolysis, and hydrolysis. PFAS are mobile in soil and leach into groundwater. PFAS have been found to bioaccumulate in animals and humans (Association of State and Territorial Solid Waste Management Officials 2015).

In 2016, EPA established a lifetime health advisory (HA) of 70 nanograms per liter (ng/L) for the combined or individual concentrations of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in drinking water (EPA 2016). The Department of Defense currently uses the 2016 lifetime HA when evaluating the drinking water exposure pathway for PFOS and PFOA.

In the United States, the largest manufacturer of PFAS voluntarily stopped producing them in 2002, and the nation's production and use these chemicals in consumer products has decreased during the past 10 years. However, other countries still produce PFAS, which can be imported into the United States in limited quantities.

USAF began using AFFF in approximately 1970 (USAF 2022a), which is supported by the following federal government documents:

- Military specification for AFFF (MIL-F-24385), formally issued in 1969
- A History of Fire Protection Training at Chanute Air Force Base, 1964-1976 (Coates 1977)

Based on USAF performance testing results on AFFF, M.G. Goddard, the USAF Director of Civil Engineering, issued authorization for USAF to procure AFFF in 1970 (Coates 1977). No usage of AFFF by USAF could have occurred prior to 1970. In 2016, USAF began replacing both PFOS-based and other legacy AFFF products with a new, environmentally responsible formula (USAF 2022a). In 2016, USAF began replacing both PFOS-based and other legacy AFFF products with a new, environmentally responsible formula (USAF 2022).

If the results of this PA indicate further evaluation in an SI is warranted, investigations will follow the Regional Screening Levels provided in the 6 July 2022 Memorandum for PFOS, PFOA, perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexane sulfonate (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA, or GenX) (Department of Defense 2022).



### 1.3 Preliminary Assessment Methods

The PA Report was prepared in accordance with the *Work Plan for PFAS Preliminary Assessments at Multiple Installations in Alaska and Hawaii* (USACE 2022) and following guidance documents:

- *Guidance for Preparing Preliminary Assessments under CERCLA* (EPA 1991)
- *Federal Facilities Remedial Preliminary Assessment Summary Guide* (EPA 2005)

Methods used during the PA included the following:

- Readily available historical records from the AFCEC Administrative Record and other online sources were reviewed for documentation of areas where AFFF may have been used, stored, and/or disposed of.
- Aerial photographs were reviewed for evidence of potential AFFF-related activities, including potential spray areas indicated by circular or arc shaped features, burn areas, and FTA-related infrastructure.
- Interviews were conducted with current and former personnel familiar with the history of operations at the installation to identify locations where AFFF releases may have occurred.
- A site visit was conducted to document the installation and environmental setting with photographs, Global Positioning System coordinates of features of interest, and site drawings.

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## **2.0 INSTALLATION BACKGROUND**

This section provides a description of the Anvil Mountain RRS, including site location and description, site access and security restrictions, physical setting, land use, and groundwater and surface water use.

### **2.1 Site Location and Description**

The Anvil Mountain RRS (Figure 1) is an inactive installation located on the Seward Peninsula, approximately 4 miles north of Nome, Alaska. Nome is approximately 539 miles northwest of Anchorage, Alaska. The site occupies 12 acres on the summit of Anvil Mountain.

### **2.2 Site History**

The Anvil Mountain RRS installation was established in 1944. The Anvil Mountain site was developed in 1956 as an RRS to support the air defense system constructed in Alaska during the early 1950s. In 1957, a White Alice Communications System (WACS) was constructed on the site. The installation consisted of a Composite Building, a Vehicle Operations Building (temporary garage), a Vehicle Maintenance Building, four WACS antennas, two 70,000-gallon fuel storage tanks, several aboveground storage tanks (ASTs) for antenna heating systems, and associated fuel distribution piping. The RRS did not have a hangar or airstrip for aircraft use. The WACS site was active until 1979 when it was replaced with a commercial satellite earth terminal. The site was declared excess in 1981.

From 1956 to 1983, the United Smelting, Refining, and Mining Company and the City of Nome had rights-of-way for underground communications cables. Portions of the Anvil Mountain site were leased to various tenants during 1979 to 1993. In 1989, the two 70,000-gallon fuel tanks, five 1,000-gallon ASTs, and the Vehicle Maintenance Building were transferred to the Nome Public School District. In 1999 and 2000, the remaining facilities were demolished except for the four WACS tropospheric antennas and the concrete slab where the temporary garage had been. In 2011 and 2012, the antennas were stripped of hazardous materials (e.g., mercury switches, light tubes, batteries, light ballasts, Galbestos siding). The steel framework of four antennas on concrete footings remain onsite along the southern edge of the Main Camp.

### **2.3 Climate**

The climate around the Anvil Mountain RRS is influenced by a number of factors, including terrain, latitude, and geographic position. At an altitude of over 2,000 feet above mean sea level (amsl) in the interior of Alaska, the Northern Polar Continental climatic zone has short, warm summers with long daylight hours and extremely cold winters with shortened days. The area surrounding Anvil Mountain RRS is relatively arid, with annual precipitation of approximately 11 inches. Annual snow accumulation averages 60 inches (USAF 2022b).

January exhibits the lowest monthly mean temperature in Northway Junction, ranging from -20 degrees Fahrenheit (°F) to -12°F. Summers are relatively cool, with average July temperatures in the 45°F to 69°F range. The average year-round temperature of 28°F is much lower than the Alaska average of 32°F (USAF 2022b).

Prevailing winds are from the northwest and vary depending on the time of year. Wind is strongest in the winter with speeds up to 31 miles per hour (mph). The least amount of wind is experienced during May and July with average wind speeds between 5 and 7 mph (USAF 2022b).

## 2.4 Geology

The Anvil Mountain site is on a hillside at approximately 2,500 feet amsl. The area east and north of the site is mountainous with elevations reaching approximately 3,000 to 4,000 feet amsl. The area west and south of the site is a broad valley with the Chisana and Nabesna rivers running through it. The valley has extensive lake and marsh complexes, and much of the valley is within the Tetlin National Wildlife Refuge.

The Anvil Mountain site is underlain by bedrock primarily of the Paleozoic and Precambrian age and is composed of schist, quartzite, and gneiss. Intrusive Cretaceous granitics are present in the uplands. River basins consist of deep unconsolidated Quaternary deposits with surficial deposits of fluvial sand and gravel, silts, and peat. Discontinuous permafrost is present in the area to depths of up to 150 feet (USAF 1997).

## 2.5 Hydrology

The Anvil Mountain site does not exhibit well-defined drainage patterns, and no surface water has been observed. Potential drainages from Anvil Mountain lead to tributary systems of two rivers, the Snake River and Nome River. Although the volume of surface water runoff from the installation has not been measured, it is believed to be a minor component of the total volume of water that forms either the Nome or Snake rivers (USAF 1997). Major named drainages of Anvil Mountain are Little Specimen Gulch and Cooper Gulch, which lead to the Snake River drainage, and Grass Gulch and Wet Gulch, which lead to the Nome River drainage. Anvil Creek is approximately 1.5 miles west, and Bear Creek is approximately 0.75 miles east of the Anvil Mountain site. Anvil and Bear creeks are tributaries of the Snake River. Dexter Creek is approximately 1 mile northeast of the summit of Anvil Mountain and discharges into the Nome River (USAF 2022b).

Moderately thick (90 to 120 feet deep) to relatively thin permafrost occurs in the area (USAF 1998), and the site is underlain with a 3- to 5-foot-thick layer of permafrost. Depth to groundwater at Anvil Mountain RRS is estimated to be over 50 feet below ground surface (bgs) (USAF 2000). During a remedial investigation (RI) in 2014, soil borings were advanced up to 12 feet bgs at Anvil Mountain RRS, and groundwater was not encountered.

## 2.6 Ecology

The vegetation at the upper elevations of Anvil Mountain consists of tundra among bare rock. Interspersed between the bare rocks and rubble are mossy plants, both herbaceous and shrubby. Alpine tundra communities occur in mountainous areas and along well drained ridges. Alders tend to be found in the lower wetter areas. Subsistence berry gathering occurs in the areas surrounding the Anvil Mountain RRS.

A variety of fish inhabit coastal waters near the Anvil Mountain site, including all five species of Pacific salmon (king, sockeye, coho, chum, and pink), Pacific cod, Arctic char, and halibut. Freshwater fish habitat in the area near the site includes primarily the Nome and Snake rivers and their tributaries. Freshwater fish include Arctic grayling, rainbow trout, whitefish, and northern pike. Marine invertebrates are abundant in Norton Sound and clams and crabs, particularly king crab, are commonly harvested by subsistence and commercial users. Nome River, located south of the installation, is designated as a specified waterbody for anadromous fish. The streams within 1 mile of Anvil Mountain RRS do not appear capable of supporting fish year-round and are not cataloged by the Alaska Department of Fish and Game as important to anadromous fish (USAF 2013).

Common small mammals on the Seward Peninsula, and presumably at Anvil Mountain RRS, include collared lemmings, brown lemmings, voles, ground squirrels, and fox range throughout the area. Brown bears, moose, and occasional herds of caribou inhabit the area. No threatened or endangered species of either flora or fauna are known to exist in the area.

Numerous species of birds are present on a seasonal basis. The most abundant species include yellow warbler, Wilson's warbler, long-tailed jaeger, fox sparrow, and common snipe.

## **2.7 Land Use**

The current land use of the Anvil Mountain RRS and the adjacent and surrounding land is recreational and is not expected to change for the foreseeable future. Outdoor recreation opportunities available at the Anvil Mountain site include small and big game hunting and non-consumptive activities, such as all-terrain vehicle riding along gravel roads and bird watching. The limited hunting that occurs onsite primarily consists of subsistence harvest of animals and the collection of vegetation for greens and berries by residents. Mining also takes place around the RRS; there is a 15-foot-deep drift mine approximately 500 feet northeast of the RRS and 100 feet lower in elevation than the RRS (USAF 2022b).

## **2.8 Groundwater and Surface Water Use**

Groundwater at the site is not a current or likely future source of drinking water. When the Anvil Mountain RRS was active, potable water was trucked to the RRS. There are eight wells within 5 miles of Anvil Mountain. Two wells are not in use, one is a private well for domestic use, and four wells are for public supply. The use for the remaining well is listed as "stock." One of the public supply wells serves the residents of Icy View, a suburb of Nome. This well is located approximately 1 mile from the site (USAF 1998). Three of the public wells (Alaska Department of Natural Resources [ADNR] file 24904) were advanced to depths of 80.67 feet bgs, 94.25 feet bgs, and 122 feet bgs and are capable of producing 550,000 gallons of water per day (USAF 2013).

The primary drinking water supply for the City of Nome is Moonlight Springs, an artesian spring approximately 1.5 miles southwest of the summit of Anvil Mountain. In 1996, a single water sample was collected from Moonlight Springs and analyzed for gasoline range organics, diesel range organics, residual range organics, volatile organic compounds, semi-volatile organic compounds, polychlorinated biphenyls, pesticides, and Resource Conservation Recovery Act metals to determine if contaminants had migrated from the Anvil Mountain RRS into the City of Nome water supply. Analytical results were less than cleanup levels and background concentrations (USAF 1997).

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## 3.0 PRELIMINARY ASSESSMENT FINDINGS

During the records review, historical photograph review, interviews, and site visit phases of this PA, no FTAs and no non-FTAs associated with potential AFFF storage or use were identified. A summary of historical records reviewed during the PA is provided in Appendix A. Appendix B contains the records of communication and completed interview forms from people familiar with historical site activities. Field forms from the site visit are included in Appendix C. Photographs taken during the site visit are shown in Appendix D.

### 3.1 Historical Records Review and Environmental Data Records Search

The records review included internet searches of readily available resources and databases for any information associated with the storage, use, or release of AFFF at the Anvil Mountain RRS. The resources and databases searched included the AFCEC Administrative Record, Alaska Department of Conservation Contaminated Sites Database, as well as internet searches for onsite or offsite crashes/emergency responses. Additionally, hard copies of historical USAF records and photos stored in a warehouse at Joint Base Elmendorf-Richardson (JBER) were reviewed. Historical documents that referenced the Anvil Mountain RRS were reviewed by searching for key words related to the use, storage, or release of AFFF or PFOA/PFOS. Key words used during the records review are listed in Appendix A, Table A-1.

During the review of historical records, no information describing the potential use of AFFF or fire training activities were found. One record describing the fire suppression system was reviewed. The system was reported to be a carbon dioxide system, which was removed during Clean Sweep activities in 2000 (USAF 2000). Additionally, the *Technical Report Anvil Mountain Long Range Radar Station Clean Sweep Nome, Alaska* (USAF 2000) referenced a 1986 Site Inventory Report; however, this report was not available in the Administrative Record. Additional efforts were made by USACE and AFCEC to find the 1986 Site Inventory Report, but it could not be located and therefore was not reviewed.

Historical photographs were reviewed for evidence of AFFF-related activities using Google Earth (aerial imagery was available for the years 2005, 2006, 2009, 2010, 2016, 2017, 2019, 2020, 2021, and 2022), photograph logs from historical reports, and photographs obtained from the JBER Base Historian. Features related to potential AFFF use, including circular or arc-shaped features indicating an AFFF spray testing pattern, burn areas, burned vegetation, fire training features (e.g., replicas of airplanes or other structures), or hangars were not found during the review.

As part of the review process, the JBER Traffic Management Office (TMO) was contacted, and the TMO conducted a search of historical shipping records for evidence of AFFF shipments to the Anvil Mountain RRS; no record of AFFF shipment to Anvil Mountain RRS was found. The TMO only had shipping records available for the last approximately 5 years. The records search did not cover shipments prior to approximately 2018.

**Table 1 Training Areas Identified for Potential Aqueous Film-Forming Foam Releases**

FIRE TRAINING AREAS
None
NON-FIRE TRAINING AREAS
None

**Notes:**

For definitions, refer to the Acronyms and Abbreviations section.

### 3.2 Interviews

Three interviews were conducted via phone with individuals that had knowledge of historical activities at the Anvil Mountain RRS, including former site personnel. Mr. Mark Mobely, a USAF civilian employee with history working at multiple installations in Alaska (i.e., Anvil, Bear Creek, Bethel, Big Mountain, Bullen Point, Campion, Cold Bay, Granite Mountain, Kalakaket, Kotzebue, Murphy Dome, Naknek Recreation Camps 1 and 2, Nikolski, and Port Heiden) did not recall specific details for most of the sites that he worked at but stated that, in general, if an installation had an airstrip that could accommodate larger aircraft (e.g., C-130), firefighting supplies, including jugs of AFFF, were stored in a supply building near the airstrip; however, if the airstrip was smaller AFFF was not likely stored because firefighting support for larger aircraft was not required. The employee did not have specific information for Anvil Mountain RRS; however, he did indicate that since there was not an airstrip at the installation there would be no need for AFFF storage. None of the other interviewees had knowledge of AFFF storage or use at the installation. A list of interviewees, completed interview forms, and records of communication related to interviews are included in Appendix B.

### 3.3 Site Visit

On 5 July 2023, a site visit to the Anvil Mountain RRS was conducted by Brice personnel. During the site visit, the field team performed a site walk and documented site conditions. The site was observed to be heavily vegetated and muskox were present north of the former installation. No areas of potential AFFF-related activities were identified or observed. A former building foundation and structure area was observed west of the WACS, but it is unclear whether this structure was USAF property. At this location, abandoned fire suppression piping was observed. It was not clear whether the piping was associated with the unknown structure west of the WACS or whether it came from the former Anvil Mountain RRS; however, the record review indicated that the fire suppression system at the RRS was a carbon dioxide system; therefore, the piping was likely not associated with AFFF regardless of which building it came from. The site was observed to be heavily recreated, and at the base of Anvil Mountain is the Icy View subdivision. No monitoring wells or drinking water supply wells were observed in the vicinity. Figure 2 shows the site and locations of the former infrastructure. Appendix C presents field forms, and Appendix D presents the photograph index.



## 4.0 PRELIMINARY CONCEPTUAL SITE MODEL

A preliminary conceptual site model (CSM) was developed for the entire Anvil Mountain RRS using available data in accordance with the EPA *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA 1988) and the USACE *Environmental Quality Conceptual Site Models Engineer Manual* (USACE 2012).

The CSM includes identification of the following elements:

- Sources and types of chemicals
- Release mechanisms
- Impacted media
- Known or potential human and ecological receptors
- Known and potential pathways and routes of exposure (e.g., through the skin, lungs, or digestive tract)

Exposure pathways are considered complete if the following four elements exist:

- A source
- A mechanism of release, retention, or transport of a given chemical in a given medium
- A contact point with the affected medium
- An exposure route at the contact point (e.g., ingestion, dermal absorption, or inhalation)

If any of these elements are missing, the pathway is considered incomplete and thus does not present a means of exposure. The CSM process results in a schematic representation of the links between sources, release and transport mechanisms, potentially affected media, exposure routes, and potentially exposed human receptors.

### 4.1 Sources and Release Mechanisms

During the PA, no evidence of AFFF storage or use at the Anvil Mountain RRS was found. Historical sources of AFFF include USAF fire training practices. If AFFF was released, possible PFAS release mechanisms would include spills, leaks, and direct discharges of AFFF during fire training exercises.

### 4.2 Impacted Media

During the PA, no evidence of AFFF storage or use at the Anvil Mountain RRS was found; however, if AFFF was released at the Anvil Mountain RRS, potentially impacted media would include surface and subsurface soil, groundwater, and surface water.

### 4.3 Transport Mechanisms

If PFAS contamination were present primary transport mechanisms that are of concern would include migration from surface soil to subsurface soil, migration from subsurface soil to groundwater, surface runoff/overland flow, and bioconcentration/bioaccumulation.

#### **4.4 Potential Receptors and Exposure Pathways**

If PFAS contamination were present, current potential human receptors would include commercial or industrial workers, construction workers, site visitors, and subsistence harvesters or consumers. The site is a heavily trafficked recreational area. Potentially complete human health exposure pathways in soil for all potential current and future receptors include direct contact, incidental ingestion, dermal exposure, inhalation of fugitive dust, and consumption of subsistence food items.

If PFAS contamination were present potential ecological receptors would include vegetation, birds, and mammals. Potential exposure pathways for ecological receptors includes direct contact or incidental ingestion of surface soil or surface water.

## **5.0 FIRE TRAINING AREAS**

No FTAs were identified at the Anvil Mountain RRS during this PA. Appendix E presents a general PA form, which evaluates the potential human and ecological pathways for the entire Anvil Mountain RRS.

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## **6.0 NON-FIRE TRAINING AREAS**

No non-FTAs such as hangars, fire stations, or emergency response locations were identified at the Anvil Mountain RRS during this PA. Appendix E presents a general PA form, which evaluates the potential human and ecological pathways for the entire Anvil Mountain RRS.

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## 7.0 CONCLUSIONS AND RECOMMENDATIONS

This section summarizes the findings of the PA for AFFF at the Anvil Mountain RRS and provides conclusions based on those findings.

### 7.1 Conclusions

Based on the review of readily available records, no FTAs or non-FTAs associated with the storage, use, or release of AFFF were identified.

#### 7.1.1 Fire Training Areas

During the completion of this PA, no FTAs were identified.

#### 7.1.2 Non-Fire Training Areas

During the completion of this PA, no non-FTAs such as hangars, fire stations, or emergency response locations were identified.

### 7.2 Limitations

Limitations associated with the results of this PA are a function of the uncertainty associated with information sources. Limitations of the report include:

- **Record Research:** The research conducted for this PA was limited to information, including reports, database records, and other files available through the AFCEC Administrative Record (if available), on the internet, and/or provided by interviewees.
- **Database Searches:** The accuracy and completeness of database searches, of both independent and state-operated databases, were limitations of this PA Report. Database resources were not always up to date with accurate information. Consistency of information between databases was conflicting. State well database queries sometimes lacked descriptive properties of well completions and did not always define the intended use of a well (e.g., drinking water, irrigation, agricultural, monitoring). Additionally, not all private wells were identified in databases.
- **Interviews:** Much of the information presented in this report is based on personal communication and represents the viewpoints of individuals interviewed. These viewpoints are limited to the time span and memories of a given individual, gaps in time or memory could result in information on AFFF storage and usage not being presented in this report. Personnel interviewed at the installation may not have been stationed there throughout the period in which AFFF was used at the site or present on the installation during specific potential release events. Additionally, PFOS and PFOA are emerging contaminants, and the health and environmental impacts of these compounds has only recently been discovered. Because of this recent awareness, past records regarding the storage, handling, and release are generally lacking.
- **Historical Photograph Review:** This review was limited to available digital photographs on Google Earth, photograph logs from historical reports, photographs obtained from the JBER Base Historian, and photographs from other internet resources. The review of the historical

photographs was limited by the number of images available from past years, as well as the resolution of the images.

- **Accuracy or completeness of records and inventories** of AFFF quantities used or stored.
- **Pathway Evaluation:** The completion of the PA Form was limited by the information attained during the records review, interviews with installation personnel, and review of aerial photographs.

### 7.3 Recommendations

In accordance with the EPA and CERCLA PA and SI Guidance Documents (EPA 1991) and Air Force policy, sites are recommended for one of the following: implement a response action due to imminent and substantial threat to human health; close out of location due to no release under a No Further Response Action Planned (NFRAP) determination; or initiate an SI to determine presence/absence.

- Response action, as defined in CERCLA Section 104, are actions taken to eliminate, control, or otherwise mitigate a threat posed to public health due to a release or threatened release of hazardous substances (EPA 1991).
- Closeout or NFRAP is defined as a disposition decision that further response under CERCLA is not necessary (EPA 1991).
- RI is defined as a field investigation to characterize the nature and extent of contamination at a location. The RI supports development, evaluation, and selection of the appropriate response alternative (EPA 1991). An RI is recommended for an area of interest where analytical data from a non-SI source identifies PFAS compounds at concentrations exceeding EPA Regional Screening Levels.
- SI is defined as an investigation to collect and analyze environmental samples to support an evaluation (EPA 1991). An SI is recommended for an area of interest where samples have not been collected.

Based on the available information assessed as a part of this PA, no potential AFFF storage, use, or release locations have been identified at Anvil Mountain RRS; therefore, Anvil Mountain RRS is recommended for NFRAP. Table 2 summarizes the findings from this PA and presents recommendations for future management.

**Table 2 Summary and Recommendations for Potential Aqueous Film-Forming Foam Releases**

LOCATIONS	RATIONALE	RECOMMENDATIONS
Anvil Mountain RRS	No potential AFFF storage, use, or release locations were identified	NFRAP

**Notes:**

For definitions, refer to the Acronyms and Abbreviations section.



## 8.0 REFERENCES

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## FIGURES

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Document Path: Q:\BELUS PROJECTS\DoD\USACE AK SB ERS (June 2020)\7010\_PFAS\_Assessments\AK\H110\_Submittals\03\_FinalReports\Anvil\_Supplemental\_GIS1\_MXD\F01\_SiteLocation\_AnvilMountainRRS.mxd

PRELIMINARY ASSESSMENT REPORT FOR  
 AQUEOUS FILM-FORMING FOAM AREAS  
 ANVIL MOUNTAIN RADIO RELAY STATION, ALASKA  
**INSTALLATION LOCATION - ALASKA**

**Legend**

★ Approximate Location of Former Installation

**Abbreviations**

RRS Radio Relay Station

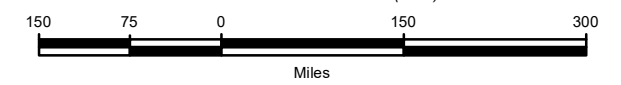
**Notes**

1. Map produced using ESRI ArcMap v. 10.7.

**References**

1. Imagery source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

NAD83 (2011) ALASKA ALBERS PROJECTION  
 HORIZONTAL DATUM: NAD83 (2011)



PROJECT No.: W911KB22F0080	DATE: 11/2/2023	FIGURE: <b>1</b>
P.M.: M.O.	DRAWN: G.O.	

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PRELIMINARY ASSESSMENT REPORT FOR  
 AQUEOUS FILM-FORMING FOAM AREAS  
 ANVIL MOUNTAIN RADIO RELAY STATION, ALASKA  
**INSTALLATION AND SURROUNDING AREA**



**Abbreviations**

RRS Radio Relay Station

**Notes**

1. For conceptual purposes only. All locations are approximate.
2. Map produced using ESRI ArcMap v. 10.7.

**References**

1. Imagery source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 8, U.S. SURVEY FEET  
 HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88



PROJECT No.: W911KB22F0080	DATE: 11/2/2023	FIGURE: <b>2</b>
P.M.: M.O.	DRAWN: G.O.	

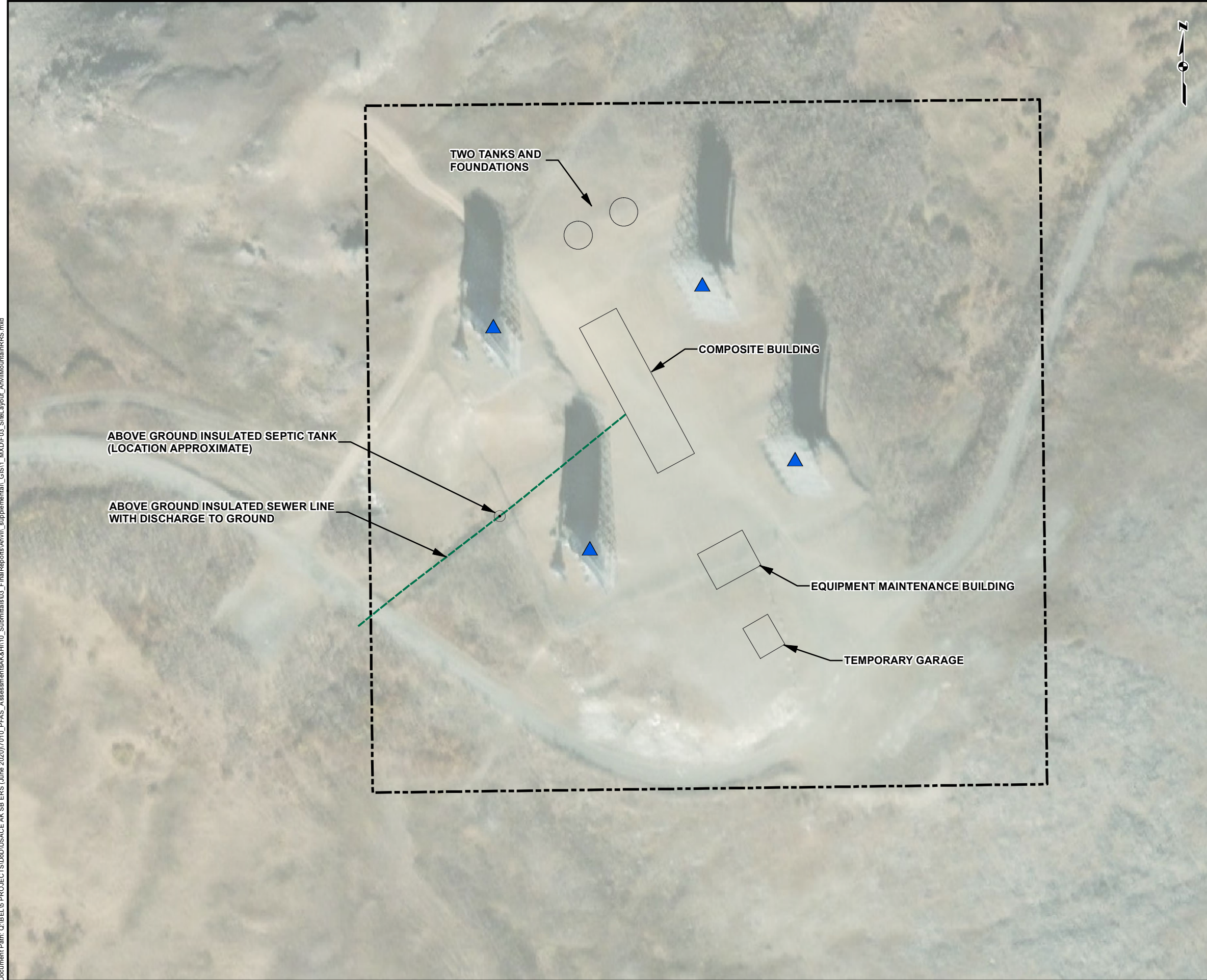
Source: Esri, Maxar, Earthstar

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PRELIMINARY ASSESSMENT REPORT FOR  
 AQUEOUS FILM-FORMING FOAM AREAS  
 ANVIL MOUNTAIN RADIO RELAY STATION, ALASKA

**INSTALLATION AREA AND  
 FORMER SITE FEATURE LOCATIONS**



**Legend**

- Above Ground Insulated Septic Tank
- Antenna Location
- Above Ground Insulated Sewer Line
- Former Building Location
- Installation Area

**Notes**

1. For conceptual purposes only. All locations are approximate.
2. Map produced using ESRI ArcMap v. 10.7.

**References**

1. Imagery source: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 8, U.S. SURVEY FEET  
 HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88



PROJECT No.: W911KB22F0080	DATE: 11/2/2023	FIGURE: <b>3</b>
P.M.: M.O.	DRAWN: G.O.	

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**APPENDIX A**  
**RECORDS REVIEW SUMMARY**

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**Table A-1 Records Review Overview and Key Words**

*Preliminary Assessment Report for Aqueous Film-Forming Foam Areas*

*Anvil Mountain Radio Relay Station, Alaska*

Facility Name / Location	Infrastructure	Property Ownership	Key Words Used
Anvil Mountain RRS / 65.563611, -165.37519 Hazard ID : 844	Anvil Mountain RRS consists of an Upper Camp area that contained all of the installation facilities including: a Composite Building, a Vehicle Maintenance Building, an Equipment Maintenance Building, two 70,000 gallon fuel tanks, several aboveground day tanks and associated piping, and four tropospheric antennas.	Anvil Mountain RRS is one of the original 31 White Alice Communication Sites; the property is owned by the U.S. Bureau of Land Management and the City of Nome.	Accident, AFFF, Fire, Fire Training, Fire Training Area, Foam, Groundwater Gradient, PFAS, PFOA, PFOS, Spray Test, Suppression

**Notes:**

For definitions, refer to Acronyms and Abbreviations section.

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**Table A-2 Summary of Records Reviewed**

Preliminary Assessment Report for Aqueous Film-Forming Foam Areas  
Anvil Mountain Radio Relay Station, Alaska

Administrative Record File Number	Year	Document Title	Contractor	Potential AFFF-Related Info (Y/N)	Notes
NA	1992	Report of Investigations 92-2, Recharge Area Evaluation for Moonlight Springs, Nome, Alaska	State of Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys	N	Good information on geology, hydrology, and Moonlight Springs (i.e., City of Nome drinking water source).  Moonlight Springs is located at a sharp physiographic boundary between flat coastal-plain topography and the base of the slope leading up to Anvil Mountain. Small water seeps emanate from unconsolidated deposits that mantle the lower slopes of Anvil Mountain. Most water is collected by perforated underground pipes and discharged to the City of Nome and an overflow pipe and drainage ditch at Moonlight Springs. Other groundwater discharges occur at scattered locations along a 500-m-long lateral zone extending west and northwest from Moonlight Springs at elevations of about 130 to 140 meters above sea level. Regionally, other springs occur on the southern Seward Peninsula.
NA	1994	Letters from ADEC to USACE and USAF RE: Final Preliminary Assessment/Site Investigation Anvil Mountain White Alice Site, September 1993 and Solid Waste Permits for Air Force in Northern Region	Alaska Department of Environmental Conservation	N	Contamin map of permitted landfill location.
NA	1994	Preliminary Assessment, Anvil Mountain	USAF	N	Inventory of debris removed between 1984-1986 for several sites is appended to end of PA report. There is no info about debris removed from Anvil Mountain.
NA	1995	Overview of Environmental and Hydrogeologic Conditions at Nome, Alaska	United States Geological Survey	N	Additional information on Moonlight Springs. Drinking water evaluated on pg. 8
NA	1996	Final Chemical Data Report, Anvil Mountain (Clean Sweep)	USACE	N	Contains results for 51 soil samples and one water sample collected at the site. Samples were analyzed for diesel range organics, residual range organics, gasoline range organics, polychlorinated biphenyls and pesticides, volatile organic compounds, semi-volatile organic compounds, and metals.
10	1997	Final EE/CA, Anvil Mountain WACS, Nome Alaska	USACE	N	Well defined drainage patterns do not exist and no surface water has been observed the site. Potential drainages off the flanks of Anvil Mountain lead to tributary systems of two large rivers, the Snake River and the Nome River. Although the volume of surface water runoff from the WACS has not been measured, it is believed to be a minor component of the total volume of water that forms either the Snake or Nome rivers. The hilltop containing the site and the surrounding hills act as a recharge zone for the aquifer (Moonlight Springs) that supplies the city of Nome, approximately 1.5 miles from the site. Available information indicates that there are no wells within 1 mile of the site. A single water sample was collected from Moonlight Springs to determine if contaminants had migrated off site into the City of Nome water supply. None of the Moonlight Springs samples detected contaminants above drinking water MCLs or naturally occurring background concentrations.  Section 2.4.1.4 has good information on receptors and exposure pathways.  Septic tank and leach field onsite.
24	1998	ADEC Letter to Base Concerning Comments on Environmental Cleanup Plan	Bristol Environmental and Engineering Services	N	Main Building is Building 1001
	1998	Clean Sweep MAP	USAF	N	The report in the administrative record (AR) is a transmittal letter. PDF provided by Steve Mattson.  There are eight wells within 5 miles of Anvil Mountain. Two wells are not in use, one is a private well for domestic use, and four wells are for public supply. The use for the remaining well is listed as "stock." One of the public supply wells serves the residents of Icy View, a suburb of Nome. This well is located approximately 1 mile from the site.  Table 2-4 lists key contacts.
33	2000	Final Technical Report, Vol I of II	Bristol Environmental and Engineering Services	N	Among the building contents removed from the Main Building was carbon dioxide cylinders from the former fire suppression system. The storage tanks were emptied, used as project wastewater temporary holding tanks, and later recycled or disposed. The carbon dioxide cylinders were superficially cleaned before removal from the building, and were deactivated by breaking off the cylinder bonnets using heavy equipment. The main building concrete slab was removed in 2000.  On the morning of September 2, 1998, workers at the Anvil Mountain site discovered that acts of vandalism had been inflicted on property and equipment at the site. Vandal(s) had damaged the Main Building, Hitachi 200 excavator, Caterpillar_966 loader, an empty 600-gallon fuel tank, and one empty 55-gallon drum. The Main Building suffered major damage inflicted by use of heavy equipment. The vandals also spread petroleum hydrocarbon contaminated soils excavated at the concrete slab of the former Maintenance Building. Damaged areas and equipment were restored and the incident was investigated by the Alaska State Troopers.  Report references: - The USAF completed a Site Inventory Report in 1986. This report is not on the AR. - A Preliminary Assessment/Site Investigation (PA/SI) was conducted in 1993. This PA is not on the AR. Transmittal letter only. - A follow-up investigation with more extensive sampling and analysis was conducted in July and August 1996. This report does not appear to be on the AR. The Final Chemical Data Report, Summer 96 AR 8 is actually the 1997 Engineering Analysis/Cost Estimate AR 10.

Administrative Record File Number	Year	Document Title	Contractor	Potential AFFF-Related Info (Y/N)	Notes
58	2005	Anvil Mountain RRS Focused Feasibility Study	Montgomery Watson Harza	N	No new information
	2013	Final Report, Clean Sweep Antenna Demolition, Debris Removal, and Environmental Remediation at SS003, Anvil Mountain RRS	USAF	N	Work was performed in 2010 and 2011. The latitude and longitude of Anvil Mountain RRS 64° 33' 48.35" N, 165° 22' 15.28 W.  Leaks and spills at fuel storage and delivery facilities led to contamination of soil with petroleum products at some locations. Electronic system maintenance activities resulted in the discharge of oil containing polychlorinated biphenyls (PCBs) and possibly solvents. Waste motor oil and cleaning solvents, some of which may have been released into the environment, were generated by power plant and vehicle-maintenance activities. Camp waste and waste from construction and demolition that are buried at the facility could generate leachate (contaminated water). Insect spray used in the 1950s to control mosquitoes (along roads) may have left residual amounts of pesticide in the environment.

**Notes:**  
For definitions, refer to Acronyms and Abbreviations section.



**APPENDIX B**  
**RECORDS OF COMMUNICATION**

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**Table B-1 Personnel Contacted***Preliminary Assessment Report for Aqueous Film-Forming Foam Areas**Anvil Radio Relay Station, Alaska*

<b>Name</b>	<b>Entity</b>	<b>Notes</b>
Steve Mattson	Former AFCEC RPM	Questionnaire sent, response received. Follow up verbal interview via teleconference was conducted.
Jessica Morris	611 Water Program Manager	Verbal interview via teleconference was conducted.
Mark Mobley	USAF	Verbal interview via teleconference was conducted on 01 May 2023; record of communication form completed. Follow up interview conducted on 24 August 2023; no additional information was obtained for Anvil Mountain. A record of communication for was completed and is included.
Christopher Koonce	Base Historian, 673D Air Base Wing History Office	Questions asked in-person. No knowledge of AFFF use at installations.
Paul Cooley	ARCTEC Environmental Manager	Questionnaire sent, no response.

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COMMUNICATION RECORD	
Date: 10 April 2023	Time: 1130
Name of Installation, State: Anvil RRS	
Interviewer: Pat Terhune / Monica Oakley / Jess Young	
Organization: Brice Engineering	Phone #:
Project Role: Geologist	Email: <a href="mailto:patrick.terhune@briceeng.com">patrick.terhune@briceeng.com</a>
Interviewee: Steve Mattson	
Organization: AFCEC	Phone #:
Position/ Job Title: Remedial Project Manager	Email: <a href="mailto:steve.mattson@us.af.mil">steve.mattson@us.af.mil</a>
How long in this position? 20+ years	
How long at this installation? N/A	
Have you held a similar position at another installation? N/A	
If yes, which installations? N/A	
How long? N/A	
Discussion summary:	
<p>This interview covered several remote Alaska installations, including Anvil RRS, Barter Island RRS, Bear Creek RRS, Beaver Creek RRS, Bethel RRS, Champion AFS, Cape Lisburne LRRS, Cape Newenham LRRS, Cape Romanzof LRRS, Clear SFS, Cold Bay LRRS, Driftwood Bay RRS, Duncan Canal RRS, Fort Yukon LRRS, Granite Mountain LRRS, Indian Mountain Research Station, Kalakaket Creek RRS, King Salmon, Kotzebue LRRS, Naknek 1/2, Nikolski RRS, North River RRS, Oliktok RRS, Point Barrow LRRS, Point Lay, Point Lonely Dome Port Heiden RRS, Sparrevohn, Tin City LRRS, Tatalina AFS, Wainwright, and West Nome Tank Farm.</p>	
No specific AFFF PFAS information for the Anvil RRS was available.	
Steve says there is a photo of a fire truck at the runway area at Kalakaket with large tank. Contents of tank are unknown but could possibly be AFFF.	
Hard copies of Clean Sweep Management Action Plans are available to look at in office. We can send someone in to look.	
Beaver creek was basically a building, tower, and AST.	
Regarding AST fire suppression systems – Steve said previous AFFF PA/SIs have found AFFF use at fuel terminals. At Romanzof there was a spill at the nak farm and they sprayed foam on it.	

Steve recommends interviewing Mark Mobley (USAF), who has historical knowledge of sites.

Prior to Clean Sweep the program was called the Alaska Cleanup Effort, which did the hazardous waste removal efforts from the installations. This program may have included AFFF removal. There are reports for the Alaska Cleanup Effort, but Steve isn't sure they exist anymore. They document demolitions by the 611<sup>th</sup> in the 1980s. Some may still exist in a warehouse, but building contents are placed on a litigation hold and cannot be removed from the building.

Anvil Mountain had a pipe that went to an insulated tank and the sewage outfall went down towards the city of Nome. This should be in the admin record. That septic tank was removed during Clean Sweep.

Fort Yukon Building 107 basically just dumped water onto the ground in the lagoon area.

Steve recommends contacting 611<sup>th</sup> CES to see if they have a wastewater contact (Jessi Morris)

Steve says to ask Todd Fitch for historical photos of Bellows and provided other Bellows contacts.

Cape Newenham – We could ask Wayne North at PRSC Program Office about the FAA Dome. Steve says the FAA dome has been there a long time and is considered permanent. IT is on USAF property, so it should probably be evaluated.

At CN there were a lot of buildings pre mid-80s. Everything south of the Warehouse Building 2166 (which is actually a gym) was the former Lower Camp area. There is a picture of old buildings, but no figure with buildings labeled. Steve will follow up with 611<sup>th</sup> to see if he can get old drawings.

Steve is unsure about fire suppression systems for CN.

Regarding septic systems – PA/Sis should have evaluated septic systems and sewage outfalls and may have drawings. A lot of the installations had septic tanks that were above ground and had outfalls (not leach fields) so the contents drained onto the ground.

Tin City – We can look at hardcopies of the Clean Sweep Reports at Steve's office to locate all landfills. The upper camp no longer has living facilities, mostly just radar facilities.

Steve has never heard of FFFP foam.

Steve says we should direct all questions about Clear SFS to Jennifer Wehrmann.

COMMUNICATION RECORD	
Date: 05 May 2023	Time: 1300
Name of Installation, State: Anvil RRS	
Interviewer: Pat Terhune / Monica Oakley / Jess Young	
Organization: Brice Engineering	Phone #:
Project Role: Geologist	Email: <a href="mailto:patrick.terhune@briceeng.com">patrick.terhune@briceeng.com</a>
Interviewee: Jessica Morris	
Organization: 611 <sup>th</sup> CES	Phone #:
Position/ Job Title: Water Program Manager	Email: <a href="mailto:jessica.morris.14@us.af.mil">jessica.morris.14@us.af.mil</a>
How long in this position? 4 years	
How long at this installation? N/A	
Have you held a similar position at another installation? N/A	
If yes, which installations? N/A	
How long? N/A	
Discussion summary:	
<p>This interview covered several remote Alaska installations, including Anvil RRS, Barter Island RRS, Bear Creek RRS, Beaver Creek RRS, Bellows AFS, Bethel RRS, Campion AFS, Cape Lisburne LRRS, Cape Newenham LRRS, Cape Romanzof LRRS, Clear SFS, Cold Bay LRRS, Driftwood Bay RRS, Duncan Canal RRS, Fort Yukon LRRS, Granite Mountain LRRS, Indian Mountain Research Station, Kalakaket Creek RRS, King Salmon, Kotzebue LRRS, Naknek 1/2, Nikolski RRS, North River RRS, Oliktok RRS, Point Barrow LRRS, Point Lay, Point Lonely Dome Port Heiden RRS, Sparrevohn, Tin City LRRS, Tatalina AFS, Wainwright, and West Nome Tank Farm.</p>	
No specific information for the Anvil RRS was available.	
<p>Jessi said that ARCTEC has drawings for active sites that could help us located septic systems/leach fields. Leach field locations should also be recorded in GIS. Any overflow events from the septic/leach fields are required to be submitted to ADEC. There have been many overflow events at Eareckson, and possibly some at radar sites. Site personnel would know. We could also check with the division of wastewater, compliance, and enforcement section of ADEC.</p>	
Cold Bay – Jessi provided the approximate location of the septic tank and drinking water well.	

Barter Island – regarding the closure of the sewage lagoon, any closure may have been coordinated through the ADEC Wastewater Engineering Section or FIRES database. We can try looking through those files.

Tatalina – Jessi does not have the locations of the septic systems available. We should look through USAF/ARCTEC files for the location of Building 3038.

Cape Newenham – Jessi says that currently only the lower camp has a septic tank. She is not sure about historically. Jessi thinks only the main building (B2180) is connected to the wastewater facility but would need to verify. The current treatment facility is a fast plant with a discharge. Jessi said it looks like there used to be a sewage lagoon at CH.

Eareckson – Jessi says there is a septic tank at Building 110. There have been many overflow events behind Hangars 6, 7, and 8. Pits were identified beneath former hangar 4 by the pump house and there was black sludge found in the pits. Jessi can send the sampling report if it's not on the admin record. GAC systems have been installed at Eareckson in areas with known PFAS contaminated groundwater. There may have also been pits (similar to hangar 4) in other areas. They have not found any drawings of those pits yet. Stormwater transport is an issue at Eareckson. Jessi can provide stormwater permit documents.

King Salmon – Currently, the AFS is connected to borough wastewater. Historically KS had 2 lagoons that have been sampled for PFAS and contain PFAS. That was a Brice project, so Brice has that report. Most buildings were connected to the lagoons, but a few had their own septic tanks. Building 560 had a septic tank.

Wake Island – There were cesspools associated with most of the buildings there. Currently there is a septic system and leach field at Peacock Point. The leach field isn't working well, so contractors created drying beds with plastic liners to try and contain overflow, but the drying beds are overflowing. All of the sewer lines at Wake are not in good shape and are leaking throughout the facility. There is also a carwash area at Wake.

General – Brice can set up a time to go to Jessi's office and look through her files for compliance. She suggests we should set up an interview with GIS to figure out how to get as-builts, etc.

Jessi says Regulations in 2005 banned underground injection wells. USAF was supposed to survey injection points, but Jessi doesn't think that was ever done.

Geobase database "FIRES" has historical as-builts. Vaults at the Ops warehouse also contain hardcopies. Contact Geobase and reference Ops and Vault and they may be able to get us as-builts of wastewater facilities. Ops has a separate vault at Building 5250. Jessi has records in her office.

There has been PFAS sampling for most facilities. Steve M may have this information.

OWSs would be in drawings if we can get access to those.

Jessi provided the contact for the CES Fire Systems POC, Haz Waste Manager, Spills Manage, Civil Engineer, Cultural Resource Manager, and JBPHH Historian.

Jessi has spill logs for the last ~4 years.



## COMMUNICATION RECORD

Date	5/1/2023
Purpose	Discuss Potential AFFF use at Remote AK Installations
Company	USAF
POC	Mark Mobley
Phone	
Email	mark.mobley.1@us.af.mil
Brice employee making the call	Monica Oakley, Pat Terhune, Jess Young

---

Team discussed Mark's work history and time spent working for the USAF. Began working for the USAF in the summer of 1976. In 1983, Mark took a permanent position with the 599<sup>th</sup> Civil Engineering Squadron (now 611<sup>th</sup>) until February 2007. Then he moved to the 773<sup>rd</sup> Engineering Squadron, and still works there currently. Mark has over 40 years of experience working with the USAF and supporting work at remote Alaska Installations.

---

Reviewed the list of installations that are included in the AFFF contract to identify which ones Mark had visited or supported in some capacity during his work history with the USAF. Installations that Mark had worked at include Anvil, Bear Creek, Bethel, Big Mountain, Bullen Point, Campion, Cold Bay, Granite Mountain, Kalakaket, Kotzebue, Murphy Dome, Naknek Recreation Camps 1 and 2, Nikolski, and Port Heiden.

---

Mark was initially hired as an equipment operator and supported the demolition and hazmat cleanup efforts at many of the old remote Alaska installations. Mark recalls seeing plastic containers, typically blue 5-gallon jugs, which contained AFFF and collocated with the fire suppression systems including carbon dioxide and halon cylinders. Almost every installation that Mark visited was very similar; building types and materials were very much the same across the board. Most sites had a supply/warehouse building at the airfield. In general, Mark observed that if the installation had an airfield, the site had a supply building with fire suppression supplies, including the plastic containers of AFFF. Mark recalls the plastic containers being in various states of condition; some full, some empty, and some cracked and compromised due to weathering.

---

At the time of the demolition and cleanup efforts, the environmental cleanup efforts were focused on the main contaminants of concern at that time, which were asbestos, POLs, and PCBs. These materials were removed and hauled offsite for disposal before demolition commenced. Each site had anywhere from 3 to 15 C-130 loads of hazmat hauled out; some included contaminated soil. However, since AFFF was not a known contaminant of concern at the time, the plastic containers were typically left in the buildings. As far as Mark remembers, the plastic containers were left in the buildings and included in the demolition debris and buried onsite in the landfills or monofills.

---

Mark recalls seeing firefighting trucks at some of the larger installations with airfields. Most of the vehicles were flown to Elmendorf during the decommissioning efforts.

---

Mark shared some specific installation memories. At Sparrevohn, the plastic containers were shipped out on a pallet. At Big Mountain, about a dozen 5-gallon buckets of AFFF were hauled out. The only potential fire training area that Mark recalls seeing was one potentially at Campion, which was a structure built of steel tanks (all black and sooty). But he could not remember the exact location or details.

---

At Bethel, the State operated runway. Mark does not recollect seeing any fire truck or firefighting materials.

---

## COMMUNICATION RECORD

During demolition, Mark recalls that oil water separators were rare. Some of the buildings contained them, but most drained directly to the subsurface. Most of the time it was an open pit where a vehicle was driven over the top for maintenance, or a dry sump drain in the floor. Mark stated that often the reclaimed material was used for dust suppression on the road. Especially in the Interior, such as Indian Mtn where there is 14 miles of road to the top.

Mark was asked if he recalls anything about a potential lodge fire at Naknek Rec Camp 1. He remembers hearing about it, but the fire occurred before his time. Cecil Schumann 907-360-3969 spent a lot of time in King Salmon. Or Herbert Lemon 907-529-5083. Herbert was at a lot of the other radar sites. Herbie was plumber. Cecil operated a rock crushing plant and resurfaced the runways.

Most of the photos taken during the decommissioning efforts were kept on carousels of slides and green cloth bound books of operations information for each site. Manifests for the materials shipped offsite were also kept. Mark believes these items were stored in a warehouse building at JBER, and the building collapsed in 2012. Unsure of where the items were moved to and how much was able to be salvaged.

## COMMUNICATION RECORD

Date	8/24/2023
Purpose	Discuss Potential AFFF use at Remote AK Installations – Bear Creek, Big Mountain, Campion, Granite, Kalakaket, Kotzebue, Murphy Dome, Nikolski, North River, Port Heiden
Company	USAF
POC	Mark Mobley
Phone	
Email	mark.mobley.1@us.af.mil
Brice employee making the call	Pat Terhune, Jess Young

---

Mark doesn't recall seeing any fire training areas. He says that he wouldn't be surprised if the landfills were used as fire training areas.

---

Mark makes general statement that in the fire pump stations/fire pumphouses, no AFFF was stored. All water storage. AFFF was focused on aircraft and stored by the airstrip.

---

**Bear Creek.** Mark says he flew in to Bear Creek, evaluated, and set up a team. He thinks it was probably a similar situation to Nikolski and there was not necessarily a need for AFFF because the big planes didn't fly into the smaller airstrip.

---

**Big Mountain.** Mark remembered specifically seeing AFFF at Big Mountain. The AFFF jugs that they hauled out of there were in a ramp and small storage building and wooden structure right off flight operations building along the runway. They also had a fire bottle in there (red cart) and a pallet of AFFF. Mark recalls the jugs of AFFF being blue, but they may also have been green. They were square, 5-gallon jugs. All jugs were pretty deteriorated. Some were shot up. Some were split, broken, damaged and others had holes like they were used for target practice. There was a fire trailer at the lower camp. All the trailers were outfitted the same and staged at the airstrips.

Mark does not recall any big burn areas. He says that landfills were always stained from burning but does not recall a specific fire training area.

---

Mark says the fire station at Big Mountain upper camp would have had the deuce and a half (D&1/2). D&1/2. Generally AFFF was not stored at the upper camp. The Fire Station also had generators.

---

**Campion.** Mark stated that Campion AFS was associated with Galena. Campion had its own established fire team, but he would be very surprised if they did much fire training at Campion. They did store firefighting supplies onsite because there was an airstrip, but fire training likely occurred at Galena. If they did fire training, it could potentially have occurred at cleared area across from Galena landfarm. Mark did not see training in main cantonment or field. Mark knows that they had AFFF onsite, in the range of 500 gallons in 5-gallon jugs. He was there in the 1976 timeframe when the installation was fully active and fire equipment was present. They had a fire trailer and smaller AWD drive truck.

---

Pat/Brice showed the picture of yellow truck provided by another former Campion employee. Mark says that it is a truck mounted crane, not a fire truck. He left the site in September 1976 right before the fire, which was in October. Mark says the fire was responded to with a bulldozer, which was used to sever the fire from the remainder of the facilities. There was a deuce and half (6 tire truck with a tank on the back); 2.5 ton military truck, with a 1,000-gallon tank. Pat/Brice shows the 1954 photos of old Campion truck and Mark and Mark confirms it was a fire truck. He says they would have likely used

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## COMMUNICATION RECORD

water to suppress the 1976 fire. All the buildings are asbestos and they don't burn very well. Campion didn't have a hydrant system so they filled the tanker from the well.

Pat/Brice shows pictures of little yellow trailers. Mark says the triangle one is a compressor and the other is a pump. Looks like a fire line is running down the middle. Not potable water. A lot of the piping was woodstave piping.

Pat/Brice shows pictures of 55-gallon drums outside of doors. Mark is not sure what is in those drums. May have been fuel for auxiliary heating. The orange barrel by the door might be a gun clearing point.

Mark says AFFF was stored at the Civil Engineering Buildings. There was a small building almost like a shed where they had firefighting equipment; they had a 500-gallon tank to be pulled behind the truck (a D&1/2). The trailer was outfitted for AFFF use. About 50 of the 5-gallon jugs were seen on pallets outside of CE complex where maintenance operations were conducted. The jugs on the pallets were deteriorating, split, frozen and split, exposed to weather, hit by heavy equipment and snowplows. Not all, but some of the jugs had leaked.

**Granite.** Pat/Brice shows Mark the Management Action Plan for Granite Mountain and asks what would fall under the term of fire training? Pat/Brice says that there are a number of installations that list that but we can't find out what was done. Mark was not there during the time that fire training would have been done. He was there near the end of operations (between 1985 and 1990). In the 90s everything had been abandoned. He was up there in the 90s because of a fuel spill at the upper camp. Mark saw 15 or 20 of the AFFF containers in the vehicle operations heated parking building at the lower camp by the airstrip. The jugs were empty. There was a private gold mine operating to the west of the installation. Mark speculated that the jugs looked like the gold miners operating nearby may have used them for another purpose. They were scattered on the floor of the building. Mark thinks the jugs were brought to the building from somewhere else. There was a trailer by the vehicle storage building and fire station. Mark says it was not a fuel trailer and thinks it was a fire trailer similar to the ones at Campion and Kalakaket.

Pat/Brice asks if he remembers seeing any burn areas. Mark says no. Mark states that they absolutely burned material at the landfill. Mark says there was an area on the side of the mountain on the way to the upper camp that was a burn pit area, which he says was more of a landfill type of area that they burned (this is the DP009 Burn Area). The firefighting guys would have set up at the burn pit with a D&1/2 and tank to keep the fire from burning across the tundra. It was really windy in that area. No fire training would have been conducted up at the upper camp. If they were doing fire training it would have been done by the disposal area J at the lower camp. He does not remember seeing soot on the ground.

Mark said he does not know of any fire training activities that would not have involved AFFF. The focus was learning how to deal with an aircraft fire and using the foam dispensers with the pump correctly.

**Kalakaket.** Mark did not do much work at Kalakaket and does not have any specific knowledge of AFFF at the installation. He flew into Kalakaket with a team to unload gear. He was not the supervisor on that job. The site had a fire trailer similar to Campion. For the fire trailer, 500 – 1000 gallons at the most is what could be pulled behind the D&1/2. There would be an injector to pick up the foam to introduce to the water. This same type of truck was at Campion.

**Kotzebue.** Mark doesn't remember seeing any AFFF. He also did not see a truck or fire trailer. The airstrip was state run.

**Murphy Dome.** Mark cannot remember anything related to AFFF at Murphy Dome. He says there was not an airstrip, so there was no real need for AFFF. He does not have much info to offer for Murphy Dome.

## COMMUNICATION RECORD

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**Nikolski.** Mark says that AFFF would not have been stored at the runway. The runway was so small that they didn't bring larger planes in until later but by that time the installation had been closed. No recollection or knowledge of AFFF being there.

---

**North River.** Mark did not work at North River.

---

**Port Heiden.** Mark did not see any AFFF at Port Heiden. Because it was a large runway and large aircraft came in it is likely that they had containers in the fire department, but he does not remember seeing any like at Big Mountain or the other sites.

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**APPENDIX C**  
**SITE VISIT FORMS**

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## Checklist for Conducting Preliminary Assessment Site Visits

Site Visit Team: J. Young / R. Reyes

Date of Visit: 05 July 2023

Site Name: Anvil Mountain RRS

### General Installation Location and Access Information

Latitude: 64.56278	Longitude: -165.37105	Status of Installation: <input type="checkbox"/> Active <input type="checkbox"/> Not Specified <input checked="" type="checkbox"/> Inactive/Closed Closure Date: Inactive/Not Closed	Site Access: <input type="checkbox"/> Airport/Airstrip near installation? <input checked="" type="checkbox"/> Accessible via road? <input checked="" type="checkbox"/> Rental car/ATV/UTV available?
Installation Point of Contact: Name _____ Phone _____ Email _____		Security or Access Restrictions? (Y/N) <b>N</b> <input type="checkbox"/> Site Access Request (SAR) approved? <input type="checkbox"/> Security gate present	Has legal access to the site been obtained from USAF? (Y/N) <b>N/A</b> Will client representative be present during site visit? (Y/N) <b>N</b>

**Site Access Notes:** Access to site via roadway from Nome, AK. Site is not operational and a recreation/tourist destination.

### Preparing for Site Reconnaissance

**Prior to Site Visit, Review/Complete the Following:**

- Section 2.5 of EPA PA Guidance (EPA 1991) (Attachment 1) and FFA Remedial PA Summary Guide (EPA 2005) (Attachment 2)
- Type of site and operations
- Amount of information available concerning sources
- Age and reliability of data available for review
- Potential visibility of the site from public access areas
- Relative ease or difficulty of obtaining site access
- Can personnel at installation (e.g. fire station chiefs or facility managers) provide interviews or tours of locations?
- Health and safety concerns – prepare Health and Safety Plan
- Obtain necessary materials and equipment

### Conducting Onsite Reconnaissance

**While On Site, Document the Following Onsite Information in a Site-Specific Logbook:**

- Visual observations of the site and its surroundings
- Site photographs and descriptions of photographs taken
- Conversations with site personnel, operators, workers, or neighbors
- Preferential migration pathways (e.g., overland flow routes to surface water)
- Freehand site sketches and/or marked up site maps
- Descriptions of potential AFFF source areas
  - Source and source type
  - Location (collect GPS information)
  - Dimensions/volumes
  - Evidence of containment
  - Signs of migration from source area
  - Descriptions of observed areas (stained soil, stressed vegetation, etc.)
  - Descriptions of potential receptors
- Review facility records on site, if available (fire training records, waste management records, etc.)
- Monitoring wells and/or drinking water supply wells onsite

### **Checklist for Conducting Preliminary Assessment Site Visits**

Site Visit Team: J. Young / R. Reyes

Date of Visit: 05 July 2023

*Site Name:* Anvil Mountain RRS

#### **Conducting Offsite Reconnaissance**

**During the Site Visit, Document the Following Offsite Information in a Site-Specific Logbook:**

- Verify locations of potential AFFF use in the vicinity of the site (along access road, near airstrip, emergency response sites, etc.)
- Gather additional information concerning potential migration pathways and overland flow routes to surface water
- Determine land uses in the vicinity of the site
- Conduct a perimeter survey (walking or driving around the site, as access allows)
- Evidence of contaminant migration
- Identify any outfalls discharging to a surface water body
- Obtain a count of any houses, cabins, or other structures near the installation
- Discussions with local authorities from nearby communities
- Monitoring wells and/or drinking water supply wells in the vicinity of the site

#### **General Notes:**

**Notes:**

Site heavily vegetated and overgrown. No sign of historical AFFF use or areas observed. a former foundation and structure area was observed west of the WACS. The site is heavily recreated and at the base of Anvil Mountain is the Icy View subdivision with residential housing. No monitoring wells or drinking water supply wells in the vicinity of the site. Moonlight Springs is the drinking water source for the city of Nome, located approximately 1.5 miles southwest of the former installation.

## Daily Contractor Quality Control Report (QCR)

PROJECT TITLE		DATE
AFFF PFAS Preliminary Assessments at Multiple Installations in Alaska and Hawaii		07/05/2023
CONTRACT NUMBER		REPORT NUMBER
USACE Contract W911KB20D0002 Task Order W911KB22F0080		001
WEATHER	WIND	TEMPERATURE
Sunny	10 mph, N	55 F
ACTIVITY STATUS		
<b>Project Location</b>		
Anvil Mountain RRS		
<b>Comments</b>		
Personnel on site: Jess Young and Rebecca Reyes. Walked site. Site was heavily vegetated and overgrown. No sign of historical AFFF use or areas observed.		
<b>Activities Today</b>		
<ul style="list-style-type: none"> <li>· Mobilized to Nome via AK Air</li> <li>· Conducted site visit to Anvil Mtn RRS. Former antennas still present. Signs of foundations, metal pilings, wiring, and metal debris observed including former fire suppression piping; however, no signs of AFFF use or areas observed.</li> <li>· Site is heavily trafficked by recreational users and trespassers.</li> </ul>		
<b>Activities Planned for Tomorrow</b>		
Demobilize		
<b>Cumulative Progress as of Today</b>		
<b>Meetings/Safety</b>		
<ul style="list-style-type: none"> <li>· Be aware of wildlife especially musk ox and give them a wide berth</li> </ul>		
<b>Visitors</b>		
None		
<b>Project Delays</b>		
N/A		

QC NARRATIVE
<b>QC Remarks</b>
None
<b>Tests and Inspections Performed</b>
None

## Daily Contractor Quality Control Report (QCR)

CONTRACTORS ON SITE	PERSONNEL
Brice Engineering, LLC	2
<b>Total</b>	<b>2</b>

CONTRACTOR CERTIFICATION
On behalf of the contractor, I certify this report is complete and correct and all equipment and material used and work performed during the reporting period follow the contract plans and specifications, to the best of my knowledge, except as noted above.

Jess Young

\_\_\_\_\_  
**Signature**

Jess Young

\_\_\_\_\_  
**Typed Name**


Environmental Scientist


\_\_\_\_\_  
**Title**

07/05/2023

\_\_\_\_\_  
**Date**

PHOTOGRAPH LOG

<p>Photograph No. 1</p>	
<p>Description: Two former antennas. View southwest.</p>	

<p>Photograph No. 2</p>	
<p>Description: Former sprinkler piping in concrete.</p>	

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CONTRACT W911KBZ0D002  
W911KBZ2F0080

PFAS PAs



7/5/23 MONTE WTN WAS

~~0630~~ 1400 PA SITE VISIT

SAFETY TOPIC: WILDFIRE

PERSONNEL: J. YOUNG AND R. ROYCE

WEATHER: SUNNY, 55°F

0630 ARRIVE THE MARKET

1000 ARRIVE HOME AND PICK UP

EQUIPMENT

1800 PERFORM SITE VISIT. OBSERVED

SIGNS OF FORMER FOUNDATIONS,

PIPING, ELECTRICAL WIRES,

AND ~~REBAR~~ REINFORCEMENTS REMAIN

IN PLACE. NO SIGNS OF

REEF USE OR AREAS OBSERVED.

THE SITE IS A RECREATION

SITE AND HEAVILY TRAFFICKED.

2000 SITE VISIT COMPLETE. (PA)

OF DAY.

Scale: 1 square = \_\_\_\_\_

7/5/23

Scale: 1 square = \_\_\_\_\_

*Rite in the Rain*



**APPENDIX D**  
**PHOTOGRAPH INDEX**

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## TABLE OF CONTENTS

Photograph 1: Southern antennas, view west.....	D-1
Photograph 2: Antennas on east side of former installation, view north. ....	D-1
Photograph 3: Northwest antenna and former infrastructure location, view north. ....	D-2
Photograph 4: Solar panels and monitoring equipment, north of former installation, view north.....	D-2
Photograph 5: West of former main building, view south. ....	D-3
Photograph 6: Rebar north and adjacent to former installation, view north. ....	D-3
Photograph 7: Overview of former installation area and antennas, view southeast.....	D-4
Photograph 8: Guy wire anchors west of antenna, view southeast.....	D-4
Photograph 9: Solar panel and monitoring equipment, view north.....	D-5
Photograph 10: Solar panel station and equipment, view north. ....	D-5
Photograph 11: Buried wood box, Styrofoam, and damaged cable housing, former tank foundation location, view west. ....	D-6
Photograph 12: Corrugated metal and wiring, former tank foundation location, view west.....	D-6
Photograph 13: Unknown former foundation, view southeast.....	D-7
Photograph 14: Concrete pilings, unknown former structure, view north. ....	D-7

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Photograph 1: Southern antennas, view west.



Photograph 2: Antennas on east side of former installation, view north.



Photograph 3: Northwest antenna and former infrastructure location, view north.



Photograph 4: Solar panels and monitoring equipment, north of former installation, view north.





Photograph 5: West of former main building, view south.



Photograph 6: Rebar north and adjacent to former installation, view north.



Photograph 7: Overview of former installation area and antennas, view southeast.



Photograph 8: Guy wire anchors west of antenna, view southeast.





Photograph 9: Solar panel and monitoring equipment, view north.



Photograph 10: Solar panel station and equipment, view north.



Photograph 11: Buried wood box, Styrofoam, and damaged cable housing, former tank foundation location, view west.



Photograph 12: Corrugated metal and wiring, former tank foundation location, view west.





Photograph 13: Unknown former foundation, view southeast.



Photograph 14: Concrete pilings, unknown former structure, view north.

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**APPENDIX E**  
**PRELIMINARY ASSESSMENT FORM**

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Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: N/A
						CERCLIS Discovery Date: N/A	
<b>1. General Site Information</b>							
Name: Anvil Mountain RRS			Street Address:				
City: Nome		State: AK	Zip Code: 99762	County: N/A	Co. Code: N/A	Cong. Dist.: N/A	
Latitude: 64.56277718	Longitude: -165.3710461	Approximate Area of Site: 12 <input checked="" type="checkbox"/> Acres <input type="checkbox"/> Square Ft		Status of Site: <input type="checkbox"/> Active <input type="checkbox"/> Not Specified <input checked="" type="checkbox"/> Inactive <input type="checkbox"/> NA (GW plume, etc.)			
Site Name: Anvil Mountain RRS							
Site Description: <p>The WACS site was active until 1979 when it was replaced with a commercial satellite earth terminal. The site was declared excess in 1981. Portions of the Anvil Mountain site were leased to various tenants during 1979 to 1993. In 1989 the two 70,000-gallon fuel tanks, five 1,000-gallon AST, and the Vehicle Maintenance Building were transferred to the Nome Public School District. In 1999 and 2000, the remaining facilities were demolished except for the four WACS tropospheric antennas and the concrete slab where the temporary garage had been. In 2011 and 2012, the antennas were stripped of hazardous materials. The steel framework of four antennas on concrete footings remain on site along the southern edge of the Upper Camp. From 1956 to 1983 the United Smelting, Refining, and Mining Company and the City of Nome had rights-of-way for underground communications cables.</p>							
<b>2. Owner/Operator Information</b>							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City:				City:			
State:	Zip Code:	Telephone:		State:	Zip Code:	Telephone:	
Type of Ownership: <input type="checkbox"/> Private <input type="checkbox"/> County <input checked="" type="checkbox"/> Federal Agency <input type="checkbox"/> Municipal Name: DoD <input type="checkbox"/> Not Specified <input type="checkbox"/> State <input type="checkbox"/> Other _____ <input type="checkbox"/> Indian				Type of Ownership: <input type="checkbox"/> Private <input type="checkbox"/> County <input checked="" type="checkbox"/> Federal Agency <input type="checkbox"/> Municipal Name: DoD <input type="checkbox"/> Not Specified <input type="checkbox"/> State <input type="checkbox"/> Other _____ <input type="checkbox"/> Indian			
<b>3. Site Evaluator Information</b>							
Name of Evaluator: Jessica Young		Agency/Organization: Brice Engineering, LLC			Date Prepared: July 2023		
Street Address: 3700 Centerpoint Dr			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:			Telephone:		
<b>4. Site Disposition (for EPA use only)</b>							
Emergency Response/Removal Assessment Recommendation:  <input type="checkbox"/> Yes <input type="checkbox"/> No  Date: _____				CERCLIS Recommendation:  <input type="checkbox"/> Higher Priority SI <input type="checkbox"/> Lower Priority SI <input type="checkbox"/> NFRAP <input type="checkbox"/> RCRA <input type="checkbox"/> Other: _____ Date: _____		Signature:  Name (typed):  Position:	

**5. General Site Characteristics**

<p><b>Predominant Land Use Within 1 Mile of Site (check all that apply):</b></p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Industrial</td> <td><input type="checkbox"/> Agriculture</td> <td><input type="checkbox"/> DOI</td> </tr> <tr> <td><input type="checkbox"/> Commercial</td> <td><input type="checkbox"/> Mining</td> <td><input type="checkbox"/> Other Federal Facility:</td> </tr> <tr> <td><input type="checkbox"/> Residential</td> <td><input checked="" type="checkbox"/> DOD</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Forest/Fields</td> <td><input type="checkbox"/> DOE</td> <td><input type="checkbox"/> Other _____</td> </tr> </table>	<input type="checkbox"/> Industrial	<input type="checkbox"/> Agriculture	<input type="checkbox"/> DOI	<input type="checkbox"/> Commercial	<input type="checkbox"/> Mining	<input type="checkbox"/> Other Federal Facility:	<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> DOD	_____	<input type="checkbox"/> Forest/Fields	<input type="checkbox"/> DOE	<input type="checkbox"/> Other _____	<p><b>Site Setting:</b></p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Urban</td> </tr> <tr> <td><input type="checkbox"/> Suburban</td> </tr> <tr> <td><input checked="" type="checkbox"/> Rural</td> </tr> </table>	<input type="checkbox"/> Urban	<input type="checkbox"/> Suburban	<input checked="" type="checkbox"/> Rural	<p><b>Years of Operation:</b></p> <p>Beginning Year <b>1944</b></p> <p>Ending Year <b>1979</b></p> <p><input type="checkbox"/> Unknown</p>
<input type="checkbox"/> Industrial	<input type="checkbox"/> Agriculture	<input type="checkbox"/> DOI															
<input type="checkbox"/> Commercial	<input type="checkbox"/> Mining	<input type="checkbox"/> Other Federal Facility:															
<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> DOD	_____															
<input type="checkbox"/> Forest/Fields	<input type="checkbox"/> DOE	<input type="checkbox"/> Other _____															
<input type="checkbox"/> Urban																	
<input type="checkbox"/> Suburban																	
<input checked="" type="checkbox"/> Rural																	
<p><b>Type of Site Operations (check all that apply):</b></p> <table style="width:100%;"> <tr> <td style="vertical-align: top;"> <input type="checkbox"/> Manufacturing (must check subcategory)                     <ul style="list-style-type: none"> <li><input type="checkbox"/> Lumber and Wood Products</li> <li><input type="checkbox"/> Inorganic Chemicals</li> <li><input type="checkbox"/> Plastic and/or Rubber Products</li> <li><input type="checkbox"/> Paints, Varnishes</li> <li><input type="checkbox"/> Industrial Organic Chemicals</li> <li><input type="checkbox"/> Agricultural Chemicals</li> <li><input type="checkbox"/> Miscellaneous Chemical Products</li> <li><input type="checkbox"/> Primary Metals</li> <li><input type="checkbox"/> Metal Coating, Plating, Engraving</li> <li><input type="checkbox"/> Metal Forging, Stamping</li> <li><input type="checkbox"/> Fabricated Structural Metal Products</li> <li><input type="checkbox"/> Electronic Equipment</li> <li><input type="checkbox"/> Other Manufacturing</li> </ul> <input type="checkbox"/> Mining                     <ul style="list-style-type: none"> <li><input type="checkbox"/> Metals</li> <li><input type="checkbox"/> Coal</li> <li><input type="checkbox"/> Oil and Gas</li> <li><input type="checkbox"/> Non-metallic Minerals</li> </ul> </td> <td style="vertical-align: top;"> <input type="checkbox"/> Retail  <input type="checkbox"/> Recycling  <input type="checkbox"/> Junk/Salvage Yard  <input type="checkbox"/> Municipal Landfill  <input type="checkbox"/> Other Landfill  <input checked="" type="checkbox"/> DOD  <input type="checkbox"/> DOE  <input type="checkbox"/> DOI  <input type="checkbox"/> Other Federal Facility _____  <input type="checkbox"/> RCRA                     <ul style="list-style-type: none"> <li><input type="checkbox"/> Treatment, Storage, or Disposal</li> <li><input type="checkbox"/> Large Quantity Generator</li> <li><input type="checkbox"/> Small Quantity Generator</li> <li><input type="checkbox"/> Subtitle D                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Municipal</li> <li><input type="checkbox"/> Industrial</li> </ul> </li> <li><input type="checkbox"/> "Converter"</li> <li><input type="checkbox"/> "Protective Filer"</li> <li><input type="checkbox"/> "Non-or Late Filer"</li> </ul> <input type="checkbox"/> Note Specified  <input type="checkbox"/> Other _____                 </td> </tr> </table>		<input type="checkbox"/> Manufacturing (must check subcategory) <ul style="list-style-type: none"> <li><input type="checkbox"/> Lumber and Wood Products</li> <li><input type="checkbox"/> Inorganic Chemicals</li> <li><input type="checkbox"/> Plastic and/or Rubber Products</li> <li><input type="checkbox"/> Paints, Varnishes</li> <li><input type="checkbox"/> Industrial Organic Chemicals</li> <li><input type="checkbox"/> Agricultural Chemicals</li> <li><input type="checkbox"/> Miscellaneous Chemical Products</li> <li><input type="checkbox"/> Primary Metals</li> <li><input type="checkbox"/> Metal Coating, Plating, Engraving</li> <li><input type="checkbox"/> Metal Forging, Stamping</li> <li><input type="checkbox"/> Fabricated Structural Metal Products</li> <li><input type="checkbox"/> Electronic Equipment</li> <li><input type="checkbox"/> Other Manufacturing</li> </ul> <input type="checkbox"/> Mining <ul style="list-style-type: none"> <li><input type="checkbox"/> Metals</li> <li><input type="checkbox"/> Coal</li> <li><input type="checkbox"/> Oil and Gas</li> <li><input type="checkbox"/> Non-metallic Minerals</li> </ul>	<input type="checkbox"/> Retail <input type="checkbox"/> Recycling <input type="checkbox"/> Junk/Salvage Yard <input type="checkbox"/> Municipal Landfill <input type="checkbox"/> Other Landfill <input checked="" type="checkbox"/> DOD <input type="checkbox"/> DOE <input type="checkbox"/> DOI <input type="checkbox"/> Other Federal Facility _____ <input type="checkbox"/> RCRA <ul style="list-style-type: none"> <li><input type="checkbox"/> Treatment, Storage, or Disposal</li> <li><input type="checkbox"/> Large Quantity Generator</li> <li><input type="checkbox"/> Small Quantity Generator</li> <li><input type="checkbox"/> Subtitle D                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Municipal</li> <li><input type="checkbox"/> Industrial</li> </ul> </li> <li><input type="checkbox"/> "Converter"</li> <li><input type="checkbox"/> "Protective Filer"</li> <li><input type="checkbox"/> "Non-or Late Filer"</li> </ul> <input type="checkbox"/> Note Specified <input type="checkbox"/> Other _____	<p><b>Waste Generated:</b></p> <p><input checked="" type="checkbox"/> Onsite  <input type="checkbox"/> Offsite  <input type="checkbox"/> Onsite and Offsite</p> <p><b>Waste Deposition Authorized By:</b></p> <p><input type="checkbox"/> Present Owner  <input type="checkbox"/> Former Owner  <input checked="" type="checkbox"/> Present &amp; Former Owner  <input type="checkbox"/> Unauthorized  <input type="checkbox"/> Unknown</p> <p><b>Waste Accessible to the Public:</b></p> <p><input type="checkbox"/> Yes  <input checked="" type="checkbox"/> No</p> <p><b>Distance to Nearest Dwelling, School, or Workplace:</b></p> <p align="center">_____ Feet</p> <p align="center">&lt;1,300 Feet</p>													
<input type="checkbox"/> Manufacturing (must check subcategory) <ul style="list-style-type: none"> <li><input type="checkbox"/> Lumber and Wood Products</li> <li><input type="checkbox"/> Inorganic Chemicals</li> <li><input type="checkbox"/> Plastic and/or Rubber Products</li> <li><input type="checkbox"/> Paints, Varnishes</li> <li><input type="checkbox"/> Industrial Organic Chemicals</li> <li><input type="checkbox"/> Agricultural Chemicals</li> <li><input type="checkbox"/> Miscellaneous Chemical Products</li> <li><input type="checkbox"/> Primary Metals</li> <li><input type="checkbox"/> Metal Coating, Plating, Engraving</li> <li><input type="checkbox"/> Metal Forging, Stamping</li> <li><input type="checkbox"/> Fabricated Structural Metal Products</li> <li><input type="checkbox"/> Electronic Equipment</li> <li><input type="checkbox"/> Other Manufacturing</li> </ul> <input type="checkbox"/> Mining <ul style="list-style-type: none"> <li><input type="checkbox"/> Metals</li> <li><input type="checkbox"/> Coal</li> <li><input type="checkbox"/> Oil and Gas</li> <li><input type="checkbox"/> Non-metallic Minerals</li> </ul>	<input type="checkbox"/> Retail <input type="checkbox"/> Recycling <input type="checkbox"/> Junk/Salvage Yard <input type="checkbox"/> Municipal Landfill <input type="checkbox"/> Other Landfill <input checked="" type="checkbox"/> DOD <input type="checkbox"/> DOE <input type="checkbox"/> DOI <input type="checkbox"/> Other Federal Facility _____ <input type="checkbox"/> RCRA <ul style="list-style-type: none"> <li><input type="checkbox"/> Treatment, Storage, or Disposal</li> <li><input type="checkbox"/> Large Quantity Generator</li> <li><input type="checkbox"/> Small Quantity Generator</li> <li><input type="checkbox"/> Subtitle D                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Municipal</li> <li><input type="checkbox"/> Industrial</li> </ul> </li> <li><input type="checkbox"/> "Converter"</li> <li><input type="checkbox"/> "Protective Filer"</li> <li><input type="checkbox"/> "Non-or Late Filer"</li> </ul> <input type="checkbox"/> Note Specified <input type="checkbox"/> Other _____																

**6. Waste Characteristics Information**

(Refer to PA Table 1 for WC Score)

<p><b>Source Type:</b> (check all that apply)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Landfill</li> <li><input type="checkbox"/> Surface Impoundment</li> <li><input type="checkbox"/> Drums</li> <li><input type="checkbox"/> Tanks and Non-Dum Containers</li> <li><input type="checkbox"/> Chemical Waste Pile</li> <li><input type="checkbox"/> Scrap Metal or Junk Pile</li> <li><input type="checkbox"/> Tailings Pile</li> <li><input type="checkbox"/> Trash Pile (open drum)</li> <li><input type="checkbox"/> Land Treatment</li> <li><input type="checkbox"/> Contaminated GW Plume (unidentified source)</li> <li><input type="checkbox"/> Contaminated SW/Sediment (unidentified source)</li> <li><input checked="" type="checkbox"/> Contaminated Soil</li> <li><input type="checkbox"/> Other _____</li> <li><input type="checkbox"/> No Sources</li> </ul>	<p><b>Source Waste Quantity:</b> (include unit)</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><b>Tier*:</b></p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p> <p align="center">-</p>	<p><b>General Type of Waste</b> (check all that apply):</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Metals</td> <td><input type="checkbox"/> Pesticides/Herbicides</td> </tr> <tr> <td><input type="checkbox"/> Organics</td> <td><input type="checkbox"/> Acids/Bases</td> </tr> <tr> <td><input type="checkbox"/> Inorganics</td> <td><input checked="" type="checkbox"/> Oily Waste</td> </tr> <tr> <td><input checked="" type="checkbox"/> Solvents</td> <td><input type="checkbox"/> Municipal Waste</td> </tr> <tr> <td><input type="checkbox"/> Paints/Pigments</td> <td><input type="checkbox"/> Mining Waste</td> </tr> <tr> <td><input type="checkbox"/> Laboratory/Hospital Waste</td> <td><input type="checkbox"/> Explosives</td> </tr> <tr> <td><input type="checkbox"/> Radioactive Waste</td> <td><input checked="" type="checkbox"/> Other <u>PCBs</u></td> </tr> <tr> <td><input checked="" type="checkbox"/> Construction/Demolition Waste</td> <td></td> </tr> </table> <p><b>Physical State of Waste as Deposited (check all that apply):</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Solid</li> <li><input type="checkbox"/> Sludge</li> <li><input type="checkbox"/> Powder</li> <li><input type="checkbox"/> Liquid</li> <li><input type="checkbox"/> Gas</li> </ul>	<input type="checkbox"/> Metals	<input type="checkbox"/> Pesticides/Herbicides	<input type="checkbox"/> Organics	<input type="checkbox"/> Acids/Bases	<input type="checkbox"/> Inorganics	<input checked="" type="checkbox"/> Oily Waste	<input checked="" type="checkbox"/> Solvents	<input type="checkbox"/> Municipal Waste	<input type="checkbox"/> Paints/Pigments	<input type="checkbox"/> Mining Waste	<input type="checkbox"/> Laboratory/Hospital Waste	<input type="checkbox"/> Explosives	<input type="checkbox"/> Radioactive Waste	<input checked="" type="checkbox"/> Other <u>PCBs</u>	<input checked="" type="checkbox"/> Construction/Demolition Waste	
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<input type="checkbox"/> Radioactive Waste	<input checked="" type="checkbox"/> Other <u>PCBs</u>																		
<input checked="" type="checkbox"/> Construction/Demolition Waste																			

\*C=Constituent, W=Wastestream, V=Volume, A=Area



### 7. Ground Water Pathway

<p>Is Ground Water Used for Drinking Within 4 Miles:</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes, Distance to nearest Drinking Well: Moonlight Springs 1.75 mi downgradient</p> <p><input type="checkbox"/> Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area.</p> <p>Type of Drinking Water Wells Within 4 Miles (check all that apply):</p> <p><input checked="" type="checkbox"/> Municipal <input checked="" type="checkbox"/> Private <input type="checkbox"/> None</p>	<p>Is There a Suspected Release to Ground Water<sup>1</sup>:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <hr/> <p>Have Primary Target Drinking Water Wells Been Identified:</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes, Enter Primary Target Population: 3498 People<sup>3</sup></p>	<p>List Secondary Target Population Served by Ground Water Withdrawn From:</p> <p>0 - 1/4 Mile _____</p> <p>&gt;1/4 - 1/2 Mile _____</p> <p>&gt;1/2 - 1 Mile _____</p> <p>&gt;1 - 2 Mile _____</p> <p>&gt;2 - 3 Mile _____</p> <p>&gt;3 - 4 Mile _____</p> <p>Total Within 4 Miles<sup>4</sup> _____</p> <p><small>*Use population #s for PA Table 2 *Note nearest well for #5 on GW Pathway Scoresheet</small></p>
<p>Depth to Shallowest Aquifer: _____ Feet</p> <p>Karst Terrain/Aquifer Present:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Nearest Designated Wellhead Protection Area<sup>6</sup>:</p> <p><input type="checkbox"/> Underlies Site <input type="checkbox"/> &gt;0-4 Miles <input checked="" type="checkbox"/> None Within 4 Miles</p>	

### 8. Surface Water Pathway

<p>Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):</p> <p><input type="checkbox"/> Stream    <input checked="" type="checkbox"/> River    <input checked="" type="checkbox"/> Pond    <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Bay    <input checked="" type="checkbox"/> Ocean    <input type="checkbox"/> Other _____</p>	<p>Shortest Overland Distance From Any Source to Surface Water:</p> <p>_____ Feet &gt;1 _____ Miles</p>
<p>Is There a Suspected Release to Surface Water<sup>1</sup>:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Site is Located in:</p> <p><input type="checkbox"/> Annual - 10 yr Floodplain <input type="checkbox"/> &gt;10yr - 100yr Floodplain <input type="checkbox"/> &gt;100yr - 500yr Floodplain <input checked="" type="checkbox"/> &gt;500yr Floodplain</p>
<p>Drinking Water Intake Located Along the Surface Water Migration Path:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Have Primary Target Drinking Water Intakes Been Identified:</p> <p><input checked="" type="checkbox"/> Yes    If Yes, Distance to Nearest Drinking Water Intake : 1.5 Miles<sup>6</sup> <input type="checkbox"/> No</p> <p>If Yes, Enter Population Served by Target Intake: 3498 People<sup>4</sup></p>	<p>List All Secondary Target Drinking Water Intakes:</p> <p><u>Name:</u>    <u>Water Body:</u>    <u>Flow (cfs):</u>    <u>Population Served:</u></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p style="text-align: right;">Total within 15 Miles <sup>4</sup> _____</p>
<p>Fisheries Located Along the Surface Water Migration Path:</p> <p><input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No    If Yes, Distance to Nearest Fishery: _____ Miles</p>	<p>List All Secondary Target Fisheries<sup>10</sup>:</p> <p><u>Water Body/ Fishery Name:</u>    <u>Flow (cfs):</u></p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>Have Primary Target Fisheries Been Identified:</p> <p><input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No</p>	

### 8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

- Yes  
 No

Have Primary Target Wetlands Been Identified:

- Yes  
 No

List All Wetlands:

Water Body :      Flow (cfs):      Frontage miles:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Other Sensitive Environments Located Along the Surface Water Migration Path:

- Yes  
 No

If Yes, Distance to Nearest Sensitive Environment: \_\_\_\_\_ Miles

Have Primary Target Sensitive Environments Been Identified:

- Yes  
 No

List All Sensitive Environments<sup>11</sup>:

Water Body :      Flow (cfs):      Sensitive Environment Type:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### 9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

- Yes  
 No

If Yes, Enter Total Residential Population:

\_\_\_\_\_ People<sup>2</sup>

Number of Workers Onsite<sup>4</sup>:

- None  
 1 - 100  
 101 - 1,000  
 > 1,000

Population Within 1 Mile:

<100 \_\_\_\_\_ People<sup>7</sup>

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

- Yes  
 No

If Yes, List Each Terrestrial Sensitive Environment<sup>5</sup>:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*Refer to PA Table 7 for environment types

### 10. Air Pathway

Is there a Suspected Release to Air<sup>1</sup>:

- Yes  
 No

Enter Total Population on or Within:

Onsite \_\_\_\_\_

0-1/4 Mile \_\_\_\_\_

>1/4-1/2 Mile \_\_\_\_\_

>1/2-1 Mile \_\_\_\_\_

>1-2 Miles \_\_\_\_\_

>2-3 Miles \_\_\_\_\_

>3-4 Miles \_\_\_\_\_

Total Within 4 Miles<sup>3-5</sup> \_\_\_\_\_

Wetlands Located Within 4 Miles of the Site<sup>6</sup>:

- Yes  
 No

If Yes, How Many Acres: unknown Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

- Yes  
 No

List All Sensitive Environments Within 1/2 Mile of the Site<sup>6</sup>:

Distance:      Sensitive Environment Type/Wetlands Area (acres):

Onsite \_\_\_\_\_

0-1/4 Mile \_\_\_\_\_

>1/4-1/2 Mile \_\_\_\_\_

\*Refer to PA Table 10 for calculations on air pathway exposures

<sup>1-11</sup> Refers to question number on the PA scoresheet for each particular pathway

**APPENDIX F**  
**RESPONSE TO COMMENTS**

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THE STATE  
of **ALASKA**  
GOVERNOR MIKE DUNLEAVY

## Department of Environmental Conservation

Spill Prevention and Response  
Contaminated Sites

610 University Ave.  
Fairbanks, Alaska 99709-3643  
Main: 907.451.2156  
Fax: 907.451.2155  
[www.dec.alaska.gov](http://www.dec.alaska.gov)

File No. 400.38.004

October 24, 2023

Jennifer Wehrmann  
611 CES/CEVR  
10471 20th Street, Suite 327  
JBER AFB, AK, 99506-2200

Re: **DEC Acknowledgement of Receipt for the *Redline Final Preliminary Assessment Report for Aqueous Film-Forming Foam Areas, Anvil Mountain Radio Relay Station, Alaska, September 2023***

Dear Ms. Wehrmann:

The Alaska Department of Environmental Conservation (DEC) Contaminated Sites Program has reviewed the above referenced document and responses to comments, received on October 16, 2023. The purpose of this Preliminary Assessment (PA) Report is to evaluate if a potential release of Aqueous Film-Forming Foams (AFFF) may have occurred from historical storage or use at fire training areas (FTAs) and other non-FTAs, such as hangars, fire stations, and emergency response locations at the Anvil Mountain Radio Relay Station (RRS). This PA includes information on the installation background, historical records review, and interviews with installation personnel with knowledge of past or current operations.

The PA did not identify any FTAs or non-FTAs at Anvil Mountain RRS and the report recommends no further remedial action planned (NFRAP) for AFFF sources. DEC's comments have been addressed, and future investigation of non-AFFF PFAS sources will be evaluated under a separate contract. Please provide DEC with the finalized PA report for our records. If you have any questions regarding this review, please contact the DEC project manager at (907) 451-2181, or by email at [cascade.galasso-irish@alaska.gov](mailto:cascade.galasso-irish@alaska.gov).

Sincerely,

A handwritten signature in cursive script, appearing to read "Cas Galasso".

Cas Galasso  
Environmental Program Specialist

Attachment: DEC Cmnts Draft AFFF PA Anvil RRS

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Alaska Department of Environmental Conservation (DEC)  
Contaminated Sites Program

**Document Name:** DRAFT Preliminary Assessment Report for Aqueous Film-Forming Foam Areas  
Anvil Mountain Radio Relay Station, Alaska. September 2023  
**Commenters:** Alaska Department of Environmental Conservation  
**Document Received by DEC:** September 25, 2023

#	Page #	Section	ADEC Comment	Response	ADEC Response
1.		General comment	<p>As a general comment DEC would like to ensure that USAF and DEC are in agreement that this review of AFFF sources only covered a portion of the potential sources of PFAS that could be found at military installations. Please confirm that this NFRAP does not preclude the evaluation of additional PFAS sources (i.e. that a non-AFFF PA/SI will occur). This is DEC understanding of the DoD position and the current text.</p> <p>With regards to a future non-AFFF PA/SI, DEC would point to the presence of a permitted landfill as potential non-AFFF PFAS source.</p>	Concur. Additional non-AFFF PFAS sources are being evaluated under a separate contract.	A
2.	2-1 3-2	Section 2.2 Section 3.3	<p>The Site History section references two 70,000-gallon fuel storage tanks, several above-ground storage tanks for antenna heating systems, and associated fuel distribution piping.</p> <p>Fuel storage areas are often accompanied by some form of fire-suppression system. Was the carbon dioxide fire suppression system referenced in Section 3.3 and Table A-2 used for potential fire-fighting activities associated with the fuel storage tanks? If not, was any fire suppression system in place at the fuel storage area?</p>	<p>Concur. The Anvil Mountain RRS had a tank farm including two 70,000-gallon diesel ASTs with a spill containment ditch; other fuel ASTs for antenna heating systems; and a fuel pipeline. During the review process there were no records of a fire suppression system at the fuel tank areas or indication of a release.</p>	<p style="text-align: center;">Clarification requested.</p> <p>Table A-2 1998 Document Titled “ADEC Letter to Base Concerning Comments on Environmental Cleanup Plan” Notes column reference a ‘Fire Suppression System – Main Building and building number found – No. 1001.’ Was this fire suppression system not associated with the tank farm?</p> <p><i><b>USAF - Clarification:</b> The comment in Table A-2 was a refence to identifying the main building number (1001). No other relevant information was identified in the ADEC Letter to Base Concerning Comments on Environmental Cleanup Plan. During the records review no evidence of a fire suppression system</i></p>

					<p><i>associated with the tank was found. Table A-2 line 11 will be revised to read: “Main building is Building 1001”.</i></p> <p>DEC understands that the site will be evaluated for non-AFFF PFAS sources in a subsequent PA. Due to the uncertainty of the nature or presence of a fire suppression system at Anvil Mountain RRS, DEC recommends the USAF evaluate any PFAS contamination discovered through subsequent sampling in areas of potential concern (landfill, PAD area, waterproofing sprayed areas, etc.) with the consideration that AFFF may have been released regardless of known sources.</p> <p><i><b>USAF - Noted.</b> Non-AFFF PFAS sources are being evaluated under a separate contract.</i></p> <p><b>DEC Response: A</b></p>
<i>End of comments</i>					