

**FINAL**

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

**Granite Mountain Radio Relay Station, Alaska**

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**Prepared for:**



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

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## ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
ADEC	Alaska Department of Environmental Conservation
AFCEC	Air Force Civil Engineer Center
AFFF	aqueous film-forming foam
AST	aboveground storage tank
bgs	below ground surface
BLM	Bureau of Land Management
Brice	Brice Engineering, LLC
CEC	contaminant of emerging concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO <sub>2</sub>	carbon dioxide
CSM	Conceptual Site Model
DNR	Department of Natural Resources
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FTA	fire training area
GRO	gasoline range organics
HA	health advisory
HFPO-DA	hexafluoropropylene oxide dimer acid
JBER	Joint Base Elmendorf-Richardson
mg/kg	milligrams per kilogram
NFRAP	No Further Response Action Planned
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexane sulfonate
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
RI	Remedial Investigation
RRO	residual range organics
RRS	Radio Relay Station
SI	Site Inspection
SVOC	semi-volatile organic compound
TMO	Traffic Management Office
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force

## **ACRONYMS AND ABBREVIATIONS (CONTINUED)**

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
WACS	White Alice Communications System

## 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 Granite 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 a record and 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 Granite 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 Granite 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 2022), 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 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.
- Historical 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 Granite 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 former Granite Mountain RRS (Figures 1 and 2) is on the isthmus of the Seward Peninsula north of Norton Bay, approximately 40 miles north of the community of Koyuk and approximately 120 miles northeast of Nome. The facility encompasses 258 acres and was composed of an Upper Camp and Lower Camp connected by an access road (USAF 1998).

### **2.2 Access and Security Restrictions**

Access to the area is limited with aircraft providing the only year-round access. A dirt road connects the Granite Mountain RRS to the airstrip approximately 2 miles to the southwest. No security or access restrictions are in place.

### **2.3 Site History**

Initial construction of facilities at Granite Mountain occurred in 1956 and 1957. The site is one of the 31 original White Alice Communications System (WACS) sites. USAF real estate records indicate it was the Granite Mountain Communications Station, renamed Granite Mountain Air Force Station in 1958, and in 1961 became the Granite Mountain RRS. Granite Mountain operated as a combined tropospheric scatter/TD-2 microwave station, which relayed radio information to and from North River, Anvil Mountain, and Kotzebue WACS sites. While the RRS was active, Upper Camp facilities included an Equipment Building, a Dormitory Building, a Vehicle Maintenance Shop, a Communications Facility, four WACS antennas, diesel aboveground storage tanks (ASTs), a water tank, and a septic tank (Figure 3). Lower Camp facilities included a Fire Station, a Temporary Air Terminal Building, a Vehicle Operations Heated Parking Building, an airstrip, diesel pump station, diesel ASTs, and a septic tank (Figure 4). The Granite Mountain RRS did not have a hangar for aircraft use. The RRS was abandoned in 1973. In 1976, a portion of the facility was leased to Alascom, and in 1986 the Bureau of Land Management (BLM) and Federal Aviation Administration (FAA) also leased portions. All structures were demolished in 2009 under the Clean Sweep program (USAF 2010a). Abandoned facilities of the Upper Camp include several former disposal areas and a landfill. Abandoned facilities of the Lower Camp include the gravel runway and several former disposal areas.

### **2.4 Climate**

Koyuk has a subarctic climate with a maritime influence. Average summer temperatures range from 46 degrees Fahrenheit (°F) to 62°F; winter temperatures average -8°F to 8°F. Annual precipitation averages 19 inches, with 40 inches of snowfall. Extremes from -49°F to 87°F have been recorded. Norton Bay is usually ice-free from May to October (TWC Product and Technology 2023).

## 2.5 Geology

The Granite Mountain site is within the Seward Peninsula Physiographic Province, characterized by highlands with rolling topography and gentle slopes (USAF 1989). The Upper Camp is on a local topographic high point at 2,835 feet above mean sea level. The peak of Granite Mountain is on the Continental Divide. The Lower Camp is approximately 1,600 feet below the Upper Camp on a slight north-south oriented ridgeline on the western slope of Granite Mountain.

The Granite Mountain site is on the Granite Mountain Pluton, which is composed of biotite quartz monzonite rock of mid-Cretaceous age. Outcrops of this unit are a predominant surface feature around the peak of Granite Mountain. The Granite Mountain Pluton is surrounded by an andesitic volcanic unit of early Cretaceous age. This unit is predominantly composed of andesitic trachyandesitic crystal and lithic tuffs, tuffaceous volcanic greywacke, massive andesitic breccia, agglomerate, conglomerate, and intercalated flows of porphyritic pyroxene andesite and basalt. In the vicinity of Granite Mountain these rocks are characteristically hornfelsic and propylitically altered to a hard, pale green aggregate of chlorite, epidote, calcite, and sodic plagioclase (USAF 1994).

The Granite Mountain site is in the Pergelic Cryaquepts-Perelic Cryorthents, very gravelly, hilly to steep soil association. The six principal components comprising the association, in order of percent composition in the area, are: Pergelic Cryaquepts, poorly drained; Pergelic Cryaquepts, well drained; Histic Pergelic Cryaquepts, well drained; Histic Pergelic Cryaquepts, poorly drained; Pergelic Ruptic-Histic Cryaquepts; and rough mountain land. Poorly drained soils are found on long uniform slopes, foot slopes, valley bottoms, and steep north-facing slopes. Well drained soils occur on high ridges and steep south-facing slopes. Common frost features are solifluction lobes, frost boils, and stone stripes (USAF 1994).

## 2.6 Hydrology

Granite Mountain is on a topographic high point and is predominantly rocky and devoid of surface water bodies. Headwaters of many creeks, which are often springs, originate off the flanks of Granite Mountain. Surface water flow originating from rain or snowmelt drains east or west of the Upper Camp into the Peace River or Kiwalik River drainages. Surface water in the area of the Lower Camp drains east and south into Granite Creek and Spring Creek, which are tributaries of Sweepstakes Creek. Sweepstakes Creek discharges into the Peace River (USAF 1994). Granite Creek is the closest surface water feature to the site, approximately 0.5 miles.

Groundwater at Granite Mountain is considered to be perched (USAF 2001a). During snowmelt of precipitation events, water infiltrates the shallow soil layer until it encounters a relatively impermeable boundary at either permafrost or shallow bedrock. Some groundwater discharges from the mountain at lower elevations in the form of springs, such as a spring approximately 1.5 to 2 miles northeast of the runway near the access road. Permafrost in the region is almost continuous and ranges in thickness from 15 to more than 260 feet. Surface layers of soil thaw to depths of 1 to 10 feet. Permafrost serves as a relatively impermeable boundary between any water collected seasonally in the active layer and the underlying subpermafrost aquifer (USAF 1994).



## **2.7 Ecology**

The upper elevations of Granite Mountain consist of a mosaic of alpine tundra and bare rock. Interspersed between the bare rocks and rubble are low mat plants, both herbaceous and shrubby. Alpine tundra communities occur in mountainous areas and along well-drained rocky ridges. The soils in this area, if present, are generally very coarse, rocky, and dry. Plants with low-growth form are typical of this exposed windswept habitat (USAF 2001a).

Between mid-mountain and the lower elevation areas of the Granite Mountain RRS, topographic slope decreases and soil thickness increases. Soil moisture, seeps, and springs are abundant in many areas. As a result, vegetation density and diversity increase significantly at lower elevations. Many types of berries may be found in this area, including lingonberry, crowberry, bearberry, alpine blueberry, and cloudberry. Cottongrass ranges throughout the lower elevations (USAF 2001a).

Habitats within the Granite Mountain area support few species of resident wildlife. The predominant resident species observed at Granite Mountain RRS include pika, red-backed vole, and ptarmigan. Although no fox dens were observed, red foxes have been reported in the area. Several species of large mammals are also present, including caribou, grizzly bear, and moose. 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 (USAF 2001a).

According to the Alaska Region of the U.S. Fish and Wildlife Service (USFWS), no endangered or threatened species of flora or fauna are found within a 1-mile radius of the Granite Mountain site. Also, no federal- or state-designated critical habitats or wilderness areas lie within a 1-mile perimeter of Granite Mountain RRS. No significant fishery occurs in the streams near the Granite Mountain site (USFWS 2001).

## **2.8 Land Use**

Land use activities are limited due to the isolated location of Granite Mountain. Access to the area is limited with aircraft providing the only year-round access. Hunters use facilities of the Lower Camp for camping and processing game. Miners in the area may use natural resources on the site.

## **2.9 Groundwater and Surface Water Use**

Whether the groundwater is used by seasonal miners is unknown; however, no wells are listed within a 10-mile radius of the site, according to the U.S. Geological Survey (USGS) Groundwater Site Inventory Database (USGS 2001) and the Department of Natural Resources (DNR) Well Log Tracking System (DNR 2023). A cistern and associated pump house at Mid Mountain were installed and used by USAF to collect water from natural springs for drinking. This cistern was abandoned by USAF during the installation Clean Sweep (USAF 2010a), the pumps disabled, and the distribution system removed. Miners and hunters could potentially use water from Sweepstakes or Granite Creek for drinking (USAF 1995).

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### 3.0 PRELIMINARY ASSESSMENT FINDINGS

During the records review, historical photograph review, interviews, and site visit phases of this PA, two FTAs and two non-FTAs associated with potential AFFF storage or use were identified (Table 1). 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 Granite 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 Granite 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.

The *Management Action Plan* for Granite Mountain RRS identifies “Fire Training” as a “hazardous substance activity” conducted by USAF at the installation from 1957 to 1975 (USAF 2001b); however, the location and nature of the fire training activities are unknown. Other than the reference to fire training in Table 1-1 of the *Management Action Plan* (USAF 2001b), no documentation of fire training activities could be found. A Site Inventory Survey from 1985 was obtained during the records review and listed materials that were left on site after the installation was abandoned. The site inventory did not list AFFF or any other fire suppression supplies; however, a USAF employee who worked at Granite Mountain between 1985 and 1990 recalled seeing empty jugs of AFFF in a building by the airstrip (discussed in Section 3.2). Two locations were identified where fire training may potentially have been conducted, including an area near the Fire Station and DP010 (formerly Disposal Area J), both at the Lower Camp (discussed in Section 5.0).

Other areas identified where firefighting equipment may have been stored or used include a Water Fire Pump Station at the Upper Camp and the DP009 Burn Area uphill from the Upper Camp.

The *Preliminary Assessment/Site Inspection Report* (USAF 1995) for Granite Mountain states:

*“Between 1984 and 1986, the Air Force removed various types of debris from the Granite Mountain RRS. Materials removed included large and small capacitors, drums and cans of oil and waste oil, paint and paint thinners, solvents, wastewater, creosote, cement, sealer, tar, septic tank cleaners, wood preservative, fire extinguishers, herbicides and pesticides, and various other miscellaneous compounds.”*

The report did not specify the types of fire extinguishers that were removed, and it is unclear whether this statement is referring to liquid fire extinguishing agents such as AFFF, or to Class A/B fire extinguishers.

The BLM had a permit from USAF and used various facilities at the installation as headquarters for wildland firefighting operations during the summer from approximately 1976 until at least 1998 (USAF 1995, 1998).

Portions of the facility were leased to the BLM and FAA in 1986 and the records review indicated that the gravel runway continued to be used as a fuel staging area by BLM for firefighting purposes. No documentation was found describing specific BLM firefighting or fire training practices at the RRS. Class A foams are generally used for fighting wildfires, and do not contain PFAS (Massachusetts Department of Environmental Protection 2021). AFFF is not generally used for wildland firefighting; therefore, it is unlikely that BLM used AFFF at Granite Mountain.

During Clean Sweep activities at the Granite Mountain RRS (USAF 2010a), two carbon dioxide (CO<sub>2</sub>) fire suppression systems were discovered in buildings at the Upper Camp: one in the former Communications Facility and the other in the former Vehicle Maintenance Shop (Figure 3). Both systems were removed prior to building demolition.

On 3 August 1964, a Fairchild C-82A-FA aircraft crashed while landing at the Granite Mountain airstrip. Review of the accident report indicated that the crash resulted in a fire, but the report did not indicate the type of response action and/or if firefighting equipment was used to extinguish the fire (National Transportation Safety Board Identification: Unknown). Debris from the crash remains onsite and was observed during the site visit for this PA. A part number on the aircraft debris the airplane model as “82A,” confirming the debris was from the 1964 crash. AFFF was not used by USAF prior to 1970; therefore, AFFF would not have been stored on site at the time or used during an emergency response for the 1964 crash.

Historical photographs were reviewed for evidence of AFFF-related activities using Google Earth (aerial imagery was available for the years 2007, 2019, and 2020), photograph logs from historical reports, photographs obtained from the JBER Base Historian, and photographs from other internet resources. The *Clean Sweep Environmental Survey Report* (USAF 2001c) and *Clean Sweep Building Demolition, Debris Removal, and Environmental Remediation Report* (USAF 2010a) contained photos of the concrete foundation of the Fire Station at Lower Camp, the DP009 Burn Area, and red gas cylinders for the building CO<sub>2</sub> fire suppression systems. Other 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 Granite Mountain RRS; no record of AFFF shipment to Granite 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
Potential FTA at Fire Station Area
Potential FTA at DP010
NON-FIRE TRAINING AREAS
DP009 Burn Area
Water Fire Pump Station (Building 1023)

**Notes:**

For definitions, refer to the Acronyms and Abbreviations section.

## 3.2 Interviews

Four interviews were conducted via phone with individuals that had knowledge of historical activities at the Granite Mountain RRS, including a former site employee with knowledge of activities at Granite Mountain RRS. Mr. Mark Mobley, 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 Granite Mountain RRS airstrip is approximately 3,500 feet in length, which is long enough to accommodate larger aircraft, such as a C-130, and had support structures including a small Fire Station, a Temporary Air Terminal Building, a Vehicle Operations Heated Parking Building, an equipment and materials staging area, and a hazardous/non-hazardous waste staging area.

On 24 August 2023, a follow up interview was conducted with Mr. Mobley for clarification and additional information for the sites he worked at. Mr. Mobley remembered specifically seeing 15 to 20 empty 5-gallon jugs of AFFF in the Vehicle Operations Heated Parking Building at the Lower Camp of the Granite Mountain RRS. Mr. Mobley said the jugs were scattered on the floor of the building and appeared to have been brought there from somewhere else. Mr. Mobley also recalled seeing a fire trailer outfitted for foam use parked at the Lower Camp. When asked about the reference to fire training in the *Management Action Plan* for Granite Mountain, Mr. Mobley said that he did not know of any fire training activities that would not have involved AFFF because at the time they were focused on learning how to use foam dispensers and pumps to respond to aircraft crashes. He did not have specific knowledge of fire training activities at the RRS but stated that he knew USAF historically conducted burning at landfills, and if fire training was done it likely would have been conducted at DP010, located along the airstrip.

Mr. Mobley also had knowledge of historic burning at the DP009 Burn Area. He stated that USAF personnel would set up firefighting equipment at the Burn Area to prevent flames from spreading onto the tundra. However, it was a windy area, so fire training would not have been conducted there and AFFF would not have been used to prevent the spread of flames.

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 Granite Mountain RRS was conducted by Brice personnel. The field team mobilized to the site via helicopter and landed at the Lower Camp. The helicopter was unable to fly to the Upper Camp due to weather conditions. During the site visit, the field team performed a site walk and documented site conditions at the Lower Camp. Two 55-gallon drums, one empty and one approximately one-third full, were located at the south end of the runway. Both drums had diesel labels. Plane wreckage was observed in the area west of and adjacent to DP010. The area was scattered with debris, and signs of stressed vegetation were present. At the location of the former Fire Station, heavy equipment was observed in what looked like a staging area, possibly for miners. Multiple black poly containers and two 55-gallon drums were observed; all containers were empty. One dilapidated, unknown structure was observed north of the former Fire Station, west of the runway and southeast of DA021 (also known as

Surface Disposal Area K). The structure was in disrepair, and the field team did not go inside. All other infrastructure had been removed from Lower Camp. The former Fire Station is further discussed in Section 5.0.

On 16 September 2023, the field team mobilized to the Granite Mountain RRS via helicopter for Institutional Control/Land Use Control inspections at the Upper Camp. During this visit a site walk was made of the entire Upper Camp and the field team viewed the locations of the former buildings and DP009 Burn Area. Field Observations indicated that the Upper Camp area was primarily gravel with minimal vegetation; all infrastructure had been removed and the landscape was modified during the Clean Sweep Activities. At the former DP009 Burn Area where Mr. Mobley indicated historical burning occurred a dark lichen-type vegetation was observed on some of the rocks and gravel; however, no signs of burning or potential AFFF use and/or related activities was observed at this location or at the Upper Camp. Figures 3 and 4 show the site layout. 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 Granite Mountain RRS using available data in accordance with the EPA *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA 1988), 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

Based on historical USAF fire training practices, it is possible that AFFF was used at the Granite Mountain RRS, which could have resulted in a release of AFFF into the environment. Potential release mechanisms include spills, leaks, and direct discharges of AFFF during fire training exercises.

### 4.2 Impacted Media

During the PA, evidence of potential AFFF storage or use at the Granite Mountain RRS was found. If AFFF was released, potentially impacted media would include surface and subsurface soil, groundwater, and surface water.

### 4.3 Transport Mechanisms

If PFAS contamination were present, the 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, site trespassers, and subsistence harvesters or consumers. 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.

Construction workers could be exposed to site contaminants through direct contact or incidental ingestion of soil, or inhalation of dust during soil disturbing activities.

Site visitors are users assumed to visit the site occasionally. These receptors could be exposed through direct contact or incidental exposure to soil. Site visitors may incidentally ingest soil by consuming fine particles that adhere to skin surfaces, particularly the hands, from engaging in outdoor activities. These receptors are expected to visit the site only occasionally.

Subsistence harvesters or consumers may ingest site contaminants through dietary intake of harvested plants and animals as PFAS have been shown to bioaccumulate in plants and animals. Exposure for current and future subsistence gatherers is expected to be similar to those of site visitors.

There are no residents at Granite Mountain RRS, and the RRS is not expected to be used for residential use in the future.

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

As discussed in Section 3.1, the *Management Action Plan* for Granite Mountain RRS indicates fire training was conducted at the installation (USAF 2001b); however, the location and nature of the fire training activities are unknown. A USAF employee who worked at Granite Mountain RRS recalled seeing empty jugs of AFFF on site and indicated that any fire training activities would have taken place at the Lower Camp. Based on information obtained during the personnel interview, and the layout of the Lower Camp, two locations along the western side of the airstrip were identified as the most likely locations where fire training activities may have taken place: the Fire Station Area and DP010. The following sections describe these two potential FTA source areas, exposure pathways, and environmental hazards. Appendix E provides completed PA forms used to evaluate potential human and ecological pathways for areas where the potential for an AFFF release was identified. The PA forms provide a checklist of potential contaminant exposure pathways identified in the *Guidance for Performing Preliminary Assessments Under CERCLA* (EPA 1991). Potential migration and exposure pathways are further evaluated in the following sections.

### 5.1 Potential FTA at Fire Station Area

#### 5.1.1 Description and Operational History

The airstrip at Granite Mountain RRS was approximately 3,500 feet in length, which is long enough to accommodate larger planes (e.g., a C-130), and according to a USAF employee who worked at the installation (Mr. Mark Mobley), would have required fire suppression methods that included AFFF and a fire trailer outfitted for AFFF use. Structures that supported the airstrip included a Fire Station, a Vehicle Operations Heated Parking Building, a Temporary Air Terminal Building, an equipment and materials staging area, and a hazardous/non-hazardous staging area (Figure 4). These support structures were located on an approximately 150-foot by 130-foot gravel pad immediately west of the airstrip (referred to as the Fire Station Area in this report).

The Fire Station was a small, 126-square-foot building that supported firefighting operations and housed the necessary firefighting equipment for the runway. The Fire Station was active while the RRS was operational from 1958 to 1973; it is not known when the building was demolished. During the Clean Sweep survey in 2000, it was noted that only the concrete foundation of the Fire Station remained (USAF 2001c). Mr. Mobley observed a fire trailer in the Fire Station Area, and 15 to 20 empty jugs of AFFF in the Vehicle Operations Heated Parking Building, which was located adjacent to the Fire Station (Figure 4) but indicated that the jugs appeared to have been brought there from somewhere else. The location where AFFF would have been regularly stored is not known, but likely locations include the Fire Station, Vehicle Operations Heated Parking Building, and the staging area next to the Fire Station (Figure 4).

The location where fire training activities took place at the Granite Mountain RRS is not known, but the Fire Station Area was identified as a possible location. A photograph log entry in the *Clean Sweep Environmental Survey Report* (USAF 2001c) stated that the Temporary Air Terminal, which is approximately 100 feet northwest of the Fire Station, had two burn barrels and a fire circle; however, photos showing these features could not be found, and no information was found describing what the burn barrels and fire circle were used for. It is possible that the burn barrels and fire circle were used for fire training, but this could not be confirmed.

### **5.1.2 Waste Characteristics**

Specific practices related to fire training activities at the Granite Mountain RRS are unknown. Based on the time period the installation was active (1958 to 1973), and the statement from Mr. Mobley indicating that AFFF would have been used for fire training, AFFF was potentially used during training activities, and the potential for an AFFF release to the environment is present. Fire training could potentially have been conducted at the location of the burn barrels and fire circle near the Fire Station. The observation of empty AFFF jugs at the Vehicle Operations Heated Storage Building indicate that AFFF could potentially have been stored at the Fire Station Area.

### **5.1.3 Pathway and Environmental Hazard Assessment**

Groundwater, surface water, and soil and air exposure pathways for human and ecological receptors were evaluated for the Fire Station Area. The PA form for the Fire Station Area is provided in Appendix E.

Ecological receptors consist primarily of terrestrial mammals and invertebrates that burrow and have the opportunity for direct contact with the soil, such as lemmings, voles, ground squirrels, and Arctic foxes. Plants are also a potential ecological receptor, as they can uptake contaminated porewater or surface water through direct contact absorption.

#### **5.1.3.1 Groundwater Pathway**

If AFFF was used for fire training at the fire circle and burn barrels at the Fire Station Area, PFAS compounds from a release could potentially have infiltrated to groundwater. Groundwater has been encountered at the Lower Camp at approximately 3.5 feet below ground surface (bgs) (USAF 2001a). Shallow groundwater flow is thought to generally follow surface topography, and likely flows toward Sweepstakes Creek. There are no known drinking water wells within 4 miles of the Granite Mountain RRS; therefore, human groundwater exposure pathways are currently considered potentially complete, but insignificant. Ecological receptors could potentially access groundwater at seeps that have been observed at the installation; therefore, groundwater pathways are considered potentially complete for ecological receptors.

#### **5.1.3.2 Surface Water Pathway**

The nearest surface water body to the Fire Station Area is Sweepstakes Creek, approximately 0.6 miles to the west. The Fire Station Area is situated at the top of a hill that drops in elevation to the west. Surface runoff at the Fire Station Area is expected to be minimal due to permeable soil. However, compounds from AFFF potentially used during fire training may have migrated with surface runoff toward Sweepstakes Creek. There are no known surface water uses at Granite Mountain. Surface water could potentially be used as an occasional drinking water source for hunters and miners in the area. Surface water runoff could potentially produce a complete exposure pathway for non-ingestion exposures, such as dermal exposure to humans. Surface water ingestion by animals is a potential pathway for ecological receptors. Because PFAS compounds are known to bioaccumulate, the ingestion pathway for humans who might consume these animals is potentially complete.

#### **5.1.3.3 Soil Exposure and Air Pathway**

A release of AFFF to surface soil may have occurred during fire training activities. Compounds from a potential AFFF release may have infiltrated into the subsurface. The Fire Station Area consists of dirt, gravel, and soil covered by vegetation; therefore, potential exposure pathways through fugitive dust

emissions are present. No land use controls are in place at the Fire Station Area; therefore, construction or other ground-disturbing activities could result in potential site worker exposure to soil or dust. The potential exposure for burrowing animals is also present.

No workers or residents are present within 200 feet. There are no residents, workers, or occupied buildings at Granite Mountain. The population within a 4-mile radius of the RRS is zero; the nearest occupied area is the community of Koyuk approximately 40 miles to the south. The RRS has unfenced boundaries and can be accessed by the public. The installation and the surrounding land are used for hunting, fishing, and harvesting of wild foods.

## **5.2 Potential FTA at DP010**

### **5.2.1 Description and Operational History**

DP010 (formerly Disposal Area J) is a former non-permitted disposal pit/dump located near the southwest corner of the airstrip (Figure 4). According to a land survey conducted in 1992, DP010 appeared to be a two-tiered landfill (USAF 2001a). The first tier is approximately 50,000 square feet and is located adjacent to the runway and above the second tier. The second tier is approximately 30,000 square feet.

In 1994, a PA/SI noted a small area of visibly stained soil, and two subsurface soil samples were collected. The maximum diesel range organics (DRO) and residual range organics (RRO) concentrations were 16,900 milligrams per kilogram (mg/kg) and 95,200 mg/kg, respectively (USAF 1995).

In 1999, a Remedial Investigation (RI) documented surface debris that included domestic garbage, metal debris, and pieces of an aircraft. Three test pits were excavated in and around stained soil. Test pit 1, immediately adjacent to the stained area, had DRO and RRO concentrations of 4,720 mg/kg and 75,400 mg/kg, respectively. Remaining soil analytical results were less than cleanup levels. Fuel contamination was noted as limited to the surface and near surface soil (USAF 2001c).

In 2009, Alaska Department of Environmental Conservation (ADEC) and USAF representatives inspected the site and determined surface staining was minimal. Petroleum contamination was classified as *de minimis*, and the site was recommended for closure (USAF 2011).

In 2011, a Decision Document designated Site DP010 as Cleanup Complete with institutional control to restrict excavation or disturbance of buried solid waste and restrict movement of buried solid waste without prior approval.

### **5.2.2 Waste Characteristics**

Specific practices related to fire training activities at the Granite Mountain RRS are unknown. Based on the time period the installation was active (1958 to 1973), and the statement from Mr. Mobley indicating that AFFF would have been used for fire training to prepare for aircraft crashes, AFFF was potentially used during training activities, and the potential for an AFFF release to the environment is present. Mr. Mobley stated that based on his knowledge of the installation, burning took place at the landfills, and fire training would have been conducted at the Lower Camp; therefore, he identified DP010 as the most likely location for fire training activities at the RRS.

### **5.2.3 Pathway and Environmental Hazard Assessment**

Groundwater, surface water, and soil and air exposure pathways for human and ecological receptors were evaluated for DP010. The PA form for the DP010 is provided in Appendix E.

Ecological receptors consist primarily of terrestrial mammals and invertebrates that burrow and have the opportunity for direct contact with the soil, such as lemmings, voles, ground squirrels, and Arctic foxes. Plants are also a potential ecological receptor, as they can uptake contaminated porewater or surface water through direct contact absorption.

### **5.2.3.1 Groundwater Pathway**

If AFFF was used for fire training at DP010, PFAS compounds from a release could potentially have infiltrated to groundwater. Groundwater has been encountered at the Lower Camp at approximately 3.5 feet bgs (USAF 2001a). Shallow groundwater flow is thought to generally follow surface topography, and likely flows toward Sweepstakes Creek. There are no known drinking water wells within 4 miles of the Granite Mountain RRS; therefore, human groundwater exposure pathways are currently considered potentially complete, but insignificant. Ecological receptors could potentially access groundwater at seeps that have been observed at the installation; therefore, groundwater pathways are considered potentially complete for ecological receptors.

### **5.2.3.2 Surface Water Pathway**

The nearest surface water body to DP010 is Sweepstakes Creek, approximately 0.6 miles to the west. DP010 is situated at the top of a hill that drops in elevation to the west. Surface runoff at the DP010 is expected to be minimal due to permeable soil. However, compounds from AFFF potentially used during fire training may have migrated with surface runoff toward Sweepstakes Creek. There are no known surface water uses at Granite Mountain. Surface water could potentially be used as an occasional drinking water source for hunters and miners in the area. Surface water runoff could potentially produce a complete exposure pathway for non-ingestion exposures, such as dermal exposure to humans. Surface water ingestion by animals is a potential pathway for ecological receptors. Because PFAS compounds are known to bioaccumulate, the ingestion pathway for humans who might consume these animals is potentially complete.

### **5.2.3.3 Soil Exposure and Air Pathway**

A release of AFFF to surface soil may have occurred during fire training activities. Compounds from a potential AFFF release may have infiltrated into the subsurface. DP010 consists of dirt, gravel, and soil covered by vegetation; therefore, potential exposure pathways through fugitive dust emissions are present. Institutional controls are in place at DP010; however, construction or other ground-disturbing activities could result in potential site worker exposure to soil or dust. The potential exposure for burrowing animals is also present.

No workers or residents are present within 200 feet. There are no residents, workers, or occupied buildings at Granite Mountain. The population within a 4-mile radius of the RRS is zero; the nearest occupied area is the community of Koyuk approximately 40 miles to the south. The RRS has unfenced boundaries and can be accessed by the public. The installation and the surrounding land are used for hunting, fishing, and harvesting of wild foods.

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

The following sections describe potential non-FTA source areas, exposure pathways, and environmental hazards. Appendix E provides a completed PA form used to evaluate potential human and ecological pathways for areas where the potential for an AFFF release was identified. The PA form provides a checklist of potential contaminant exposure pathways identified in the *Guidance for Performing Preliminary Assessments Under CERCLA* (EPA 1991). Potential migration and exposure pathways are further evaluated in the following sections.

### **6.1 DP009 Burn Area**

#### **6.1.1 Description and Operational History**

Site DP009 (also known as Disposal Pit No. 1) is a former disposal pit located at the crest of a ridge approximately 1,400 feet north of the former Upper Camp facilities. The area was initially used as a personnel camp during construction of the permanent facility and subsequently may have been used to store equipment and waste-filled drums (USAF 2001a). During a 1994 site reconnaissance, an area of stained soil was observed near what appeared to be a pad for a building, with partially buried metallic debris at the southwestern corner of the area; the western portion of DP009 is referred to as the “Western Stain Area.” The eastern portion of DP009, which contained an extensive area of ash and burned debris, is commonly referred to in historical reports as the “DP009 Burn Area,” the “Eastern Burn Area,” or the “Burn Pit.”

According to Mr. Mobley, materials disposed of in DP009 were regularly burned. He stated that during burning, Granite Mountain firefighters would set up a truck and water tank adjacent at the burn area to prevent the flames from spreading onto the tundra. Mr. Mobley indicated that AFFF would not have been used for burning at DP009, and that fire training would not have been conducted at this location because of the high winds on the ridgeline, and because USAF training was focused on responding to plane crashes at the airstrip.

#### **6.1.2 Waste Characteristics**

No evidence of a release of AFFF at the DP009 Burn Area was found during the records review. Additionally, according to Mr. Mobley, a former USAF employee familiar with operations at Granite Mountain RRS, AFFF was not used during burning activities at the DP009 Burn Area. Therefore, a release of AFFF is unlikely at the DP009 Burn Area.

### **6.2 Water Fire Pump Station (Building 1023)**

#### **6.2.1 Description and Operational History**

Firefighting infrastructure at the Upper Camp consisted of Water Fire Pump Station, which was a 221-square-foot metal sided building adjacent to a 250,000-gallon water tank (Figure 3). The Water Fire Pump Station was operational from 1962 until 1978 and was demolished during the Granite Mountain Clean Sweep (USAF 2010a). No records describing operations at the Water Fire Pump Station were found during the records review.

### **6.2.2 Waste Characteristics**

The waste characteristics of the Water Fire Pump Station area are unknown. During the interview with Mr. Mobley, he indicated that AFFF would have been stored at the Lower Camp along the airstrip because operations using AFFF were focused on responding to aircraft crashes. He stated that in general, AFFF was not kept at the pumpstations located at Upper Camps of USAF installations. Therefore, it is unlikely that AFFF was stored or used at the Water Fire Pump Station at Granite Mountain.

## **7.0 CONCLUSIONS AND RECOMMENDATIONS**

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

### **7.1 Conclusions**

Based on the review of readily available records, two FTAs and two non-FTAs were identified during the review portion of this PA.

#### **7.1.1 Fire Training Areas**

##### **7.1.1.1 Potential FTA at Fire Station Area**

The *Management Action Plan* for Granite Mountain RRS lists “Fire Training” as an activity at Granite Mountain RRS (USAF 2001b). Specific practices related to fire training activities at the Granite Mountain RRS are unknown. Based on the time period the installation was active (1958 to 1973), and the statement from Mr. Mobley indicating that AFFF would have been used for fire training, AFFF was potentially used during training activities, and the potential for an AFFF release to the environment is present. The Fire Station Area was identified as a possible location for fire training activities based on the observation of empty jugs of AFFF in the Vehicle Operations Heated Parking Building, indicating that AFFF may have been stored in the area. Additionally, two burn barrels and a fire circle were present in the area and could potentially have been used for fire training.

##### **7.1.1.2 Potential FTA at DP010**

DP010 is a former non-permitted disposal pit/dump located near the southwest corner of the airstrip, and was identified by a USAF employee familiar with operations at Granite Mountain RRS as a likely location for fire training activities. Mr. Mobley stated that based on his knowledge of the installation, burning took place at the landfills, and fire training would have been conducted at the Lower Camp; therefore, he identified DP010 as the most likely location for fire training activities at the RRS.

#### **7.1.2 Non-Fire Training Areas**

##### **7.1.2.1 DP009 Burn Area**

Site DP009 is a former disposal pit located at the crest of a ridge approximately 1,400 feet north of the former Upper Camp facilities. According to Mr. Mobley, materials disposed of in DP009 were regularly burned, and firefighters were present to control the flames using water. Mr. Mobley indicated that AFFF would not have been used for burning at DP009, and that fire training would not have been conducted at this location because of the high winds on the ridgeline, and because USAF training was focused on responding to plane crashes at the airstrip. No evidence of a release of AFFF at the DP009 Burn Area was found during the completion of this PA.

##### **7.1.2.2 Water Fire Pump Station (Building 1023)**

A Water Fire Pump Station was formerly located at Upper Camp. No records describing operations at the Water Fire Pump Station were found during the records review. During the interview with Mr. Mobley, he indicated that AFFF would have been stored at the Lower Camp along the airstrip because operations

using AFFF were focused on responding to aircraft crashes. He stated that in general, AFFF was not kept at the pumpstations located at Upper Camps of USAF installations. Therefore, it is unlikely that AFFF was stored or used at the Water Fire Pump Station at Granite Mountain. No evidence for the storage or use of AFFF at the Water Fire Pump Station was found during the records review.

## 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, two FTAs and two non-FTAs were identified during the review portion of this PA. Two potential FTAs, the Fire Station Area and DP010, are recommended for SI. Two non-FTAs, the DP009 Burn Area and the Water Fire Pump Station, are 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
Potential FTA at Fire Station Area	<ul style="list-style-type: none"> <li>• Fire training was identified as a historical activity at Granite Mountain RRS.</li> <li>• A former site employee observed empty jugs of AFFF at a building in the Fire Station Area.</li> <li>• Two burn barrels and a fire circle in the Fire Station Area could potentially have been used for fire training.</li> </ul>	SI
Potential FTA at DP010	<ul style="list-style-type: none"> <li>• Fire training was identified as a historical activity at Granite Mountain RRS.</li> <li>• A former site employee who observed AFFF jugs on site stated that based on his knowledge of the site, the most likely location for fire training activities was DP010.</li> </ul>	SI
DP009 Burn Area	<ul style="list-style-type: none"> <li>• Burning took place at DP009, a former disposal pit. However, a former site employee familiar with operations at the site stated that flames were controlled using water, not AFFF, and that AFFF was not store or used at the Upper Camp.</li> </ul>	NFRAP
Water Fire Pump Station (Building 1023)	<ul style="list-style-type: none"> <li>• According to a former site employee, AFFF was not stored or used at the Upper Camp.</li> </ul>	NFRAP

**Notes:**

For definitions, refer to the Acronyms and Abbreviations section.

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## 8.0 REFERENCES

- Association of State and Territorial Solid Waste Management Officials. 2015. *Perfluorinated Chemicals (PFCs): Perfluorooctanic Acid (PFOA) & Perfluorooctance Sulfonate (PFOS) Information Paper*. August.
- Coates. 1977. *A History of USAF Fire Protection Training at Chanut Air Force Base, 1964 – 1976*. February.
- Department of Defense (DoD). 2022. *Memorandum: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program*. July.
- Department of Natural Resources (DNR). 2023. *Well Log Tracking System*. [https://gis.data.alaska.gov/datasets/f66b10eb208b45569a0ea95e974e5dc0\\_0/about](https://gis.data.alaska.gov/datasets/f66b10eb208b45569a0ea95e974e5dc0_0/about). Accessed 12 September 2023.
- Fire Fighting Foam Coalition. 2014. *Fact Sheet on AFFF Fire Fighting Agents*.
- Massachusetts Department of Environmental Protection. 2021. *Advisory Information for Aqueous Film Forming Foam (AFFF) Containing Per- and Polyfluorinated Alkyl Substances (PFAS)*. August.
- Office of the Deputy Under Secretary of Defense. 2001. *Management Guidance for the Defense Environmental Restoration Program*. September.
- TWC Product and Technology. 2023. *The Weather Channel*. [www.weather.com](http://www.weather.com). Accessed 1 July 2023.
- U.S. Army Corps of Engineers (USACE). 2012. *Environmental Quality Conceptual Site Models Engineer Manual*. December.
- USACE. 2022. *Work Plan for PFAS Preliminary Assessments at Multiple Installations in Alaska and Hawaii*. December.
- U.S. Air Force (USAF). 1989. *Installation Restoration Program, Preliminary Assessment, Granite Mountain Radio Relay Station, Alaska*. Prepared by Dynamic Corporation, Inc.
- USAF. 1994. *Granite Mountain RRS, Alaska, Preliminary Assessment/Site Inspection Work Plan*. September.
- USAF. 1995. *Final Preliminary Assessment, Site Inspection Report, Granite Mountain RRS, Alaska*. April.
- USAF. 2001a. *Granite Mountain Radio Relay Station Remedial Investigation Report*. April.
- USAF. 2001b. *Final Clean Sweep Management Action Plan, Granite Mountain Radio Relay Station, Alaska*. May.
- USAF. 2001c. *Year 2000 Clean Sweep Environmental Survey Report For Granite Mountain RRS*. September.
- USAF. 2010a. *Clean Sweep Building Demolition, Debris Removal, and Environmental Remediation, Granite Mountain Radio Relay Station, Alaska*. April.
- USAF. 2010b. *Granite Mountain Radio Relay Station September 2009 Groundwater Monitoring Report*. January.

- USAF. 2011. *Final Decision Document Installation Restoration Program for non-CERCLA Sites OT001, LF002, SS003, SS004, SS005, SS006, SS007, WP008, DP009, DP010, SS013, SS016, SS017, SS018, SS019, DA020, DA021, and DA022, Granite Mountain Radio Relay Station, Alaska*. January.
- USAF. 2022. *Air Force Response to PFAS*. <https://www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds>. Accessed 29 November 2022.
- U.S. Environmental Protection Agency (EPA). 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. October.
- EPA. 1991. *Guidance for Preparing Preliminary Assessments Under CERCLA*. September.
- EPA. 2005. *Federal Facilities Remedial Preliminary Assessment Summary Guide*. July.
- USFWS. 2001. *Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for the Alaska-Breeding Population of the Steller's Eider*. In Federal Register Vol. 66 No. 23. Rules and Regulation. February.
- U.S. Geological Society (USGS). 2001. *Groundwater Site Inventory Database*.

## FIGURES

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

**Legend**

★ Approximate Location of Former Installation

**Abbreviations**

RRS Radio Relay Station

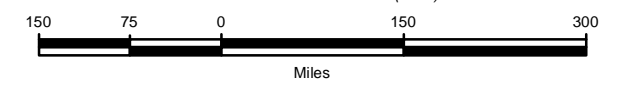
**Notes**

1. Map produced using ESRI ArcMap v. 10.7.

**References**

1. Imagery source: 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)

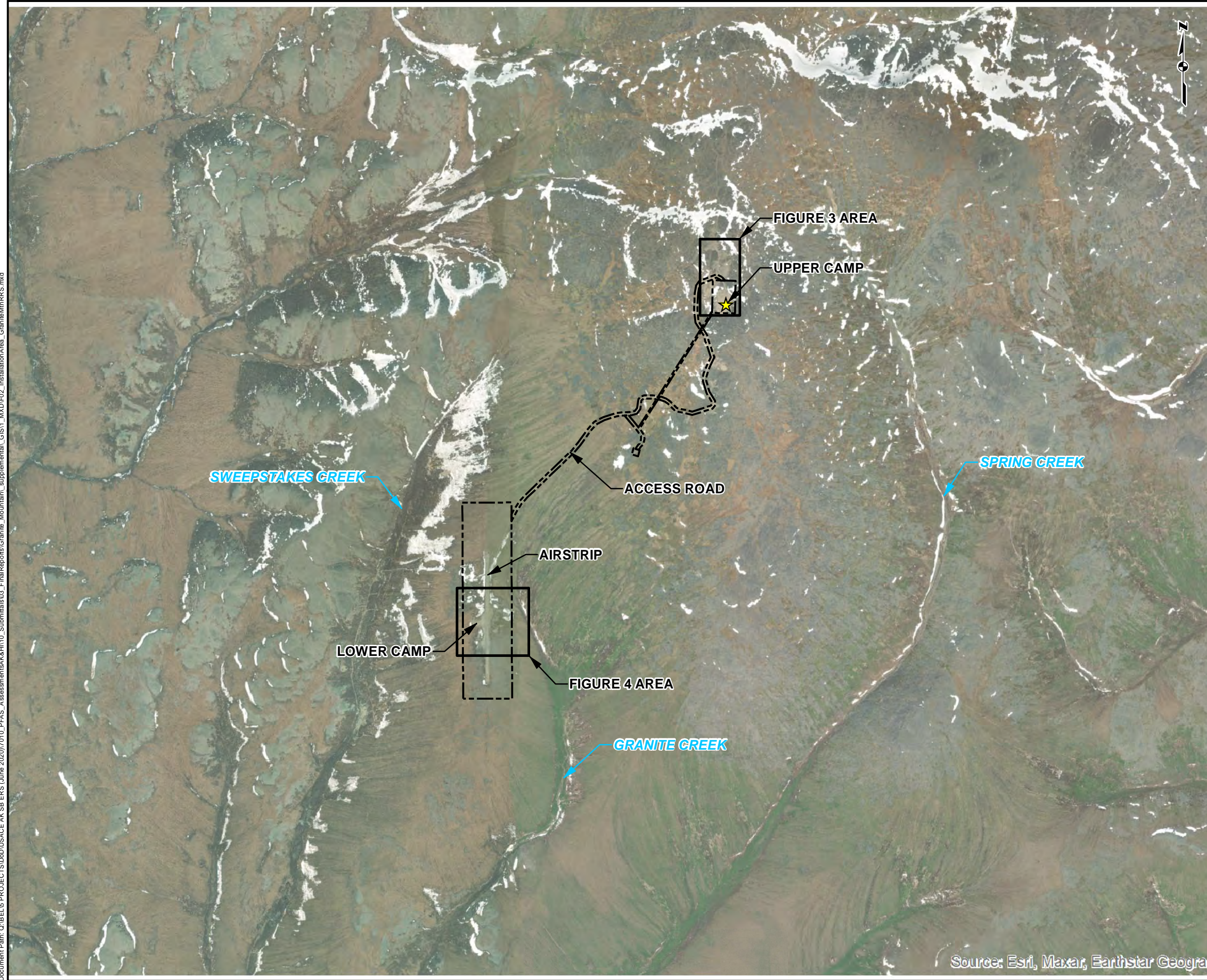


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PRELIMINARY ASSESSMENT REPORT FOR  
 AQUEOUS FILM-FORMING FOAM AREAS  
 GRANITE MOUNTAIN RADIO RELAY STATION, ALASKA  
 INSTALLATION AND SURROUNDING AREA



**Legend**

- Approximate Location of Former Installation
- Installation Boundary

**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: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 7, U.S. SURVEY FEET  
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Source: Esri, Maxar, Earthstar Geogra

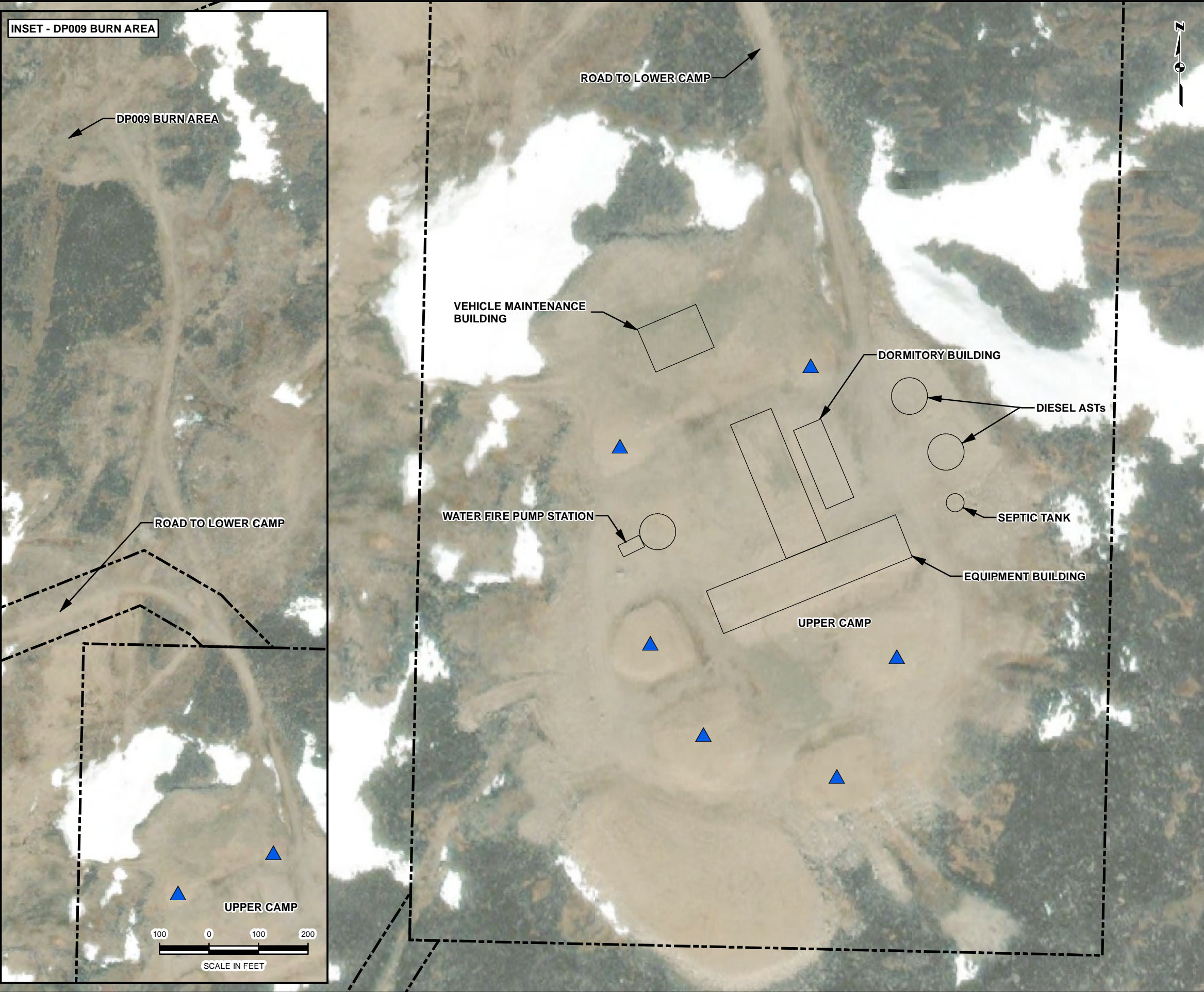
PROJECT No.: W911KB22F0080	DATE: 12/14/2023	FIGURE: <b>2</b>
P.M.: M.O.	DRAWN: G.O.	



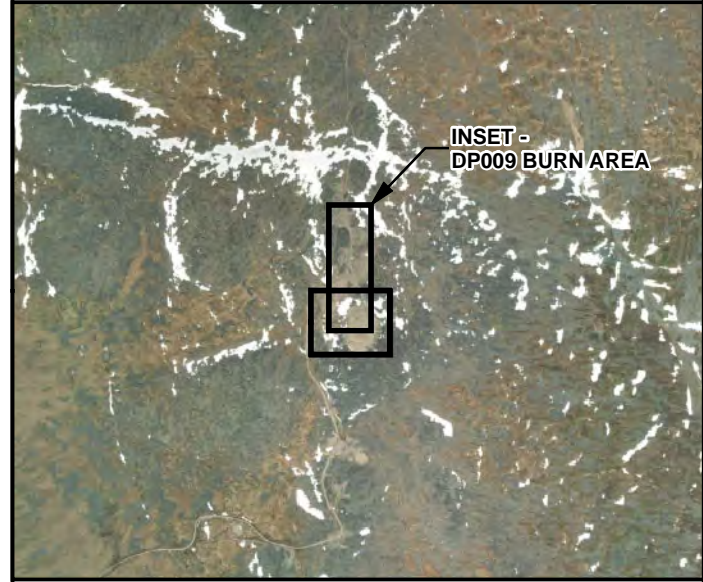
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Document Path: Q:\BELU5 PROJECTS\DoD\USACE AK SB ERS (June 2020)\7010\_PFAS\_Assessments\AK\HI10\_Submittals\03\_FinalReports\Granite\_Mountain\supplemental\_GSB1\_MXD\F03\_SiteLayout\_UpperCamp\_GraniteMtnRBS.mxd



PRELIMINARY ASSESSMENT REPORT FOR  
 AQUEOUS FILM-FORMING FOAM AREAS  
 GRANITE MOUNTAIN RADIO RELAY STATION, ALASKA  
**INSTALLATION AREA AND  
 FORMER SITE FEATURE LOCATIONS -  
 UPPER CAMP**



**Legend**

- Former Antenna Location
- Former Building Location
- Installation Boundary

**Abbreviations**

AST Aboveground Storage Tank

**Notes**

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

**References**

1. Imagery source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 7, U.S. SURVEY FEET  
 HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88



PROJECT No.: W911KB22F0080	DATE: 12/14/2023	FIGURE: <b>3</b>
P.M.: M.O.	DRAWN: G.O.	



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

**INSTALLATION AREA AND  
 FORMER SITE FEATURE LOCATIONS -  
 LOWER CAMP**



**Legend**

-  Former Building Location
-  Installation Boundary

**Notes**

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

**References**

1. Imagery source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 7, U.S. SURVEY FEET  
 HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88



PROJECT No.: W911KB22F0080	DATE: 12/14/2023	FIGURE: <b>4</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*

*Granite Mountain Radio Relay Station, Alaska*

Facility Name / Location	Infrastructure	Property Ownership	Key Words Used
Granite Mountain RRS / 65.427906°, -161.232750°	<p>While the RRS was active, Upper Camp facilities included an Equipment Building, a Dormitory Building, a Vehicle Maintenance Shop, a Communications Facility, four WACS antennas, diesel ASTs, a water tank, and a septic tank.</p> <p>Lower Camp facilities included a Fire Station, a Temporary Air Terminal Building, a Vehicle Operations Heated Parking Building, diesel pump station, diesel ASTs, and a septic tank.</p> <p>The RRS was abandoned in 1973. All structures were demolished in 2009 under the Clean Sweep program.</p>	<p>The site is one of the 31 original WACS sites. USAF real estate records indicate it was Granite Mountain Communications Station, renamed Granite Mountain AFS in 1958, and in 1961 became the Granite Mountain RRS. Granite Mountain operated as a combined tropospheric scatter/TD-2 microwave station, which relayed radio information to and from North River, Anvil Mountain, and Kotzebue WACS sites. The RRS was abandoned in 1973. In 1976, a portion of the facility was leased to Alascom, and in 1986 the Bureau of Land Management and Federal Aviation Administration also leased portions.</p>	<p>Accident, AFFF, ARFF (aircraft rescue and firefighting), CAFS (compressed air foam system), concentrate, crash, deluge system, detergent foam, eductor, FFFP (film-forming fluoroprotein foam), fire, firefighting, fluorine, foam, nozzle, fog nozzle, FTA, mutual aid, MVA (motor vehicle accident), perfluorinated, PFAS, PFC (perfluorinated compound), PFOA, PFOS, pumper, spray test, sprinkler, standpipe, suppression, tanker, tender, vapor suppression, vehicle fire, VMR (vehicle machinery rescue)</p>

**Notes:**

For definitions, refer to the Acronyms and Abbreviations section.

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

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

Administrative Record File Number	Year	Document Title	Contractor	Potential AFFF-Related Info (Y/N)	Personnel Identified for Interview (Y/N)	Notes
N/A	1989	Installation Restoration Program Preliminary Assessment Granite Mountain Radio Relay Station, Alaska	Hazardous Materials Technical Center	N	Y	Identified Alaskan Air Command (AAC) members assisted contactors on a site visit in 1988.
7	1994	Preliminary Assessment/Site Inspection Work Plan	Jacobs Engineering Group Inc.	Y	N	The BLM has a permit from the Air Force to use the space in one of the antennas as a headquarters for firefighting operations. There was also a small fire station at the original main site. BLM uses the RRS as headquarters for firefighting operations in the summer.
32	1995	PA/SI Final Report - Part 1 of 2	Jacobs Engineering Group Inc.	Y	N	Between 1984 and 1986, USAF removed various types of debris from the RRS, including...drums of fire extinguishers...and other miscellaneous compounds. Approximately 500 x 55-gallon drums of various volumes and liquids were discovered and removed from AOC03 east of the runway. Hundreds of drums were removed from other areas around the station. A burn area was identified on the southern side of AOC16 (later called DP009). "During the June 1994 site visit conducted by USAF, debris, wrecked aircraft, and pits with possible buried drums were identified at [AOC 17 - disposal area near southwestern portion of runway]."
32	1995	PA/SI Final Report - Part 2 of 2	Jacobs Engineering Group Inc.	N	N	
10	1997	Final Management Action Plan	Hart Crowser	Y	N	Before the BLM used the land for fire fighting operations, the White Alice Communications System was used as a fire training area.
12	1998	Community Relations Plan - Granite Mountain Radio Relay station	USAF 611th Civil Engineer Squadron	N	N	The site currently serves as a FAA single frequency outlet. The BLM used the facilities for firefighting operations from 1976 and 1994. Both the AFF and BLM extended their lease agreements through 1997 - no personnel are currently stationed at Granite Mountain RRS. The 1995 SI discussed 18 AOCs and two Installation Restoration Program (IRP) sites. Of these locations, nine areas were identified for further evaluation or remedial action under the IRP, nine locations were eliminated from further action, and two areas were combined to form one IRP Site which was identified for further action. Presently, 10 IRP Sites have been established. Six of the sites are in the Upper Camp and the remainders are in the Lower Camp. Nine areas are considered AOCs and are proposed for NFRAP status. Seven of these are in areas are in the Upper Camp, one in the Lower Camp, and one area covered base wide runway and road oiling.
11	1998	Management Action Plan (MAP), Clean Sweep	611 CES/CEVR	Y	N	Fire training listed as installation operations.
13	1999	Buckland Community Meeting on RI/FS Report, 13 Apr 99	611 CES/CEVR	N	N	
29	2001	Granite Mountain Radio Relay Station Remedial Investigation Report Vol I of II	CH2M HILL	Y	N	It is believed that the BLM had used various site facilities for headquarters to carry out firefighting operations during the summer. The site is closed, but occasionally the gravel runway is used as a fuel staging area for firefighting purposes.
29	2001	Granite Mountain Radio Relay Station Remedial Investigation Report Vol II of II	CH2M HILL	Y	N	Discussion of DP009 Burn Pit and associated analytical sampling. Fire extinguishers were observed as surficial debris at LF02. Surface debris at DP010, Disposal Area J, included remains of a wrecked airplane.
41	2001	FS, Final Report	CH2M HILL	N	N	
36	2001	Clean Sweep Environmental Survey Report, 2000	Montgomery Watson Harza	N	N	A Water Fire Pumping Station was located in the former Upper Camp (Facility 1023). The 2000 Clean Sweep Environmental survey results identified five facilities at Granite Mountain RRS that required asbestos abatement, and the Water Fire Pumping Station was one. Facility 1004, located at the Mid Camp, is also identified as a Water Fire Pump Station. CO2 fire system (46 cylinders total) removed from upper camp. Fire Station (Facility 1040) was located in the lower camp. Photo log (page 191) says that temporary air terminal had 2 burn barrels and a fire circle. Logbook (page 203) has info about CO2 fire extinguisher system/ Suspects system was discharged. Logbook (Page 204) states "Deb believes the Temporary Air Terminal is the fire station". Equipment and materials staging area and haz waste staging area was next to fire station.
38	2008	Supplemental Remedial Investigation Work Plan	Jacobs Engineering Group Inc.	N	N	A Burn Area consisted of a gravel pad from former building and a burn pit where ash and burned debris was discovered. In a 1994 PA/SI lead, arsenic, and RRO were found greater than ADEC Method Two Cleanup Levels.
45	2009	Final Work Plan Clean Sweep Building Demolition, Debris Removal, Landfill Construction and Environmental Remediation Granite Mountain Radio Relay Station, Alaska	611 CES/CEOR	Y	N	The Fire Station was a 126-square-foot building that housed firefighting equipment for the runway. The building was demolished and the only remnant is a concrete pad. The concrete pad was broken down into manageable pieces and transported to the Granite Mountain Landfill. Then the site was backfilled and graded to fit the contours of the landscape. The Communication Facility is a 13,611-square-foot building that once housed the electronics for controlling the antennas at the Upper Camp. The facility was home to a fire suppression system that was removed. The facility's heating and cooling systems, generators, and 300-gallon heating oil tank were removed, and the building was demolished and transported to the Granite Mountain Landfill. The Vehicle Maintenance Shop also housed a fire suppression system. The building was demolished and the concrete pieces transported to the Landfill. If contamination is suspected at a floor drain (if discovered), then a soil sample will be collected at beneath the floor drain location.
44	2009	Fact Sheet, Granite Mountain RRS, 2009	611 CES/CEVR	N	N	
46	2009	EE/CA, Sites OT-001, AOC15, SS-003	Jacobs Engineering Group Inc.	N	N	
53	2009	Final Monofill Design Report	Jacobs Engineering Group Inc.	N	N	
54	2009	Action Memorandum, Removal Action	Johnson, Brent A./611 ASG/CC	N	N	

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

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

*Granite Mountain Radio Relay Station, Alaska*

Administrative Record File Number	Year	Document Title	Contractor	Potential AFFF-Related Info (Y/N)	Personnel Identified for Interview (Y/N)	Notes
57	2009	Supplemental RI, Final Report	Jacobs Engineering Group Inc.	N	N	
64	2010	Final Report, Clean Sweep Building Demolition, Debris Removal, and Environmental Remediation	611 CES/CEVR	Y	Y	Same info as previous reports.
66	2010	Proposed Plan, Granite Mountain RRS, Fourteen Sites	Jacobs Engineering Group Inc.	N	N	
75	2011	Land Use Control Implementation, Granite Mountain Radio Relay Station	Jacobs Engineering Group Inc.	N	N	
76	2011	Inert Waste Monofill Inspection - Granite Mountain Radio Relay Station	Jacobs Engineering Group Inc.	N	N	
N/A	2011	ROD - Granite Mountain Radio Relay Station, Alaska	USAF Joint Base Elmendorf-Richardson, Alaska	N	N	1999 RI could not replicate 1994 PA/SI, and lead/fuel was not found above ADEC Method Two Cleanup Levels.
N/A	N/A	whitealice.com	N/A	N/A	N/A	Photo galleries of former WACS sites. No photos of Granite.
N/A	N/A	dewlinemuseum.com	N/A	N/A	N/A	No info or photos of Granite Mountain.
N/A	1985	Granite Mountain Site Inventory Survey	N/A	N/A	N/A	Inventory retrieved from JBER Warehouse. No AFFF info on inventory.

**Notes:**

For definitions, refer to the 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  
Granite Mountain Radio Relay Station, Alaska*

<b>Name</b>	<b>Entity</b>	<b>Notes</b>
Todd Fitch	AFCEC RPM	Questionnaire sent, response received. Follow up verbal interview via teleconference was conducted. Record of communication form completed.
Steve Mattson	Former AFCEC RPM	Questionnaire sent, response received. Follow up verbal interview via teleconference was conducted. Record of communication form completed.
Jessica Morris	611 Water Program Manager	Questionnaire sent, response received. Follow up verbal interview via teleconference was conducted. Record of communication form completed.
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; second record of communication form completed.
Christopher Koonce	Base Historian, 673D Air Base Wing History Office	Questions asked in-person. No knowledge of AFFF use at installations. No record of communication form completed.
Paul Cooley	ARCTEC Environmental Manager	Questionnaire sent, no response received.

**Notes:**

For definitions, refer to the Acronyms and Abbreviations section.

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**QUESTIONNAIRE**

**ASSESSMENT OF PAST PRACTICES FOR PFAS**

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Facility: Granite Mountain RRS, Alaska Date: 4/12/2023  
Name: Todd Fitch Organization: AFCEC  
Position: Remedial Project Manager How long in the Position? Since 2019  
How Long at the Facility? N/A Previous Position? \_\_\_\_\_  
Previous Facilities: \_\_\_\_\_  
Phone: 907-552-3544 Email: \_\_\_\_\_

---

Interviewer: Monica Oakley, Pat Terhune Organization: Brice

---

**AFFF**

1. Was AFFF used or stored at this facility?  
No knowledge of AFFF storage or use at Granite Mountain RRS.
  
2. What type of AFFF was used at this facility (3%, 6%, high expansion foam) and during what timeframe was it used?  
Unknown.
  
3. What manufacturer of AFFF products was used at this facility (3M, Ansul, Chemguard)?  
Unknown.
  
4. Where was AFFF solution handled (received, mixed, contained, transferred, used, disposed)?  
Unknown.
  
5. How was AFFF stored (5-gallon pail, 55-gallon drum, tank)?  
Unknown.
  
6. Which building(s) contained AFFF?  
Unknown.

7. Is there an inventory for AFFF stored at the facility (amount, container size, purchase frequency)?

Unknown.

### **FIRE SUPPRESSION SYSTEMS**

1. Have fire suppression / extinguishing systems used AFFF (automated, manual standpipe hose station)?

Unknown.

2. Is there an inventory of the amount of AFFF present in fire suppression systems and/or maintenance/testing logs?

Unknown.

3. What procedure was used for supplying fire suppression systems with AFFF?

Unknown.

4. Has there been a release(s) of AFFF from fire suppression systems (inadvertent, testing)?

Unknown.

5. How were releases of AFFF handled (cleaned up and disposed of)?

Unknown.

### **FIRE SUPPRESSION VEHICLES**

1. Where were vehicles (trucks, trailers, mobile units, carts) carrying AFFF parked/stored?

Unknown.

2. How much AFFF was carried/stored in the specified vehicles (gallons)?

Unknown.

3. Were the vehicles tested to make sure equipment is working properly?

Unknown.

4. How often were spray tests performed, and can the locations be provided?

Unknown.

5. When AFFF was used during a testing exercise, how was the AFFF cleaned up or disposed of?

Unknown.

6. What procedure was used to supply vehicles with AFFF? Where did the resupply occur, and was there secondary containment?

Unknown.

7. What procedure was used to clean/decontaminate fire vehicles?

Unknown.

**RECORDS, SPILL LOGS, HISTORICAL INFORMATION**

1. Are there records of or do you recall AFFF usage in response to any of the following?

a. Fuel releases to prevent or extinguish fires?

Unknown.

b. Historical emergency responses? (crash sites, fires)?

Unknown.

c. Emergency runway landings (as a precaution)?

Unknown.

d. Firefighter training?

Unknown.

e. Burn areas and/or incinerator burn barrels?

Unknown.

2. If yes, are there written records or information regarding spill or emergency response locations where AFFF was used?

Unknown.

3. Are there any other locations where AFFF was stored, contained, or used (fire stations, spray testing areas, wastewater treatment plants, pond/lagoons)?

Unknown.

**FIRE TRAINING AREAS/BURN AREAS**

1. Are/were there fire training areas (FTAs) and where are they located?

Unknown.

2. Was AFFF applied to burn areas?

Unknown.

3. When were they in operation?

Unknown.

4. When was AFFF used?

Unknown.

5. What fuels/flammables were used at the FTAs/Burn Areas?

Unknown.

**OTHER**

1. Is there anyone else with possible AFFF usage knowledge that you would recommend for an interview and can you provide their contact information (name, position/organization, phone number, email)?

COMMUNICATION RECORD	
Date: 10 April 2023	Time: 1130
Name of Installation, State: Granite Mountain RRS	
Interviewer: Pat Terhune / Monica Oakley / Jess Young	
Organization: Brice Engineering	Phone #:
Project Role: Geologist	Email: patrick.terhune@briceeng.com
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 information for the Granite Mountain 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: Granite Mountain 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 Granite Mountain 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 Manager, 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.

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## COMMUNICATION RECORD

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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

---

## 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.

**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.

## COMMUNICATION RECORD

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

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**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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## Daily Quality Control Report (DQCR)

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
Overcast, Rainy	10 mph, N	45 F
ACTIVITY STATUS		
Project Location		
Granite Mountain RRS		
Comments		
Personnel on site: Jess Young and Rebecca Reyes. Walked lower camp. Based on PA research AFFF use at either the location of the plane crash or former fire station staging area. Both locations photographed. Top camp was inaccessible due to weather.		
Activities Today		
<ul style="list-style-type: none"> <li>Conducted site visit to Granite RRS. Mobilized to Nome via Ak Air and Granite via Bering air.</li> <li>Photographed former plane crash location adjacent to DP010. Stressed vegetation observed.</li> <li>Photographed former fire station area. Currently being used as a staging area. Black cannisters observed at site, and cannisters were empty.</li> </ul>		
Activities Planned for Tomorrow		
<ul style="list-style-type: none"> <li>Demobilization</li> </ul>		
Cumulative Progress as of Today		
<ul style="list-style-type: none"> <li>Conducted site visit at Granite Mountain</li> </ul>		
Meetings/Safety		
<ul style="list-style-type: none"> <li></li> </ul>		
Visitors		
None		
Project Delays		
N/A		
QC NARRATIVE		
QC Remarks		
None		
Tests and Inspections Performed		
None		

## Daily Quality Control Report (DQCR)

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

# Daily Quality Control Report (DQCR)

## PHOTO LOG



Photo 1: Runway, former fire station staging area, view north.



Photo 2: Crash debris adjacent to DP010, view west.



## Daily Quality Control Report (DQCR)



Photo 3: Black cannisters adjacent to former fire station staging area.



Photo 4: Road and view to top camp, view north.

### Checklist for Conducting Preliminary Assessment Site Visits

Site Visit Team: J. Young / R. Reyes

Date of Visit: 7/5/23

Site Name: Granite Mountain RRS

#### General Installation Location and Access Information

Latitude: 65.427906	Longitude: -161.23275	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 checked="" type="checkbox"/> Airport/Airstrip near installation? <input type="checkbox"/> Accessible via road? <input 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 helicopter from Nome, AK. Site is not operational. USAF relinquished in 1981. Buildings demolished in 2009. IC/LUC inspections still performed.

#### 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: 7/5/23

Site Name: Granite 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:**

Mobilized to site via helicopter. Upper camp not accessible due to weather. At the lower camp two 55-gallon drums, one empty one approximately 1/3 full were located at the south end of the runway. Diesel labels. Wreckage adjacent to DP010 area not buried. Signs of debris and stressed vegetation present. Former fire station area looks like a staging area. Maybe for miners? Multiple black poly cannisters and two 55-gallon drums observed. No monitoring wells observed onsite. Approximately 1 mile west of site is a mining operation.

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PFAS PAs



7/5/23 GRANITE MTR RRS  
 REAR PA SITE VISIT  
 SAFETY TOPIC: SITUATIONAL  
 AWARENESS - HAZARD TREE BURIED  
 PERSONNEL: J. YOUNG & R. RAYES  
 WEATHER: P. CLOUDS, 55F  
 1630 ARRIVE AT PINE AIRPORT  
 1000 ARRIVE NOME AND PICK  
 UP GEAR  
 1100 CHECK-IN AT BEKING AIR  
 1115 DEPART TO GRANITE  
 1230 ARRIVE AT GRANITE.  
 INSPECT 2 DRUMS AT SOUTH  
 END OF RUNWAY. BOTH WABELED  
 DIESEL. ONE EMPTY AND THE  
 OTHER APPROX 1/3 FULL (SEMI)  
 MORE VISCID THAN LIQUID.  
 1245 PHOTOGRAPH FORMER CRASH  
 AT DROID. WABELED NOT BURIED  
 1300 PHOTOGRAPH FORMER FIRE  
 STATION AREA. LOOKS  
 LIKE CURRENT STAGING FOR  
 MINE OPERATION? MULTIPLE  
 BLACK POLY CANNISTERS,  
 TWO EMPTY 55-GAL DRUMS,

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

WABELED RUNWAY AND  
 CONTINUED TAKING PHOTOGRAPHS.  
 TOP DRUM WABELED IN  
 DID NOT FLY UP.  
 1445 DEPART GRANITE  
 1615 ARRIVE NOME

7/5/23

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

*Rite in the Rain*



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**PHOTOGRAPH INDEX**

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Photograph 1: Empty 55-gal drum with diesel label, south end of runway, view oblique.



Photograph 2: Crash debris adjacent to site DP010, view west.



Photograph 3: Debris west of DP010, view east.



Photograph 4: Crash debris, wheel well, view southwest.





Photograph 5: Equipment label on wheel well, view oblique.



Photograph 6: Miscellaneous debris and crash debris, west of DP010, view west.



Photograph 7: Stained vegetation at DP010, view north.



Photograph 8: Lower camp, truck staged in former fire station staging area, mid-runway, view north.





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Photograph 10: Lower camp, black poly cannisters, possible fuel cannisters, empty, former fire station staging area, mid-runway, view west.



Photograph 11: Lower camp, empty 55-gallon drum of avgas, former fire station staging area, mid-runway, view oblique.



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Photograph 15: DA021, metal cable and debris, view northwest.



Photograph 16: DA021, former structure east of site, view east.



Photograph 17: DA021, food cans and wiring.



Photograph 18: Aerial photograph of Upper Camp area. Photo facing south.





Photograph 19: Upper Camp area. Photo facing northeast.



Photograph 20: Upper Camp area. Photo facing northwest.



Photograph 21: Upper Camp area. Photo facing south.



Photograph 22: Land use control sign at Upper Camp. Photo facing north.





Photograph 23: Surface Disposal Area A (Site SS016) at Upper Camp. Photo facing south.



Photograph 24: Surface Disposal Area B (Site SS017) at Upper Camp. Photo facing north.





Photograph 25: Surface Disposal Area B (Site SS017) at Upper Camp. Photo facing south.



Photograph 26: Former DP009 Burn Area. Photo facing east.



Photograph 27: Dark lichen-type vegetation at the former DP009 Burn Area.



Photograph 28: Ground surface at the former DP009 Burn Area.

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

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<b>Potential Hazardous Waste Site Preliminary Assessment Form</b>	<b>Identification</b>	
	State: <b>AK</b>	CERCLIS #: <b>NA</b>
	CERCLIS Discovery Date: NA	

**1. General Site Information**

Name: Granite Mountain Radio Relay Station		Street Address: <b>NA</b>			
City: <b>NA</b>	State: <b>AK</b>	Zip Code: <b>NA</b>	County: <b>NA</b>	Co. Code: <b>NA</b>	Cong. Dist: <b>NA</b>
Latitude: <b>65.399845°</b>	Longitude: <b>-161.282764°</b>	Approximate Area of Site: <sup>3</sup> <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: Potential FTA at DP010

Site Description: DP010 (formerly Disposal Area J) is a former non-permitted disposal pit/dump located near the southwest corner of the airstrip. According to a land survey conducted in 1992, DP010 appeared to be a two-tiered landfill. The first tier is approximately 50,000 square feet and is located adjacent to the runway and above the second tier. The second tier is approximately 30,000 square feet. Specific practices related to fire training activities at the Granite Mountain RRS are unknown. Based on the time period the installation was active (1958 to 1973), and the statement from Mr. Mobley indicating that AFFF would have been used for fire training to prepare for aircraft crashes, AFFF was potentially used during training activities, and the potential for an AFFF release to the environment is present. Mr. Mobley stated that based on his knowledge of the installation, burning took place at the landfills, and fire training would have been conducted at the Lower Camp; therefore, he identified DP010 as the most likely location for fire training activities at the RRS.

**2. Owner/Operator Information**

Owner: USAF			Operator: USAF		
Street Address: <b>NA</b>			Street Address: <b>NA</b>		
City: <b>NA</b>			City: <b>NA</b>		
State: <b>AK</b>	Zip Code: <b>99638</b>	Telephone: <b>NA</b>	State: <b>AK</b>	Zip Code: <b>99638</b>	Telephone: <b>NA</b>
Type of Ownership: <input type="checkbox"/> Private <input type="checkbox"/> County <input checked="" type="checkbox"/> Federal Agency <input type="checkbox"/> Municipal Name: <b>DoD</b> <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 type="checkbox"/> Federal Agency <input type="checkbox"/> Municipal Name: _____ <input type="checkbox"/> Not Specified <input type="checkbox"/> State <input type="checkbox"/> Other: _____ <input type="checkbox"/> Indian		

**3. Site Evaluator Information**

Name of Evaluator: <b>Patrick Terhune</b>	Agency/Organization: <b>Brice Engineering, LLC</b>	Date Prepared: <b>7/28/23</b>
Street Address: <b>3700 Centerpoint Dr</b>	City: <b>Anchorage</b>	State: <b>AK</b>
Name of EPA or State Agency Contact: <b>NA</b>	Street Address:	
City:	State:	Telephone:

**4. Site Disposition (for EPA use only)**

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:



### 7. Ground Water Pathway

<p>Is Ground Water Used for Drinking Within 4 Miles:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes, Distance to nearest Drinking Well:</p> <p>__ 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 type="checkbox"/> Municipal <input type="checkbox"/> Private <input checked="" type="checkbox"/> None</p>	<p>Is There a Suspected Release to Ground Water<sup>1</sup>:</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><small>If AFFF was released, PFAS could potentially infiltrate to groundwater.</small></p> <hr/> <p>Have Primary Target Drinking Water Wells Been Identified:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If Yes, Enter Primary Target Population: _____ People<sup>3</sup></p>	<p>List Secondary Target Population Served by Ground Water Withdrawn From:</p> <p>0 - 1/4 Mile                      0 _____</p> <p>&gt;1/4 - 1/2 Mile                      0 _____</p> <p>&gt;1/2 - 1 Mile                      0 _____</p> <p>&gt;1 - 2 Mile                      0 _____</p> <p>&gt;2 - 3 Mile                      0 _____</p> <p>&gt;3 - 4 Mile                      0 _____</p> <p>Total Within 4 Miles<sup>4</sup>      0 _____</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:</p> <p>    <u>3.5</u> 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 checked="" type="checkbox"/> Stream      <input type="checkbox"/> River      <input checked="" type="checkbox"/> Pond      <input type="checkbox"/> Lake <input type="checkbox"/> Bay      <input type="checkbox"/> Ocean      <input type="checkbox"/> Other _____</p>	<p>Shortest Overland Distance From Any Source to Surface Water:</p> <p>    <u>3,100</u> Feet     <u>0.6</u> Miles</p>
<p>Is There a Suspected Release to Surface Water<sup>1</sup>:</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If AFFF was released, surface runoff could potentially migrate to surface water</b></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 type="checkbox"/> &gt;500yr Floodplain</p> <p style="text-align: right; font-weight: bold;">No floodplain study has been conducted</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 type="checkbox"/> Yes      If Yes, Distance to Nearest Drinking Water Intake : _____ Miles<sup>6</sup> <input checked="" type="checkbox"/> No</p> <p>If Yes, Enter Population Served by Target Intake:</p> <p>    _____ 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>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: **Tundra**

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

Site is abandoned. Contractors are present on site.

Population Within 1 Mile:

\_\_\_\_\_ 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 \_\_\_\_\_

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

>1/4-1/2 Mile            0 \_\_\_\_\_

>1/2-1 Mile              0 \_\_\_\_\_

>1-2 Miles                0 \_\_\_\_\_

>2-3 Miles                0 \_\_\_\_\_

>3-4 Miles                0 \_\_\_\_\_

Total Within 4 Miles<sup>3-5</sup> 0 \_\_\_\_\_

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







**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: **Tundra**

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

Site is abandoned. Contractors are present on site.

Population Within 1 Mile:

\_\_\_\_\_ 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 \_\_\_\_\_

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

>1/4-1/2 Mile            0 \_\_\_\_\_

>1/2-1 Mile              0 \_\_\_\_\_

>1-2 Miles                0 \_\_\_\_\_

>2-3 Miles                0 \_\_\_\_\_

>3-4 Miles                0 \_\_\_\_\_

Total Within 4 Miles<sup>3-5</sup> 0 \_\_\_\_\_

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 COMMENTS**



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THE STATE  
of **ALASKA**  
GOVERNOR MICHAEL J. DUNLEAVY

## Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE  
Contaminated Site Program

610 University Avenue  
Fairbanks, AK 99709  
Main: 907.451.2143  
Fax: 907.451.2155

File No.: 610.38.001  
Hazard ID: 846

*\*Electronic Delivery Only\**

December 18, 2023

Mr. Todd Fitch  
Remedial Project Manager  
AFCEC/CZOP  
10471 20<sup>th</sup> St. Ste 348  
JBER, Alaska 99506-2201

Subject: DEC approval for the *Final Preliminary Assessment Report for Aqueous Film-Forming Foam Area, Granite Mountain Radio Relay Station, Alaska, Dated December 2023*

Dear Mr. Fitch:

The Alaska Department of Environmental Conservation (DEC) Contaminated Sites Program (CSP) provided review comments for the above-referenced draft report on November 17, 2023, received the responses to comments on November 28, 2023 and a final version of the document on December 14, 2023. The document is a preliminary assessment (PA) evaluating potential historical Aqueous Film-Forming Foam (AFFF) storage or use at the Granite Mountain Radio Relay Station (RRS) Upper and Lower Camp areas, located on the Seward Peninsula of Alaska. Recommendations are for two areas in the Lower Camp (Potential Fire Training Area at Fire Station Area and Potential Fire Training Area at DP010) to be investigated in a site inspection. The two areas at the Upper Camp site have been recommended for no further response action planned (NFRAP). DEC recommends the two NFRAP areas be investigated during the non-AFFF PA.

DEC has completed a backcheck of the above-referenced document and all changes have been incorporated into the document as appropriate. See enclosure for all accepted comments. The *Final Preliminary Assessment Report for Aqueous Film-Forming Foam Area, Granite Mountain Radio Relay Station, Alaska, (dated December 2023)* is now approved.

Mr. Todd Fitch  
Granite Mountain RRS

2

December 18, 2023

If you have any questions or need further assistance, please contact the project manager, Brian Watts by phone at (907) 269-4702 or by email at [brian.watts@alaska.gov](mailto:brian.watts@alaska.gov).

Sincerely,



Digitally signed by Erica  
Blake  
Date: 2023.12.18 17:04:46  
-09'00'

Erica Blake  
Environmental Program Specialist

Enclosures: 2023.11.15 DEC Cmnts Draft PFAS PA Granite Mountain RRS



THE STATE  
of **ALASKA**  
GOVERNOR MICHAEL J. DUNLEAVY

## Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE  
Contaminated Site Program

610 University Avenue  
Fairbanks, AK 99709  
Main: 907.451.2143  
Fax: 907.451.2155

File No.: 610.38.001  
Hazard ID: 846

*\*Electronic Delivery Only\**

December 13, 2023

Mr. Todd Fitch  
Remedial Project Manager  
AFCEC/CZOP  
10471 20<sup>th</sup> St. Ste 348  
JBER, Alaska 99506-2201

Subject: DEC responses to comments for the *Draft-Final Preliminary Assessment Report for Aqueous Film-Forming Foam Area, Granite Mountain Radio Relay Station, Alaska, Dated November 2023*

Dear Mr. Fitch:

The Alaska Department of Environmental Conservation (DEC) Contaminated Sites Program (CSP) provided review comments for the above-referenced draft report on November 17, 2023, and received the responses to comments on November 28, 2023. The document is a preliminary assessment (PA) evaluating potential historical Aqueous Film-Forming Foam (AFFF) storage or use at the Granite Mountain Radio Relay Station (RRS) Upper and Lower Camp areas, located on the Seward Peninsula of Alaska. Recommendations are for two areas in the Lower Camp (Potential Fire Training Area at Fire Station Area and Potential Fire Training Area at DP010) to be investigated in a site inspection. The two areas at the Upper Camp site have been recommended for no further response action planned (NFRAP). DEC recommends these two areas be investigated during the non-AFFF PA.

DEC has reviewed the responses to comments, and all are acceptable (see enclosures). Please provide DEC with a clean final document for approval. If you have any questions or need further assistance, please contact the project manager, Brian Watts by phone at (907) 269-4702 or by email at [brian.watts@alaska.gov](mailto:brian.watts@alaska.gov).

Sincerely,

A handwritten signature in blue ink that reads "Erica Blake".

Digitally signed by  
Erica Blake  
Date: 2023.12.13  
11:02:18 -09'00'

Erica Blake  
Environmental Program Specialist

Enclosures: 2023.11.15 DEC Cmnts Draft PFAS PA Granite Mountain RRS

**REVIEW  
COMMENTS**

**PROJECT: Granite Mountain RRS, Alaska  
DOCUMENT: Preliminary Assessment Report for Aqueous Film-Forming  
Foam Areas, Granite Mountain Radio Relay Station, Alaska, dated October 2023**

ALASKA DEPT. OF ENVIRONMENTAL CONSERVATION		DATE: 11/8/2023 REVIEWERS: Erica Blake (907) 451-2182, Brian Watts (907) 269-4702	Action taken on comment by:			
Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	ADEC/EPA RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)	CONTRACTOR RESPONSE
1	General	Regarding the future non-AFFF PA/SI, DEC recommends assessing landfills, waste accumulation areas, crash zones, historical firefighting infrastructure, recorded transportation, system purging/testing, accidents, leaks, and repairs. DEC expects a thorough assessment of upper camp.		DEC comment noted. Evaluation of additional non-AFFF PFAS sources is currently in progress under a separate contract.	Agree.	
2	Section 2.9, Page 2-3	Statement; “Miners and hunters likely occasionally use water from Sweepstakes or Granite Creek.”  Please clarify what ‘occasionally’ means? Once a year? Once every other year? Multiple times in a year?  What is the potential for stormwater runoff at Lower Camp reaching Sweepstakes Creek or Granite Creek?		Clarification. It has not been confirmed that water from Sweepstakes and Granite Creek is used as a drinking water source. However, the potential exists for surface water to be used by miners and hunters. During the site visit, a mining operation was observed at Sweepstakes Creek approximately 1 mile southwest of the Lower Camp, but the drinking water source for the mining camp is unknown. The text in Section 2.9 will be revised to read:  <i>“Miners and hunters likely occasionally could potentially use water from Sweepstakes or Granite Creek for drinking (USAF 1995).”</i>  The Lower Camp of Granite Mountain RRS is located on a ridge and elevation drops to the west towards Sweepstakes Creek and to the east towards Granite Creek. Therefore, it is possible that a release at the Lower Camp could migrate	Agree.	

**REVIEW  
COMMENTS**

**PROJECT: Granite Mountain RRS, Alaska  
DOCUMENT: Preliminary Assessment Report for Aqueous Film-Forming  
Foam Areas, Granite Mountain Radio Relay Station, Alaska, dated October 2023**

ALASKA DEPT. OF ENVIRONMENTAL CONSERVATION		DATE: 11/8/2023 REVIEWERS: Erica Blake (907) 451-2182, Brian Watts (907) 269-4702	Action taken on comment by:			
Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	ADEC/EPA RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)	CONTRACTOR RESPONSE
				with surface runoff towards Sweepstakes Creek or Granite Creek. The Potential FTA at the Fire Station Area and the Potential FTA at DP010 are located west of the airstrip; therefore, if surface runoff were to occur, any runoff would likely migrate west towards Sweepstakes Creek. This is discussed in the pathway analysis for each potential source area. For example, the text in Section 5.1.3.2 states:  <i>“However, compounds from AFFF potentially used during fire training may have migrated with surface runoff toward Sweepstakes Creek.”</i>		
3	Section 7.3, Table 2, Page 7-3	The Upper Camp was not investigated during the PA site visit. The contractor could not verify if there was any evidence of AFFF use. DEC expects these sites to be re-evaluated for the non-AFFF PA, and hopefully the contractor will be able to visit the site and verify evidence of past activities		Clarification. On 16 September 2023, a site visit was conducted at the Upper Camp under a separate contract. No signs of AFFF use were observed during the site visit. The following text will be added to Section 3.3:  <i>“On 16 September 2023, the field team mobilized to the Granite Mountain RRS via helicopter for Institutional Control/Land Use Control inspections at the Upper Camp. During this visit a site walk was made of the entire Upper Camp and the field team viewed the locations of the former buildings and DP009 Burn Area.</i>	Agree. Thanks for including the site photos from the Upper Camp site inspection. Based on the site photos DEC concurs it does not appear there is any evidence of AFFF use.  DEC recommends the two no further response action planned (NFRAP) sites be investigated for the non-AFFF PA	



**REVIEW  
COMMENTS**

**PROJECT: Granite Mountain RRS, Alaska  
DOCUMENT: Preliminary Assessment Report for Aqueous Film-Forming  
Foam Areas, Granite Mountain Radio Relay Station, Alaska, dated October 2023**

ALASKA DEPT. OF ENVIRONMENTAL CONSERVATION		DATE: 11/8/2023 REVIEWERS: Erica Blake (907) 451-2182, Brian Watts (907) 269-4702	Action taken on comment by:			
Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	ADEC/EPA RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)	CONTRACTOR RESPONSE
				<p><i>Field Observations indicated that the Upper Camp area was primarily gravel with minimal vegetation; all infrastructure had been removed and the landscape was modified during the Clean Sweep Activities. At the former DP009 Burn Area where Mr. Mobley indicated historical burning occurred a dark lichen-type vegetation was observed on some of the rocks and gravel; however, no signs of burning or potential AFFF use and/or related activities was observed at this location or at the Upper Camp. Figures 3 and 4 show the site layout. Appendix C presents field forms, and Appendix D presents the photograph index.”</i></p> <p>Additionally, photographs of the Upper Camp will be added to Appendix D. Please see photographs 18 through 28 in the attached revised photolog.</p>	as there are discussions about disposal pits and burning in this document.	
4	Section 7.3, Table 2 Water Fire Pump Station (Building 1023)	Was the former site employee interviewed? Please confirm.		Clarification. The referenced text refers to the interview with Mr. Mark Mobley, which is discussed in Sections 3.2 and 6.2.2. Documentation of the interviews with Mr. Mobley are included in Appendix B.	Agree.	
5	End of Comments					