

FINAL

Preliminary Assessment Report

Former Crash Fire Station, Newington, New Hampshire

Perfluorooctane-Sulfonic Acid (PFOS) and
Perfluorooctanoic Acid (PFOA) Impacted Sites
ARNG Installations, Nationwide

December 2019

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFB	Air Force Base
AFFF	aqueous film forming foam
AGQS	ambient groundwater quality standards
AIMS	Airfield Interim Mitigation System
amsl	above mean sea level
ANG	Air National Guard
ANGB	Air National Guard Base
AOI	area of interest
ARFF	Aircraft Rescue Fire Fighting
ARNG	Army National Guard
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
DoD	Department of Defense
EDR	Environmental Data Resources, Inc.
ERA	Emergency Removal Action
FD	Fire Department
ft	feet/foot
FTA	fire training area
HEF	high expansion foam
IED	Installations and Environment Division
HA	Health Advisory
MCL	maximum contaminant level
N	North
NHARG	New Hampshire Air National Guard
NHARNG	New Hampshire Army National Guard
NHDES	New Hampshire Department of Environmental Services
OWS	Oil/Water Separator
PA	Preliminary Assessment
PDA	Pease Development Authority
PFAS	per- and poly-fluoroalkyl substances

PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
ppt	parts per trillion
SI	Site Inspection
UCMR 3	Third Unregulated Contaminant Monitoring Rule
US	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
VSI	visual site inspection
W	West
WWTP	Waste Water Treatment Plant

Executive Summary

The United States (US) Army Corps of Engineers (USACE) Baltimore District, on behalf of the Army National Guard (ARNG)-Installations and Environment Division (IED), Cleanup Branch, contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide*. The ARNG is assessing potential effects on human health-related to processes at facilities that used per- and poly-fluoroalkyl substances (PFAS), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, although other PFAS sources are possible.

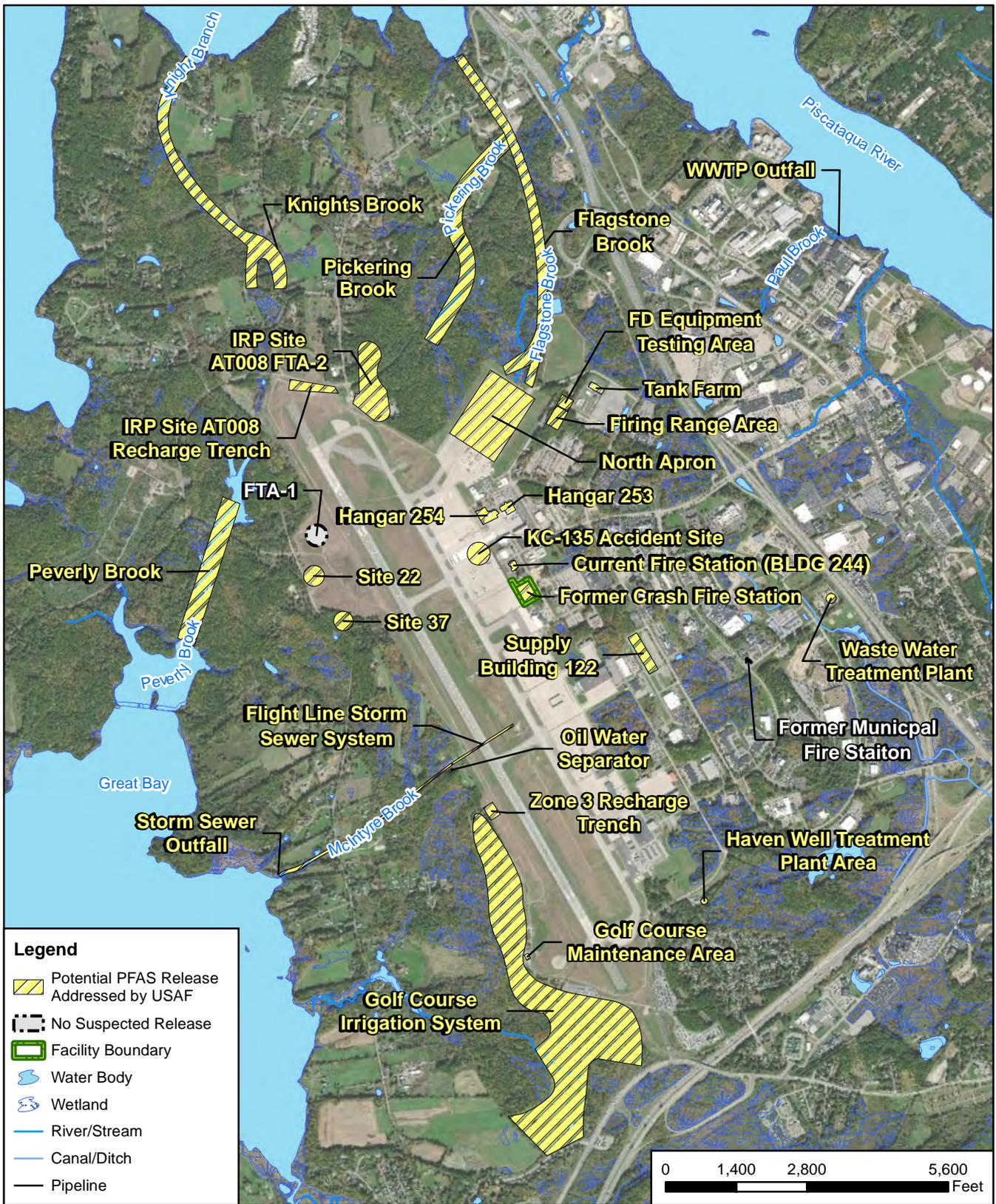
AECOM completed a PA for PFAS at the former Crash Fire Station, former Building 241 (also referred to as “the facility”) in Newington, New Hampshire, to assess potential PFAS release areas and exposure pathways to receptors. The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases;
- Conducted a site visit on 23 April 2019;
- Interviewed current Pease Air National Guard Base (ANGB) personnel and the Pease ANGB environmental manager during the site visit;
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs.

During this PA, AFFF releases were identified at the former Crash Fire Station during use by the United States Air Force (USAF) at the former Pease Air Force Base (AFB) and later during use by the New Hampshire Air National Guard (NHANG) at the Pease ANGB. No releases have occurred since the property was transferred to the New Hampshire Army National Guard (NHARNG) in 2013. The former Crash Fire Station is shown on **Figure ES-1** and described below:

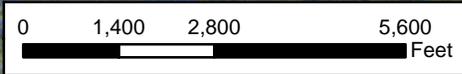
Name	Used By	Release Dates	Potential Future Action
Former Crash Fire Station (Former Building 241)	USAF (Pease AFB) and NHANG (Pease ANGB)	~1974 - 2006	Potential releases to soil and groundwater being addressed by the USAF

In July 2015, the United States Environmental Protection Agency (USEPA) issued the *Administrative Order for Response Action Docket Number SDWA-01-2015-0061* to the USAF, which requires investigation and mitigation of PFAS-related impacts to groundwater at the former Pease AFB (USEPA, 2015). The USAF is currently conducting PFAS response activities at the former Pease AFB in response to the Administrative Order. The releases to soil and groundwater at the former Crash Fire Station were evaluated by the USAF as part of a basewide PA and SI for the former Pease AFB. At the time of this PA, the USAF has taken the lead in addressing the AFFF releases at the former Crash Fire Station as part of the ongoing response effort.



Legend

- Potential PFAS Release Addressed by USAF
- No Suspected Release
- Facility Boundary
- Water Body
- Wetland
- River/Stream
- Canal/Ditch
- Pipeline



CLIENT	ARNG			
Preliminary Assessment for PFAS at Newington FCFS, NH				
REVISED	7/8/2019	GIS BY	MS	7/8/2019
SCALE	1:33,600	CHK BY	AM	7/8/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/8/2019



Summary of Findings

12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1

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1. Introduction

1.1 Authority and Purpose

The United States (US) Army Corps of Engineers (USACE) Baltimore District, on behalf of the Army National Guard (ARNG)-Installations and Environment Division, Cleanup Branch, contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide* under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017, and Modification 01 issued 30 September 2017. The ARNG is assessing potential effects on human health related to processes at facilities that used per- and poly-fluoroalkyl substances (PFAS), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, although other PFAS sources are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of PFAS compounds in the environment varies. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued Drinking Water lifetime Health Advisories (HAs) of 70 parts per trillion (ppt), individually or combined, for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water (USEPA, 2016a; USEPA, 2016b). In the absence of federal maximum contaminant levels (MCLs), some states have adopted their own drinking water standards for PFAS. In June 2019, the New Hampshire Department of Environmental Services (NHDES) issued Final Proposed MCLs and Ambient Groundwater Quality Standards (AGQS) for four PFAS compounds. The drinking water rule amendments were subsequently adopted by the New Hampshire Joint Legislative Committee on Administrative Rules to be effective on 30 September 2019 (New Hampshire Code of Administrative Rules, 2019). The MCLs/AGQS are as follows:

- PFOA: 12 ppt
- PFOS: 15 ppt
- PFHxS: 18 ppt
- PFNA: 11 ppt

This report presents findings of a PA for PFAS at the former Crash Fire Station (former Building 241; also referred to as “the facility”) in Newington, New Hampshire, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; USEPA, 1980), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300; USEPA, 1994a), and USACE requirements and guidance.

This PA documents the known locations where PFAS may have been released into the environment at the former Crash Fire Station. The term PFAS will be used throughout this report to encompass all PFAS chemicals being evaluated, including PFOS and PFOA, which are key components AFFF.

1.2 Preliminary Assessment Methods

The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases;
- Conducted a site visit on 23 April 2019;
- Interviewed current Pease Air National Guard Base (ANGB) personnel and the Pease ANGB environmental manager during the site visit;
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs.

1.3 Report Organization

This report has been prepared in accordance with the USEPA *Guidance for Performing Preliminary Assessments under CERCLA* (USEPA, 1991). The report sections and descriptions of each are:

- **Section 1 – Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA.
- **Section 2 – Fire Training Areas:** describes the Fire Training Areas (FTAs) at the facility identified during the site visit, if present.
- **Section 3 – Non-Fire Training Areas:** describes other locations of PFAS releases at the facility identified during the site visit.
- **Section 4 – Emergency Response Areas:** describes areas of AFFF release at the facility, specifically in response to emergency situations, if present.
- **Section 5 – Adjacent Sources:** describes sources of PFAS release adjacent to the facility that are not under the control of ARNG.
- **Section 6 – Preliminary Conceptual Site Model:** describes the pathways of PFAS transport and receptors for the areas of interest (AOIs) and the facility.
- **Section 7 – Conclusions:** summarizes the data findings and presents the conclusions of the PA.
- **Section 8 – References:** provides the references used to develop this document.
- **Appendix A – Data Resources**
- **Appendix B – Preliminary Assessment Documentation**
- **Appendix C – Photographic Log**

1.4 Facility Location and Description

The former Crash Fire Station (former Building 241) is located adjacent to the ANGB and the Portsmouth International Airport, within the Pease International Tradeport in the town of Newington, Rockingham County, New Hampshire (**Figure 1-1**). The property is bordered on the east by the city of Portsmouth, on the north by the Pease ANGB and the town of Newington, and on the southeast by the town of Greenland. The approximate center of the facility is located at 43°05'1.69" North (N); 70°49'6.04" West (W), at 109 feet (ft) above mean sea level (amsl). According to the 2017 census, the town of Newington has a population of approximately 789 people, and the city of Portsmouth has a population of approximately 21,796 people (US Census, 2018).

The property was originally developed in the early 1930s by the city of Portsmouth as a municipal airport (CDM and Rivers 1993). During World War II, the US Navy leased the 300-acre municipal airport from the city. In 1946, rights to the airfield were transferred to the US Air Force (USAF) for use by the Strategic Air Command. Additional land was acquired by the USAF in 1952 and 1953, with construction of Pease Air Force Base (AFB) beginning in 1954 (Earth Tech, 1995). At its maximum extent, the former Pease AFB occupied approximately 4,365 acres (Amec Foster Wheeler, 2016). The NHANG first arrived at Pease AFB in 1966.

Pease AFB was closed in 1991 as part of the Secretary of Defense's Commission on Base Realignment and Closure (BRAC). As a result of the base closure, the New Hampshire legislature created the Pease Development Authority (PDA) to develop a plan for the reuse and redevelopment of the base (EarthTech, 1995; ANG, 2005). Most of the former AFB was transferred to the PDA for reuse as a civilian airport and commercial center. Approximately 1,100 acres were transferred to the US Department of Interior for use as a national wildlife refuge (NHDES, 2014), and 229 acres became Pease ANGB (Amec Foster Wheeler, 2016).

The facility, known as Parcel A of Tract 1 (of former Pease AFB), was developed with the former Building 241 in 1956 as part of Pease AFB, according to the 2005 Environmental Baseline Survey (ANG, 2005). The Pease AFB used the former Building 241 from 1954 to 1990, when the property was licensed to the state of New Hampshire for use by the NHANG. The NHANG used the building from 1992 until 2006 as a Crash/Fire response facility for base operations (ANG, 2005). In 2006, the facility was vacated, as the Crash/Fire Response activities were relocated to the newly-constructed Fire Station on the base. The building remained vacated for part of this period but was then utilized by the PDA to provide covered storage of ground support equipment for the local airport operations. In August 2011, the USAF issued a formal notice of intent to dispose the 3.5-acre parcel. The NHARNG subsequently submitted a Real Estate Action Plan, indicating its intentions to acquire the facility for stationing of one of its units (NHARNG, 2012). The property was officially transferred to the NHARNG in June 2013 (**Appendix A**). Aside from demolishing the building in December 2016, the property has not yet been used by the NHARNG.

The facility is currently closed to the public by a 6-ft chain-link fence surrounding the facility. During the time of the VSI, the property was used by the US Navy for the storage of Conex boxes.

1.5 Facility Environmental Setting

The following sections describe the environmental setting of the facility and include information on geology, hydrogeology, hydrology, climate, and current and future land use.

1.5.1 Geology

The facility is located on a peninsula in the Piscataqua River drainage basin, which is bounded by the Atlantic Ocean to the east and the New England upland section to the west (Amec Foster

Wheeler, 2015). The facility is situated in the approximate center of the peninsula on a relatively flat kame plain. Generally, the land surface slopes radially downward in all directions on the peninsula.

The soils in the vicinity of the facility are unconsolidated glacial deposits consisting of unsorted clay, silt, sand, gravel, cobbles, and boulders. The unconsolidated sedimentary deposits are separated into six stratigraphic units (fill, upper sand unit, marine clay and silt, lower sand unit, and glacial till unit). These units were deposited during the Pleistocene glaciation and the associated flooding of coastal areas by rising ocean water levels. The units are laterally discontinuous across the base and range in thickness from zero to greater than 100 ft (ANG, 2005; AECOM, 2015). The upper sand and lower sand are indistinguishable, except where the marine clay and silt separate the two units. The sand units consist of fine to coarse sand with trace fine gravel and silt. The marine clay and silt vary from pure clay to a silt and clay interbedded with sand. The thickness of the clay unit ranges from zero to 55 ft across Pease ANGB. The contact between the lower sand and the glacial till is often gradational. Where the lower sand can be identified, it ranges in thickness from a few ft to approximately 37 ft. The till at the facility consists of either a compact, poorly sorted silt and clay with abundant faceted and rounded gravel, or a less compact, more sand-rich deposit with angular to subangular gravel. The glacial till is up to 39 ft thick and is discontinuous across the facility (ANG, 2005).

Bedrock beneath the facility is associated with the Merrimack Trough, one of the groups of northeast-trending rocks with folded and metamorphosed features. The facility is divided between the Eliot Formation to the north and Kittery Formation to the south. Both formations are of Ordovician to Silurian age generally composed of phyllite, quartzite, and metasandstone. The surface of the bedrock is locally weathered, both chemically and physically. While below the weathered zone, the bedrock is variably fractured.

1.5.2 Hydrogeology

Groundwater in the area occurs in unconsolidated material, fractured bedrock, and competent bedrock and is typically 5 to 25 ft below ground surface (bgs). Depth to groundwater varies because of natural and human factors such as precipitation and pumping rates. Overburden (shallow) groundwater regionally flows east to southeast, while bedrock (deep) predominantly moves southeast (**Figure 1-2**). The principal water-bearing overburden units are the Upper Sand and Lower Sand, which merge under the flight line to form a 40 to 60 ft-thick section of saturated, permeable sand (Shaw, 2013). The marine clay and silt and the glacial till, where present, may act as local confining layers that retard vertical groundwater flow. Where natural aquitard units are discontinuous, the shallow bedrock, which is highly permeable, can be considered part of the water table aquifer along with the overburden deposits.

The presence of groundwater in the competent bedrock is dependent on secondary porosity, which is a function of fractures, bedding planes, and joint sets. Tidal fluctuations can be measured in both water table wells and bedrock wells (ANG, 2005). Groundwater elevations also vary seasonally, with groundwater highs from December to May, and lows from July to September (ANG, 2005). Available groundwater data indicate that groundwater flow in the vicinity of the former Crash Fire Station is to the southeast. Groundwater elevations in January 2016 ranged from approximately 73.90 to 66.30 ft amsl in the Upper Sand and from 73.53 to 61.42 ft amsl in the Lower Sand (Amec Foster Wheeler, 2017). The approximate depth to groundwater in the vicinity of the facility is 15 ft bgs.

Currently, the Portsmouth Water System supplies the former Pease AFB property with potable water, in addition to the following municipalities: Greenland, New Castle, Newington, Portsmouth, and Rye (Tighe & Bond, 2013). The water system is supplied by the Bellamy Reservoir and three groundwater wells via the Madbury Water Treatment Plant, located approximately 8 miles

northwest of the installation, and six groundwater wells located throughout the municipalities mentioned above. The Harrison and Smith wells are still in service and are located on the former Pease AFB property; the Collins and Portsmouth wells are located within 0.5 miles southeast of the installation, and the Greenland well is located approximately 1.7 miles southwest of the installation. The Haven well was in operation until May 2014, after which it was shut down due to detectable levels of PFAS, including PFOS above USEPA HA (Amec Foster Wheeler, 2015). Locations of the wells are shown on **Figure 1-2**.

Third Unregulated Contaminant Monitoring Rule (UCMR 3) data were reviewed as part of the PA. UCMR 3 samples were collected at four locations within the Portsmouth Water System, including the Collins Well Treatment Site (**Figure 1-2**), Portsmouth Well Treatment Site (**Figure 1-2**), Greenland Well Treatment Site (approximately 4.5 miles southeast of the facility), and the Madbury Water Treatment Plant. All samples were nondetect for PFAS within the Portsmouth Water System (USEPA, 2017).

1.5.3 Hydrology

The facility is located on a peninsula in the Piscataqua River Basin, approximately 2 miles southwest of the Piscataqua River (**Figure 1-3**). The river is a 13-mile long, tidally-influenced river that drains approximately 1,020 square miles of southern Maine and southeastern New Hampshire, prior to discharging to the Atlantic Ocean (ANG, 2005). The Great Bay, a 6,000-acre tidal estuary, is located approximately 1.5 miles west of the facility and flows into the Piscataqua River. The North Mill pond, also tidally influenced, is located approximately 2.5 miles east of the facility and also discharges to the Piscataqua River.

The surface water runoff at the former Pease AFB has been altered from natural conditions by facility infrastructure and is collected by a series of manmade ditches, storm sewers, and drainage swales, which all leave the base in outfalls, streams, or brooks to one of three receiving bodies of water: the Great Bay, the Little Bay, or the Piscataqua River (ANG, 2005). The former Crash Fire Station is potentially located near a surface water flow divide. Stormwater runoff from the entire Pease ANGB flightline and, in particular, the area where the Pease ANGB aircraft are parked (approximately 250 ft west of the former Crash Fire Station), drains through underground pipes and one of two oil/water separators (OWSs) to an OWS on the west side of the runway. Water is then discharged to McIntyre Brook, which flows into the Great Bay. Stormwater from the Pease ANGB around Hangars 251 and 252 (north of the former Crash Fire Station) drains through open ditches and underground pipes to the vicinity of Hodgson Brook, where it discharges to the North Mill Pond and then to the Piscataqua River (ANG, 2005).

According to Federal Emergency Management Agency Flood Insurance Rate Maps for the region, there are no 100- or 500-year floodplains on the facility (ANG, 2005). Several wetland studies were performed on the former Pease AFB as part of its closure (USAF, 1995). The National Wetlands Inventory Map indicates that wetlands are not present at the facility; however, there is a small parcel of wetland area present approximately 1,000 ft to the northeast along Newington Street and New Hampshire Avenue (ANG, 2005). Additionally, numerous wetlands are located throughout the former Pease AFB. These wetlands are generally groundwater recharge features that collect and attenuate surface water runoff (Amec Foster Wheeler, 2016).

The Great Bay National Wildlife Refuge, located 1.5 miles west of the facility, comprises over 1,000 acres and is the largest parcel of protected conservation land on the Great Bay. The refuge includes many diverse habitats including oak hickory forests, grasslands, shrub thickets, fresh and saltwater wetlands, marshes, and open water habitats, all where wild plants and animals thrive, including several state-listed rare and endangered species (Amec Foster Wheeler, 2016).

1.5.4 Climate

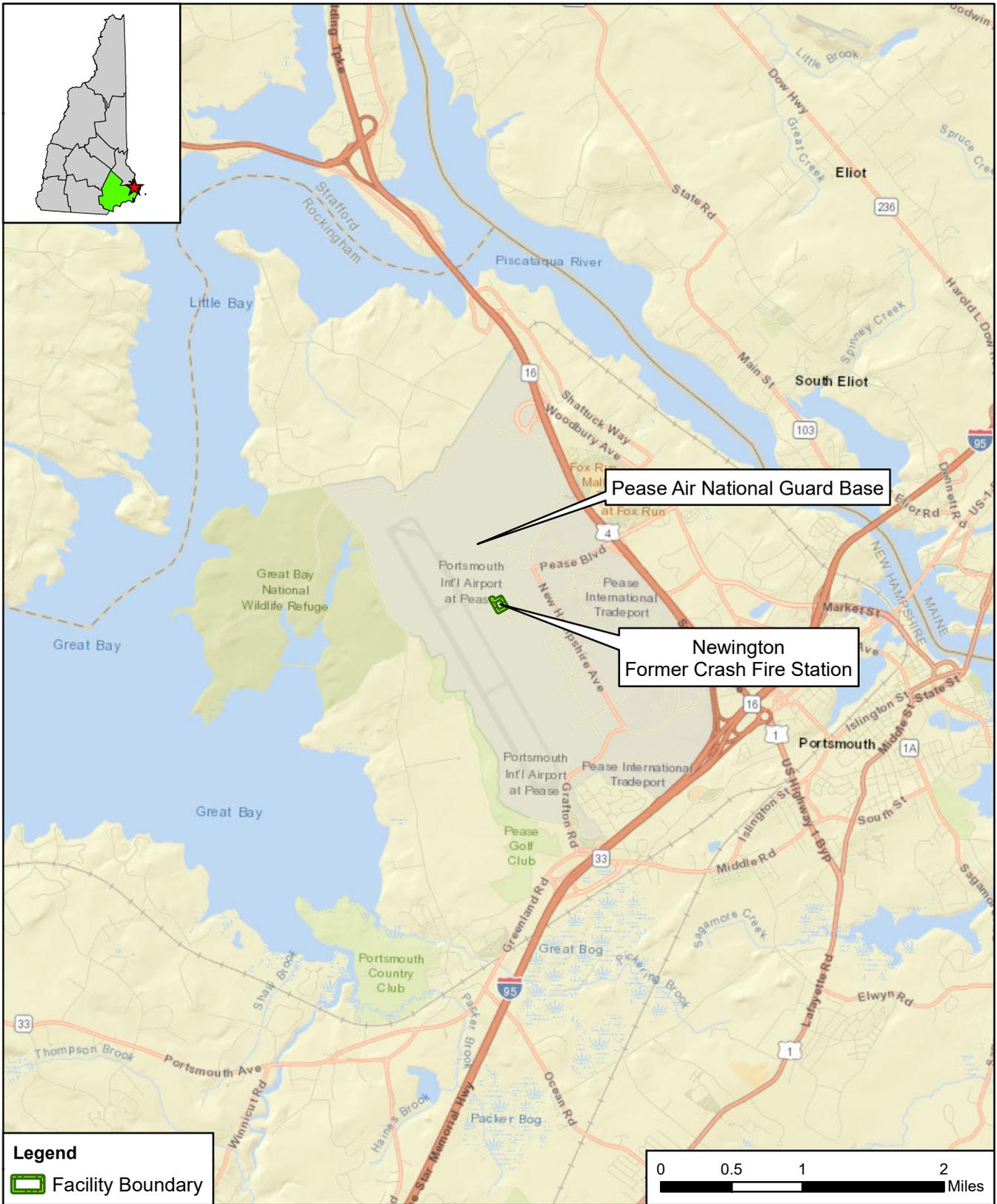
The facility lies within the humid continental climate zone, which is characterized by long, cold, snowy winters, very warm (and at times humid) summers, and relatively brief autumns and springs. The monthly daily average temperature ranges from a high of 33 degrees Fahrenheit (°F) in January to 83°F in July. In winter, successive storms deliver light to moderate snowfall amounts that contribute to the relatively reliable snow cover. Summer can bring stretches of humid conditions as well as thunderstorms. Average annual rainfall is 46 inches, and average annual snowfall is approximately 45 inches (US Climate Data, 2019). The region has a fairly even distribution of precipitation throughout the year, as measurable amounts of precipitation typically occur one out of three days (ANG, 2015).

1.5.5 Current and Future Land Use

The facility is not currently being used by the NHARNG and is closed to the public by a 6-ft chain-link fence surrounding the facility. During the time of the VSI, the property was being used by the US Navy for the storage of Conex boxes. According to NHARNG personnel, the NHARNG may construct a new facility on the property, but no plans have been finalized at the time of this PA.

The surrounding properties include the Pease ANGB, the Portsmouth International Airport, and the Pease International Tradeport. The Portsmouth International Airport shares its runway with the Pease ANGB and operates both domestic and international passenger service. The Pease International Tradeport is a 3,000-acre business and industrial park that is home to over 200 businesses including technology companies, insurance firms, and goods manufacturers, among many others.

The surrounding area also includes the following residential communities: many schools, daycares, medical facilities, and multiple commercial centers. The Great Bay National Wildlife Refuge is located 1.5 miles west of the property and comprises over 1,000 acres of protected conservation. Future land use in the surrounding area is anticipated to remain the same.



Legend

Facility Boundary



CLIENT	ARNG			
Preliminary Assessment for PFAS at Newington FCFS, NH				
REVISED	5/31/2019	GIS BY	MS	5/31/2019
SCALE	1:63,360	CHK BY	AM	5/31/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	5/31/2019

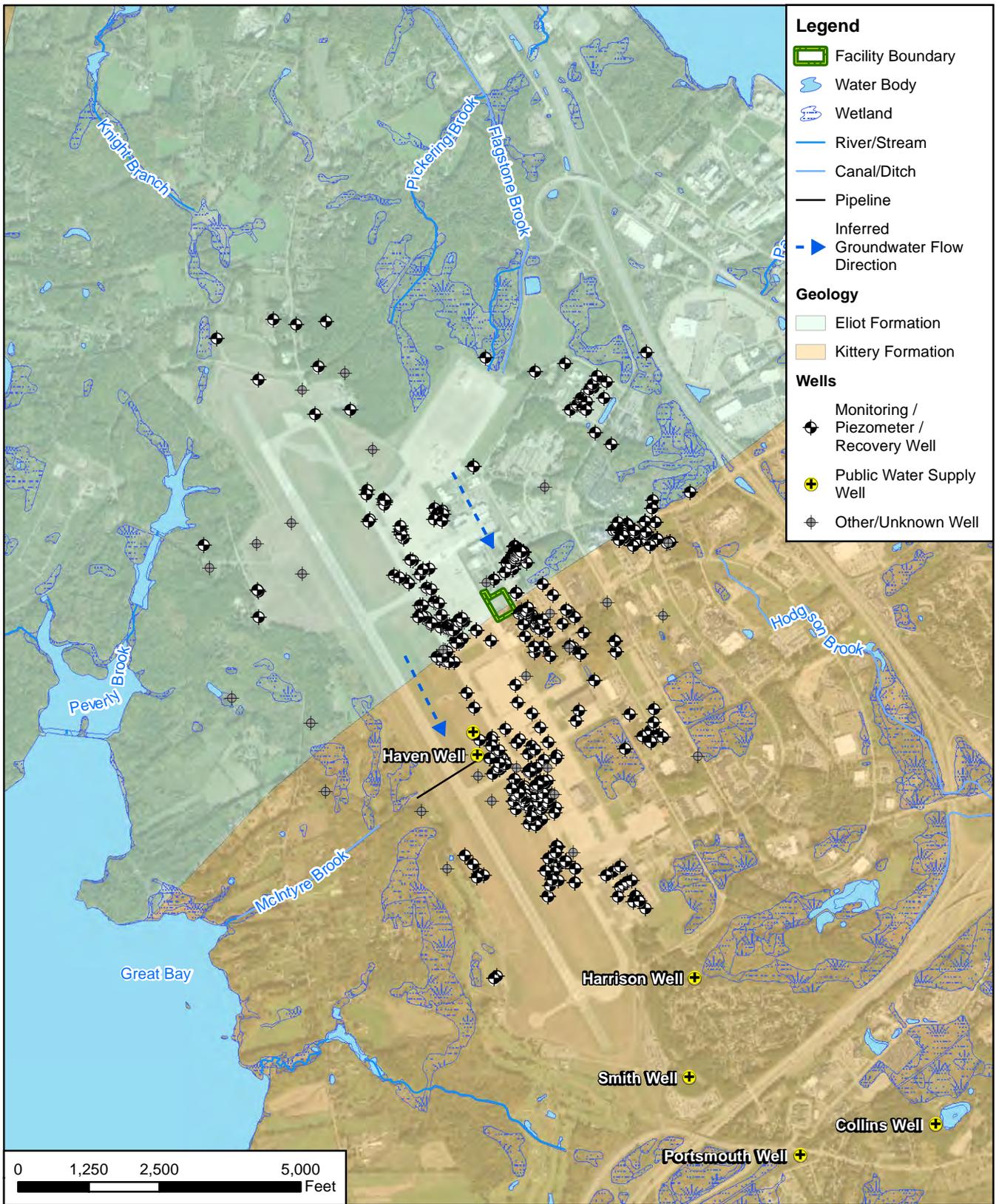


Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

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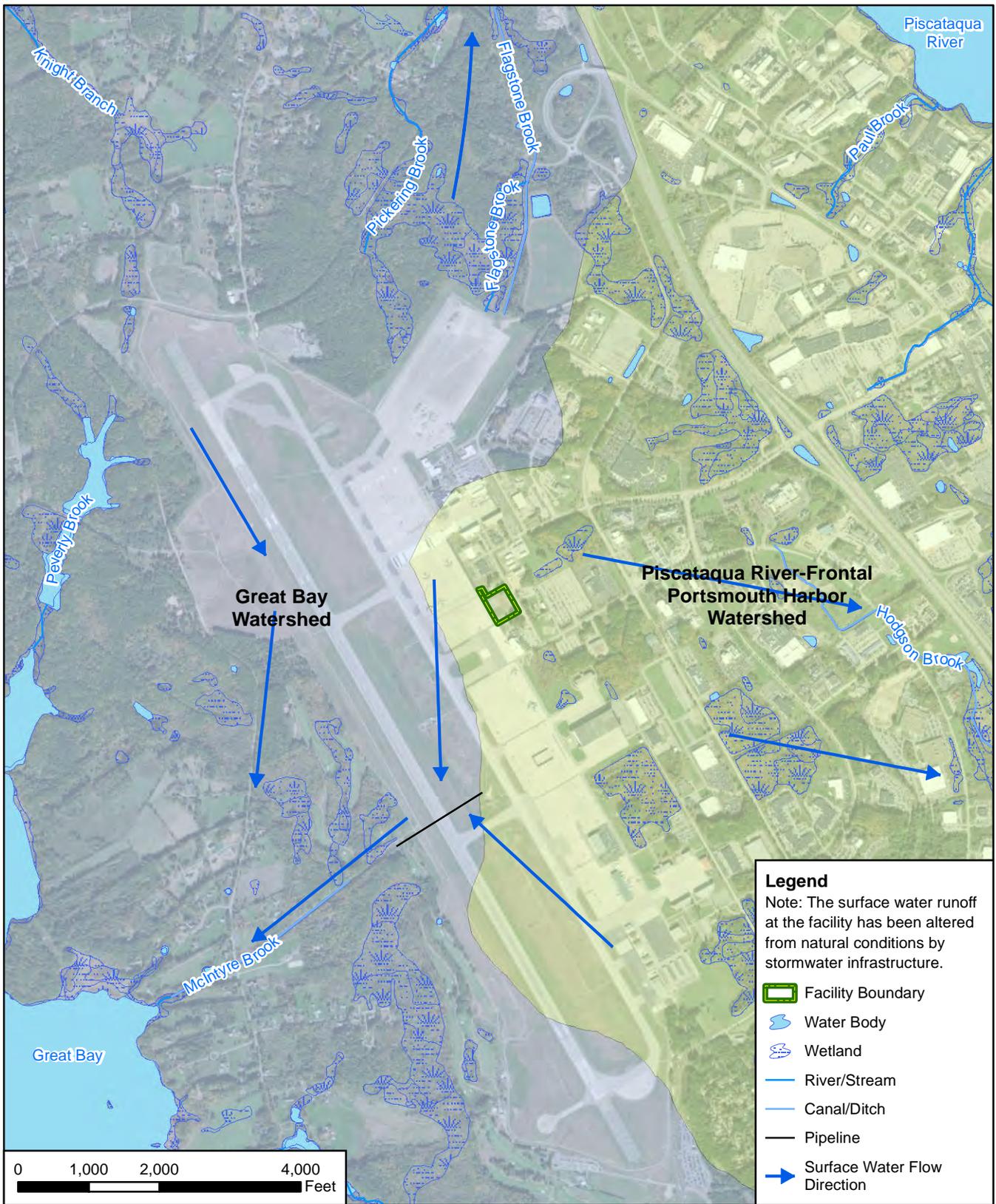


CLIENT	ARNG			
Preliminary Assessment for PFAS at Newington FCFS, NH				
REVISED	6/7/2019	GIS BY	MS	6/7/2019
SCALE	1:30,000	CHK BY	AM	6/7/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	6/7/2019



Groundwater Features	
AECOM 12420 Milestone Center Drive Germantown, MD 20876	Figure 1-2

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\NH\Newington_FCFS_Figures\Newington_FCFS_PA_Figures\Fig_1-2_Newington_FCFS_Groundwater.mxd



Legend
 Note: The surface water runoff at the facility has been altered from natural conditions by stormwater infrastructure.

- Facility Boundary
- Water Body
- Wetland
- River/Stream
- Canal/Ditch
- Pipeline
- Surface Water Flow Direction

CLIENT	ARNG			
Preliminary Assessment for PFAS at Newington FCFS, NH				
REVISED	7/8/2019	GIS BY	MS	7/8/2019
SCALE	1:24,000	CHK BY	AM	7/8/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/8/2019



Surface Water Features

AECOM
 12420 Milestone Center Drive
 Germantown, MD 20876

Figure 1-3

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2. Fire Training Areas

No FTAs were identified within the former Crash Fire Station property boundary during the PA through interviews (**Appendix B**), historical document review, or Environmental Data Resource, Inc. (EDR) Reports (**Appendix A**; EDR, 2019). Historic fire training activities occurred at two off-facility areas, which are discussed in **Section 5** of this PA Report. According to interviewees, current fire training activities are conducted at the New Hampshire Fire Academy (also known as the Richard M. Flynn Fire Academy) in Concord, New Hampshire.

3. Non-Fire Training Areas

One non-FTA where AFFF was stored and/or released was identified during the PA. A description of the non-FTA is presented below, and the location is shown on **Figure 3-1**.

3.1 Former Crash Fire Station

The former Crash Fire Station (former Building 241) was located on the flightline of the Portsmouth International Airport at Pease, New Hampshire, south of the control tower, at approximately 43°05'1.69"N; 70°49'6.04"W. The station was in service from 1954 to 2006 and was first used by the former Pease AFB, followed by the Pease ANGB. In 2006, the facility was vacated by the NHANG Fire Department (FD), as the Crash/Fire Response activities were relocated to the newly-constructed Fire Station on the Pease ANGB. The property was transferred to the NHARNG in June 2013, and the building was demolished in 2016. The NHARNG did not use AFFF or PFAS-containing materials at the former Crash Fire Station. No activities conducted by the NHARNG would have resulted in a release of PFAS.

According to interviews with NHANG FD personnel, the former Crash Fire Station did not have a fire suppression system. Two Aircraft Rescue Fire Fighting (ARFF) vehicles were housed at the former Crash Fire Station, which are still in use at the new NHANG FD today. Photos of the vehicles are included in **Appendix C**. AFFF was transferred into the respective ARFF vehicles at the station from trailers, which were used as secondary containment. No documentation or procurement records were kept for AFFF, but 3% AFFF was always used. At the time of the closure of the former Crash Fire Station, 3% Ansulite AFFF was being used.

NHANG FD personnel also indicated that the ARFF trucks often had small leaks (approximately less than 1 gallon per week). The leaks were sometimes contained in buckets when the vehicles were parked inside the station. When the vehicles were parked outside the station, leaks would discharge to the parking apron. The vehicles were never parked on the grass. The station also contained a wash rack. Because AFFF has surfactant-like properties, AFFF was occasionally used to wash the vehicles at the wash rack when soap was not available. Surface drainage from the former station would have been collected by the storm water collection system along the flight line and routed to the storm water outfall at McIntyre Brook. AFFF spilled inside the building, and runoff from the truck washing would have been contained in the building and collected by the building sanitary sewer piping, ultimately being discharged to the former Pease AFB municipal Waste Water Treatment Plant (WWTP).

The USAF began initiatives in 2012 to assess the presence of PFAS at BRAC installations in accordance with Department of Defense (DoD) Instruction 4715.18, Emerging Contaminants (DoD, 2009). Additionally, in July 2015, the USEPA issued the *Administrative Order for Response Action Docket Number SDWA-01-2015-0061*, which requires investigation and mitigation of PFOS and PFOA related impacts to groundwater at the former Pease AFB (USEPA, 2015). As part of this effort, a Perfluorinated Compounds PA was prepared for the former Pease AFB (Amec Foster Wheeler, 2015), and a basewide SI was subsequently conducted (Amec Foster Wheeler, 2017). The former Crash Fire Station (former Building 241) was included in the basewide PA and SI.

Consistent with the findings of the interviews conducted as part of this PA, the USAF PA found that AFFF was stored at the station from 1974 to the closure of the installation. No AFFF was purposely released at the station, and no equipment testing or calibration were performed. PFAS may have been inadvertently released from spilled AFFF and runoff from the truck washing, which would have been contained in the building and ultimately discharged to the former Pease AFB municipal WWTP (Amec Foster Wheeler, 2015).

Soil and groundwater samples were collected at the former Crash Fire Station as part of the 2017 SI. PFAS were detected in soil and groundwater at elevated concentrations. In groundwater, PFOS was detected at 1000 J (estimated value) to 19,000 ppt, and PFOA was detected at 160 to 1500 ppt, all of which exceed the current USEPA HA of 70 ppt and the New Hampshire MCLs/AGQS of 15 ppt (PFOS) and 12 ppt (PFOA). The SI Report also concluded that the distribution of PFAS across the former AFB in combination with the flow patterns derived from the groundwater model suggested that the former Crash Fire Station was one of four areas that were the primary contributors to PFAS concentrations in groundwater at Pease (Amec Foster Wheeler, 2017).

In June 2018, an Action Memorandum was prepared to document the approval and decision by the USAF to conduct an ERA in response to the presence of PFOA and PFOS in private drinking water wells in Newington, New Hampshire and surrounding areas of the former Pease AFB (USAF, 2018). The USAF is continuing to address PFAS at the former Crash Fire Station as part of the ongoing PFAS response activities at the former Pease AFB, in accordance with USEPA *Administrative Order SDWA-01-2015-0061*. An Airfield Interim Mitigation System (AIMS) is currently being implemented in response to the Administrative Order to treat groundwater in the vicinity of the airfield, including the groundwater at the former Crash Fire Station.



Legend

- Potential PFAS Release Addressed by USAF
- Facility Boundary
- Wetland



CLIENT		ARNG		
Preliminary Assessment for PFAS at Newington FCFS, NH				
REVISED	7/8/2019	GIS BY	MS	7/8/2019
SCALE	1:3,600	CHK BY	AM	7/8/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/8/2019



Non-Fire Training Area

12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

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4. Emergency Response Areas

No emergency response areas were identified within the former Crash Fire Station property boundary during the PA through interviews (**Appendix B**) or historical document review. One adjacent, off-facility emergency response area was identified and is discussed in **Section 5** of this PA Report.

5. Adjacent Off-Facility Sources

Several potential off-facility sources of PFAS adjacent to the former Crash Fire Station, not under the control of the ARNG, were identified during the PA. Based on interviews with Pease ANGB personnel (**Appendix B**) and historical document review, all identified adjacent areas with potential AFFF releases are within the former Pease AFB boundary. Descriptions of the adjacent sources are presented below and are shown on **Figure 5-1**.

5.1 Former Pease Air Force Base

The former Pease AFB is located at approximately 70°49'24"N; 43°04'41"W in the communities of Portsmouth and Newington in Rockingham County, New Hampshire. The installation was in operation by the USAF from 1956 to 1991 and occupied approximately 4,365 acres (Amec Foster Wheeler, 2016).

Two fire stations were located at the installation: the former Crash Fire Station (discussed in **Section 3**), which was tasked to respond to fires associated with aircraft crashes, and the former Municipal Fire Station, which was primarily tasked to respond to municipal fires. The former Municipal Fire Station was located at the corner of Rye Street and International Drive (**Figure 5-1**). Crash station vehicles were never stored, maintained, or washed in the former Municipal Fire Station; this location was strictly a structural substation that did not store or utilize AFFF (Amec Foster Wheeler, 2016). The Portsmouth FD reopened the former Pease AFB municipal firefighting station in 1993 (Portsmouth FD, 2014).

The NHANG FD at Pease ANGB currently operates a crash fire station on the flight line. The current crash fire station was opened in 2006 and is located north of the control tower. Operations were moved from the former Crash Fire Station at that time. Two AFFF-capable fire engines are housed at the NHANG FD. The NHANG FD stores AFFF at the current crash fire station in the two engines and two mobile trailers (**Appendix C**).

Fire suppression systems are currently installed in eight hangars on the Pease ANGB. NHANG hangars 251, 253, and 254 have high expansion foam (HEF) suppression systems. The former PAN-AM hangar, which is the largest hangar on the installation, contains a deluge suppression system that utilizes water. The Tyco, PlaneSense, and two Port City Air hangars also have suppression systems; however, the type of suppressant utilized (either HEF or AFFF) is currently unknown (Amec Foster Wheeler, 2015).

As described in **Section 3**, the USAF began initiatives to assess the presence of PFAS at the former Pease AFB in 2012. Additionally, in July 2015, the USEPA issued the *Administrative Order for Response Action Docket Number SDWA-01-2015-0061*, which requires investigation and mitigation of PFOS and PFOA related impacts to groundwater at the former Pease AFB (USEPA, 2015). In response to the Administrative Order, a Perfluorinated Compounds PA was prepared (Amec Foster Wheeler, 2015) and a basewide SI was subsequently conducted (Amec Foster Wheeler, 2017). The results of the PA indicated that AFFF containing PFAS was used and stored at the former Pease AFB and was routinely used during training exercises and to extinguish petroleum fires. In addition, AFFF was inadvertently released on several occasions at several locations. AFFF areas associated with the former Pease AFB are shown on **Figure 5-1** (Amec Foster Wheeler, 2015) and are described below:

- Installation Restoration Program Site AT008, former Fire Training Area 2 (herein referred to as "Site 8" or FTA-2): The former Pease AFB FD utilized two FTAs during operational years. FTA-1 was utilized from 1956 to 1961 (prior to the time PFAS were first used in 1969), and FTA-2 was utilized from 1961 to 1988 (USEPA, 1994b). FTA-2 was located at the north end

of the Pease flightline. AFFF was used at the FTA-2 to extinguish mixed waste oils, solvents, and fuel training fires.

- North Apron: After the closure of FTA-2, the NHANG FD used the North Apron for testing and calibration of the ARFF vehicle equipment.
- Fire Department Equipment Testing Area: The NHANG FD currently uses wooded area south of Landfill 5 (FD Equipment Testing Area) for testing and calibration of the ARFF vehicle equipment.
- KC-135 Accident Area: The Boeing KC-135 Stratotanker is a military aerial refueling aircraft. In January 1990, a KC-135 burned and exploded during routine fuel cell maintenance. An estimated 90,000 gallons of water and AFFF mixture were used to extinguish the fire.
- Hangar 253: Hangar 253 was equipped with an AFFF fire suppression system. The hangar is located at the north end of the flightline, east of parking Row 3. AFFF was released during the initial acceptance tests for the system conducted in 1992. The suppression systems were designed to contain, store, and ultimately discharge the AFFF to the Pease Municipal WWTP.
- Hangar 254: Hangar 254 was also equipped with an AFFF fire suppression system. The hangar is located near Hangar 253 at the north end of the flightline, east of parking Row 3. AFFF was also released during the initial acceptance tests for the system conducted in 1992. The suppression systems were designed to contain, store, and ultimately discharge the AFFF to the Pease Municipal WWTP.
- Bulk Fuel Storage Area: The bulk fuel storage area contained an AFFF fire suppression system. The system was installed in 1993 and decommissioned in 2012. The system was never tested or used, nor was there an accidental release reported.
- Golf Course Maintenance Area: During the CERCLA PA, AFFF-labeled 55-gallon barrels were identified in the golf course maintenance area. The maintenance area is located on the north side of the golf course, west of the installation runway. The AFFF-labeled barrels, at the time of the inspection, contained various constituents other than AFFF; however, it is unclear if AFFF were stored or discharged in the area.
- Firing Range Area: An unknown quantity of AFFF was released north of the firing range around 2006. The firing range was located south of the current FD Equipment Test Area. AFFF released in this area could be collected by the brooks around Landfill 5, which discharge into the Little Bay via Railway Ditch and Flagstone Brook.
- Supply Building 122: Site representatives said the Pease supply building (122) was used to store AFFF. No further information was provided concerning the storage or handling of the AFFF in this area.
- Pease International Tradeport WWTP: AFFF was collected and transported by the installation sanitary sewer system from Hangars 253 and 254, and possibly the former crash fire station, to the Pease International Tradeport WWTP. Additionally, PFAS could have entered the soil and groundwater through cracks in the sanitary sewer system piping.
- Pease International Tradeport WWTP Outfall: AFFF collected by the installation sanitary sewer system flowed to the municipal WWTP, where it would have been discharged into the Piscataqua River through the outfall. This outfall also serves as the discharge point for the city of Newington's treated wastewater effluent.

- Flightline Storm Sewer System: The flightline storm sewers collected AFFF during the KC-135 fire (see KC-135 Accident Area description above), transported the AFFF through the storm sewer system, and discharged it into the McIntyre Brook through the main outfall and/or the OWS.
- Flightline Storm Sewer Outfall: The PA indicates that a release of AFFF on the flightline would have been collected and routed by the sewer system to the storm sewer outfall at the McIntyre Brook.
- Current Crash Fire Station: The NHANG FD stores AFFF at the current crash fire station, occupied beginning in 2006. AFFF is stored in two 850-gallon mobile trailers.
- Site 8 Recharge Trenches: The Site 8 groundwater hydraulic containment and treatment system was designed to remove organic and inorganic contaminants from the groundwater. Historically, the treatment facility was not designed to remove PFAS. Therefore, groundwater containing PFAS extracted by the treatment system could have been re-injected into the aquifer via the recharge trench(s) that are located north of the flightline.
- Zone 3 Recharge Trench: The Zone 3 groundwater hydraulic containment and treatment system was designed to remove contaminants from groundwater and discharge (in part) the treated water via subsurface recharge. The treatment facility was not designed to handle PFAS. Therefore, groundwater containing PFAS extracted by the treatment system could be re-injected into the aquifer via the recharge trench that is located southwest of the flightline.
- Golf Course Irrigation System: The Zone 3 groundwater hydraulic containment and treatment system was designed to remove contaminants from groundwater and discharge (in part) the treated water through surface application to the Pease golf course. The treatment facility is not designed to handle PFAS. Therefore, any groundwater containing PFAS extracted by the treatment system and used for irrigation purposes could be topically applied to the ground throughout the golf course.
- Hodgson Brook: Groundwater from the 1992 aquifer test conducted on the Haven Well, which is known to contain PFAS, was discharged into Hodgson Brook.
- Haven Well Treatment Plant Area: Groundwater from the 2002 safe yield test and subsequent annual flow tests on the Haven Well, which is known to contain PFAS, was discharged approximately 100 ft east of the Haven Well Treatment Plant and 475 ft up gradient of the Harrison Well. Receiving waters for this discharge is Lower Grafton Ditch, which flows into Hodgson Brook.
- IRP Site AB022 (former Burn Area 1) and IRP Site AB037 (former Burn Area 2): AFFF might have been used as a fire suppressant at these two burn areas. Although definitive documentation proving PFAS use was not available, PFAS and PFOA were detected in groundwater in the area at concentrations exceeding the current USEPA HA and New Hampshire MCLs and AGQS (Amec Foster Wheeler, 2017).
- McIntyre Brook, Peverly Brook, Knights Brook, Pickering Brook, and Flagstone: PFAS releases from the above-described sources likely have entered the surrounding brooks via surface water flow. The surface water runoff at the former Pease AFB is collected by a series of manmade ditches, storm sewers, and drainage swales, some of which discharge to these brooks.

Two of the PFAS release areas described above (the FTA-2 and Site 8 recharge trenches) were subsequently investigated by the USAF in the Site 8 Investigation Report (Amec Foster Wheeler,

2016). The remaining PFAS release areas were investigated by the USAF in the Basewide SI for PFAS (Amec Foster Wheeler, 2017). In June 2018, an Action Memorandum was prepared to document the approval and decision by the USAF to conduct an Emergency Removal Action (ERA) in response to the presence of PFOA and PFOS in private drinking water wells in Newington, New Hampshire and surrounding areas of the former Pease AFB (USAF, 2018).

The USAF is continuing to address PFAS at the former Pease AFB in accordance with USEPA *Administrative Order SDWA-01-2015-0061*. An AIMS is currently being implemented to treat groundwater in the vicinity of the airfield. Additionally, a groundwater extraction and treatment system was installed at Site 8 as an interim action to address PFOS and PFOA (Amec Foster Wheeler, 2018).



CLIENT	ARNG			
Preliminary Assessment for PFAS at Newington FCFS, NH				
REVISED	6/4/2019	GIS BY	MS	6/4/2019
SCALE	1:33,600	CHK BY	AM	6/4/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	6/4/2019



Adjacent Sources	
AECOM 12420 Milestone Center Drive Germantown, MD 20876	Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings from interviews with Pease ANGB personnel, review of EDR reports, and review of historic documents, known AFFF releases occurred at the former Crash Fire Station during use by the USAF at the former Pease AFB and later during use by the NHANG FD at the Pease ANGB. No releases have occurred since the property was transferred to the NHARNG in 2013. Because no PFAS sources were identified to originate from the NHARNG activities at the facility, preliminary conceptual site models (CSMs) were not developed as part of this PA.

However, because known releases of AFFF have occurred at the former Crash Fire Station historically, there is a potential for exposure to PFAS contamination in surface soil to site workers, construction workers, and trespassers via ingestion and inhalation of dust; subsurface soil to construction workers via ingestion; surface water and sediment to nearby offsite receptors via ingestion; and groundwater to construction workers and nearby offsite receptors via ingestion. Potential offsite receptors include nearby residents and recreational users of the Great Bay and Piscataqua River. In general, the potential PFAS exposure pathways are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of PFAS toxicological study.

To address the known releases of AFFF, ongoing PFAS response activities are being conducted by the USAF at the former Pease AFB, including the former Crash Fire Station.

7. Conclusions

This report presents a summary of available information gathered during the PA on the use, storage, and potential release of AFFF and other PFAS-related activities at the former Crash Fire Station (former Building 241). The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

Known AFFF releases were identified (**Table 7-1**) at the former Crash Fire Station during use by the USAF at the former Pease AFB and later by the NHANG as the NHANG FD (**Figure 7-1**). No releases have occurred since the property was transferred to the NHARNG in 2013.

Table 7-1: Release Area

Area Name	Used by	Release Dates
Former Crash Fire Station (former Building 241)	USAF (Pease AFB) and NHANG (Pease ANGB)	~1974 - 2006

Based on known AFFF releases at the former Crash Fire Station, there is potential for exposure to PFAS contamination in media at or near the facility.

7.2 Uncertainty

A number of information sources were investigated during this PA to determine the potential for PFAS-containing materials to have been present, used, or released at the facility. Historically, documentation of PFAS use was not required because PFAS were considered benign. Therefore, records were not typically kept by the facility or available during the PA on the use of PFAS in training, firefighting, or other non-traditional activities, or on its disposition.

The conclusions of this PA are predominantly based on the information provided during interviews with personnel who had direct knowledge of PFAS use at the facility. Sometimes the provided information was vague. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS were first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected. **Table 7-2** summarizes the uncertainties associated with the PA.

Table 7- 2: Uncertainties

Area of Interest	Source of Uncertainty
Former Crash Fire Station	No documentation of procurements records were kept for AFFF at the former Crash Fire Station. Although 3% AFFF was always used, the type and quantities are not documented.

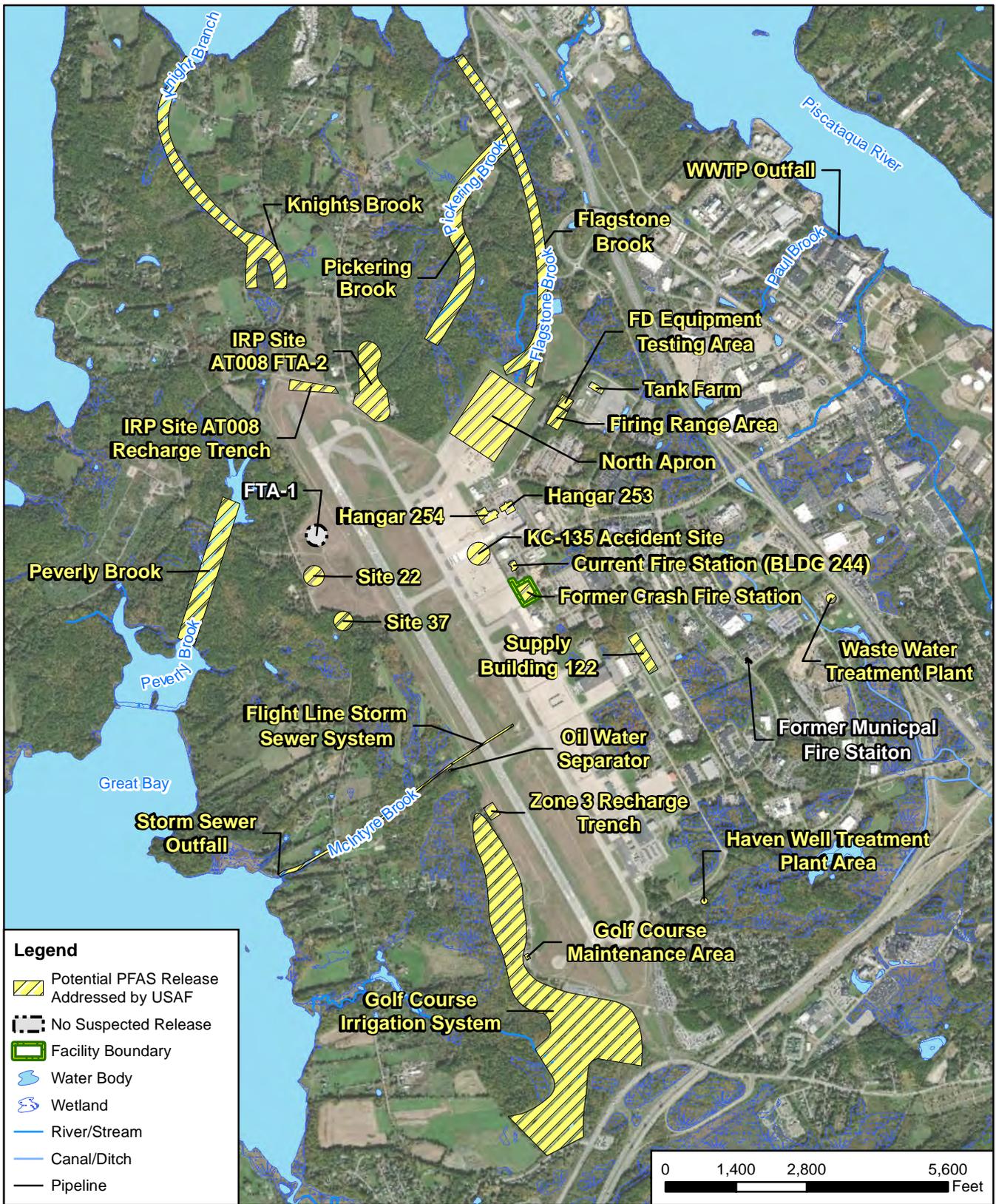
7.3 Potential Future Action

Based on the PA findings from interviews with Pease ANGB personnel, review of EDR reports, and review of historic documents, known AFFF releases have occurred at the former Crash Fire Station.

The releases to soil and groundwater at the former Crash Fire Station were evaluated by the USAF as part of a basewide PA and SI for the former Pease AFB. At the time of this PA, the USAF has taken the lead in continuing to address PFAS at the former Crash Fire Station as part of the ongoing PFAS response activities at the former Pease AFB, in accordance with USEPA *Administrative Order SDWA-01-2015-0061*. An Airfield Interim Mitigation System (AIMS) is currently being implemented in response to the Administrative Order to treat groundwater in the vicinity of the airfield, including the groundwater at the former Crash Fire Station.

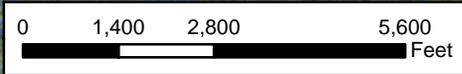
Table 7- 3: PA Findings Summary

Area Name	Area Location	Rationale	Potential Future Action
Former Crash Fire Station (former Building 241)	43°05'1.69"N; 70°49'6.04"W	AFFF was stored at the station from 1974 to 2006. Two ARFF vehicles were housed at the station; AFFF was transferred to vehicles there. Vehicles were also washed with AFFF. No AFFF was released purposely but small leaks were noted by interviewees.	Potential releases to soil and groundwater being addressed by the USAF

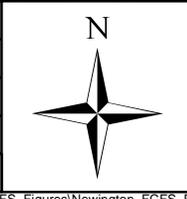


Legend

- Potential PFAS Release Addressed by USAF
- No Suspected Release
- Facility Boundary
- Water Body
- Wetland
- River/Stream
- Canal/Ditch
- Pipeline



CLIENT	ARNG			
Preliminary Assessment for PFAS at Newington FCFS, NH				
REVISED	7/8/2019	GIS BY	MS	7/8/2019
SCALE	1:33,600	CHK BY	AM	7/8/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/8/2019



Summary of Findings

12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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8. References

- AECOM, 2015. *Revised Final Regional Compliance Restoration Program Preliminary Assessment/Site Inspection, Pease Air National Guard Base, Portsmouth, New Hampshire*. September.
- Amec Foster Wheeler, 2015. *Final – Perfluorinated Compounds Preliminary Assessment, Former Pease Air Force Base*. December.
- Amec Foster Wheeler, 2016. *Final – Perfluorinated Compounds Release Response, Site 8 Investigation Report, Former Pease Air Force Base*. March.
- Amec Foster Wheeler, 2017. *Final – Basewide Site Investigation Report, Perfluorinated Compounds Release Response, Former Pease Air Force Base*. June.
- Amec Foster Wheeler, 2018. *Final – Site 8 Interim Mitigation System Implementation Work Plan, CDRL A007 & A008, Perfluorinated Compounds Release Response, Former Pease Air Force Base*. January.
- ANG, 2005. *Environmental Baseline Survey, 157th Air Refueling Wing, New Hampshire Air National Guard*. December.
- Camp, Dresser and McKee Inc. (CDM) and Rivers Engineering Corporation, 1993. *Pease International Tradeport, Stormwater Best Management Practices Plan*. February.
- DoD, 2009. *Department of Defense (DoD), Instruction and Enclosures, No. 4715.18 – Emerging Contaminants*. June 11.
- Earth Tech, Inc., 1995. *Base-Wide Environmental Baseline Survey for Pease Air Force Base*. January.
- EDR, 2019. *The EDR Radius Map™ Report with GeoCheck®; Aerial Photo Decade Package; and Certified Sanborn® Map Report; Former Crash Fire Station, 26 Airline Avenue, Portsmouth, NH*. May.
- Leidos, 2017. *Second Annual Groundwater Monitoring Report for Long-Term Monitoring at Site 76, 157th Air Refueling Wing, Pease Air National Guard Base, Newington, New Hampshire*. December.
- New Hampshire Code of Administrative Rules, *Chapter Env-Dw 700, Water Quality: Standards, Monitoring, Treatment, Compliance, and Reporting; Env-Dw 701.03, Env-Dw 705.06, Env-Dw 707.06, Env-Dw 712.23 through Env-Dw 712.30*. Effective 30 September 2019. NHARNG, 2012. *Pease Building 241 Supplemental Environmental Baseline Survey, Pease Air National Guard, Bldg 241 Former Crash/Fire Response Facility, Newington, New Hampshire*. January 12.
- NHDES, 2014. *Pease Air Force Base*. Accessed 19 May 2019 as <http://des.nh.gov/organization/divisions/waste/hwrb/fss/dod/pease.htm>.
- Portsmouth FD, 2014. *City of Portsmouth Fire Department*. Accessed May 20 2019 at <http://www.cityofportsmouth.com/fires/>.
- Shaw Environmental and Infrastructure, Inc., 2013. *2012 Annual Report, Site 85, ST085, Flight Line Refueling System, Former Pease Air Force Base, Portsmouth, New Hampshire*. October.

- Tighe & Bond, 2013. Portsmouth Water System Master Plan. Accessed May 20 2019 at: http://files.cityofportsmouth.com/publicworks/Portsmouth_WaterSystem_MasterPlan_2013.pdf.
- United States Census Bureau, 2018. QuickFacts: Concord city, New Hampshire; United States. Accessed April 9 2019 at <https://www.census.gov/quickfacts/fact/table/concordcitynewhampshire,US/PST045218>.
- US Climate Data, 2019. Climate Durham - New Hampshire. Accessed April 9 2019 at <https://www.usclimatedata.com/climate/durham/new-hampshire/united-states/usnh0057>.
- USAF, 1995. *Final Environmental Impact Statement, Volume I, Disposal and Reuse of Pease Air Force Base, Newington, New Hampshire*. June.
- USAF, 1995. *Final Supplemental Environmental Impact Statement, Disposal and Reuse of Pease Air Force Base, Newington, New Hampshire*. August.
- USAF, 2018. *Action Memorandum for an Emergency Removal Action in Response to PFOA- and PFOS-Contaminated Private Drinking Water, Newington, New Hampshire. Former Pease Air Force Base, New Hampshire*. 8 June.
- USEPA, 1980. *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*.
- USEPA, 1991. *Guidance for Performing Preliminary Assessments under CERCLA*. September.
- USEPA, 1994a. National Oil and Hazardous Substances Pollution Contingency Plan (Final Rule). 40 CFR Part 300; 59 Federal Register 47384. September.
- USEPA, 1994b. *EPA Superfund Record of Decision: Pease Air Force Base*. September.
- USEPA, 2015. *Administrative Order for Response Action (Order), Docket No.: SDWA-01-2015-0061*. United States Environmental Protection Agency, Region 1, Boston, Ma. August 3.
- USEPA, 2016a. *Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA)*. Office of Water (4304T). Health and Ecological Criteria Division, Washington, DC 20460. EPA Document Number: 822-R-16-005. May.
- USEPA, 2016b. *Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS)*. Office of Water (4304T). Health and Ecological Criteria Division, Washington, DC 20460. EPA Document Number: 822-R-16-004. May.
- USEPA, 2017. *UCMR 3 (2013-2015) Occurrence Data by State. Occurrence Data for the Unregulated Contaminant Monitoring Rule*. Accessed 9 July 2019 at <https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule>. January.

Appendix A

Data Resources

Data resources will be provided separately on CD. Data resources for the former Crash Fire Station include:

Environmental Data Resources Report

- 2019 The EDR Radius Map™ Report with GeoCheck®; Aerial Photo Decade Package; and Certified Sanborn® Map Report; Former Crash Fire Station, 26 Airline Avenue, Portsmouth, NH 03801.

Previous Investigations

- ANG, 2005. *Environmental Baseline Survey, 157th Air Refueling Wing, New Hampshire Air National Guard*. December.
- NHARNG, 2012. *Pease Building 241 Supplemental Environmental Baseline Survey. Pease Air National Guard, Bldg 241 Former Crash/Fire Response Facility, Newington, New Hampshire*. 12 January.
- Amec Foster Wheeler, 2015. *Final – Perfluorinated Compounds Preliminary Assessment, Former Pease Air Force Base*. December.
- Amec Foster Wheeler, 2016. *Final – Perfluorinated Compounds Release Response, Site 8 Investigation Report, Former Pease Air Force Base*. March.
- Amec Foster Wheeler, 2017. *Final – Basewide Site Investigation Report, Perfluorinated Compounds Release Response, Former Pease Air Force Base*. June.

Real Estate Documentation

- National Guard Bureau, ARNG-ILE, 2012. *Memorandum for ARNG-ILI-E. Subject: Review of National Environmental Policy Act (NEPA) and Environmental Condition of Property (ECOP) requirements for Pease Air National Guard (ANG) Base license for use by New Hampshire Army National Guard (NHARNG)*. 15 May.
- National Guard Bureau, ARNG-ILI-E, 2012. *Memorandum for the U.S. Army Corps of Engineers, New England District. Subject: Directive to Transfer Approximately 3.5 Acres and 14,639 Square Feet of Excess Air National Guard Property at Pease Air National Guard Base to the United States Property and Fiscal Officer (USPFO) for New Hampshire and Subsequent Licensing of the Property to the New Hampshire Army National Guard (NHARNG)*. 21 May.
- Department of the Army, CEMP-CR, 2013. *Memorandum for the Acting Deputy Assistant Secretary of the Army. Subject: Action Memorandum – Sign Transfer and Acceptance of DoD Real Property (DD form 1354) to Effectuate the Transfer of 3.5-acre Parcel at Pease International Tradeport Air National Guard Station, Newington, NH to the Army National Guard*. 1 February.
- Department of the Army, 2013. *License for Army National Guard Purposes. Newington ARNG Site, Rockingham County, New Hampshire. License No. DACA33-3-13-044*. 28 June.

Regulations, Advisories, and Orders

- USEPA, 2015. *Administrative Order for Response Action (Order), Docket No.: SDWA-01-2015-0061*. United States Environmental Protection Agency, Region 1, Boston, Ma. 3 August.
- NHDES, 2019. *New Hampshire Code of Administrative rules, Chapter Env-Dw 700, Water Quality: Standards, Monitoring, Treatment, Compliance, and Reporting; NH Env-Dw 701.03*.

NH Env-Dw 705.06, NH Env-Dw 707.06, NH Env-Dw 712.23 through NH Env-Dw 712.30.
30 September

Engineering Drawings

- 2006. *Layout Plan, Fire Crash & Rescue Station, Building 241, Pease Air National Guard Base, Newington, NH.* 6 June.

Appendix B

Preliminary Assessment Documentation

Appendix B.1

Interview Records

PA Interview Questionnaire - Environmental Manager

Facility: Newington ECFS (Pearse)
 Interviewer: [Redacted]
 Date/Time: 04-23-19

Interviewee: [Redacted] Title: <u>Env. Manager</u> Phone Number: [Redacted] Email: [Redacted]	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N
1. Roles or activities with the Facility/years working at the Facility. <u>WORKS for state of NH for the ANG ANGB</u> <u>9 mo Oct Pearse ANGB</u>	
2. Where can I find previous facility ownership information? <u>2005 EBS Report</u> <u>2008 Cultural Resources Report</u> <u>Updated EBS (provided by [Redacted])</u>	
3. What can you tell us about the history of PFAS including aqueous film forming foam (AFFF) at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map. <u>unknown - interviewee is new to facility</u>	
Maintenance Fire Training Areas Firefighting (Active Fire) Crash Fire Suppression Systems (Hangers/Dining Facilities) Fire Protection at Fueling Stations Non-Technical/Recreational/ Pest Management Metals Plating Facility Waterproofing Uniforms (Laundry Facilities) Other	
4. Fill out CSM Information worksheet with the Environmental Manager. <u>complete</u>	
5. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing the AFFF/suppression system? Do you have "As Built" drawings for the buildings? <u>unknown</u> <u>as-built drawings provided by [Redacted] NHARNG</u>	

unsure - will follow up

• "potential AFFF area" for AFCEC 2015 Draft Conceptual Site Model Data Gap/P

• FTA is known as Site 8

PA Interview Questionnaire - Environmental Manager

Facility:

Interviewer:

Date/Time:

(Please)
Nuvination FCFS

04-23-19

6. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam? If retrofitted, when was that done?

unknown

7. How is AFFF procured? Do you have an inventory/procurement system that tracks use?

unknown

8. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)? Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?

unknown

9. Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material?

unknown

10. How many FTAs are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them?

unknown

PA Interview Questionnaire - Environmental Manager

Facility: ^(Please) Newington ECFS
Interviewer: [REDACTED]
Date/Time: 01/22/19

11. When a release of AFFF occurs during a fire training exercise, now and in the past, how is the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

unknown

12. Can you recall specific times when city, county, and/or state personnel came on-post for training? If so, please state which state/county agency or military entity? Do you have any records, including photographs to share with us?

unknown

13. Did military routinely or occasionally fire train off-post? List the units that you can recall used/trained at various areas.

unknown

14. Did individual units come with their own safety personnel, did they also bring their own AFFF? Was training with AFFF part of these exercises? How were emergencies handled under these circumstances?

unknown

15. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?

unknown

PA Interview Questionnaire - Environmental Manager

Facility: ^(Please) WAWA/ATD/ECFS
Interviewer: [REDACTED]
Date/Time: 04-23-19

16. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?

unknown

17. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?

unknown

18. Are there mutual aid/use agreements between county, city, and local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement?

unknown

19. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste treatment plants, and AFFF ponds)?

Refer to Air Force PFAS PA + SI
Otherwise unknown to interviewee

20. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?

unknown

PA Interview Questionnaire - Environmental Manager

Facility: ^(Pease) ~~NUMMATION~~ FCFs
Interviewer: [REDACTED]
Date/Time: 04-23-19

21. Are there past studies you are aware of with environmental information on plants/animals/ groundwater/soil types, etc., such as Integrated Cultural Resources Management Plans or Integrated Natural Resources Management Plans?

- 2005 EBS for Pease ANGB
- 2008 Cultural Resources Report
- Updated EBS for Bldg 241 [REDACTED]

22. What other records might be helpful to us (environmental compliance, investigation records, admin record) and where can we find them?

- 2015 Final PFC PA for Pease AFB
- 2017 Final PFC SI for Pease AFB
- 2016 Final PFC Release Response Site 8 Investigation
- Multiple additional PFAS groundwater monitoring reports

23. Do you have or did you have a chrome plating shop on base? What were/are the years of operation of that chrome plating shop?

unknown

24. Do you know whether the shop has/had a foam blanket mist suppression system or used a fume hood for emissions control? If foam blanket mist suppression was used, where was the foam stored, mixed, applied, etc.?

unknown

25. How is off-spec AFFF disposed (used for training, turned in, or given to a local Fire Station)? If applicable, do you know the name of the vendor that removes off-spec AFFF? Do you have copies of the manifest or B/L?

unknown

PA Interview Questionnaire - Environmental Manager

Facility: ^(Please) NEWINGTON ECES
Interviewer: [REDACTED]
Date/Time: 04-23-19

26. Do you recommend anyone else we can interview? If so, do you have contact information for them?

[REDACTED] - USEPA Boston
[REDACTED] - NHDES Portsmouth
[REDACTED] (to contact).

Additional Resources

- ★ NHDES "one stop" - repository for public docs
- check for document
- contract #

PA Interview Questionnaire - Fire Station

Facility: ^(Pease) Newington FCFS
Interviewer: [Redacted]
Date/Time: 09-23-19

<p>Interviewee: <u>CM Sgt [Redacted]</u> Title: <u>Fire Emergency Service Chief</u> Phone Number: [Redacted] Email: [Redacted]</p>	<p>name/role be used in the PA Report? <u>Y</u> or N Can you recommend anyone we can interview? Y or N [Redacted]</p>
<p>1. Roles or activities with the Facility/years working at the Facility. <u>34 years w/ Air Force 1986-1990 active duty</u> <u>Chief since 2003; 1990 started w/ APNG</u> <u>started at Pease AFB at 1987</u> <u>AFB (Federal) Guardsman 2000</u></p>	
<p>2. What can you tell us about the history of AFFF at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.</p> <p>Maintenance (e.g., ramp washing) - <u>truck washing</u> Fire Training Areas - <u>area to N of runway (Site 8)</u> Firefighting (Active Fire) - <u>tanker crash</u> Crash - <u>tanker crash</u> Fire Suppression Systems (Hangers/Dining Facilities) - <u>NA</u> Fire Protection at Fueling Stations - <u>mobile fuel truck w/ chemical extinguishers</u> Non-Technical/Recreational/ Pest Management - <u>used to wash trucks at the fire station (wash rack)</u></p>	
<p>3. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing at the AFFF/suppression systems?</p> <p><u>NO</u></p> <p><i>attach to OWS</i></p>	
<p>4. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?</p> <p><u>no (bldg demolished)</u></p>	
<p>5. How is AFFF procured? Do you have an inventory/procurement system that tracks use?</p> <p><u>no information/record</u> <u>fire chief would have put request to "supply guy"</u></p>	

6. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F 24385, High Expansion)?
 Manufacturer (3M, Dupont, Ansul) National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?
 Always 3% - different brands (remembers circled brands)
 Class B foams

7. Is AFFF formulated on base? If so, where is the solution mixed, contained, transferred, etc.?
 - mixed in truck itself during discharge
 stored as concentrate
 - trucks frequently leaked, used bucket to containize, truck parked sometimes inside or outside

8. Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material?
 AFFF was stored in the tanks on the trucks.
 sometimes 55-gal drums or 5-gal buckets for short-term (couple weeks) No long-term storage.
 Foam testing was only at FTA (site 8)
 Nozzle testing was only w/ water on-site.

9. How is the AFFF transferred to emergency response vehicles, suppression systems, flightline extinguishers? Is/was there a specified area on the facility where vehicles are filled with AFFF and does this area have secondary containment in case of spills? How and where are vehicles storing AFFF cleaned/decontaminated?
 Transferred to truck from drum/bucket using pump on truck (see photos of tank trailers) - or used tank trailer (drum/bucket → trailer → truck using pump).

10. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located?
 • parked in building 241 inside and outside (never in grass, only on pavement)
 • two vehicles that were at the old FCFS still are in use at new base ANGB CFS (see photos)

11. Any vehicles have a history of leaking AFFF? Do you/did you test the vehicles spray patterns to make sure equipment is working properly? How often are/were these spray tests performed and can you provide the locations of these tests, now and in the past?
 - yes - small leaks (less than 1 gal/week) were regular. never large leaks
 - spraying was only at FTA north of runway Federal Superfund site (lookup address online).

PA Interview Questionnaire – Fire Station

Facility: ^(Perse) Newington FES
Interviewer: [Redacted]
Date/Time: 09-23-19

12. How many FTAs are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them?

1960s - area to NE of runway
1970s and 80s - FTA to N of runway (current Superfund site)
Fire Academy in Concord is current training loc (Smookey Bear Blvd)

13. What types of fuels/flammables were used at the FTAs?

"whatever was on hand" - leftover fuels, solvents, whatever. Mostly JP-4.

14. What was the frequency of AFFF use at each location? When a release of AFFF occurs during a fire training exercise, now and in the past, how is/was the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

- at FTA, weekly training during his years of service (at least 1987-1989). amt. discharged depended on the type of fire. Maybe 2 hrs of training, maybe about 50-100 gal concentrate per training. let it soak into ground afterwards.

15. Are there mutual aid/use agreements between county, city, local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement? Can you recall specific times when city, county, state personnel came on-post for training? If so, please state which state/county agency, military entity? Do you have any records, including photographs to share with us?

- shipyard + local towns people would train together w/ ANG equipment
- no formal records/agreements

Portsmouth, Newington, Greenland ~~etc~~ towns

16. Did individual units come on-post with their own safety personnel, did they also bring their own AFFF? Was training with AFFF part of these exercises? How were emergencies handled under these circumstances?

- never brought their own AFFF
- used ANG AFFF for these trainings

unaware if sampling completed on ARNG facility. Air Force is in charge of this.

↳ Follow up: Sampling completed by Air Force on ARNG facility. PFAS PA + SI available on admin record 3

PA Interview Questionnaire - Fire Station

Facility: ^(Please) Newington FCS
Interviewer: [Redacted]
Date/Time: 09/25/19

17. Did military routinely or occasionally fire train off-post? List units that you can recall used/trained at various areas.

- same FTA previously described was the only one used

18. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?

- KC135 caught on fire + exploded (can look up on youtube) - dumped 1000s of gallons of AFFF on and took hours to put out - Feb 1990
- near taxiway to hangars approx 4300S 11.3"N
(foam for hours) 70 29 19.1"N

19. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?

- never used to wash fuel spills (water only)
- heard rumors of foaming runway before his time; cant recall any instances of this occurring

20. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?

No knowledge

21. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds)?

- no additional locations on Building 2411 property (current ARNG property) - only the fire station

possible adjacent source - storage in buildings on former AFB

documented in Air Force PFAS PA + SI

PA Interview Questionnaire – Fire Station

Facility: ^(Perse) Newington FES
Interviewer: [REDACTED]
Date/Time: 07-25-19

<p>22. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?</p> <p>- used to wash trucks at wash rack in Bldg 241 dust suppression drum</p>
<p>23. How is off-spec AFFF disposed (used for training, turned in, or given to a local Fire Station)? If applicable, do you know the name of the vendor that removes off-spec AFFF? Do you have copies of the manifest or B/L?</p> <p>used as intended (never had to dispose of any unused foam)</p>
<p>24. Do you recommend anyone else we can interview? If so, do you have contact information for them?</p> <p>no - all others have retired from Pease ANG [REDACTED] (Air Guard), involved in transfer of property (check for name in EBS)</p>

Other local off-site uses
Interstate 1-95 in MA (not near site)

Appendix B.2

Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI:

[Redacted] ARNG
ACE
NHARNG

Recorded by:

[Redacted] AECOM

ARNG Contact:

[Redacted] NHARNG

Date and Time:

04-23-19

Method of visit (walking, driving, adjacent):

walking

Source/Release Information

Site Name / Area Name / Unique ID:

Newington (Pease) Former Crash Fire Station

Site / Area Acreage:

3.5 acre

Historic Site Use (Brief Description):

Fire Station for Pease ANGB
and Pease AFB before that

Current Site Use (Brief Description):

building demolished - ARNG may
build new facility

Physical barriers or access restrictions:

fenced area

1. Was PFAS used (or spilled) at the site/area?

Y N

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

stored in fire trucks, occasional leaks,
used to wash trucks in wash rack

2. Has usage been documented?

Y N

2a. If yes, keep a record (place electronic files on a disk):

3. What types of businesses are located near the site?

Industrial Commercial Plating Waterproofing Residential

3a. Indicate what businesses are located near the site

no plating and waterproofing
Pease International Tradeport - many businesses

4. Is this site located at an airport/flightline?

Y N

4a. If yes, provide a description of the airport/flightline tenants:

New Hampshire ANG,
(Pease ANGB) and the Portsmouth
International Airport (small commercial)

Adjacent to shipping channel, huge industrial park
• Cable manufacturing nearby (Tycomm)
• Fuel Farm (fumes) (Irving, supply depot)
(may have their own fire suppression system)
• Thermo Electron Corp control
Pease Air National Guard Base to North
Portsmouth International Airport to West
Multiple ERP sites (landfills, fuel spills, ^{1m² areas, more})

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system?

Y N (Former Facility)

1a. If yes, indicate which type of AFFF has been used:

NA Former Facility did not have suppression system

1b. If yes, describe maintenance schedule/leaks:

NA

1c. If yes, how often is the AFFF replaced:

NA

1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?

NA

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation?

Y N

1a. If so, note observation and location: yes - ~~water~~ SW near flight line would flow off site via series of manmade ditches, swales, etc to Hodgson Brook, Flagstone Brook, McIntyre Brook, or Grafton ditch then to Great Bay or Piscataqu River (See EIS for more)

2. Is there channelized flow within the site/area?

Y N

2a. If so, please note observation and location: none w/in ARNG Facility property

3. Are monitoring or drinking water wells located near the site?

Y N

3a. If so, please note the location: Haven Well, Smith Well, Harrison well - public drinking water supply wells. Many additional private wells.

4. Are surface water intakes located near the site?

Y N

4a. If so, please note the location: yes - Hodgson Brook, Flagstone Brook, McIntyre Brook, Peversly Brook, Newfields Ditch + Lower Grafton Ditch

5. Can wind dispersion information be obtained?

Y N

5a. If so, please note and observe the location. yes - windsock at Portsmouth International Airport

6. Does an adjacent non-ARNG PFAS source exist?

Y N

6a. If so, please note the source and location. yes - many - Current Fire Station at Pease ANGB, KC-135 accident site, North Apron, Site 8 FIA, Hangers at Pease ANGB

6b. Will off-site reconnaissance be conducted? Y N

refer to Air Force PFAS PA + SI for additional identified adjacent sources

Visual Survey Inspection Log

Significant Topographical Features:

- 1. Has the infrastructure changed at the site/area? Y/N
 1a. If so, please describe change (ex. Structures no longer exist): building 241 demolished by ARNG. apron still exists
- 2. Is the site/area vegetated? Y/N
 2a. If not vegetated, briefly describe the site/area composition: grass, 3 large deciduous trees in NE corner of property
- 3. Does the site or area exhibit evidence of erosion? Y/N
 3a. If yes, describe the location and extent of the erosion: some slight erosion, grass cover is missing in center of property due to vehicle movement/storage
- 4. Does the site/area exhibit any areas of ponding or standing water? Y/N
 4a. If yes, describe the location and extent of the ponding: small ponding water area in center of property (see photo)

Receptor Information

- 1. Is access to the site restricted? Y/N
 1a. If so, please note to what extent: fence around property

- 2. Who can access the site? Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological

2a. Circle all that apply, note any not covered above: on pause, reasonably expected construction. currently Navy is using site for storage of conex boxes.

- 3. Are residential areas located near the site? Y/N
 3a. If so, please note the location/distance: lys - residential areas on all sides of Pease Tradeport - approx 1 mi to NW, 0.8 mi to SW, 1.5 mi to S, 1.5 mi to E
- 4. Are any schools/day care centers located near the site? Y/N

4a. If so, please note the location/distance/type:
Robert Lister Academy, Newington Public School, Portsmouth High School, Saint Patrick Academy

- 5. Are any wetlands located near the site? Y/N
 5a. If so, please note the location/distance/type: Numerous wetlands through out former Pease AFB. Karato check for additional wetland maps

Little Blessings Child Care Center
 Discovery Child enrichment center
 Pat's Family Group childcare
 Tostenovis Day Care Center
 Edgewood Early Learning Center
 Portsmouth Kinler Care.

} all within 5 mi east-south-east

Visual Survey Inspection Log

Newington
(Pease) FCFS
04-23-19

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description
Pease FCFS -01	04-23-19 FCFS parcel	View of site looking SE. Navy currently using for storage Conex boxes
"-02	04-23-19 FCFS parcel	view of site looking SE - Former Bldg 241 location + apron/tarmac
"-03	04-23-19 FCFS parcel	view of site looking S
"-04	04-23-19 FCFS parcel	view of site looking NE adjacent to airport operation tower
#-05	04-23-19 New Pease ANG Fire House	Fire truck at new facility which was housed in FCFS previously
"-06	04-23-19 New Pease ANG Fire House	Pease ANG Fire truck #8, was used in old FCFS previously, 500 gal AFFF tank
"-07	04-23-19 New Pease ANG Fire House	Pease ANG current AFFF tanks for refilling tanks on trucks. These are new but old FCFS had similar
"-08	04-23-19 New Pease ANG Fire House	Drum previously contained 30% Ansulite AFFF, would have been used at FCFS
"-09	04-23-19 New Pease ANG Fire House	Detail of label info for 30% Ansulite AFFF which would have been used at FCFS

300 gal AFFF tank

Appendix B.3

Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

www.irs.gov
FCFS
(Pease)
04-23-19

Site Name: Newington (Pease) Former Crash Fire Station
(Building 241)

Why has this location been identified as a site? Facility is a former crash fire station. State did not report AFFF storage/use at the facility. Adjacent Pease ANGB has detections of PFAS.

Are there any other activities nearby that could also impact this location?

- Former ~~ANGB~~ Pease AFB, current Pease ANGB

Training Events

Have any training events with AFFF occurred at this site? no - all training was at

If so, how often? NA

Fire Training Area 2

How much material was used? Is it documented? NA

(1960-1988) now known as Site 8

Identify Potential Pathways: Do we have enough information to fully understand over land surface water flow, groundwater flow, and geological formations on and around the facility? Any direct pathways to larger water bodies?

yes - see 2005 EBS and other historic docs

Surface Water:

Surface water flow direction? From Bldg 241 - most likely to MacIntyre Brook + Great Bay

Average rainfall? 46 inches

Any flooding during rainy season? no

Direct or indirect pathway to ditches? yes

Direct or indirect pathway to larger bodies of water? yes

Does surface water pond any place on site? no yes - minimal ponding near center

Any impoundment areas or retention ponds? no

Any NPDES location points near the site? no - under Pease DA NPDES

How does surface water drain on and around the flight line?

at FCFS - most likely drains to sewer system the WWTP

at Flight Line - has stormwater outfall at MacIntyre Brook

→ Four NPDES locations managed by Pease Development Authority: Hodgson Brook, Flagstone Brook, MacIntyre Brook, Grafton Ditch

Preliminary Assessment – Conceptual Site Model Information

newington 1
FCFS
(Pease)
04-23-19

Groundwater:

Groundwater flow direction? E/SW in immediate vicinity, E to Great Bay at larger scale

Depth to groundwater? Approx 75 ft amsl

Uses (agricultural, drinking water, irrigation)? golf course irrigation (private)

Any groundwater treatment systems? none on base

Any groundwater monitoring well locations near the site? yes - karato search for GIS

Is groundwater used for drinking water? wells exist but currently not used due to info

Are there drinking water supply wells on installation? no - haven well but not in use

Do they serve off-post populations? yes (currently not in use)

Are there off-post drinking water wells downgradient yes -

Harrison well, Portsmouth, Smith, Collins Haven well. Treatment systems being installed on some of these, others out of use

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? previous AFB WWTP, now belong to PDA

If so, do we understand the process and which water is/was treated at the plant? unknown

Do we understand the fate of sludge waste? unknown

Is surface water from potential contaminated sites treated? yes, some areas at former Pease AFB drain to sanitary sewers that lead to WWTP. WWTP is established as AOl in Air Force PFAS PA/SI

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go? In former CFS - wash rack on N side of Bldg. would enter floor drains -> sanitary sewer -> WWTP or grass outside bldg

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after use? Where does the rinse water flow after cleaning nozzles? no nozzle testing at FCFS it washes outside on apron

3. Other?

no

Preliminary Assessment - Conceptual Site Model Information

Newington
FCFS
(Pease)
04-23-19

Identify Potential Receptors:

Site Worker - yes

Construction Worker - yes (no planned construction but reasonable expected future use)

Recreational User - no

Residential - not on site, nearby

Child - not on site, nearby

Ecological - yes

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)?

Pease international tradeport, many businesses and industries. many schools and daycares nearby. multiple hospitals/medical facilities. many churches

Ask for Engineering drawings (if applicable). obtained from F. Womack

Has there been a reconstruction or changes to the drainage system? When did that occur?

no known changes aside from demolishing building

→ Also many farms

Great Bay Farm - Beef & dairy cattle

Wild Irish Farm - Equine therapy Farm

Lord Farm

Frink Farm - Belted Galloway Beef Cattle,

Spinney Farm - now closed

chickens,
strawberries

Great Bay National Wildlife Refuge

Appendix C Photograph Log

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Former Crash Fire Station (Pease)	Newington, New Hampshire
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Photograph No. 01	
Date 4/23/2019 Time 10:01	
Description: Location of Former Crash Fire Station (Building 241). Former building has been demolished. Property is currently fenced and used for storage by the Department of the Navy.	
Orientation: Southwest	

Photograph No. 02	
Date 4/23/2019 Time 10:02	
Description: Location of Former Crash Fire Station (Building 241) with Portsmouth International Airport runway in the background. Former building has been demolished but asphalt parking area is still present.	
Orientation: Southwest	

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Former Crash Fire Station (Pease)	Newington, New Hampshire
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Photograph No. 03	
Date 4/23/2019 Time 10:02	
Description: Location of Former Crash Fire Station (Building 241). Former building has been demolished. Property is currently fenced and used for storage by the Department of the Navy.	
Orientation: South	

Photograph No. 04	
Date 4/23/2019 Time 10:03	
Description: Former Crash Fire Station (Building 241) property, grassy area west of Portsmouth International Airport control tower.	
Orientation: Northwest	

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Former Crash Fire Station (Pease)	Newington, New Hampshire
<p>Photograph No. 05</p>		
<p>Date 4/23/2019 Time 11:32</p>		
<p>Description: Firetruck (Engine #3) at the new Pease Air National Guard Base Fire Station. This engine was previously housed at the Former Crash Fire Station (Building 241) and is equipped with at 300-gallon AFFF tank.</p>		
<p>Orientation: Southwest</p>		

<p>Photograph No. 06</p>		
<p>Date 4/23/2019 Time 11:32</p>		
<p>Description: Firetruck (Engine #8) at the new Pease Air National Guard Base Fire Station. This engine was previously housed at the Former Crash Fire Station (Building 241) and is equipped with at 500-gallon AFFF tank.</p>		
<p>Orientation: Southwest</p>		

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Former Crash Fire Station (Pease)	Newington, New Hampshire
Photograph No. 07		
Date 4/23/2019 Time 11:33		
Description: Two AFFF trailer tanks used for refilling AFFF tanks on firetrucks at the new Pease Air National Guard Base Fire Station. These trailer tanks are new but the Former Crash Fire Station would have had similar trailer tanks used to refill firetrucks on the property.		
Orientation: East		

Photograph No. 08	
Date 4/23/2019 Time 11:35	
Description: Drum (55-gallon) that previously contained 3% Ansulite AFFF, which would have been used at the Former Crash Fire Station. According to interviewee, this drum was likely moved to the new facility from the Former Crash Fire Station.	
Orientation: NA	

Appendix C - Photographic Log		
Army National Guard, Preliminary Assessment for PFAS	Former Crash Fire Station (Pease)	Newington, New Hampshire
Photograph No. 09		
Date 4/23/2019		
Time 11:35		
Description: Label information for 55-gallon drum that previously contained 3% Ansulite AFFF, which would have been used at the Former Crash Fire Station.		
Orientation: NA		