Final
Preliminary Assessment Report
Bangor Training Site
Bangor, Maine

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

January 2020

Prepared for:

Army National Guard Headquarter
111 S. George Mason Drive
Arlington, VA 22204

U.S. Army Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

Prepared by:

AECOM
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876
aecom.com

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Acronyms and Abbreviations

ºF	degrees Fahrenheit
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFB	Air Force Base
AFFF	aqueous film forming foam
AFRC	Armed Forces Reserve Center
amsl	above mean sea level
AOI	Area of Interest
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
FAA	Federal Aviation Administration
FMS	Field Maintenance Shop
ft	feet/foot
FTA	fire training area
gpm	gallons per minute
IED	Installations and Environment Division
ME	Maine
MEANG	Maine Air National Guard
MEARNG	Maine Army National Guard
MEDEP	Maine Department of Environmental Protection
ng/L	nanograms per liter
OWS	Oil water separator
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
POL	petroleum, oil, and lubricants
RTI	Regional Training Institute
SI	Site Inspection
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
USPFO	United States Property and Fiscal Office
VSI	visual site inspection
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 & 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 Bangor Training Site in Bangor, Maine (ME) 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 1-day site visit on 25 October 2018
- Interviewed personnel with knowledge of Bangor Training Site activities during the site visit, including a Maine ARNG (MEARNG) Operations Officer, MEARNG Building Control Supervisor, MEARNG Stormwater Manager, and two Maine Air National Guard (MEANG) Fire Department Assistant Chiefs
- Completed visual survey inspections (VSIs) at known or suspected PFAS release locations and document with photographs

Two Areas of Interest (AOIs) related to potential PFAS release were identified at the Bangor Training Site, based on PA data. The AOIs are shown on **Figure ES-1** and described in the **Table ES-1** below:

Table ES-1: Areas of Interest

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Building 260 Army Aviation Support Facility (AASF)	MEARNG	2003, 2011, 2016
AOI 2	Building 254 (Cold Storage Hangar)	MEARNG	2013-2018

Based on the known PFAS releases at AOI 1 and potential PFAS release at AOI 2, there is potential for exposure to PFAS in surface soil to site workers, construction workers, and trespassers/recreational users via ingestion; in subsurface soils to construction workers via inhalation and ingestion; in surface water and sediment to site workers and trespassers/recreational users via ingestion; and in groundwater to construction workers via ingestion. Additionally, a groundwater drinking well on the Bangor Training Site western property is sampled quarterly due to PFAS detections in drinking water during an ARNG 2017 sampling event. Releases at AOI 1 and AOI 2 are unlikely to have contributed to PFAS in groundwater on the western property; however, the pathway for PFAS exposure to site workers via ingestion of groundwater is complete via the active drinking water well.

Although private domestic wells exist within a one-mile radius of the facility, they are located at greater distances from the specific locations of the AOIs, and are cross- or upgradient of the release areas. The pathway for PFAS exposure to off-facility residents is considered incomplete.

Several adjacent sources of PFAS release to the environment were identified in the area surrounding MEARNG Bangor Training Site through interviews or review of previous environmental investigations. The preliminary conceptual site model (CSM) for the MEARNG Bangor Training Site is shown on **Figure ES-2.**

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	11/6/2019	GIS BY	MS	11/6/2019
SCALE	1:142,779	CHK BY	JW	11/6/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)		PM	RG	11/6/2019

Area of Interest
Potential PFAS Release
No Suspected Release
Facility Boundary
Bangor ANG Facility Boundary
Water Body
Wetland
River/Stream

0 500 1,000 2,000 Feet

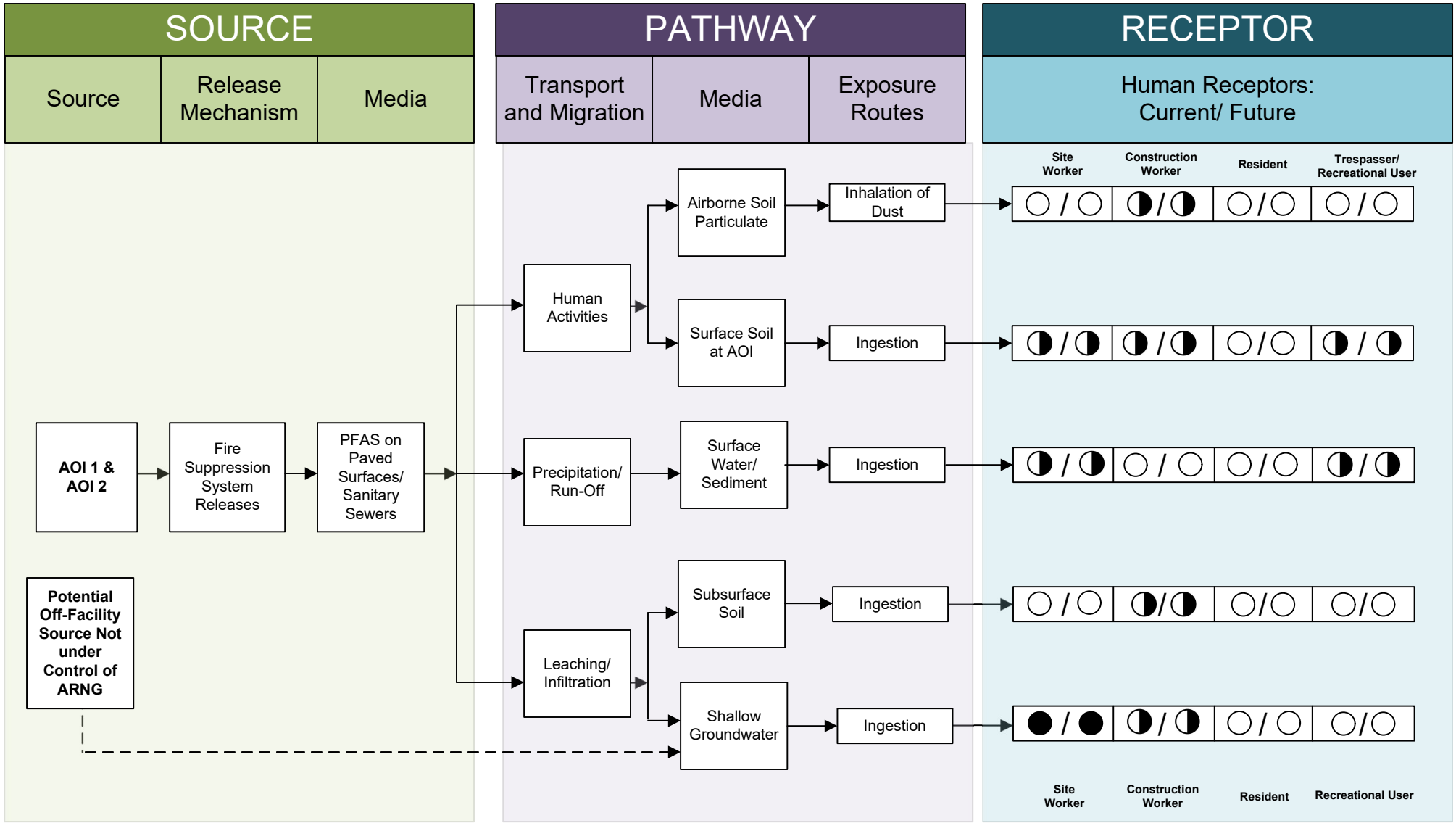
N

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\ME\Bangor_Training_Site_Figures\Bangor_PA_Figures\Fig_ES-1_Bangor_TS_Summary.mxd



LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Complete Pathway

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure ES-2
Preliminary Conceptual Site Model
Bangor Training Site, ME

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 & 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* under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017. The ARNG is assessing potential effects on human health related to processes at their facilities that used per- and poly-fluoroalkyl substances (PFAS), primarily releases of aqueous film forming foam (AFFF) although other sources of PFAS 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. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued Drinking Water Health Advisories for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. In the absence of federal maximum contaminant levels, some states have adopted their own drinking water standards for PFAS. The Maine Department of Environmental Protection (MEDEP) established a Maximum Exposure Guideline concentration of 70 nanograms per liter (ng/L) individually for PFOA and PFOS on 31 December 2016.

This report presents findings of a PA for PFAS at Bangor Training Site (also referred to as the "facility") in Bangor, Maine in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300), and USACE requirements and guidance.

This PA documents the known army aviation support facilities as well as additional locations where PFAS may have been stored or released into the environment at Bangor Training Site. The term PFAS will be used throughout this report to encompass all PFAS chemicals being evaluated, including PFOS and PFOA, which are key components of 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 1-day site visit on 25 October 2018
- Interviewed personnel with knowledge of Bangor Training Site activities during the site visit, including a Maine ARNG (MEARNG) Operations Officer, MEARNG Building Control Supervisor, MEARNG Stormwater Manager, and two Maine Air National Guard (MEANG) Fire Department Assistant Chiefs
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs
- If Areas of Interest (AOIs) were identified, developed a preliminary conceptual site model (CSM) to outline the potential release and pathway of PFAS for each AOI

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 potential or suspected fire training areas (FTAs) at the facility identified during the site visit
- **Section 3** – **Non-Fire Training Areas:** describes other locations of potential or suspected PFAS releases at the facility identified during the site visit
- **Section 4** – **Emergency Response Areas:** describes areas of suspected or potential AFFF release at the facility, specifically in response to emergency situations
- **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 at 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 MEARNG Bangor Training Site comprises 213.7 acres and 13 buildings between two properties located immediately east and west of the Bangor International Airport runway, in the city of Bangor, Penobscot County, Maine (MEARNG, 2015) (**Figure 1-1**). The MEARNG properties are owned by the Federal Government and licensed to MEARNG.

The western property comprises approximately 161.85 acres and is used by both military and civilian groups. The western property includes a firing range in the northeastern area, a Regional Training Institute (RTI), and an Armed Forces Reserve Center (AFRC). The remainder of the area is forested with some open fields and wetlands. A small parcel of land within the western property, near the southeastern boundary, is permitted to the Department of Transportation Federal Aviation Administration (FAA), in accordance with License DACA51-1-96-089A, and contains the Area Search Radar and FAA Tower, but it is not operated by MEARNG. The RTI (approximately 10 acres) was constructed in 2012 and includes housing, training rooms, presentation rooms, and offices; the AFRC (approximately 4.5 acres) was constructed in 1992 and includes classrooms, administrative offices, and equipment parking and storage areas. The western property is located within the Airport Development District zone. The land is federally owned and licensed to the MEARNG by the USACE under the “Department of the Army License for National Guard Purposes” No. DACA33-3-08-123, dated 25 September 2008 (Summit Environmental Consultants, Inc., 2011) (**Appendix A**).

The eastern property is made up of seven parcels and comprises approximately 51.85 acres. According to the MEARNG title for the eastern property, the original 19.01-acre parcel was

licensed to the state of Maine Department of the Air Force in 1968 to be used for ARNG purposes. Since then, the MEARNG has leased an additional six parcels from the city of Bangor. The main operational buildings on the eastern property include Field Maintenance Shop (FMS) #3, an Aviation Readiness Center, and an Army Aviation Support Facility (AASF). Ground equipment maintenance occurs at FMS #3, and maintenance of helicopters occurs at the AASF. The AASF also serves as the flight operations center for the Aviation Companies. There are also several support buildings at the facility, including an aircraft hangar used for cold storage, a covered fuel tanker building that provides secondary containment for refueling vehicles, a Controlled Humidity Storage Building used for cold storage, and a concrete block building used as for petroleum, oil, and lubricants (POL) and hazardous materials storage (CES, Inc., 2017). The MEARNG title for the eastern property is included in **Appendix A**.

1.5 Facility Environmental Setting

Section 1.5 presents information taken from several sources, including the 2011 Environmental Baseline Study for the MEANRG Parcel 3 on the Bangor Training Site western property (Summit Environmental Consultants, Inc., 2011), the 2015 MEARNG Integrated Cultural Resources Management Plan Update (MEARNG, 2015), and the 2017 Integrated Contingency Plan for the facility (CES, Inc., 2017). The Bangor Training Site lies within the Coastal Province of Maine and is characterized by relatively flat terrain. Topographic relief in this region area is largely influenced by structural features greatly modified by Pleistocene glaciation (Hunt, 1974). The facility is approximately three miles west of the confluence of the Kenduskeag Stream and Penobscot River. Two small tributaries originate within the Bangor Training Site western property.

According to the United States Geological Survey (USGS) 7.5 Minute Bangor quadrangle, the elevation of the western property ranges from 150 to 225 feet (ft) above mean sea level (amsl) (USGS, 1981). The most conspicuous elevation change is associated with a hill in the southern part of the property, near the FAA tower. The remaining portions of the facility slope gently to the west, toward Hermon Bog (Summit Environmental Consultants, Inc., 2011). At the adjacent MEANG base, construction has modified the ground surface and reduced topographic relief to approximately 65 ft at elevations ranging from 170 to 240 ft amsl (Amec Foster Wheeler, 2018). A similar elevation is anticipated at the Bangor Training Site eastern property.

1.5.1 Geology

Section 1.5.1 presents information taken from the 2018 MEANG Final FY16 Phase 1 Regional SI for Perfluorinated Compounds at the adjacent Bangor Air National Guard Base (Amec Foster Wheeler, 2018). The Bangor Training Site is situated within the folded and faulted, metamorphosed, Paleozoic strata of the northeast trending Kearsarge-Central Maine Synclinorium. The oldest known rocks consist of interbedded pelite and sandstone overlain by mafic to felsic volcanic rock of Cambrian and Ordovician age. These rocks are unconformably overlain by late Ordovician-early Silurian age beds (Vassalboro Formation) of fine to medium grained feldspathic graywacke with layers or lenses of phyllite (Griffin, 1976).

Regional overburden materials include the glacial moraine deposits of the Presumpscot Formation, glacial-stream deposits, and till. The Presumpscot Formation consists of silt, clay, and sand washed from glacial ice and deposited on the ocean floor during the Late Wisconsin (Pleistocene) glacial stage (Thompson, 1977). The formation can range up to 125 ft in thickness and is locally fossiliferous. Clayey-silts characterized by low permeability and poor drainage typify the Presumpscot Formation near the facility. Glacial-stream deposits consist of well-sorted sands and gravels deposited in layers by meltwater streams and currents during Late Wisconsin deglaciation. The deposits are commonly overlapped or entirely buried by the Presumpscot Formation and include kames and kame terraces, deltas, kettles, eskers, and outwash plains (Thompson, 1977). The glacial-stream deposits located nearest the facility are found along the

Kenduskeag Stream. Glacial till is composed of a heterogeneous mixture of clay, silt, sand, gravel, cobbles, and boulders deposited directly by glacial ices. One of two varieties (basal or ablation) may be present in the area. Basal till is fine-grained, very compact, and exhibits low permeability and poor drainage. Ablation till consists of loose, sandy to stony material, characterized by moderate permeability and fair to good drainage. Glacial till generally overlies bedrock, but may overlie or include sand and gravel (Thompson, 1977).

Subsurface soils encountered near the Bangor Training Site eastern property during a 1997 MEANG SI (ABB-ES, 1997) at the adjacent MEANG base generally consisted of clay to silty clay, silt, silty sand, or sand with trace to some gravel. Loose to medium dense soils overlying dense or very dense materials were encountered and were characterized as typical of the glacial till deposits as described by Thompson (1977) for the Bangor quadrangle. Bedrock was encountered at 4 to 16 ft below ground surface (bgs) in the borings that encountered bedrock. The bedrock appeared to be Vassalboro Formation, as shown in **Figure 1-2**, and consisted of dark gray Phyllite with quartz stringers. Wet fracture zones were encountered.

Bedrock outcrops exist throughout the Bangor Training Site western property. A preliminary geotechnical investigation was completed by Summit Geoengineering Services in August 2005 in support of the RTI construction; soil in the vicinity of the western property generally consists of topsoil/forest duff overlying a thin layer of sandy glacial alluvium overlying glacial marine and/or glacial till deposits overlying bedrock. Glacial till was encountered at shallow bedrock areas at higher elevation while the glacial marine deposits were generally encountered at lower elevation areas. Bedrock was encountered at depths ranging from 1.5 inches to 15.5 ft. Soft glacial marine silty clay layers were also encountered at the northern and western edges of the investigation area adjacent to wetland systems (Summit Environmental Consultants, Inc., 2011).

1.5.2 Hydrogeology

Information in this section was drawn from the 2018 MEANG Final FY16 Phase 1 Regional SI for Perfluorinated Compounds at the adjacent Bangor Air National Guard Base (Amec Foster Wheeler, 2018). The facility lies within the lower Penobscot River Basin, which covers an area of approximately 825 square miles. The largest supplies of groundwater in the basin occur in the unconsolidated deposits formed by glaciofluvial processes. Under favorable conditions, as much as 1,000 gallons of water per minute (gpm) may be obtained from wells constructed in ice-contact deposits (Prescott, 1964).

The nearest sand and gravel aquifers are located over three miles southwest of the facility, at the southern end of Hermon Bog (Foster & Smith, 1992). The bedrock formations in the lower Penobscot River Basin are sparsely fractured, and groundwater is generally only present in these secondary openings. Hydraulic continuity varies widely depending on the size of the fractures. A 1964 survey of 613 bedrock wells in the lower Penobscot River Basin found that groundwater yields ranged from less than 0.5 to 100 gpm (Prescott, 1964). Drinking water at the Bangor Training Site is provided by the Bangor Water District. An active potable well also used for drinking water exists on the western parcel, which has tested positive for PFAS. This well is sampled quarterly for PFAS and is discussed further later in this section.

During a 1997 MEANG SI, groundwater at the adjacent Air National Guard (ANG) base existed at depths of 8 to 23 ft bgs (ABB-ES, 1997). The water table appeared to be present in the overburden at the southern portion of the MEANG base (closer to the Bangor Training Site), and in the bedrock at the northern end of the base. Groundwater levels in MEANG monitoring wells ranged from approximately 1 to 15 ft bgs, with a fluctuation of 1 to 4 ft higher in the spring. Groundwater in overburden and bedrock appeared to constitute the same aquifer. Groundwater at the MEANG base flows southeast, towards the Penobscot River; however, local groundwater flow conditions in the overburden till may be locally influenced by large structures that extend below the surface and extend across large surface areas on the various properties across Bangor

International Airport. Average hydraulic conductivity values were 4.09 x 10^{-3} ft per minute for bedrock wells, and 5.0074 x 10^{-3} ft per minute for overburden wells (ABB-ES, 1997).

A 2015 Environmental Data Resources, Inc. (EDR) Radius Map™ Report with Geocheck® for the MEANG base listed eight water wells within a one-mile radius of MEANG base (BB&E, 2015). Of these wells, three appear on the US Geological Survey (USGS) database, which usually lists monitoring or test wells, and five are listed in the State database. Two of the wells on the State database are listed as commercial use, and three are listed as domestic use (BB&E, 2015). Based on the interpreted southeasterly groundwater flow direction, these wells are upgradient and side gradient from the MEANG base and Bangor Training Site (Amec Foster Wheeler, 2018).

Data from the MEANG 2018 SI indicate that concentrations of PFOS and PFOA in groundwater beneath the MEANG base exceed the USEPA Drinking Water Health Advisory. Based on the presence of PFOA and PFAS in groundwater beneath the MEANG base and southeasterly groundwater flow, there is potential for PFOA and PFAS migration beneath the MEARNG Bangor training Site (Amec Foster Wheeler, 2018).

Groundwater flow direction on the western MEARNG property, based upon topography, is anticipated to generally flow west-northwest. The Maine Significant Sand and Gravel Aquifer Map, Bangor Quadrangle, indicates that the western property is not located on or near a mapped sand or gravel aquifer (Summit Environmental Consultants, Inc., 2011).

A 2018 EDR Radius Map™ Report with Geocheck® for the western MEARNG property listed three wells not previously identified in the 2015 EDR Radius Map™ Report within a one-mile radius of the facility; all three wells are listed in the State database (**Appendix A)**. Two of the wells are listed for domestic use, and one well is listed for commercial use. The wells are located northwest and southeast of the western property, which is side gradient, based on an inferred westerly groundwater flow direction.

Additionally, the MEARNG sampled water from a drinking water well supplying a training facility at the RTI on 16 May 2017 for PFAS. Although several PFAS compounds were detected above reporting limits, neither PFOA (4.47 ng/L) nor PFAS (not-detected) exceeded the MEDEP Maximum Exposure Guideline concentration of 70 ng/L. Tabulated results from this sampling event are included in **Appendix A**. Due to the 2017 PFAS detections in drinking water, sampling for PFAS was mandated by the ARNG. Water from the RTI bathroom sink on the MEARNG western property is sampled quarterly for PFAS. PFOA was detected in the August 2018 sample at 24.7 ng/L; PFOS was not detected. Concentrations of remaining PFAS compounds ranged from not detected to 137 ng/L. The August 2018 sample concentration of PFOA increased from the 9.98 ng/L concentration observed in June 2018. Laboratory results from the August 2018 sampling event are included in **Appendix A**, and Groundwater features are shown on **Figure 1-2**.

1.5.3 Hydrology

No surface water features are present on the MEARNG Bangor Training Site eastern property. The “Domestic Channel”, which is a channelized portion of Birch Stream, abuts the property to the west-northwest and is the nearest surface waterbody. Storm water runoff from the facility flows into storm drains located on the property and in the vicinity, and drain to the Domestic Channel. The Domestic Channel/Birch Stream drains into the Kenduskeag Stream (CES, Inc., 2017), which is located approximately one mile northeast of the facility.

According to the 2013 Environmental Baseline Study performed at the western property, a natural pond is used as a storm water retention pond along the access road southeast of the AFRC. Two water containing “pot holes” are located within the forested portion of the property, south of the AFRC compound. According to MEARNG personnel, the “pot holes” are likely rip-rap lined energy

dissipaters at culvert outlets. Storm water runoff associated with the AFRC complex drains primarily in two directions; storm water from paved areas to the northeast and southeast of the AFRC drains southeast toward the retention pond, storm water from the southwest parking lot and roadway drains southward into a natural wetland located to the south of the parking area. Surface water from the RTI is diverted to outfalls located to the west of the RTI that feed into Shaw Brook, a riverine wetland. Surface water from the northern portion of the property drains toward the west into Hermon Bog (Summit Environmental Consultants, Inc., 2011).

Based upon the topography of the facility (approximately 150 to 225 feet amsl) and the lack of nearby flooding sources, it is unlikely that the facility would experience a major flood event.

The US Fish and Wildlife Service (USFWS) National Wetlands Inventory Map identified several small wetland areas within the boundaries of the eastern property. These areas include freshwater forested wetlands, freshwater emergent wetlands, a freshwater pond, and a permanently flooded riverine habitat (USFWS, 2019). Surface water features are presented on **Figure 1-3**.

1.5.4 Climate

Bangor is located less than 50 miles from the Atlantic Ocean and within 30 miles of Penobscot Bay. The climate of Bangor is categorized as humid continental with cold, snowy winters and warm summers. The weather in Bangor is influenced by air masses that originate from several general regions. Continental air masses originating in the North America polar region consist of dry, cool air. Warm maritime air masses can originate either from the subtropical Atlantic Ocean or Gulf of Mexico, and cold maritime air masses can originate from the sub-polar regions of the North Atlantic. Air masses that flow into Maine often originate in the prevailing westerlies (Amec Foster Wheeler, 2018).

The average temperature ranges from 10.8 degrees Fahrenheit (°F) in the winter to 77.3°F in the summer, with an annual average temperature of 44.3°F. Bangor receives an average annual precipitation in rainfall of 41.93 inches, and an average annual precipitation in snowfall of 66 inches (National Oceanic and Atmospheric Administration, 2019). Rainfall is fairly evenly distributed throughout the year, with the wettest month being November, and the driest month being January. Snowfall generally occurs in November to April, with most snowfall occurring between December and March.

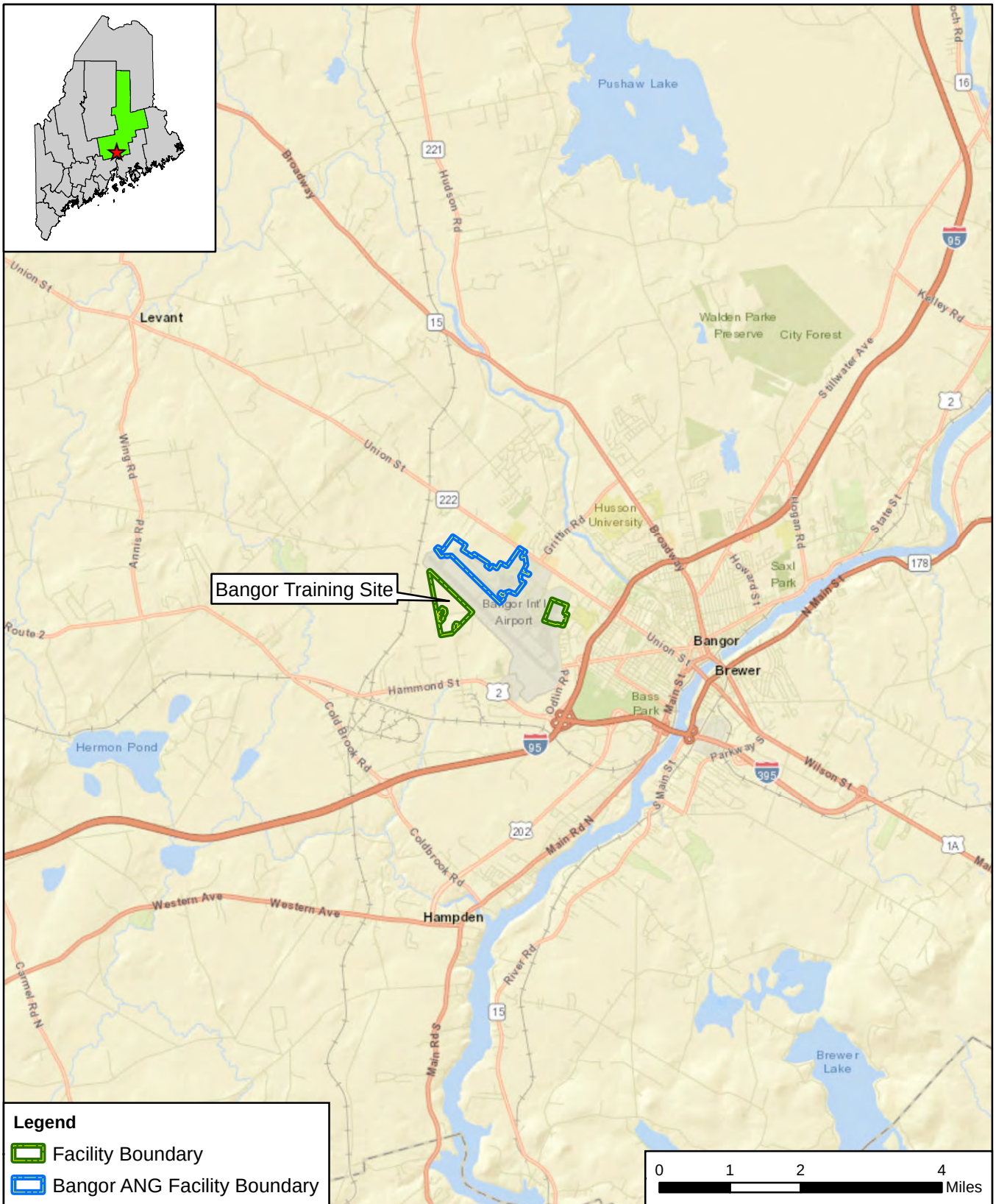
1.5.5 Current and Future Land Use

The MEARNG Bangor Training Site is used for the maintenance of rotary wing aircrafts and ground vehicles. Activities carried out at the facility include administrative and financial services, training of personnel, warehousing of supplies and equipment, building maintenance and repair, and vehicle maintenance and repair.

Land use around the Bangor Training Site is consistent with the city of Bangor Zoning for Airport Development District. The Bangor International Airport runway divides the eastern and western properties. The eastern property is located within the Bangor International Airport complex, which is surrounded by mixed land use that includes commercial/industrial and business enterprise parks, a mobile home park and cemetery to the southwest, University College to the northeast, and Bangor Municipal Golf Course to the southeast. The MEANG Air Base and Bangor International Airport terminal and parking areas bound the eastern property to the northwest. The western property is bounded by the Bangor International Airport runway to the northeast, and by undeveloped and industrial areas in every other direction.

Prior to the opening of Bangor International Airport in 1931, the area surrounding the airport (including the Bangor Training Site western property) was primarily agricultural property. After the development of the airport, portions of the surrounding area were developed as industrial

property. In the early 1940s, the Dow Air Field Military Base was developed in the area as a military installation, which remained in operation until 1968. From 1968 to the present day, parcels of land associated with the former Dow Air Field Military Base have been developed as commercial properties (Summit Environmental Consultants, Inc., 2011).



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	5/16/2019	GIS BY	MS	5/16/2019
SCALE	1:126,720	CHK BY	JW	5/16/2019
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI,		PM	RG	5/16/2019

Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

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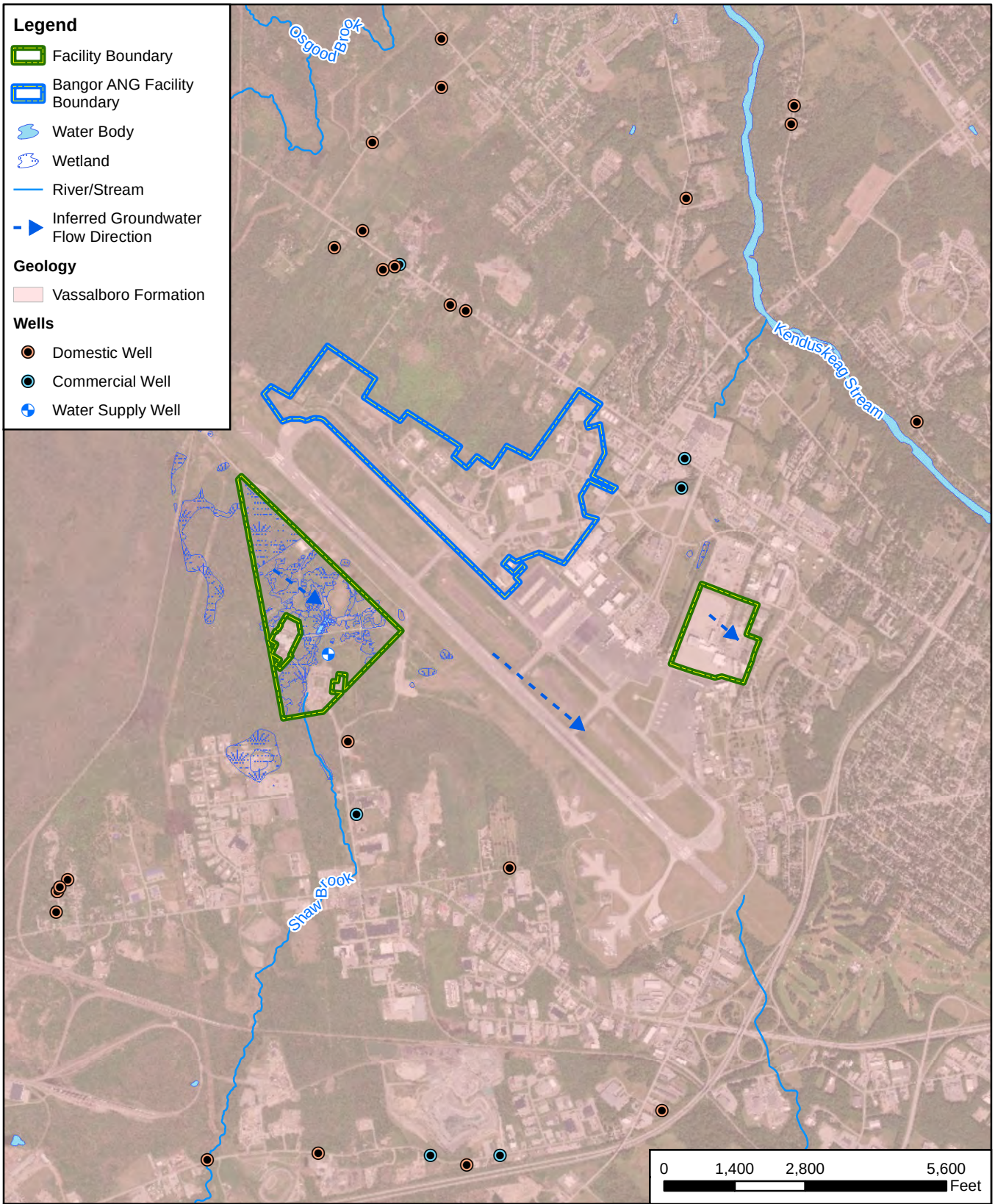

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	7/16/2019	GIS BY	MS	7/16/2019
SCALE	1:33,600	CHK BY	JW	7/16/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/16/2019

N

Groundwater Features

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-2

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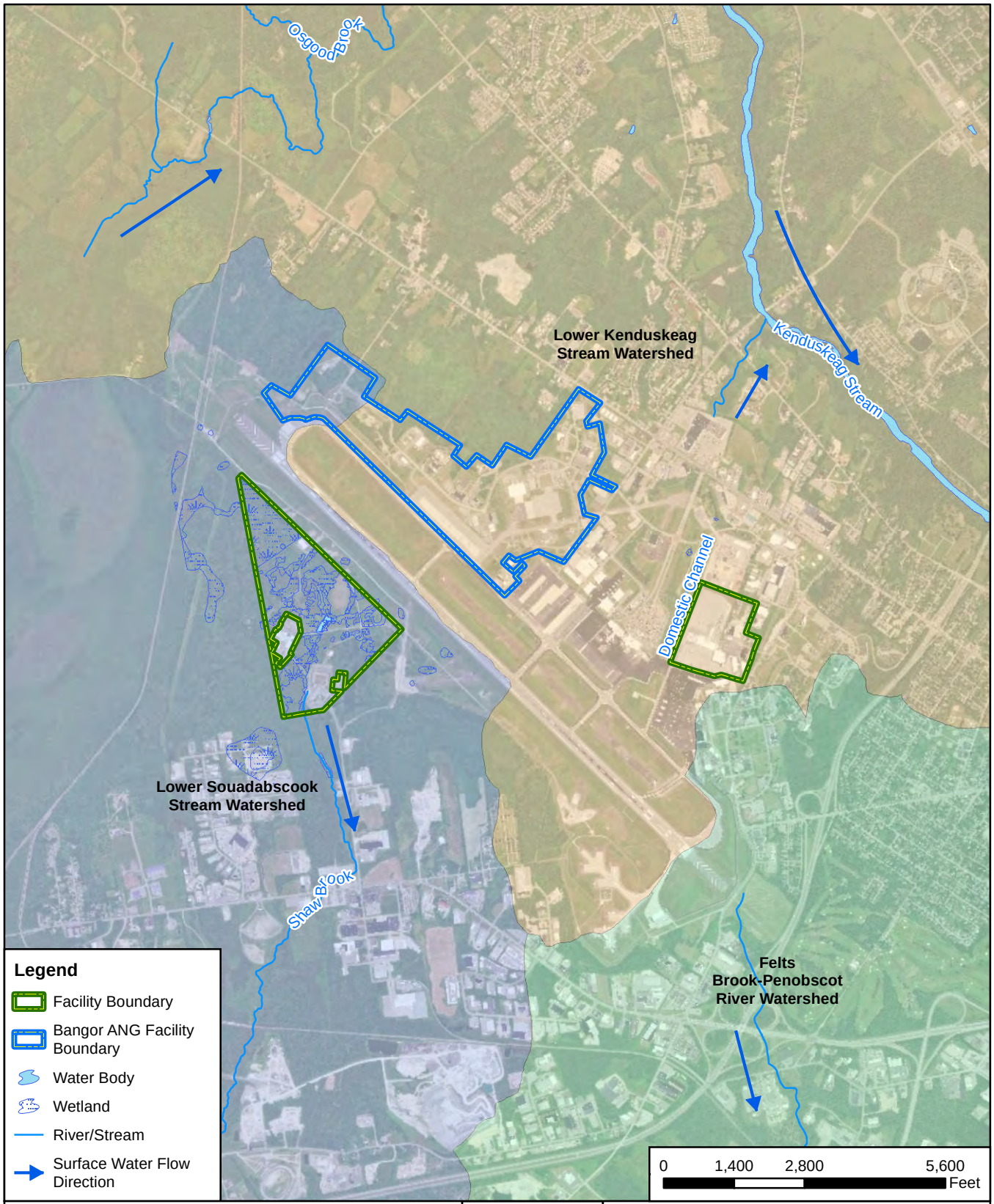

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	5/16/2019	GIS BY	MS	5/16/2019
SCALE	1:33,600	CHK BY	JW	5/16/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/16/2019

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

No FTAs were identified at the Bangor Training Site eastern and western properties during the PA. MEARNG personnel confirmed that training with mobile AFFF fire extinguishers has never been performed by MEARNG on- or off-facility. Before mobile AFFF fire extinguishers were disposed of in 2012, they were tested by contractors off-facility. Because the MEANG fire department and City of Bangor Fire Department are responsible for providing emergency response in the vicinity of the MEARNG facility and the Bangor International Airport, the MEARNG has never trained with AFFF at the Bangor Training Site.

A former Dow Air Force Base (AFB) FTA exists off facility and west of the Bangor International Airport runway; this FTA is discussed further in **Section 5**.

3. Non-Fire Training Areas

Non-FTAs on both the eastern and western properties of the Bangor Training Site were investigated during the PA. A description of each non-FTA is presented below, and they are shown on **Figure 3-1**, with photographs appearing in **Appendix C**.

3.1 Bangor Training Site Eastern Properties

3.1.1 Building 254 (Cold Storage Hangar)

Building 254 is an aircraft hangar currently used for the cold storage of rotary wing aircraft located in the southeastern portion of the Bangor Training Site eastern property. The building was historically used for aviation maintenance but was transitioned to a cold storage hangar in the 1980s. It contains a fire suppression system, including a 300-gallon tank containing Ansul Jet-X 2% High Expansion Foam Concentrate, powered by diesel fire pumps and diesel fuel tanks. Additionally, five 55-gallon drums also containing Ansul Jet-X 2% High Expansion Foam Concentrate are stored within the building's fire suppression system room. The Safety Data Sheet for the Ansul product stored in Building 254 (**Appendix A**) does not include PFAS in its composition, but only lists hazardous components. The Data Sheet for the product (**Appendix A**) states that it uses a hydrocarbon surfactant; however, no material information definitively states that Ansul Jet-X 2% High Expansion Foam Concentrate does not include PFAS. Additional dry chemical handheld fire extinguishers are stored within the building.

Building 254 is protected via a linear heat wire detection system. Triggering the heat wire detection system results in flooding the hangar bays with high expansion foam from the fire suppression system via overhead shafts. Annual, quarterly, and other regularly scheduled maintenance is performed on the fire suppression system that does not result in suppression system contents releases.

According to the MEARNG Building Control Supervisor and Operations Officer, the building fire suppression system was tested once between 2013 and 2018. The test involved the full release of the 300-gallon high expansion foam tank and resulted in approximately 4 ft of standing foam inside the building. The test was completely enclosed, and sprayed foam was left to dry in place. After the foam dried, it was collected, containerized, and disposed of as municipal trash. MEARNG personnel stated that the Jet-X 2% High Expansion Foam did not escape the building to site media during the release.

Floor drains in fire suppression room of the Building 254 discharge to the municipal sanitary system (CES, Inc., 2017). Stormwater runoff from areas west and south of Building 254 flows to catch basins south and west of the building. The catch basins direct stormwater via drainage pipes towards the southwest side of Building 260 and discharge to the Domestic Channel.

3.1.2 Building 260 (Army Aviation Support Facility)

Building 260 comprises the AASF on the Bangor Training Site eastern property, and it consists of hangars and landing pads for helicopters along with flight operations offices. Maintenance and repair on rotary wing aircraft are conducted in the three hangars at the AASF; helicopter refueling is conducted on the tarmac to the north and west of the AASF. Paved tarmac/apron areas along the south-southwest and north-northeast sides of the AASF serve as exterior staging/parking areas for rotary and fixed wing aircraft. The fire suppression system that serves the AASF hangars comprises two 1,200-gallon AFFF tanks: one tank contains National Foam Centurion 3% AFFF concentrate, the other contains Buckeye BFC-3.1 Platinum 3% AFFF concentrate. The deluge fire suppression system was installed in 2003 during the construction of new hangar space and is the only AFFF fire suppression system on the MEARNG property. Safety Data Sheets for

National Foam Centurion 3% AFFF concentrate and Buckeye BFC-3.1 Platinum 3% AFFF concentrate are included in **Appendix A**. Two 55-gallon storage drums that contain residual AFFF are also kept in the AASF fire suppression room. Water sprinklers service the AASF office and supply areas. The city of Bangor public water supply hydrant serves as the firefighting water source for the AASF. More than 100 dry chemical fire extinguishers are also staged throughout the AASF.

During the 2003 installation of the AFFF fire suppression system at the AASF, a small quantity of AFFF concentrate was inadvertently released from the AFFF tanks to pipes within the building. The exact volume of the release is unknown. MEARNG staff stated during interviews that AFFF did not migrate further than the building confines, and that the pipes AFFF was released to were replaced.

In 2011, an incidental release of AFFF resulted from the malfunction of a gasket on one of the AFFF tank isolation valves. Approximately 1,200 gallons of Buckeye BFC-3.1 Platinum 3% AFFF concentrate were released, resulting in 7 ft of standing foam inside the fire suppression pump room. The AFFF drained into the fire suppression room floor drains and traveled via city sanitary system pipes to the city of Bangor treatment plant. No AFFF was observed to have escaped the fire suppression room. City sanitary system piping received all the released AFFF not captured in the fire suppression room.

In 2016, another incidental release from the AFFF tanks caused by triggering an incorrectly identified solenoid resulted in 30 gallons of Buckeye BFC-3.1 Platinum 3% AFFF solution spilling across the ramp outside the fire suppression room and into a sump designed to capture runoff. The AFFF solution escaped the suppression room through the 2-inch main drain line to the exterior ramp. According to MEARNG staff, the standing foam reached an approximate height of 1 ft on the ramp outside the fire suppression room. The sump does not have an outlet or discharge drain. The AFFF solution in the sump did not reach a height capable of migrating to the main stormwater sewer. All AFFF was captured and contained within the ramp area and the sump, and the released AFFF was subsequently vacuumed out of the sump in a controlled manner.

Additionally, MEARNG staff confirmed that AFFF Tri-Max™ fire extinguishers were previously stored on the parking areas at the AASF. Testing and maintenance of the mobile Tri-Max™ fire extinguishers were performed off facility by private contractors. The Tri-Max™ extinguishers were returned to the MEARNG Camp Keyes in 2012 under the purview of the US Property and Fiscal Office (USPFO). All AFFF procurement for the Bangor Training Site occurs through the USPFO.

A Flammable and Combustible Storage Building is present to the northeast of the AASF and is used for storage of POLs and small quantities of hazardous materials including alcohols, paints, and corrosives used at the AASF. As such, the AASF is considered a small quantity hazardous waste generator and has been assigned an individual hazardous waste generator.

The majority of AASF stormwater runoff is collected in catch basins and a storm drain southwest of the AASF, which discharges to a drainage channel. A small amount of storm water flows to the north of the AASF and is collected in a catch basin at the northwest corner of the AASF, which also flows to the drainage channel.

Oil water separators (OWSs) at the facility serve as secondary containment for spills associated with the AASF. Three 1,000-gallon OWSs are located outside of the AASF. The first OWS is located west of Hangar B and receives water from Hangar B's floor drain system. The second OWS is located north of Hangar C and receives water from Hangar C's floor drains and the indoor wash rack. The third OWS is located at the southeast corner of the AASF and receives water from the floor drains in Hangar A and the exterior helicopter engine wash rack. All three OWS's discharge to the sanitary sewer.

There are also two wash racks at the AASF. An exterior helicopter engine wash rack is located south of the AASF. Wash water generated at this wash rack flows through the OWS located near the southeast corner of the building prior to discharge to the sanitary sewer. An indoor wash rack located in the northwest corner of Hangar C drains to the OWS located north of Hangar C prior to discharge to the sanitary sewer system.

3.1.3 Building 250 (FMS #3)

Building 250 comprises the FMS #3 at the Bangor Training Site and is located on the eastern property. Building 250 is used primarily for vehicle storage and maintenance. Unit-level maintenance is performed on engineering equipment, wheeled vehicles, material handling equipment, and power generators. Maintenance activities include filter and fluid changes, Preventative Maintenance Checks and Service, battery service, parts cleaning, and repairs. The FMS #3 is served by a water sprinkler fire suppression system. No AFFF is used or stored at Building 250. FMS #3 fire alarms alert the contracted local security company, which in turn evaluates the severity of the emergency and contacts the Bangor Fire Department as needed. Dry chemical fire extinguishers are staged inside the building as well as outside in the fuel pump island area (CES, Inc., 2017).

Stormwater runoff at the FMS #3 is directed to a series of catch basins and storm drains east and south of Building 250. An under-drained soil filter northwest of FMS #3 receives stormwater runoff. This flow, along with aboveground flow and the storm drains, converge at a manhole-covered catch basin immediately west of FMS #3. Storm water flow is then discharged offsite into a drainage channel (CES, Inc., 2017).

Three OWSs are associated with FMS #3. One 350-gallon OWS is located inside FMS#3, near the interior, eastern wall. The two trench drains from the western section of the building flow into the OWS, which discharges to the sanitary sewer. A second 350-gallon OWS is located on the southwest exterior of the building. Trench drains in the eastern section of the building flow into this OWS before discharging to the sanitary sewer.

There is one wash rack at FMS #3 located outside and immediately south of the building. Wash water generated at this wash rack discharges directly to the sanitary sewer (CES, Inc., 2017).

3.1.4 Building 262 (Covered Fuel Truck Building)

The Covered Fuel Truck Building is located northeast of the Building 260 and includes a containment berm with an 8,000-gallon capacity and no drain outlet. The building accommodates up to six vehicles. Vehicles loaded with fuel are parked under cover and within a containment berm. The tankers are moved outside for fueling aircraft and then are moved back in the containment area. There is no fire suppression system at the Covered Fuel Truck Building; fire alarms notify the Bangor International Airport Crash Fire Department for emergency response.

3.2 Bangor Training Site Western Properties

3.2.1 Armed Forces Reserve Center (AFRC)

The AFRC complex (approximately 4.5 acres) is located southwest of the Bangor International Airport runway, on the MEARNG Bangor Training Site western property. The AFRC includes the AFRC main building (classrooms and administrative offices), vehicle parking compounds, fueling pad, a covered wash rack, and a cold storage building. According to MEARNG staff, the covered wash rack has never been used for vehicle maintenance. The AFRC complex was constructed in 1992, and according to MEARNG staff, has never been used for AFFF training or storage. No incidents have occurred at the AFRC complex that would require emergency response or fire

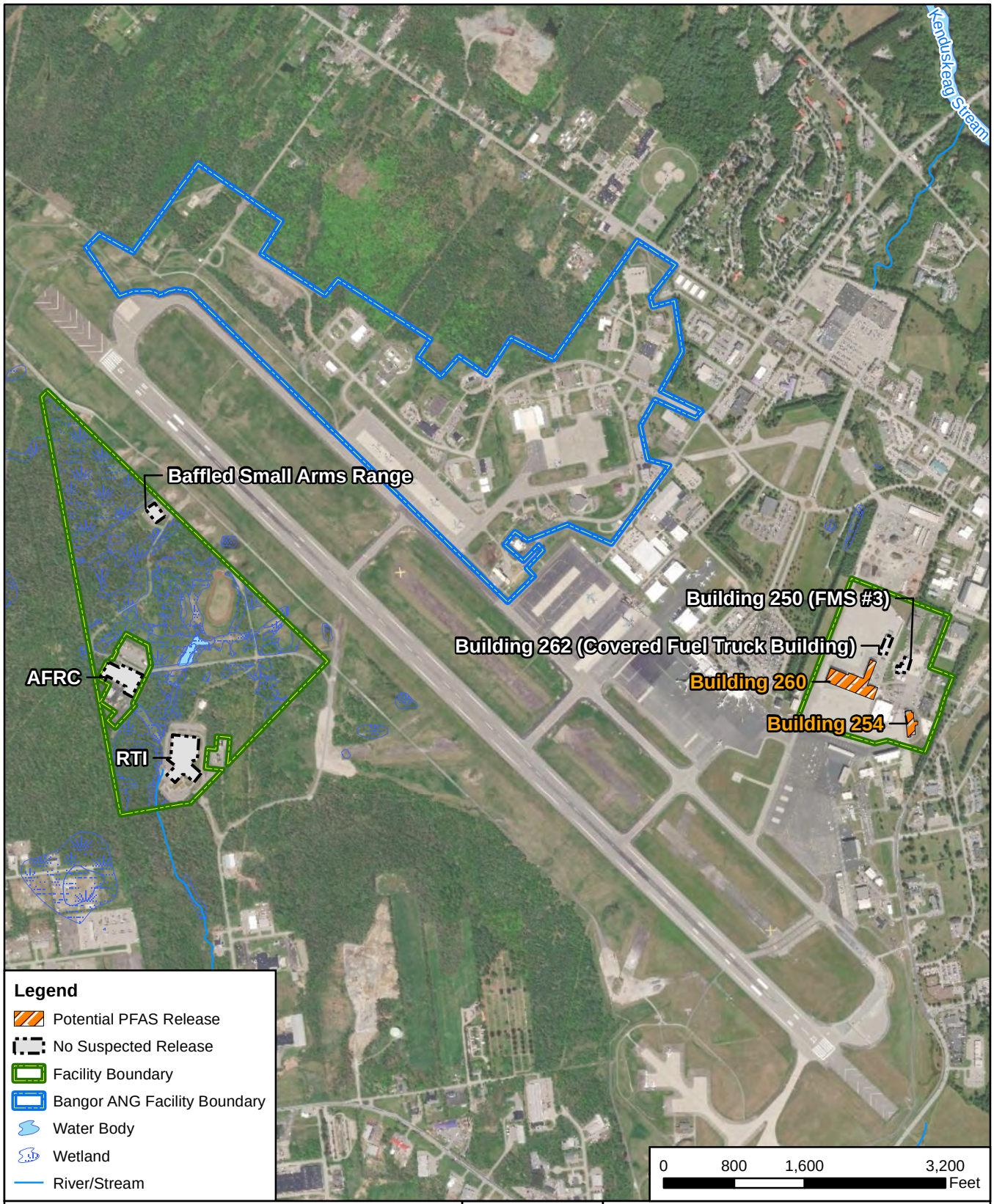
suppression. The City of Bangor Fire Department is responsible for responding to emergencies at the Bangor Training Site western property. The fire suppression system at the AFRC complex uses only water. No mobile AFFF fire extinguishers are stored at the complex, and the kitchen is supplied with Ansul K-Guard Fire Extinguishers. The Ansul K-Guard fire extinguisher is a Class A fire extinguisher that uses Ansulex Low pH Liquid Fire Suppressant. The data sheet for Ansulex Low pH Liquid Fire Suppressant is included in **Appendix A**.

3.2.2 Regional Training Institute (RTI)

The RTI complex (approximately 10 acres) is also located on the Bangor Training Site western property and includes the RTI building and associated paved parking areas. Construction of the RTI was completed in 2012, and similarly to the AFRC, MEARNG staff stated during interviews that the RTI has never been used for AFFF training or storage, nor have any incidents occurred requiring AFFF fire suppression. The fire suppression system at the RTI uses only water. No mobile AFFF fire extinguishers are stored at the complex, and the kitchen is supplied with compressed nitrogen fire extinguishers. The City of Bangor Fire Department is responsible for responding to emergencies at the RTI.

3.2.3 Baffled Small Arms Range

The MEARNG Bangor Training Site western property includes a baffled small arms range east of the AFRC complex, along the MEARNG property boundary with the Bangor International Airport runway. The area includes storage buildings, a storage container, a dry vault, and restroom, in addition to the range. The firing range was previously constructed as a wood-baffled range but has been reconstructed with steel baffles. MEARNG staff stated during interviews that no fire suppression system exists at the baffled small arms range, and that it has never been used for the AFFF training or storage. No information gathered during the VSI and interviews indicates that PFAS have been released to the environment at the baffled small arms range.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	11/6/2019	GIS BY	MS	11/6/2019
SCALE	1:19,200	CHK BY	JW	11/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	11/6/2019

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Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

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4. Emergency Response Areas

MEARNG and MEANG staff confirmed that no known crashes requiring AFFF fire suppression have occurred to their knowledge or during their collective tenure (spanning 1983-present) at the MEARNG Bangor Training Site properties. Emergency fire suppression systems have been incidentally triggered and released AFFF, but never in response to a true emergency. Numerous crashes have occurred at the Bangor International Airport; however, the use of AFFF in response to crashes is unknown.

Emergency responses to crashes sometimes require flame suppression, which may result in the release of PFAS to the environment in the form of AFFF. No locations involving the potential release of AFFF were identified within the MEARNG Bangor Training Site boundary during the VSI.

5. Adjacent Sources

Several potential PFAS sources adjacent to the Bangor Training Site were identified during the PA and are discussed below. **Figure 5-1** presents the location of potential adjacent PFAS sources.

5.1 Bangor Air National Guard Base

The Bangor ANG Base is located at the Bangor International Airport, approximately 0.5 miles northwest of the MEARNG Bangor Training Site eastern property. The Base encompasses approximately 314 acres of land leased from the city of Bangor and the Dow AFB. The MEANG has conducted a PA (BB&E, Inc., 2015) and an SI (Amec Foster Wheeler, 2018) for PFAS at the Bangor ANG Base (**Appendix A**). Based on the PA results, twelve areas at the MEANG facility were identified as potential PFAS release areas; they are identified in **Table 5-1** below.

Table 5-1: Bangor Air National Guard Base PFAS Release Locations

Potential MEANG Release Area	Nature of Release or Potential Release
Building 542 (Fuel Cell Repair Hangar)	Known release by AFFF fire suppression system during system testing.
Building 496 (Former Main Hangar)	Known releases of AFFF to interior trench drains and outside catch basins via fire suppression system.
Fire Department Current Nozzle Testing Location (East of Building 542)	Known releases of PFAS to grass via nozzle testing with AFFF since 2000.
Fire Department Current Nozzle Testing Location (East End of Taxiway C)	Known releases of PFAS on paved area via nozzle testing with AFFF since 2000.
Fire Department Historic Nozzle Testing Location	Known releases of PFAS via historic nozzle testing.
Dry Detention Basin	The basin receives drainage from known AFFF release areas (Fuel Cell Repair Hangar and Fire Department Current Nozzle Testing Locations).
Building 512 (Current Fire Department)	AFFF is stored and used within the building. Vehicle washing is also conducted within the building.
Former Fire Department	AFFF was stored and used within the building. Vehicle washing was also conducted within the building.
Building 515 (Flight Line)	Fire Department AFFF trailers are stored within the building.
Building 415 (Central Accumulation Point)	Used for waste AFFF storage.
Building 493 (Base Supply)	Used for surplus AFFF storage.
Dry Detention Pond	The dry detention pond receives drainage from known AFFF release areas (Historic Nozzle Testing Location)

Of the twelve areas listed above, the PA conducted by MEANG recommended moving forward to an SI at nine of the locations. The 2018 SI found no PFAS concentration exceedances of screening criteria in soil or sediment samples; however, PFAS concentrations in groundwater

exceeded the USEPA Drinking Water Health Advisory (70 ng/L) in samples collected at eight of the nine locations. Further groundwater and soil investigations were recommended by the SI at all nine locations, as well as a surface water investigation at one location (Amec Foster Wheeler, 2018).

5.2 Fuel Strike Incident Location – Bangor International Airport

According to interviews with MEANG staff, a release of AFFF occurred in recent years within the Bangor International Airport property, on the tarmac area near the southwestern corner of the MEARNG Bangor Training Site eastern property. During construction activities, a fuel line was struck, causing a fuel release to the paved surface. The MEANG fire department responded to the incident by spraying AFFF across the fuel spill area to prevent a fire. The exact date of the incident as well as the volume and type of AFFF released are unknown. The area MEANG staff described where the incident occurred as a paved surface between the MEARNG property and the Bangor International Airport, south of the Domestic Channel. It is possible AFFF released to this area may have infiltrated the subsurface soil via cracks in the pavement, the grassy areas north and south of the incident, and the Domestic Channel.

5.3 Former Dow Air Force Base FTA

A former Dow AFB FTA exists off-facility, west of the Bangor International Airport runway, and east of the MEARNG eastern property. According to the 2011 Environmental Baseline Survey for the MEARNG Bangor Training Site western properties, the former Dow AFB FTA was used by the Air Force, the National Guard, and the city of Bangor for fire training from 1947 to 1984. During training, flammable liquids (including JP-4 fuel, cleaning solvents, hydraulic fluids, paint thinners and motor oil) and solid wastes (including fuel filters and tires) were burned or deposited at various pits within the FTA (Summit Environmental Consultants, Inc., 2011). MEANG fire department staff stated during interviews that the former FTA was used by the Air Force and city of Bangor for fire training. According to the MEANG 2015 PA, the FTA was located on property transferred from the Dow AFB to the MEANG, but it is unclear whether the MEANG ever used the FTA for training (BB&E, Inc., 2015). The property has since been relinquished by the MEANG. A Notice of Potential Liability from the MEDEP dated 17 October 2017 identifies the US Air Force, the MEANG, and city of Bangor as responsible parties under Maine's Uncontrolled Hazardous Substance Sites law and CERCLA. The notice is included in **Appendix A**.

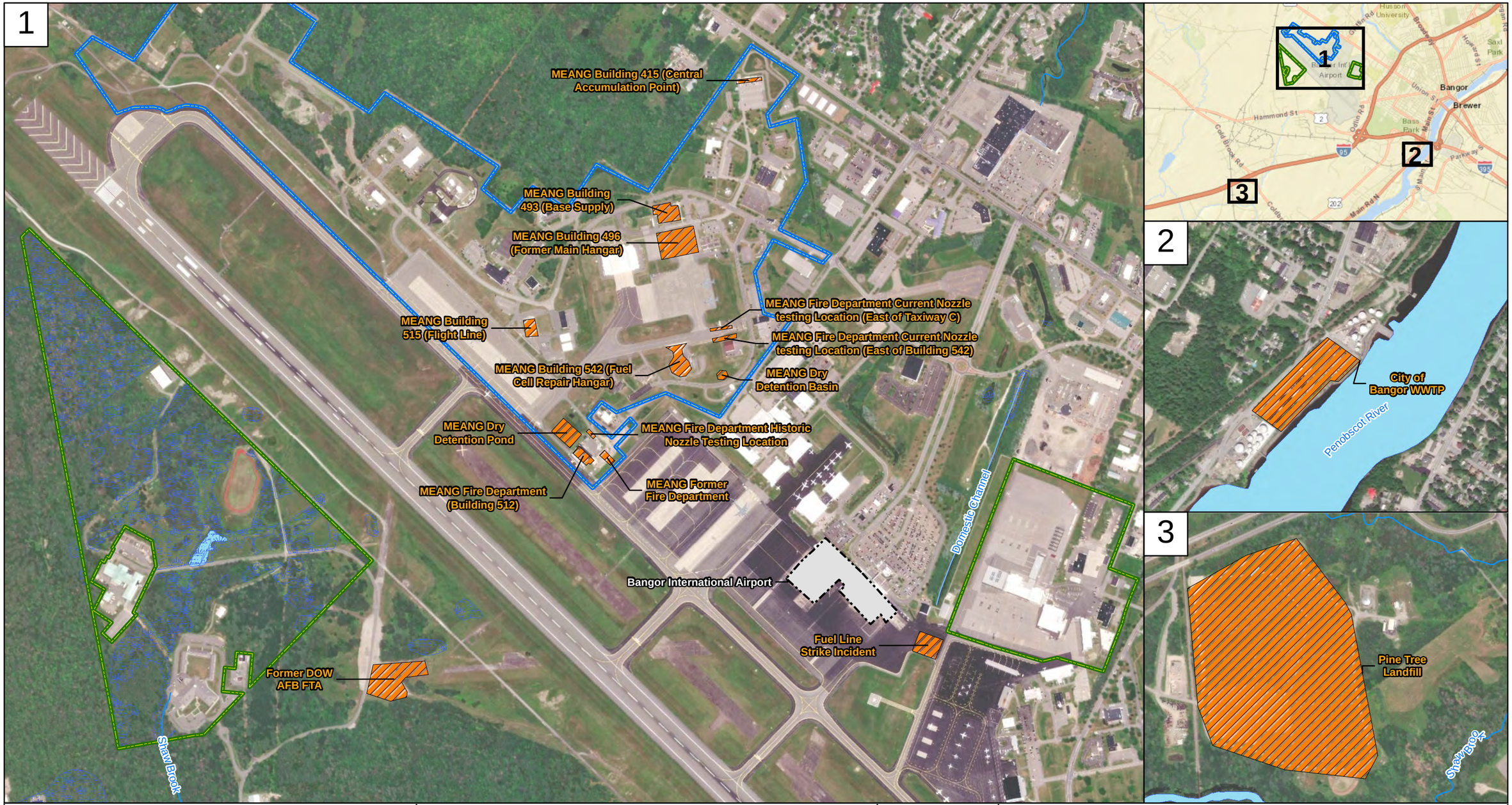
5.4 Waste Water Treatment Plant

There are no Waste Water Treatment Plants (WWTPs) at the MEARNG Bangor Training Site; however, the city of Bangor WWTP is located at 760 Main Street, Bangor, ME, approximately 2.3 miles southeast of the MEARNG facility (**Figure 1-3**). The Bangor Training Site sanitary sewer system feeds into the city of Bangor sanitary sewer system which conveys waste water to the city of Bangor WWTP. The treated water is then released into the Penobscot River. Solids removed from the waste stream are dewatered and composted for reuse at a private composting facility. Because onsite releases of AFFF at the MEARNG facility have resulted in AFFF entering the city sanitary sewer system, the city of Bangor WWTP is considered an adjacent source of potential PFAS release to the environment.

5.5 Landfills

There are no landfills on MEARNG Bangor Training Site properties. The nearest landfill that receives municipal waste from the city of Bangor is the Pine Tree Landfill, located at 358 Emerson Mill Rd, Hampden, ME, approximately 2.8 miles southwest of the Bangor Training Site western property.

Landfills are not usually a primary potential release area of PFAS, but materials disposed of in landfills may create a secondary source of contamination. Such materials, to name a few, may include sludge from a WWTP that processes PFAS-laden water, used AFFF storage containers, or products associated with waterproofing uniforms or boots. At the Bangor Training Site, high expansion foam released as part of a Building 254 fire suppression system test was collected and disposed of as municipal waste; however, it is unknown whether Ansul Jet-X 2% High Expansion Foam Concentrate contains PFAS.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	5/16/2019	GIS BY	MS	5/16/2019
SCALE	1:142,779	CHK BY	JW	5/16/2019
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, ©		PM	RG	5/16/2019

Legend

- Potential PFAS Release
- No Suspected Release
- Facility Boundary
- Bangor ANG Facility Boundary
- Water Body
- Wetland
- River/Stream
- Canal/Ditch

0 450 900 1,800 Feet

N

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, two potential PFAS release areas were identified within the MEARNG facility: AOI 1 - Building 260 (AASF) and AOI 2 - Building 254 (Cold Storage Hangar). The AOI locations are shown on **Figure 6-1**. The following sections describe the CSM components and the specific CSM developed for the AOIs. The CSM identifies the three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

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 is sparse and continues to be the subject of PFAS toxicological study (National Ground Water Association, 2018). Receptors for the MEARNG Bangor Training Site include site workers, construction workers, and trespassers/recreational users. The preliminary CSM indicates which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1 Building 260 (AASF)

AOI 1 is the Building 260 (AASF) complex. This complex includes the hangars and flight operations office space within the complex. AFFF releases at the AOI include a 2003 fire suppression system AFFF release contained to building pipes that have since been replaced, a 2011 fire suppression system AFFF release to the fire suppression pump room and city sanitary sewer lines, and a 2016 fire suppression system AFFF release to the fire suppression pump room, ramp area outside the pump room, and runoff sump.

Building 260 (AASF) is surrounded on all sides by pavement. According to MEARNG staff, AFFF releases at AOI 1 have been contained to the AASF interior, sanitary system pipes, and the ramp area and sump outside the fire suppression room. As such, surface soil at the AOI is considered an incomplete pathway for PFAS contamination to all receptors. No significant cracks in pavement were observed during the VSI, and the prevalence of pavement at the AOI inhibits subsurface migration. It is possible, however, that released AFFF may have infiltrated the subsurface via joints between areas that are paved with different materials.

If AFFF released at the AOI infiltrated the subsurface, then ground-disturbing activities beneath the pavement may result in site and construction worker exposure to potential PFAS contamination in subsurface soil via ingestion and inhalation. Accidental ingestion of groundwater is also considered a complete pathway for exposure to PFAS during construction activities due to the shallow depth to groundwater beneath the adjacent MEANG facility and potential shallow groundwater beneath the MEARNG Bangor Training Site.

PFAS are water soluble and can migrate readily from soil to groundwater via leaching. Drinking water at the Bangor Training Site is predominantly provided by the Bangor Water District, but one drinking water well that is known to contain groundwater with detectable PFAS concentrations exists on the western property upgradient of AOI 1. Because PFAS releases at AOI 1 are unlikely to contribute to PFAS in the drinking water well, the source of PFAS in the drinking water is unknown. Although, the source of PFAS is unknown, PFAS exposure to site workers via groundwater is a complete pathway.

Several domestic-use wells are listed in the Maine State database within a one-mile radius of the MEARNG properties; however, they are located at greater distances from the specific location of AOI 1, and are cross- or upgradient of the release area. If AFFF releases at the AOI infiltrated the subsurface, it is unlikely that PFAS migrated into groundwater within the vicinity of domestic wells. The pathway for off-facility resident exposure to PFAS in groundwater is considered incomplete.

The majority of stormwater runoff at AOI 1 is collected in catch basins and a storm drain southwest of the AASF, which discharges to the Domestic Channel/Birch Stream. If any AFFF was not contained during the known releases, it is possible that PFAS migrated to into surface waters of the Domestic Channel/Birch Stream, and eventually the Kenduskeag Stream. As such, the pathway for PFAS exposure to site workers and trespassers/recreational users via ingestion of surface water is considered potentially complete. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.

6.2 AOI 2 Building 254 (Cold Storage Hangar)

AOI 2 is Building 254 (Cold Storage Hangar). The potential PFAS release at AOI 2 involves the fire suppression system release of 300-gallons of Ansul Jet-X 2% High Expansion Foam Concentrate; it is unknown whether Ansul Jet-X 2% High Expansion Foam Concentrate contains PFAS. The test was confined by the hangar walls, and the dried foam was eventually containerized and disposed of as municipal trash. If foam escaped during the release via floor drains, it entered into the municipal sanitary system.

Because the release was completely contained within the hangar walls, PFAS is not expected to have migrated to surface soil surrounding the hangar during the release; however, it is possible that residual PFAS was tracked out of the hangar during cleanup efforts. Potentially escaping PFAS may have infiltrated surface soil east of the hangar, or subsurface soil beneath the paved surface west of the hangar via the same mechanism as AOI 1. Surface soil at the AOI is considered a potentially complete pathway for PFAS exposure to site workers, construction workers, and trespassers/recreational users; subsurface soil is considered a potentially complete pathway to construction workers; and groundwater is considered a potentially complete pathway to construction workers via accidental ingestion during ground-disturbing activities. Although the release at AOI 2 is unlikely to be the source of PFAS in drinking water at the active upgradient well on the western property is unlikely, PFAS exposure to site workers via drinking water is a complete pathway.

If PFAS escaped the hangar during cleanup, it is possible that is migrated via surface water runoff to catch basins south and west of the building that discharge to the Domestic Channel/Birch Stream. Surface water is considered a potentially complete pathway for site workers and trespassers/recreational users.

If Ansul Jet-X 2% High Expansion Foam Concentrate escaped via floor drains, it may have migrated to sanitary sewer drains. The facility sanitary sewer system feeds into the city of Bangor sanitary sewer system which conveys waste water to the city of Bangor WWTP. The treated water is then released into the Penobscot River. As such, the pathway for PFAS exposure to off-facility recreational users via ingestion of surface water is considered potentially complete. The preliminary CSM for AOI 2 is shown on **Figure 6-3**.

1

MEANG Building 415 (Central Accumulation Point)

MEANG Building 493 (Base Supply)

MEANG Building 496 (Former Main Hangar)

Lower Kenduskeag Stream Watershed

MEANG Fire Department Current Nozzle testing Location (East of Taxiway C)

MEANG Building 515 (Flight Line)

MEANG Fire Department Current Nozzle testing Location (East of Building 542)

MEANG Building 542 (Fuel Cell Repair Hangar)

MEANG Dry Detention Basin

Baffled Small Arms Range

MEANG Dry Detention Pond

MEANG Fire Department Historic Nozzle Testing Location

MEANG Fire Department (Building 512)

Lower Souadabscook Stream Watershed

MEANG Former Fire Department

Building 250 (FMS #3)

Building 262 (Covered Fuel Truck Building)

Building 260

Bangor International Airport

AOI 1

AFRC

Building 254

AOI 2

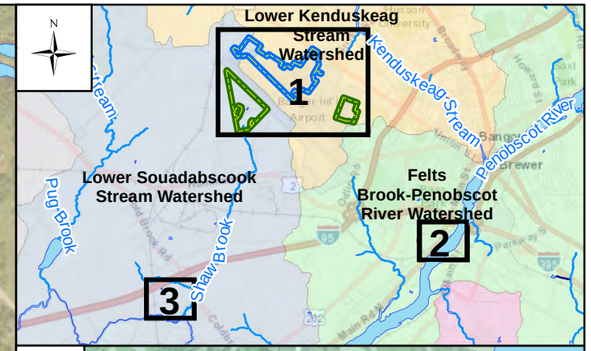
RTI

Former DOW AFB FTA

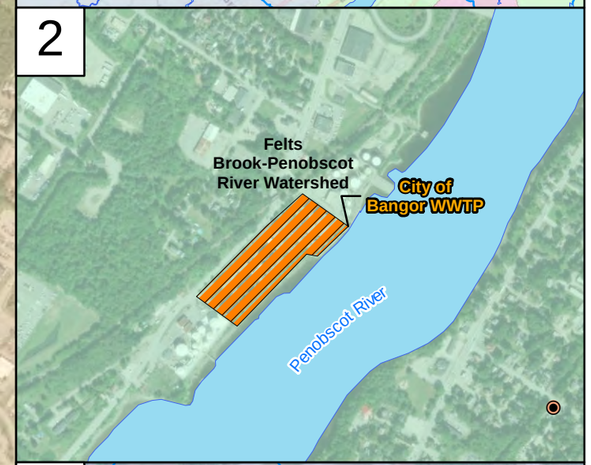
Fuel Line Strike Incident

Felts Brook-Penobscot River Watershed

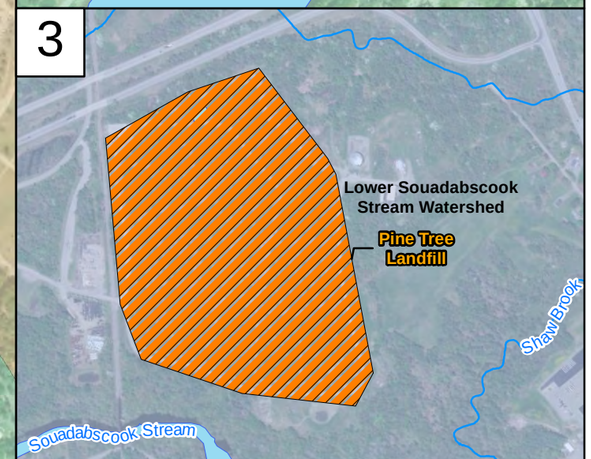
0 500 1,000 2,000 Feet



2



3



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	11/6/2019	GIS BY	MS	11/6/2019
SCALE	1:142,779	CHK BY	JW	11/6/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)		PM	RG	11/6/2019

- Area of Interest
- Potential PFAS Release
- No Suspected Release
- Facility Boundary
- Bangor ANG Facility Boundary
- Water Body
- Wetland
- River/Stream
- Surface Water Flow Direction
- Commercial Well
- Domestic Well
- Water Supply Well

N

Area of Interest

AECOM 12420 Milestone Center Drive Germantown, MD 20876

Figure 6-1

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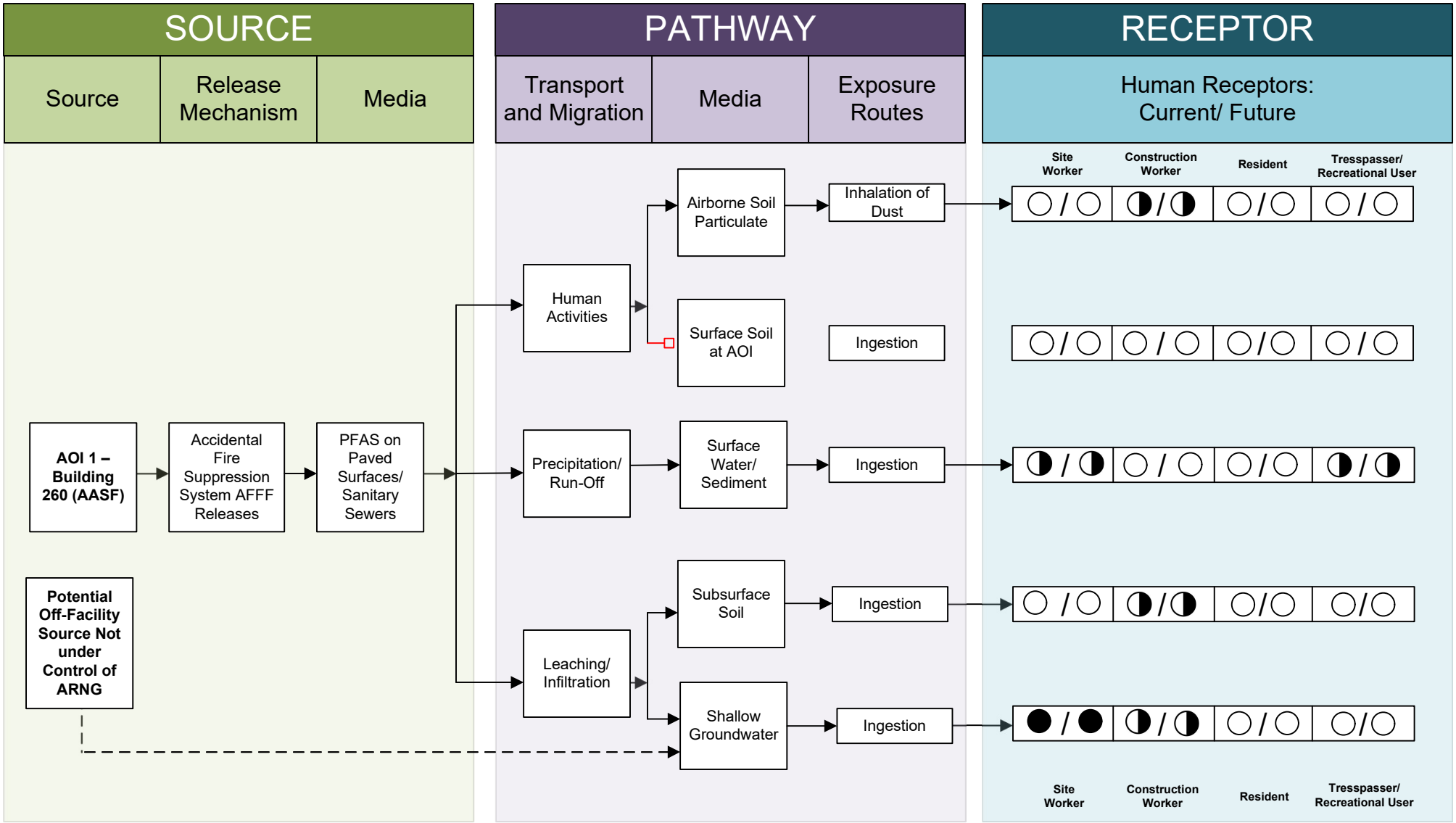


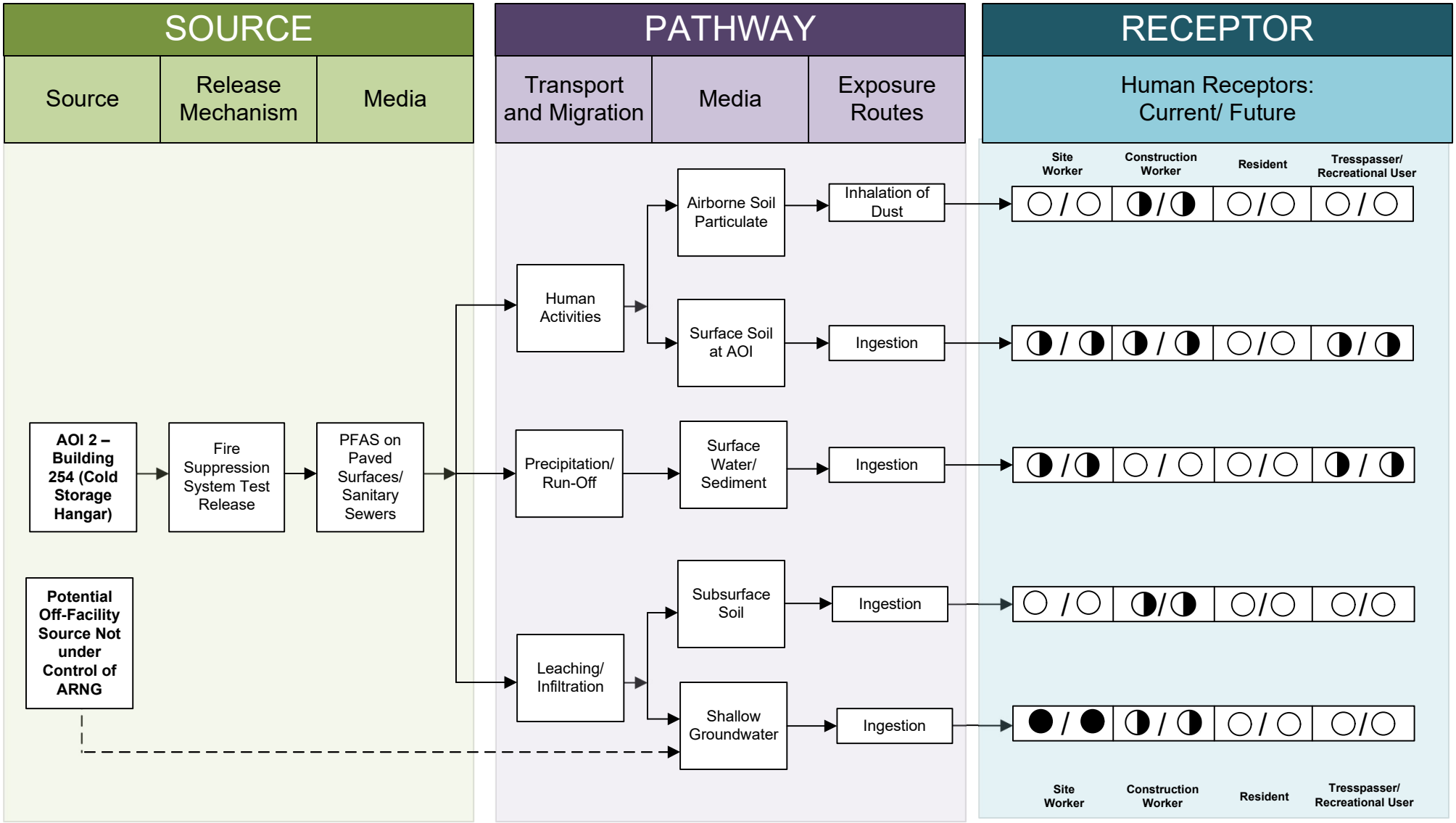
LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Complete Pathway

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-2
Preliminary Conceptual Site Model
Building 260 (AASF)



LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Complete Pathway

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-3
Preliminary Conceptual Site Model
Building 254 (Cold Storage Hangar)

7. Conclusions and Data Uncertainty

This report presents a summary of available information gathered during PA efforts on the use and storage of AFFF and other PFAS-related activities at the MEARNG Bangor Training Site. The PA findings are based on personnel interviews, environmental investigations and reports, historical documents, and the visual site inspection (**Appendix A** and **Appendix B**).

7.1 Conclusions

One AOI related to potential PFAS release was identified at the MEARNG Bangor Training Site based on PA data (**Figure 7-1**) and is described in **Table 7-1** below:

Table 7-1: Areas of Interest

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Building 260 (AASF)	MEARNG	203, 2011, 2016
AOI 1	Building 254 (Cold Storage Hangar)	MEARNG	2013-2018

Based on known PFAS releases at AOI 1 and potential PFAS release at AOI 2, there is potential for exposure to PFAS contamination in surface soil to site workers, construction workers, and trespassers/recreational users via ingestion; subsurface soils to construction workers via inhalation and ingestion; surface water and sediment to site workers and trespassers/recreational users via ingestion; and in groundwater to construction workers via ingestion. Additionally, a groundwater drinking source on the Bangor Training Site western property is sampled quarterly for PFAS due to PFAS detections in drinking water during an ARNG 2017 sampling event. Although the known and potential PFAS releases at AOI 1 and AOI 2 are unlikely to have contributed to PFAS in groundwater on the western property, the pathway for PFAS exposure to site workers via ingestion of groundwater is complete. No known or documented AFFF releases have occurred on the western property. The source of PFAS in drinking water on the western property is unknown.

The following areas shown in **Table 7-2**, discussed in **Section 3**, were determined to have no suspected release.

Table 7-2: No Suspected Release Areas

No Suspected Release Area	Used By	Rationale for No Suspected Release Determination
Building 250 (FMS #3)	MEARNG	Based on interviews and documentation, AFFF has never been stored or used at Building 250. The building relies on a water-only sprinkler system and dry chemical fire extinguishers.
Building 262 (Covered Fuel truck Building)	MEARNG	Based on interviews and documentation, AFFF has never been stored or used at Building 262. No fire suppression system exists at the building.
Armed Forces Reserve Center	MEARNG	Based on interviews and documentation, the AFRC has never been used for AFFF training or storage. No incidents have occurred at the AFRC complex that would require emergency response or fire suppression, and the fire suppression system at the AFRC complex uses only water.

Regional Training Institute	MEARNG	Based on interviews and documentation, the RTI has never been used for AFFF training or storage. No incidents have occurred at the RTI that would require emergency response or fire suppression, and the fire suppression system at the AFRC complex uses only water.
Baffled Small Arms Range	MEARNG	Based on interviews and documentation, the baffled small arms range has never been used for AFFF training or storage. No fire suppression system exists at the baffled small arms range.

Additionally, the adjacent Bangor Air National Guard Base has several documented releases of PFAS to the environment. According to the 2018 SI Report, AFFF releases at the adjacent MEANG facility have resulted in PFAS concentrations in groundwater exceeding the USEPA Drinking Water Health Advisory (70 ng/L). Further groundwater, soil, and surface water investigations were recommended by the SI (Amec Foster Wheeler, 2018).

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 MEARNG facility. Historically, documentation of PFAS use was not required because PFAS were considered benign. Therefore, records were not typically kept by the MEARNG or available during the PA on the use of PFAS in training, firefighting, 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, the time passed since PFAS was first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates, volume of releases, and the concentration of AFFF used. 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, current personnel were interviewed from MEARNG and MEANG, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected.

Table 7-3 summarizes the uncertainties associated with the PA:

Table 7-3: Sources of Uncertainties

Location	Source of Uncertainty
AOI 1 Building 260 (AASF)	The volume of AFFF released to building pipes during the 2003 fire suppression system installation is unknown, as is the extent to which AFFF migrated during the release. No records exist for the 2011 and 2016 AFFF release incidents. It is uncertain whether any AFFF solution released to the exterior ramp area migrated further than the ramp and sump. The migration of AFFF in sanitary sewer pipes is uncertain. It is unclear whether adjacent PFAS releases could have affected the MEARNG facility.

Building 254 (Cold Storage Hangar)	Although Ansul Jet-X 2% High Expansion Foam Concentrate does not list PFAS compounds on its Safety Data Sheet, the sheet only lists hazardous components, and does not definitively state that it does not contain PFAS compounds. It is also unknown if Jet-X 2% High Expansion Foam could have escaped via runoff or on the feet of staff during the disposal effort following the system release.
Bangor Training Site Facility-Wide	The only fixed AFFF fire suppression system at the MEARNG facility was installed in 2003; however, mobile Tri-Max AFFF fire extinguishers were previously stored at the facility. Use and storage practices pre-dating the tenure of MEARNG interviewees (2004-present) are unknown. Tri-Maxes were relinquished in 2012.
Bangor Training Site Western Property	The source of PFAS in groundwater beneath the western property is unclear, and suspected to be an adjacent source.
Fuel Strike Incident	No emergency response record was available for the incident. The volume and type of AFFF used in response is unknown. It is unclear how AFFF was disposed of following the incident.
Former Dow Air Force Base FTA	The use of AFFF during training events at the FTA is unknown. If used, the volume used over time and type frequently used are unknown.
Bangor Air National Guard Base	The volume and type of AFFF released at each release location are unknown. The migration pathways for PFAS at each release location is unknown.
City of Bangor Wastewater Treatment Plant	The fate of PFAS reaching the WWTP is unclear; it may discharge to the Penobscot River. If PFAS is collected in biosolids removed from wastewater, it is unclear where biosolids are disposed of for composting.
Bangor International Airport	Numerous crashes have occurred at the Bangor International Airport, but the use of AFFF in response to crashes is unclear. Although no AFFF use in response to crashes at the MEARNG Bangor training Site has been confirmed, AFFF may have been used at various times in response to crashes elsewhere in the vicinity of the airport.

7.3 Potential Future Actions

Interviews with MEARNG facility staff whose first-hand knowledge at Bangor International Airport span 1997-present indicate that ARNG activities may have resulted in potential PFAS releases at AOI 1 and AOI 2 identified during the PA. Based on the preliminary CSM developed for the AOIs, there is potential for human receptors to be exposed to PFAS contamination in subsurface soil, surface water and sediment, and groundwater during construction activities. **Table 7-4** summarizes the rationale used to determine if AOI 1 should be considered for further investigation under the CERCLA process and undergo a SI.

Table 7-4: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 Building 260 (AASF)	44°48'28.84"N; 68°48'39.94"W	Multiple AFFF releases from fire suppression system to floor drains and sumps	Proceed to an SI, focus on soil, surface water, sediment, and groundwater
AOI 2 Building 254 (Cold Storage Hangar)	44°48'24.60"N; 68°48'31.46"W	Potential PFAS release during fire suppression system release	Proceed to an SI, focus on soil, surface water, sediment, and groundwater

ARNG will evaluate the need for an SI at AOI 1 and AOI 2 at the MEARNG Bangor Training Site based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources.

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Bangor Training Site, ME			
REVISED	11/6/2019	GIS BY	MS	11/6/2019
SCALE	1:142,779	CHK BY	JW	11/6/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)		PM	RG	11/6/2019

Area of Interest
Potential PFAS Release
No Suspected Release
Facility Boundary
Bangor ANG Facility Boundary
Water Body
Wetland
River/Stream

0 500 1,000 2,000 Feet

N

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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Appendix A
Data Resources

Data Resources will be provided separately on CD. Data Resources for Bangor Training Site includes:

Facility Background Information Sources

- 2011 Environmental Baseline Study, Maine Army National Guard, Parcel 3, Bangor International Airport, Bangor, Maine
- 2015-2019 Integrated Cultural Resources Management Plan Update for Site and Training Installations of the Maine Army National Guard
- 2017 Integrated Contingency Plan, Maine Army National Guard Facility, Bangor International Airport, Bangor, Maine

Real Property Documents

- 2008 Department of the Army License for National Guard Purposes, Armed Forces Reserve Center, Bangor, Maine (No. DACA-33-3-08-123)
- MEARNG AFRC and Bangor Training Site Properties Map
- MEARNG Bangor Training Site East Parcel Title
- MEARNG Bangor Training Site East Parcel Map

Bangor Training Site EDR Report

- 2018 Bangor Training Site EDR Report 5484628

PFAS Analytical Data

- 2016-2018 PFOA and PFOS Sample Results at Bangor Training Site ETS Well
- May 16, 2017 MEARNG PFAS Analytical Data
- July 18, 2018 Per and Polyfluoroalkyl Substances (PFAS) Quarterly Sampling – 290 Hildreth Street, Bangor, Maine
- October 15, 2018 Per and Polyfluoroalkyl Substances (PFAS) Quarterly Sampling – 290 Hildreth Street, Bangor, Maine

Firefighting Material Data Sheets

- 2015 Buckeye BFC-3.1 Platinum 3% AFFF Concentrate Data Sheet
- 2015 National Foam Centurion 3% AFFF Safety Data Sheet
- 2015 Ansul Jet-X 2% High Expansion Foam Concentrate Safety Data Sheet
- 2017 Ansul Jet-X 2% High-Expansion Foam Concentrate Data Sheet

Adjacent Source Investigations

- 2015 Bangor Air National Guard Base Perfluorinated Compounds Preliminary Assessment Site Visit Report
- 2018 Bangor Air National Guard Base FY16 Phase 1 Regional Site Inspections for Perfluorinated Compounds

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:00

Interviewee: [redacted] **Title:** Operations Officer/Construction Mgmt. **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 Rob Coburn

1. Roles or activities with the Facility/years working at the Facility.

Construction Management CFMO (2004-2010), Operations Officer (2010-Present)
Discussion included illustrating on a map that is included at the end of this form. Additionally, Rob Coburn participated equally during this interview and some answers were provided by Coburn

2. Where can I find previous facility ownership information?

Bangor records are most likely available through the Augusta MEARNG office

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.

Maintenance – Yes, no AFFF.
Fire Training Areas – One FTA across the runway, but MEARNG did not use it.
Firefighting (Active Fire) – Air Guard FD relied upon
Crash – No MEARNG crashes known.
Fire Suppression Systems (Hangers/Dining Facilities) – Yes, at Buildings 254 & 260
Fire Protection at Fueling Stations – No AFFF at any fueling stations
Non-Technical/Recreational/ Pest Management - No
Metals Plating Facility – No
Waterproofing Uniforms (Laundry Facilities) - No
Other – Neighboring Air Force/Air Guard facilities

4. Fill out CSM Information worksheet with the Environmental Manager.

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?

Tests are performed on the two fire suppression systems at Buildings 254 & 260 quarterly, annually, and at other frequencies.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:00

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?

The fire suppression systems at Buildings 254 and 260 are charged with AFFF. AFFF is also stored in 55 gallon drums at Building 254.

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

AFFF is procured through the USFPO.

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)?

Buckeye brand AFFF is stored at Building 254. Buckeye and National Foam AFFF is stored in the two AFFF storage tanks in Building 260.

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?

A 300 gallon tank of AFFF is stored in Building 254, along with several 55 gallon drums. Two 1,200 gallon tanks of AFFF are stored in Building 260.

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?

No FTAs exist at either the east or west Bangor properties. One FTA exists east of the western property (west of the runway) that has historically been used by other entities.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:00

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?

Two events have resulted in MEARNG releases at the eastern Bangor property. During one incident, AFFF was released to drains that lead to City of Bangor water treatment; during the other incident, AFFF was captured in a sump that was vacuumed out in a controlled manner. A third release was planned as a test, and the AFFF was left to dry in the hangar (completely contained) and was then swept out and disposed of as solid waste (trash).

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?

No known use of the MEARNG properties by other entities for training using AFFF.

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

MEARNG did not train with their mobile AFFF extinguishers. Testing occurred by contractors offsite. MEARNG did not train on or off-facility. Mobile AFFF extinguishers were disposed of through the USFPO in 2012. Because Air Guard FD was responsible for emergency response, MEARNG did not train with AFFF.

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?

Not applicable.

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?

See response to question 12. In 2011, 1,200 gallons of AFFF was released and reached the City of Bangor water treatment plant. In 2016, 30 gallons of AFFF was released to the ramp outside Building 260, but captured by the sump intake outside.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:00

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?

AFFF was not used to treat fuel spills. Fuel spill logs are unknown to exist.

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

No forest firefighting occurred at the facility. No known training occurred off-post.

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?

The Air Guard FD is responsible for emergency response at the MEARNG Bangor Training Site facilities.

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)?

Storage of AFFF and its use at the Navy facility is captured in previously written reports.

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

No known creative uses of AFFF.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:00

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?

Environmental Baseline Study available through the Augusta office.

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

Air Force PA reports already completed.

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?

No.

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.?

Not applicable,

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?

USFPO is used for procurement of AFFF.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:00

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

Rob Coburn (MEARNG)

Air Force/Air Guard staff

Additional Notes:

- The 19.01 and 2.29 acre parcels on the Bangor East property are leased to the USACE.
- The 13.3 and 6.47 acre parcels are leased to the state of Maine or City of Bangor.
- The deluge system in Building 260 was installed in 2003 when the 2 hangars were renovated/constructed (Buildings 254 & 260).
- The Air Force Fire Department has been present at Bangor Airport for approximately 50 years.
- The maintenance area has an external wash rack. Water from the wash rack is directed to the city of Bangor treatment plant.
- The historic aviation maintenance transitioned to a cold storage hangar in the 1980s.
- The main portion of the historic aviation maintenance building was built in the 1970s. The rest of the building was built in 2004/2005.
- The administration building was once a ground vehicle maintenance building. Its previous use is unknown.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:30

Interviewee: Rob Coburn **Title:** Building Control/Maintenance Supervisor **Phone Number:** 207-735-1186 **Email:**	Can your name/role be used in the PA Report? **Y** or N Can you recommend anyone we can interview? **Y** or N Air Guard FD

1. Roles or activities with the Facility/years working at the Facility.

Building control supervisor with the MEARNG: 2007 to present
Air Force staff at Bangor: 21 years' experience

2. Where can I find previous facility ownership information?

MEARNG Augusta office will have lease/ownership documents.

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.

Maintenance – **Yes, but no AFFF**
Fire Training Areas – **Across the runway there is an FTA. No MEARNG-used FTAs in the area**
Firefighting (Active Fire) – **Air Guard FD responds to emergencies. They carry AFFF.**
Crash – **No known MEARNG crashes resulting in fire suppression.**
Fire Suppression Systems (Hangers/Dining Facilities) – **Fire suppression in two hangars (Bldg 254 & 260). Kitchens use Type K dry chemical fire suppression.**
Fire Protection at Fueling Stations – **No AFFF at fueling stations.**
Non-Technical/Recreational/ Pest Management – **No known creative uses of AFFF.**
Metals Plating Facility – **None known. Several other potential adjacent contributors.**
Waterproofing Uniforms (Laundry Facilities) – **None known.**
Other

4. Fill out CSM Information worksheet with the Environmental Manager.

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?

Yes, Buildings 254 & 260 have fire suppression systems charged with AFFF. Building 254 also stores AFFF in 55 gallon drums. Parcel map of the Eastern property given to AECOM includes some technical drawings, but is not an as-built drawing.

No mobile AFFF extinguishers exist today at the property. They were relinquished in 2012.

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?

Yes, see answer to question 5. Annual, quarterly, and other regularly scheduled maintenance tests are performed on both systems. Building 254 underwent a full tank release as a test in the last 4-5 years. The test resulted in approximately 4 feet of standing foam in Building 254. The foam was left in place, contained within the building to dry, and swept up and disposed as trash afterwards. No foam escaped the building during the test.

During the installation of the AFFF suppression system at Building 260, AFFF was inadvertently released to pipes within the building, but did not migrate further and the pipes were replaced.

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

AFFF is believed to be procured through the USFPO.

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)?

National and Buckeye AFFF is stored at the Bangor MEARNG facility at Building 254 and Building 260.

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?

AFFF is stored in two large storage tanks in Building 260, and in one storage tank at Building 254. AFFF is also stored in 55 gallon drums in Building 254.

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?

No FTAs exist on MEARNG property. An FTA exists west of the runway, where it is believed the City of Bangor FD trained. Air Guard and Air Force use of the FTA is unknown. Before their disposal, mobile AFFF containers were tested off-facility by a contractor.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:30

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?

AFFF is not used in fire training exercises by the MEARNG. During incidents at Building 260, AFFF concentrate has entered drains and traveled via city sewer drains to the City of Bangor treatment plant (2011) and across a ramp outside the hangar and into a sump that captured and contained the foam (2016).

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?

No known training by non-MEARNG units on MEARNG property. The Bangor MEARNG property does not include training areas.

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

No MEARNG training occurred off-facility.

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?

NA

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?

No known MEARNG crashes resulting in AFFF release are known to have occurred. Incident reports for the releases already discussed may be available through the Augusta office.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:30

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?

Washing fuel spills away with AFFF was not common practice, nor ever known to have been performed. Fuel spill logs may be included in the SPCC, available through the Augusta office.

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

No.

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?

A formal agreement between the Air Guard FD or City of Bangor FD may exist, but is not known of.

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)?

All known releases already discussed.

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

No known creative uses of AFFF by MEARNG at the Bangor Training Site.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:30

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?

An Air Force or Air Guard PA report has already been written for the use of AFFF at their adjacent properties. This may be available through contacts with those entities.

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

Augusta office would be best suited to provide documents from MEARNG.

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?

No known chrome plating industry in the area.

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.?

Air Guard properties believed to have roughly 4 times the amount of AFFF that MEARNG has at their facility.

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?

AFFF is disposed of via the USFPO.

PA Interview Questionnaire

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 10/25/2018; 09:30

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

Air Guard and Air Force staff would be a good resource for information on releases in the adjacent areas.

PA Interview Questionnaire – Fire Station

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 8/25/2018 14:00

Interviewee: Scott Libby / Jeremiah Jordan **Title:** Asst. Chief Training & Safety / Asst. Chief **Phone Number:**_____ **Email:**_____	Can your name/role be used in the PA Report? **Y** or N Can you recommend anyone we can interview? Y or N ___MEANG contact Winston

1. Roles or activities with the Facility/years working at the Facility.

Scott Libby: Air National Guard Fire Department Assistant Chief of Training and Safety – 1983 to present with MEANG. Also – Brunswick staff from 200-2003

Jeremeiah Jordan: Air National Guard Fire Department Assistant Chief

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.

Maintenance (e.g., ramp washing) – **None at MEARNG facilities**
Fire Training Areas – None at MEARNG facilities
Firefighting (Active Fire) – **ANG FD responded to a fuel release by using AFFF to prevent fire**
Crash – **No known MEARNG crashes**
Fire Suppression Systems (Hangers/Dining Facilities) – **Yes, two hangars**
Fire Protection at Fueling Stations – **None known**
Non-Technical/Recreational/ Pest Management – **No**

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?

Yes. Answer already known via interviews with MEARNG staff.

4. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?

Yes. Answer already known via interviews with MEARNG staff.

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

Answer already known via interviews with MEARNG staff.

PA Interview Questionnaire – Fire Station

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 8/25/2018 14:00

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)?

Answer already known via interviews with MEARNG staff.

7. Is AFFF formulated on base? If so, where is the solution mixed, contained, transferred, etc.?

Unknown. Assumed to be mixed in the AFFF storage rooms.

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?

Answer already known via interviews with MEARNG staff.

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?

MEARNG does not have any emergency response vehicles. AFFF is stored on ANG FD tucks in 100 gallon tanks and in ANG buildings.

10. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located?

No MEARNG vehicles carry AFFF. MEANG CFR vehicle list not requested because MEANG is an adjacent source.

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?

The leak at Building 260 described by MEARNG staff was recounted. A leak in the suppression system at Building 260 resulted in the release of AFFF to city sewer lines, and traveled to the Bangor water treatment plant. Additionally, at the southwest corner of the MEARNG facility east property, a fuel line was struck in recent history. ANG FD used to prevent fire during the fuel spill incident and cleanup.

PA Interview Questionnaire – Fire Station

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 8/25/2018 14:00

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?

No ANG FTAs exist at the facility. No ARNG FTAs exist at the facility. The Air Force uses the FTA across the runway to the west, along with the City of Bangor FD.

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

NA

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?

No AFFF use during any training. AFFF used by ANG to respond to fuel release at the southwest area of the MEARNG facility.

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?

MEARNG Augusta may be able to provide agreement between MEARNG and ANG FD or City of Bangor FD.

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?

ANG FD staff provide their own AFFF and safety personnel when responding to emergencies.

PA Interview Questionnaire – Fire Station

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 8/25/2018 14:00

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

MEARNG does not train off-post with AFFF. MEANG does not use the FTA west of the runway.

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?

Specific emergency response reports may be available through MEARNG.

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?

Fuel spill response involving AFFF southwest off of the MEARNG facility will be requested.

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

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 other known locations at the MEARNG facilities. ANG stores its own AFFF, along with the Air Force.

PA Interview Questionnaire – Fire Station

Facility: Bangor Training Site
Interviewer: Joe Witte
Date/Time: 8/25/2018 14:00

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

No

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?

ANG AFFF disposal is unknown.

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

Air Force staff

Appendix B.2
Visual Site Inspection Checklists

Facility ST
Visual Survey Inspection Log

Recorded by: Joe Witte
ARNG Contact: B. Packer
Date: 10-25-18

Site Name / Area Name / Unique ID: Bangor Training Site- AFRC
Site / Area Acreage: Approx. 7.5 acres
Historic Site Use (Brief Description): AFRC

Current Site Use (Brief Description): AFRC

1. Was AFFF used at the site/area? Y (N)
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014)*

2. Has usage been documented? Y (N)
   2a. If yes, keep a record (place electronic files on a disk)
   NA

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y (N)
   1a. If so, please describe change: (*ex. Structures structures longer exist.)*

2. Is the site/area vegetated? Y (N)
   2a. If not vegetated, briefly describe the site/area composition:
   Surrounding areas forested.

3. Does the site or area exhibit evidence of erosion? Y (N)
   3a. If yes, describe the location and extent of the erosion :

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 : Pond adjacent to AFRC on west side, and east side.

Migration Potential:

1. Does site/area drainage flow off installation? (Y) / N
   1a. If so, please note observation and location: Potential flow off-site to wooded area
2. Is there standing water or drainage issues within the site/area? Y (N)
   2a. If so, please note observation and location:

3. Is there channelized flow within the site/area? Y (N)
   3a. If so, please note observation and location:

4. Have man-made drainage channels been constructed within the site/area? Y (N)
   4a. If so, please note the location of the channel:

Additional Notes
Shaw brook, a stream, exists west of the site.
No AFFF ever used / stored at the site

Facility ST

Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph

Facility ST
Visual Survey Inspection Log

Recorded by: Joe Witte
ARNG Contact: B. Packer
Date: 10-25-2018

Site Name / Area Name / Unique ID: Bangor Training Site - Building 254
Site / Area Acreage: approx. 1 acre
Historic Site Use (Brief Description): Historic aviation maintenance, cold storage transition in 1980s

Current Site Use (Brief Description): Cold storage

1. Was AFFF used at the site/area? (Y) / N
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014*)
   AFFF suppression system. System test in contained manner w/in last 5 years
2. Has usage been documented? (Y) N
   2a. If yes, keep a record (place electronic files on a disk)
   Test record kept, requested

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y (N)
   1a. If so, please describe change: (*ex. Structures structures longer exist.*)
   transitioned to cold storage in 1980s
2. Is the site/area vegetated? Y (N)
   2a. If not vegetated, briefly describe the site/area composition:
   Hangar surrounded by concrete
3. Does the site or area exhibit evidence of erosion? Y (N)
   3a. If yes, describe the location and extent of the erosion :
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 :

Migration Potential:

1. Does site/area drainage flow off installation? Y (N)
   1a. If so, please note observation and location: Pipes / drains sealed
2. Is there standing water or drainage issues within the site/area? Y (N)
   2a. If so, please note observation and location:
3. Is there channelized flow within the site/area? Y / N
   3a. If so, please note observation and location:
4. Have man-made drainage channels been constructed within the site/area? Y (N)
   4a. If so, please note the location of the channel:

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph

Facility ST
Visual Survey Inspection Log

Recorded by: Joe Witte
ARNG Contact: B. Packer
Date: 10-25-2018

Site Name / Area Name / Unique ID: Bangor Training Site - Building 260
Site / Area Acreage: approx. 3.5 acres
Historic Site Use (Brief Description): Aviation Maintenance

Current Site Use (Brief Description): Hangar, aviation maintenance

1. Was AFFF used at the site/area? (Y) N
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014*)
   Used in fire suppression system. Incidents in 2011 & 2016. Deluge system added in 2003.
2. Has usage been documented? (Y) N
   2a. If yes, keep a record (place electronic files on a disk)
   Incident reports requested

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y (N)
   1a. If so, please describe change: (*ex. Structures structures longer exist.*)
   Hangar re-habed in 2003-2005
2. Is the site/area vegetated? Y (N)
   2a. If not vegetated, briefly describe the site/area composition:
   Hangar surrounded by concrete
3. Does the site or area exhibit evidence of erosion? Y (N)
   3a. If yes, describe the location and extent of the erosion :
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 :
   Drainage channel west of property

Migration Potential:

1. Does site/area drainage flow off installation? (Y) N
   1a. If so, please note observation and location: Drains in hangar connect to city sewer
2. Is there standing water or drainage issues within the site/area? Y (N)
   2a. If so, please note observation and location:
3. Is there channelized flow within the site/area? (Y) N
   3a. If so, please note observation and location:
   See question 4a.
4. Have man-made drainage channels been constructed within the site/area? (Y) N
   4a. If so, please note the location of the channel: see question 4a.

Additional Notes

AFFF suppression system supported by storage tank/deluge system that covers the majority of the building. Two storage tanks containing AFFF are kept in the storage room. National and Buckeye AFFF product stored in tanks.

Facility ST
Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph

Facility ST

Visual Survey Inspection Log

Recorded by: J. Witte
ARNG Contact: B. Packer
Date: 10-25-2018

Site Name / Area Name / Unique ID: Bangor training Site - RTI
Site / Area Acreage: Approx. 9.204 acres
Historic Site Use (Brief Description): Newly Constructed

Current Site Use (Brief Description): RTI

1. Was AFFF used at the site/area? Y (N)
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014*)
2. Has usage been documented? Y (N)
   2a. If yes, keep a record (place electronic files on a disk)
   NA

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y / N
   1a. If so, please describe change: (*ex. Structures structures longer exist.*) RTI recenty constructed
2. Is the site/area vegetated? (Y) N
   2a. If not vegetated, briefly describe the site/area composition: Surrounding areas forested
3. Does the site or area exhibit evidence of erosion? Y (N)
   3a. If yes, describe the location and extent of the erosion :
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 :

Migration Potential:

1. Does site/area drainage flow off installation? (Y) N
   1a. If so, please note observation and location: Runoff flows over rip-rap to forest
2. Is there standing water or drainage issues within the site/area? Y (N)
   2a. If so, please note observation and location:
3. Is there channelized flow within the site/area? Y (N)
   3a. If so, please note observation and location: None from areas of known AFFF
4. Have man-made drainage channels been constructed within the site/area? Y (N)
   4a. If so, please note the location of the channel: None from areas of known AFFF.

Additional Notes

Kitchen uses dry chemical / type K fire suppression.

* Shaw Brook exists adjacent to the RTI on the west side

Facility ST

Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Bangor Training Site

Why has this location been identified as a site?

The facility was identified as a training site with an AASF. Additionally, a confirmed AFFF release has occurred at a former FTA less than 2,000 feet east of the facility.

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

Air National Guard presence, former Air Force presence, airport activities, private aviation industry, police training activities, city fire department fire training

Training Events

Have any training events with AFFF occurred at this site? No FTAs on MEARNG property, but adjacent

If so, how often? NA. Fire training by non-MEARNG did occur off-facility in several areas

How much material was used? Is it documented? NA

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?

Surface Water:

Surface water flow direction? Eastern property: northeast via drainage channel; Western property: south via Shaw Brook

Average rainfall? 41.93 inches

Any flooding during rainy season? Flooding is uncommon

Direct or indirect pathway to ditches? Pathway to drainage ditch on Eastern property is incomplete

Direct or indirect pathway to larger bodies of water? Indirect pathway to Kenduskeag Stream/Penobscot River

Does surface water pond any place on site? Numerous water bodies/wetlands on Western property

Any impoundment areas or retention ponds? No detention ponds, but a drainage channel and catch basin network

Any NPDES location points near the site? Most likely, but unknown

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

On eastern half of runway surface water drains to drainage channels. On western half several wetlands and receive runoff

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Southeast

Depth to groundwater? 8-23 feet bgs at adjacent ANG property

Uses (agricultural, drinking water, irrigation)? Drinking water provided by Bangor Water District.

Any groundwater treatment systems? Unknown.

Any groundwater monitoring well locations near the site? Supply well used for monitoring on western property

Is groundwater used for drinking water? No

Are there drinking water supply wells on installation? Yes, but the single well is unused due to PFAS presence

Do they serve off-post populations? No

Are there off-post drinking water wells downgradient Cross-gradient

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? WWTP located approximately 2.5-3 miles southeast

If so, do we understand the process and which water is/was treated at the plant? Solids removed are composted for reuse at a private composting facility

Do we understand the fate of sludge waste? final destination unknown

Is surface water from potential contaminated sites treated? Potentially

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go?

Non-MEARNG Firefighting equipment is washed at adjacent locations

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?

NA

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors: For releases that have occurred on MEARNG facility

Site Worker No - releases were captured within facility pipes and/or facility sumps

Construction Worker Yes (potentially) - if construction work occurs in subsurface soil

Recreational User No - recreational use of facility or immediately surrounding areas doesn't occur

Residential Yes (potentially) - If releases result in subsurface/gw migration to off-facility residential wells

Child Yes (potentially) - If off-facility residential wells are used by children

Ecological Yes (potentially) - In wetlands near western property (due to adjacent releases)

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

Northern Light Pediatric Primary Care, All Saints Catholic School, Messiah Baptist Church

Documentation

Ask for Engineering drawings (if applicable).

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

Unknown

Appendix C
Photographic Log

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 1

Description:

Bangor Training Site Building 254 used for aviation maintenance and cold storage. View facing south.

10/25/2018

Photograph No. 2

Description:

High expansion foam suppression system storage room in Building 254.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 3

Description:

55 gallon drums containing high expansion foam concentrate in the fire suppression system storage room of Building 254.

10/25/2018

Photograph No. 4

Description:

AFFF Storage Tank 01 in the Building 260 Fire Suppression System Storage room.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 5

Description:

AFFF Storage Tank 02 in the Building 260 Fire Suppression System Storage room.

10/25/2018

Photograph No. 6

Description:

Floor drain in the AFFF Fire Suppression System Storage Room in Building 260.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 7

Description:

55 gallon drums for storage of residual AFFF concentrate in the AFFF Fire Suppression System Storage Room in Building 260.

10/25/2018

Photograph No. 8

Description:

Drainage pipe on the outside of the Building 260 AFFF Fire Suppression System Storage Room. AFFF escaped through pictured outlet during accidental release in 2016. Estimated 30 gallons of AFFF concentrate released.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 9

Description:

Ramp area outside Building 260 AFFF Fire Suppression System Storage Room. Pictured area includes the extent to which AFFF concentrate was released during incident in 2016. Released AFFF was captured by the sum drain pictured at bottom right.

10/25/2018

Photograph No. 10

Description:

Floor drains in Building 260 hangar area.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 11

Description:

Amerex Model 497 mobile fire extinguisher staged in the Building 260 hangar area.

10/25/2018

Photograph No. 12

Description:

MEARNG Bangor Regional Training Institute (RTI) on the western MEARNG property in Bangor. View facing northeast.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 13

Description:

Compressed nitrogen fire extinguisher in the MEARNG RTI kitchen area.

10/25/2018

Photograph No. 14

Description:

Fire Suppression System Storage Room at the MEARNG RTI. Pictured system uses only water.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 16

Description:

Fire training area (FTA) on west side of Bangor International Airport runway. Wooden pallets pictured at right; earthen berm pictured at left. No known use of FTA by MEARNG. View facing east.

10/25/2018

Photograph No. 16

Description:

Monitoring well adjacent to FTA west of Bangor International Airport runway. View facing east.

10/25/2018

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 17

Description:

Vehicle maintenance area at the Navy/MEARNG the Armed Forces Reserve Center (AFRC) on the western MEARNG property in Bangor. Maintenance area never used for vehicle maintenance. View facing northwest.

10/25/2018

Photograph No. 18

Description:

"Type K" fire extinguisher in the MEARNG AFRC kitchen.

10/25/2018

APPENDIX C – Photographic Log

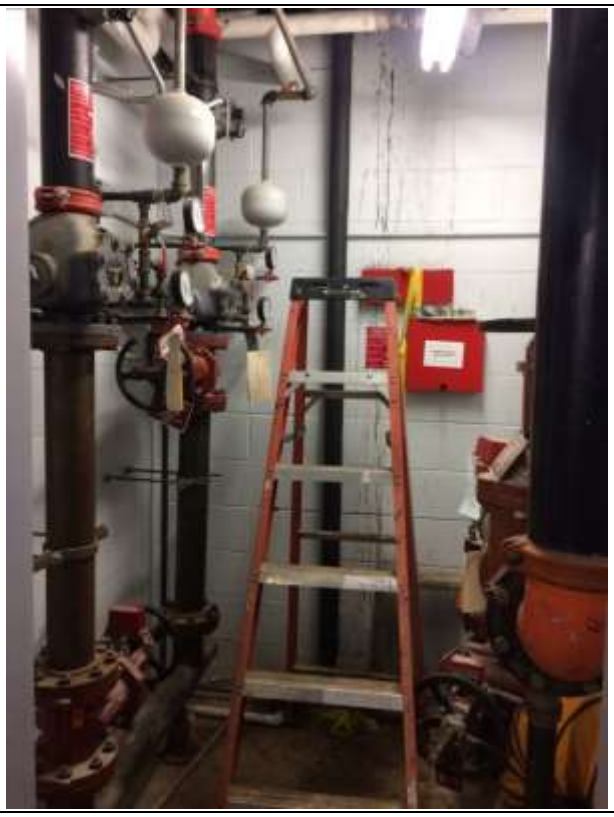
Army National Guard, Preliminary Assessment for PFAS	Bangor Training Site	Penobscot County, Maine

Photograph No. 19

Description:

Fire Suppression System Storage Room at the MEARNG AFRC. Pictured system uses only water.

10/25/2018



Photograph No. 20

Description:

Maintenance bay door at the Navy/MEARNG AFRC. Maintenance area outside door unused for vehicle maintenance. View facing south.

10/25/2018