

FINAL Preliminary Assessment Report Army Aviation Support Facility, Fort Belvoir, Virginia

Perfluorooctanesulfonic Acid (PFOS) and Perfluorooctanoic Acid
(PFOA) Impacted Sites
ARNG Installations, Nationwide

June 2020

Prepared for:



Army National Guard Bureau
111 S. George Mason Drive
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UNCLASSIFIED

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AOI	Area of Interest
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
DAAF	Davison Army Airfield
DCARNG	District of Columbia Army National Guard
DLA	Defense Logistics Agency
EDR™	Environmental Data Resources, Inc.™
FTA	fire training area
HA	Health Advisory
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site Inspection
UCMR3	Unregulated Contaminant Monitoring Rule 3
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VSI	visual site inspection

Executive Summary

The Army National Guard (ARNG) is performing *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide*. A PA for per- and polyfluoroalkyl substances (PFAS)-containing materials was completed for the Army Aviation Support Facility (AASF; also referred to as the “facility”) in Fort Belvoir, Virginia, to assess potential PFAS release areas and exposure pathways to receptors. The AASF is an enclave of Davison Army Airfield (DAAF) at US Army Garrison Fort Belvoir. The AASF is leased to the District of Columbia ARNG (DCARNG). The performance of this PA included the following tasks:

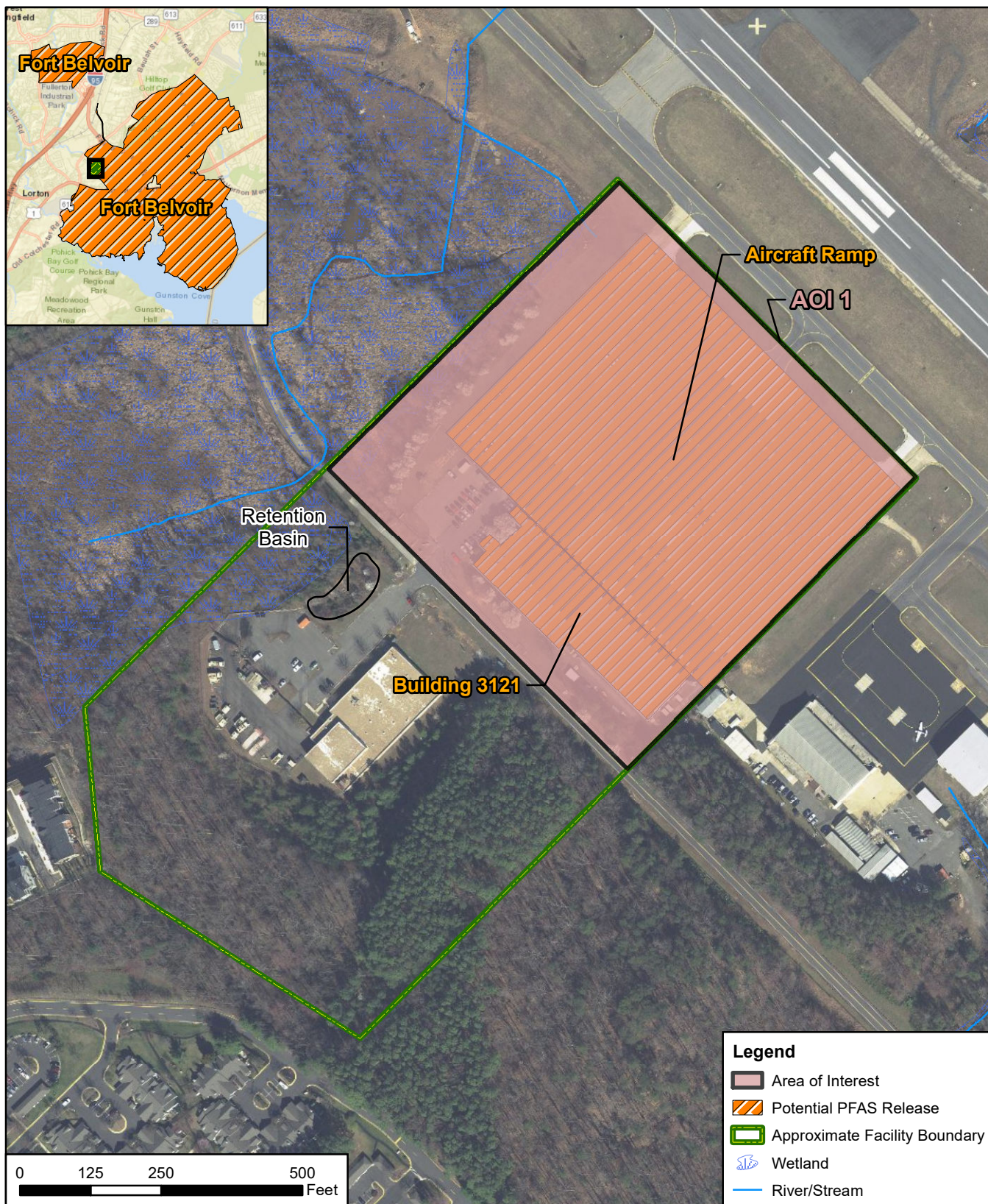
- Reviewed available administrative record documents and Environmental Data Resources, Inc. (EDR)TM report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit on 18 October 2019 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current DCARNG personnel during the site visit;
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

One AOI related to a potential PFAS release was identified at the AASF during the PA. The AOI is shown on **Figure ES-1** and described in **Table ES-1** below:

Table ES-1: AOIs at the AASF

Area of Interest	Name	Used by	Potential Release Date
AOI 1	Building 3121 and Aircraft Ramp	DCARNG	Unknown

Based on potential PFAS releases at the AOI, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for the AASF, which presents the potential receptors and media impacted, is shown on **Figure ES-2**. Based on the United States Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the USEPA's lifetime Health Advisories within 20 miles of the facility. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 sampling but might be detected if analyzed today.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at AASF, Fort Belvoir, VA			
REVISED	2/12/2020	GIS BY	MS	2/12/2020
SCALE	1:3,000	CHK BY	ST	2/12/2020
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	2/12/2020



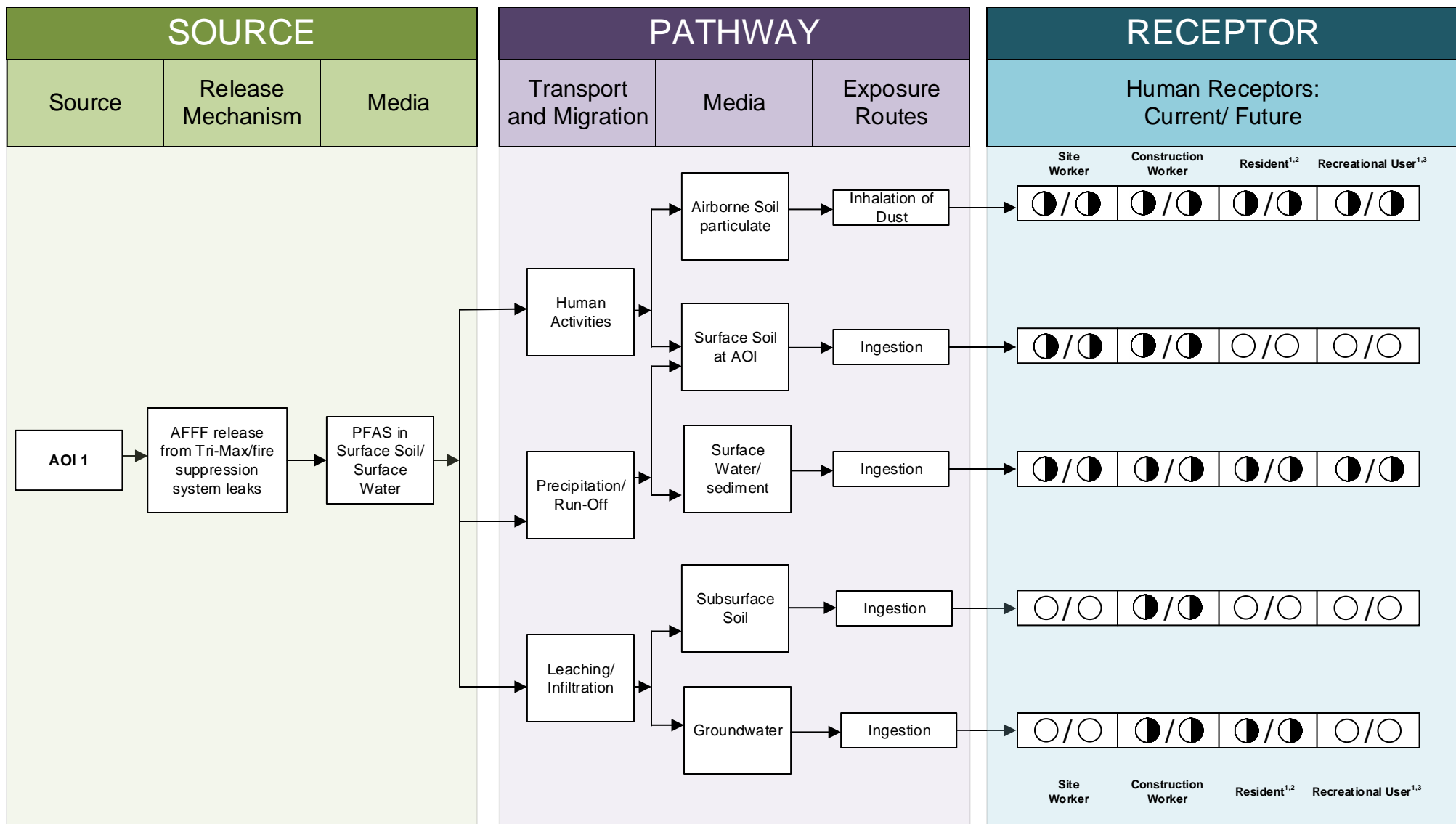
Summary of Findings

AECOM

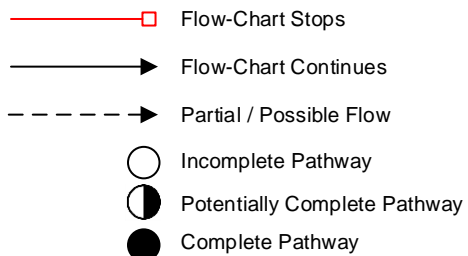
12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1

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LEGEND



NOTES

1. The resident and recreational users refer to off-site receptors.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. Human consumption of fish potentially affected by PFAS is possible.

Figure ES-2
Preliminary Conceptual Site Model
AASF, VA

1. Introduction

1.1 Authority and Purpose

The Army National Guard (ARNG)-Installations & Environment Division is the lead agency in performing *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) at Impacted Sites at ARNG Facilities Nationwide*. This work is supported by the United States (US) Army Corps of Engineers (USACE) Baltimore District and their contractor AECOM Technical Services, Inc. (AECOM) 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 facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, although other PFAS sources are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of PFAS compounds in the environment varies. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued lifetime Drinking Water Health Advisories (HAs) 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 State of Virginia does not currently have drinking water standards for PFAS.

This report presents the findings of a PA for PFAS-containing materials at the Army Aviation Support Facility (AASF; also referred to as the “facility”) in Fort Belvoir, Virginia 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 [CFR] Part 300), and Army requirements and guidance.

This PA documents the known fire training areas (FTAs) as well as other locations where PFAS may have been released into the environment at the AASF. 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 available administrative record documents and Environmental Data Resources, Inc. (EDR)[™] report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit on 18 October 2019 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current District of Columbia ARNG (DCARNG) personnel during the site visit;

- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment 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 as follows:

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

1.4 Facility Location and Description

The facility is located in an enclave of Davison Army Airfield (DAAF) at US Army Garrison Fort Belvoir, Fairfax County, Virginia. The facility occupies 25.15 acres of land along the southern flightline of DAAF. The address of the facility is listed as 5000 Britten Drive, Fort Belvoir, Virginia 22060. **Figure 1-1** illustrates the location of the AASF.

The facility is used for airfield operational functions and maintenance and storage for DCARNG rotary and fixed-wing aircraft. DCARNG began occupation of the property in 1972, and the licensing term has been extended until 2037. Property licensing agreements are included in **Appendix A**.

1.5 Facility Environmental Setting

The surrounding property within DAAF includes aircraft hangars, industrial and administrative office buildings, concrete and asphalt pads, and landscaped areas currently used for the support of airfield activities (AECOM, 2018). Commercial areas are located west of the facility, and residential areas are located south of the facility. The general topography of the facility slopes

towards the north/northeast, and the topography ranges in elevations between 45 and 75 feet above mean sea level.

1.5.1 Soil

The soils at the facility belong primarily to three soil associations: Urban Land Complex, Lunt-Marumsc Complex, and Hatboro Silt Loam. The Urban Land Complex soil series represents areas that have been heavily altered or developed for construction. The Lunt-Marumsc Complex and Hatboro Silt Loam are generally characterized as having poor drainage (Avatar and AECOM, 2018). Soils borings collected during a site characterization investigation at the adjacent Building 3233 in DAAF encountered a semi-confining clayey-sand layer at about 17 to 18 feet below ground surface (bgs) (AECOM, 2018). Soil lithology near the surface consisted of varying thicknesses of clayey to silty sand or sandy silt (Apex, 2014).

1.5.2 Geology

The facility is located on the upland subprovince of the Virginia Coastal Plain Physiographic Province and is primarily underlain by the Quaternary estuarine deposits. The estuarine deposits are characterized as moderately-well to poorly-graded sands and gravels grading to clayey to silty sand with increasing depth (Fort Belvoir, 1994). The estuarine deposits are underlain by the unconsolidated sediments of the Potomac Formation, which consist of thin to thick-bedded layers of medium to coarse sand, silty clay, and gravelly sand (**Figure 1-2**) (AECOM, 2018).

1.5.3 Hydrogeology

A shallow unconfined aquifer underlies the facility and varies in thickness from three to eight feet. The water bearing unit consists of moderately-well to poorly-graded sands and gravels (Fort Belvoir, 1994). The clayey-sand layer encountered at about 20 feet bgs serves as a bounding unit for vertical groundwater movement and likely corresponds to the lower boundary of the unconfined aquifer (Apex, 2014; Fort Belvoir, 1994).

Regional groundwater flows generally to the northeast, following the surface water drainage. However, localized groundwater flow may vary depending on the topography. For example, based on a site characterization of the adjacent Building 3233, local groundwater flow was towards Building 3233 due to a low depression area between Buildings 3233 and 3234. A horizontal gradient of 0.04 was measured across the site, and groundwater was encountered ranging from 10 to 13 feet bgs (AECOM, 2018).

There are no drinking water wells within the facility. Potable water is supplied by the American Water Company and is sourced from the Potomac River and Occoquan Reservoir (Virginia American Water, n.d.). Based on the EDR™ report (**Appendix A**), there is one active public water supply well indicated to lie approximately one mile north (downgradient) of the facility. Additional wells classified as public/ municipal/ government, domestic, industrial, monitoring/ observation, and unknown lie within a four-mile radius of the facility. Based on the USEPA Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the HAs within 20 miles of the facility. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 sampling but might be detected if analyzed today. Groundwater features are presented in **Figure 1-2**.

1.5.4 Hydrology

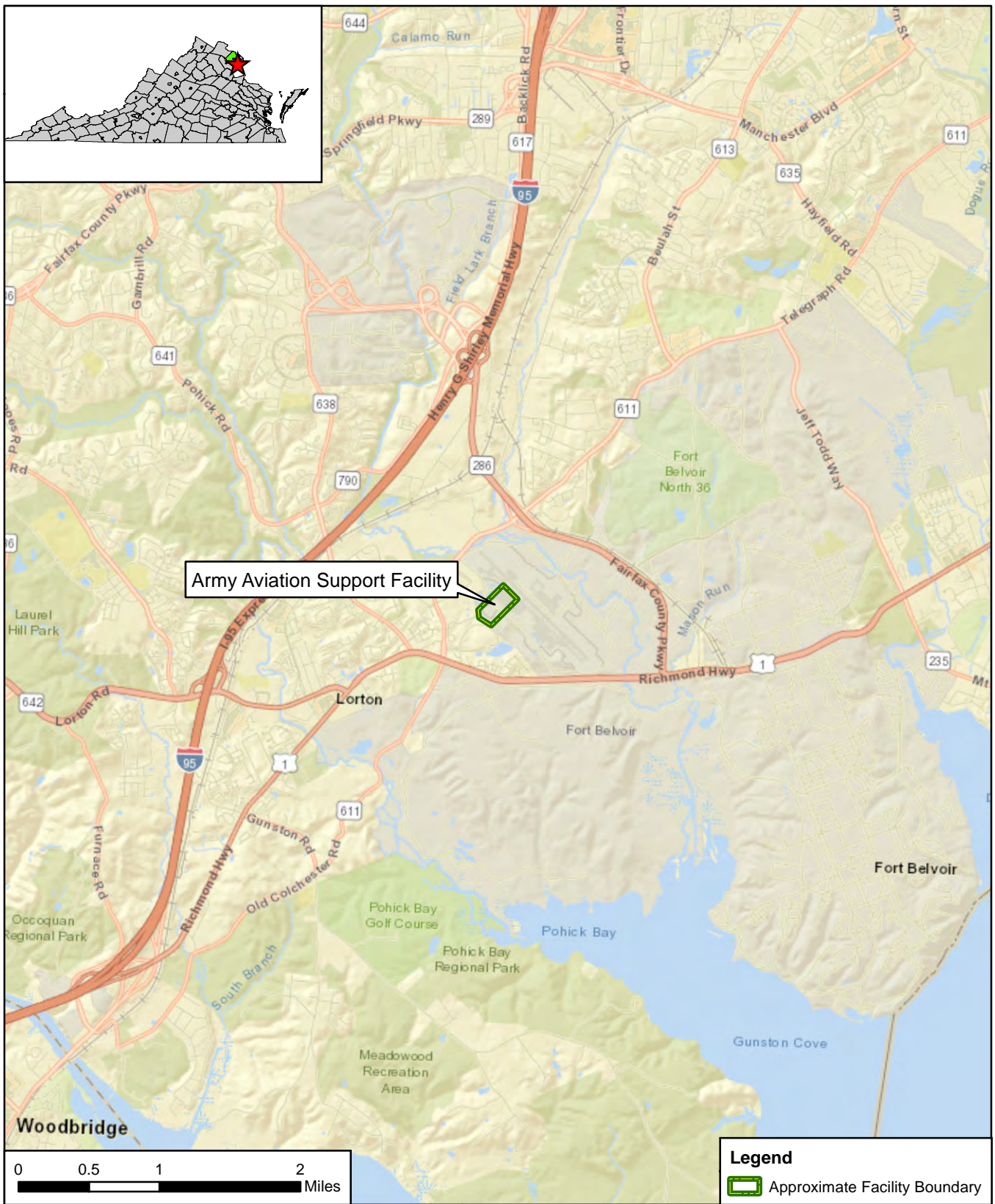
Surface water drainage for the facility is generally in the northeast direction towards Accotink Creek. Stormwater is conveyed through perennial streams or stormwater conveyance pipes that both lead into an unnamed tributary of Accotink Creek. A stormwater basin is also located in the area between Buildings 3121 and 3123 on the west side of the paved parking lot. The outfall point, designated RO-002, is located near the intersection of Sanjer Drive and Ehlers Road and captures drainage from other facilities and aircraft ramps within DAAF (SES, 2017). Surface water features are presented in **Figure 1-3**.

1.5.5 Climate

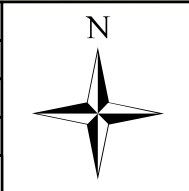
The facility is in a humid subtropical climate zone, characterized by long and warm summers and short and mild winters. Based on the monthly averages for Ronald Reagan Washington National Airport, summer temperatures peak in July, with an average high temperature of 88 degrees Fahrenheit (°F) and an average low temperature of 71 °F. Winter temperatures are lowest in January, with an average high temperature of 43 °F and an average low temperature of 29 °F. Rainfall is generally greater during the summer months but otherwise well distributed year-round, with a normal annual precipitation of 39.7 inches (National Weather Service, 2020).

1.5.6 Current and Future Land Use

The facility houses airfield operational functions and provides maintenance and storage for DCARNG rotary and fixed-wing aircraft. Related infrastructure consists of Building 3123, Aviation Personnel Support Center/Readiness Center, and Building 3121, AASF Hangar, a paved parking lot, and an aircraft ramp. Buildings 3123 and 3121 at DAAF are both leased to DCARNG. Reasonably anticipated land use is not expected to change from the current land use.

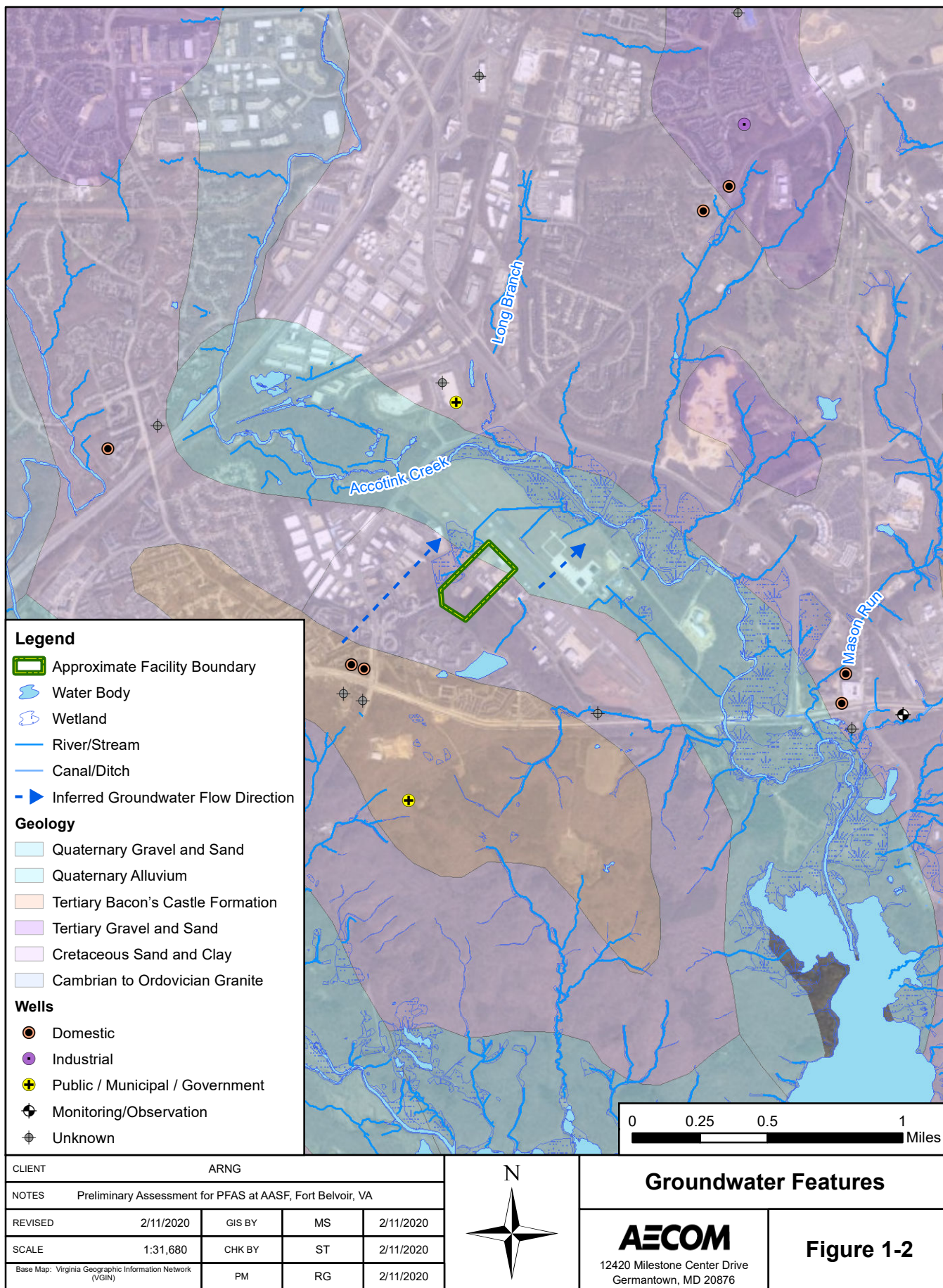


CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at AASF, Fort Belvoir, VA			
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SCALE	1:63,360	CHK BY	ST	2/11/2020
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	2/11/2020

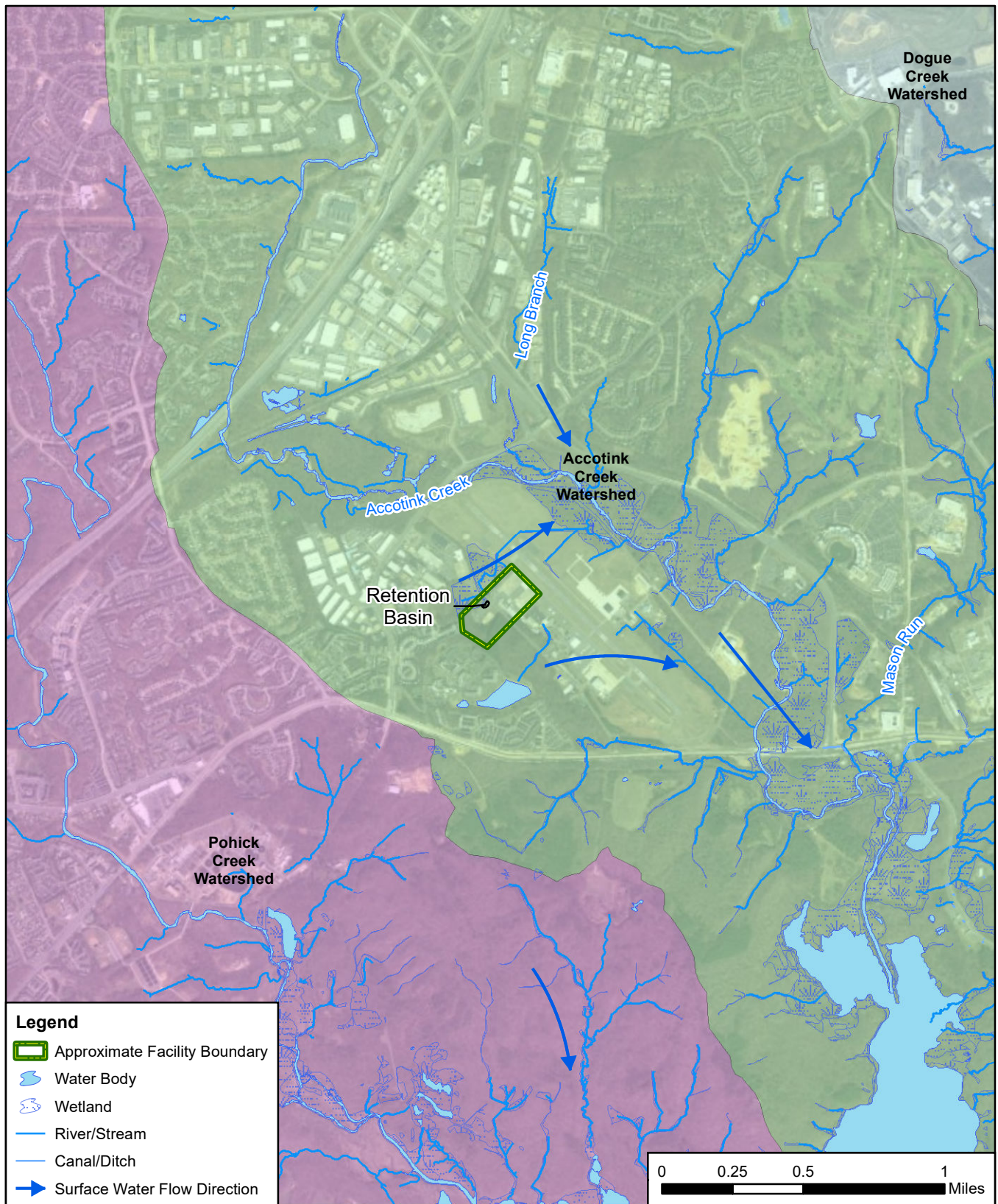




Facility Location	
<p>12420 Milestone Center Drive Germantown, MD 20876</p>	<p>Figure 1-1</p>

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CLIENT					<div>N</div> 	Surface Water Features	
NOTES Preliminary Assessment for PFAS at AASF, Fort Belvoir, VA						<div> 12420 Milestone Center Drive Germantown, MD 20876</div> <div>Figure 1-3</div>	
REVISED	2/11/2020	GIS BY	MS	2/11/2020			
SCALE	1:31,680	CHK BY	ST	2/11/2020			
Base Map: Virginia Geographic Information Network (VGIN)			PM	RG		2/11/2020	

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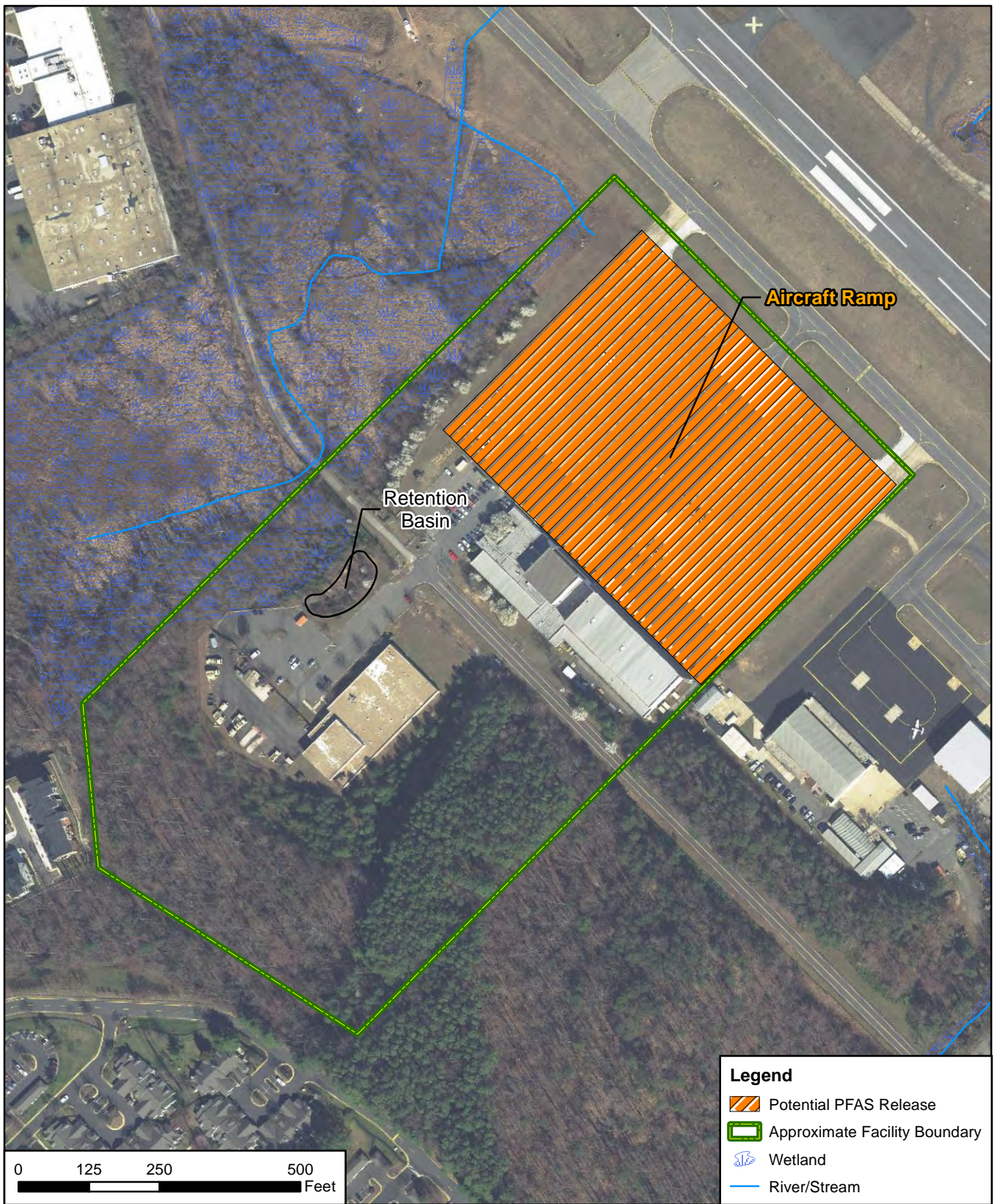
2. Fire Training Areas

One FTA was identified through record reviews and interviews during the PA as described below. The FTA is shown on **Figure 2-1**.

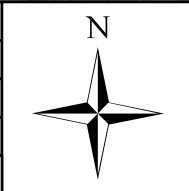
2.1 Aircraft Ramp

Training sessions where personnel are instructed on how to use Purple K dry chemical fire extinguishers, also referred to as “familiarization training”, are conducted on the aircraft ramp in front of Building 3121. There are currently three Purple K fire extinguishers located on the aircraft ramp. The familiarization training is conducted annually and supervised by the DAAF fire marshal. According to the interviewed DCARNG personnel, smaller, handheld, dry chemical fire extinguishers are discharged in lieu of the Purple K fire extinguishers located on the ramp, and a firebox containing live fire is occasionally used for the training.

Tri-Max™ fire extinguishers were stored on the aircraft ramp prior to being replaced with Purple K fire extinguishers. The Tri-Max™ fire extinguishers were never used or spilled according to the knowledge of the interviewees, which extends from 1989 to present. The DAAF Fire Department was responsible for maintaining the Tri-Max™ fire extinguishers and conducting hydrostatic testing. The Tri-Maxes were turned into the Defense Logistics Agency (DLA) Disposition Services in 2012. Based on the disposal records located in **Appendix A**, there were 14 Tri-Max™ fire extinguishers turned in, and a hydrostatic test was conducted in 2008. A Safety Data Sheet for BlastGuard 6% Synthetic Foam Concentrate was also included with the disposal records; however, it could not be confirmed if this material were used within the Tri-Max™ fire extinguishers and if the material contained PFAS. Although PFAS are not listed on the Safety Data Sheet, the sheet only lists hazardous components and does not definitely state the BlastGuard 6% Synthetic Foam Concentrate does not contain PFAS.



CLIENT	ARNG			
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REVISED	2/11/2020	GIS BY	MS	2/11/2020
SCALE	1:3,000	CHK BY	ST	2/11/2020
Base Map: Virginia Geographic Information Network (VGIN)		PM	RG	2/11/2020



Fire Training Area	
AECOM 12420 Milestone Center Drive Germantown, MD 20876	Figure 2-1

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3. Non-Fire Training Areas

In addition to FTAs, the PA evaluated areas where PFAS-containing materials may have been broadly used, stored, or disposed. This may include buildings with fire suppression systems, paint booths, AFFF storage areas, and areas of compliance demonstrations. Information on these features obtained during the PA are included in **Appendices A** and **B**. One non-FTA where AFFF was stored and/or potentially released was identified during the PA. A description of the non-FTA is presented below, and the non-FTA is shown on **Figure 3-1**.

3.1 Building 3121

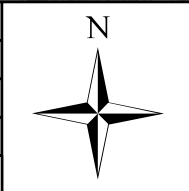
Building 3121 is a 47,000-square foot maintenance hangar. The original section of Building 3121 was constructed in 1981 and later expanded in 1985 (Avatar and AECOM, 2018). The northwestern portion of the hangar contains fixed-wing aircraft, and the southeastern portion contains rotary aircraft. Both portions are connected to an AFFF fire suppression system, which was installed during the original construction for the building.

There are two AFFF tanks for the fire suppression system housed within a tank room in Building 3121. The tanks are marked with dates indicating the levels within the tank to estimate the volume of AFFF leaking. Based on the markings, approximately 50 gallons of AFFF leaked from each tank, with both tanks originally containing about 300 gallons of AFFF. The markings also indicate that the tanks leaked AFFF beginning from August 2012 until June 2014. According to interviewed DCARNG personnel, the AFFF leakage was captured using absorbent mats placed underneath the two tanks; the disposal method for the absorbent mats is unknown. The leaks were caused by a corroded valve, and the valve was subsequently repaired in 2014. The type of AFFF leaked is unknown, but DCARNG personnel stated that the tanks have never been refilled.

Weekly inspections of the AFFF fire suppression system are performed by a state technician, and monthly inspections are performed by a DAAF Fire Department personnel. According to interviewed DCARNG personnel, there have been several repairs to the fire pump and piping due to water leaks. The latest repair occurred in August 2019.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at AASF, Fort Belvoir, VA			
REVISED	2/11/2020	GIS BY	MS	2/11/2020
SCALE	1:3,000	CHK BY	ST	2/11/2020
Base Map: Virginia Geographic Information Network (VGIN)		PM	RG	2/11/2020



Non-Fire Training Area	
AECOM 12420 Milestone Center Drive Germantown, MD 20876	Figure 3-1

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4. Emergency Response Areas

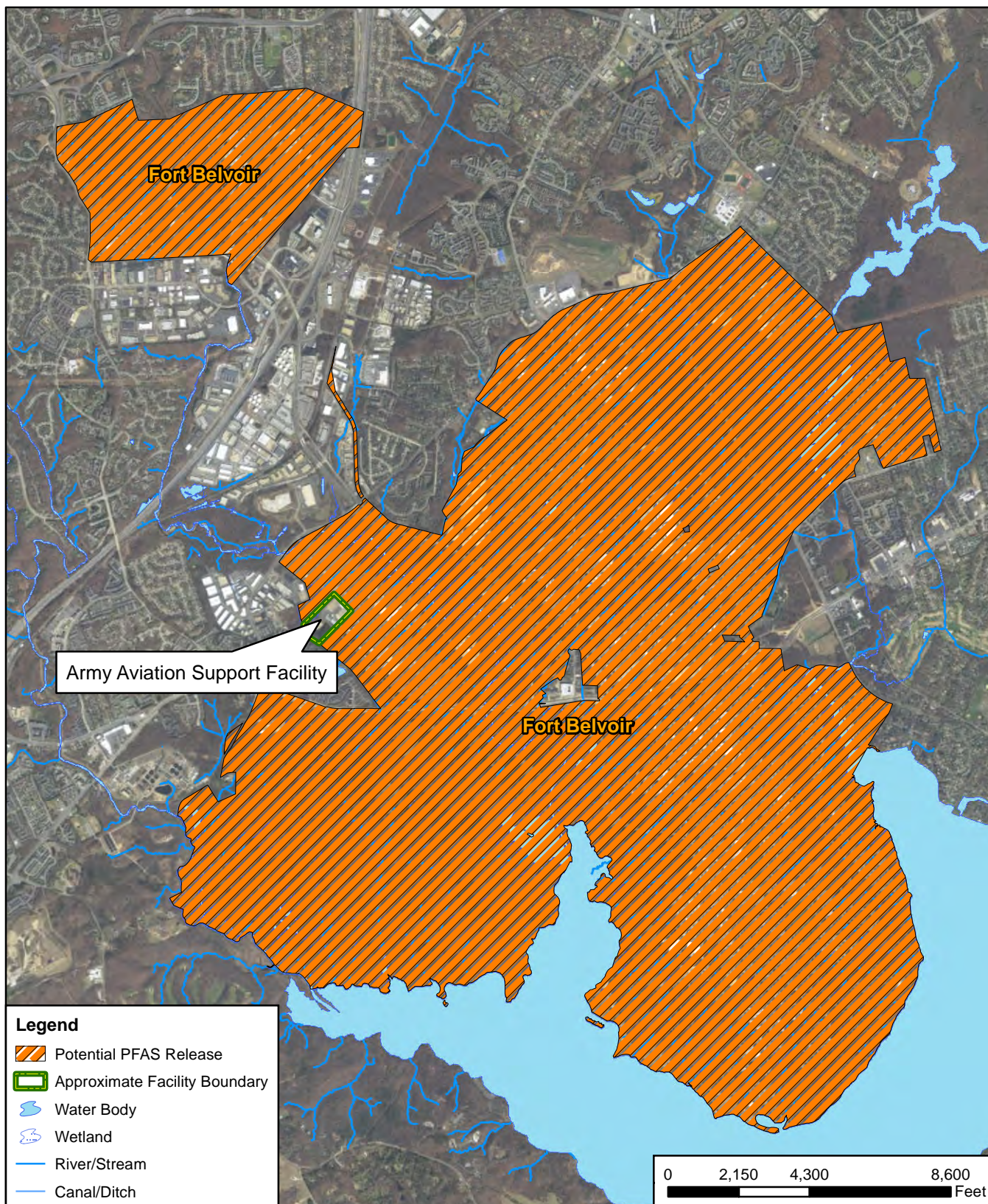
Emergency responses to crashes sometimes require flame suppression, which may result in the release of PFAS to the environment in the form of AFFF. No emergency response areas were identified within the facility during the PA through interviews with DCARNG personnel. The DAAF Fire Department is the designated first responder for emergencies at the facility. A support agreement between the US Army Garrison Fort Belvoir and the AASF is located in **Appendix A**.



5. Adjacent Sources

A potential source of PFAS adjacent to the facility, not under the control of the DCARNG, was identified during the PA. A description of the adjacent source is presented below, and the adjacent source is shown on **Figure 5-1**.

5.1 US Army Garrison Fort Belvoir

The property surrounding the facility is under the control of US Army Garrison Fort Belvoir, which is being investigated under a separate PFAS PA Program. Notable incidents at US Army Garrison Fort Belvoir that may have resulted in the release of PFAS include the 2018 Lakota Hangar (Building 3140) deluge system release and a 1984 army aircraft crash south of DAAF (UPI Archives, 1984). According to the incident report for the Lakota Hangar deluge system release (**Appendix A**), 324 gallons of Ansul Jet X 2% High Expansion Foam Concentrate were released during an accidental activation of the deluge system on 17 May 2018. The foam ran out of the hangar and into the stormwater conveyance system and runway. The foam was cleaned from the site using vacuum trucks and Frac tanks and was subsequently sent to Waste Management Bethel Landfill in Hampton, Virginia for disposal.



CLIENT		ARNG				Adjacent Sources	
NOTES		Preliminary Assessment for PFAS at AASF, Fort Belvoir, VA					
REVISED	2/11/2020	GIS BY	MS	2/11/2020		 12420 Milestone Center Drive Germantown, MD 20876	Figure 5-1
SCALE	1:51,616	CHK BY	ST	2/11/2020			
Base Map: Virginia Geographic Information Network (VGIN)		PM	RG	2/11/2020			

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6. Preliminary Conceptual Site Model

Based on the PA findings, one area was identified at the facility where AFFF may have been stored or expended: AOI 1 Building 3121 and Aircraft Ramp. As such, this area is determined to be an AOI and may be a potential PFAS source area. The AOI location is shown in **Figure 6-1**.

The following section describe the CSM components and the specific preliminary CSM developed for AOI 1. 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. The preliminary CSM for AOI 1 is shown in **Figure 6-2**.

Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of PFAS toxicological studies (National Ground Water Association, 2018). Receptors at the facility include site workers, construction workers, residents, and recreational users. The preliminary CSM for the facility indicates which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1: Building 3121 and Aircraft Ramp

AOI 1 includes one non-FTA and one FTA: Building 3121 and the aircraft ramp, respectively. AFFF leaked from fire suppression system tanks in Building 3121, and Tri-Max™ fire extinguishers potentially containing AFFF were stored on the aircraft ramp.

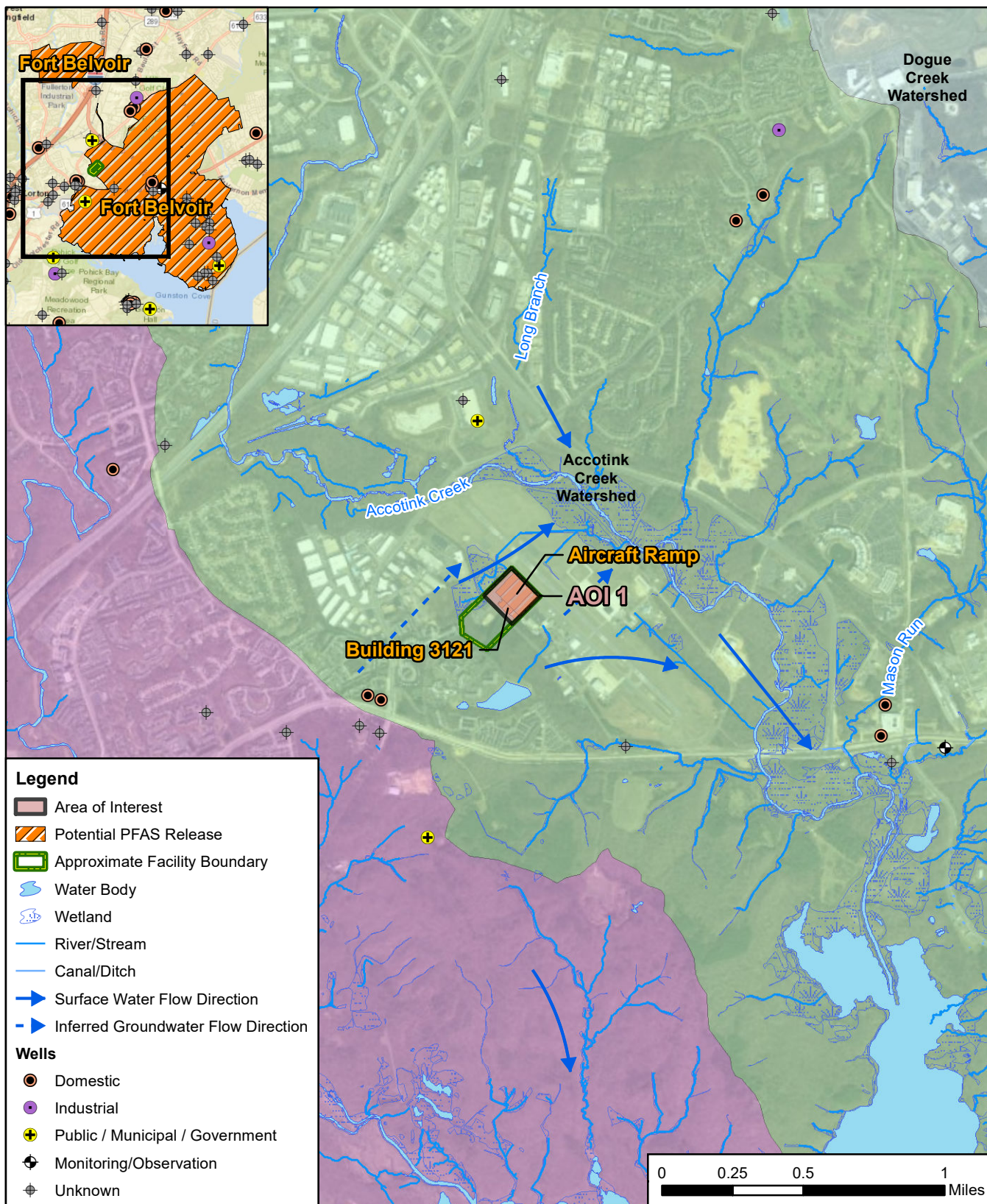
AFFF releases at Building 3121 were captured by absorbent pads that were disposed of in an unspecified manner. There are also trench drains located in Building 3121 that lead into a 2,000-gallon oil water separator. According to interviewed DCARNG personnel, the resulting discharge from the oil water separator leads into the sanitary sewer, and the oil water separator is serviced annually by American Water Company. Direct exposure pathways to receptors are unlikely due to the secondary containment and treatment of wastewater.



Potential AFFF releases on the aircraft ramp would have occurred primarily on paved surfaces but may run-off into unpaved surfaces. PFAS releases carried by run-off into surface soil may have infiltrated the subsurface soil. PFAS releases may have also infiltrated the subsurface soil via cracks in the pavement or in joints between areas that are paved with different materials. Ground-disturbing activities to soil at AOI 1 could result in construction worker exposure to potential PFAS contamination via inhalation of dust or ingestion of surface and subsurface soil. Inhalation of dust or ingestion of surface soil may also occur during the routine activities of site workers. Therefore, the inhalation and ingestion pathways for these receptors are considered potentially complete. The inhalation of dust for off-facility residents and recreational users of Accotink Creek is also a potentially complete pathway, although the exposure is likely insignificant.

PFAS releases carried by run-off likely drain downslope into tributaries of Accotink Creek. Off-facility receptors, such as residents and recreational users, may be exposed to PFAS via ingestion of surface water and sediment in Accotink Creek or via the ingestion of fish affected by PFAS. The on-facility presence of a stormwater basin near Building 3121 presents a potentially complete exposure pathway to site workers and construction workers via ingestion of surface water and sediment.

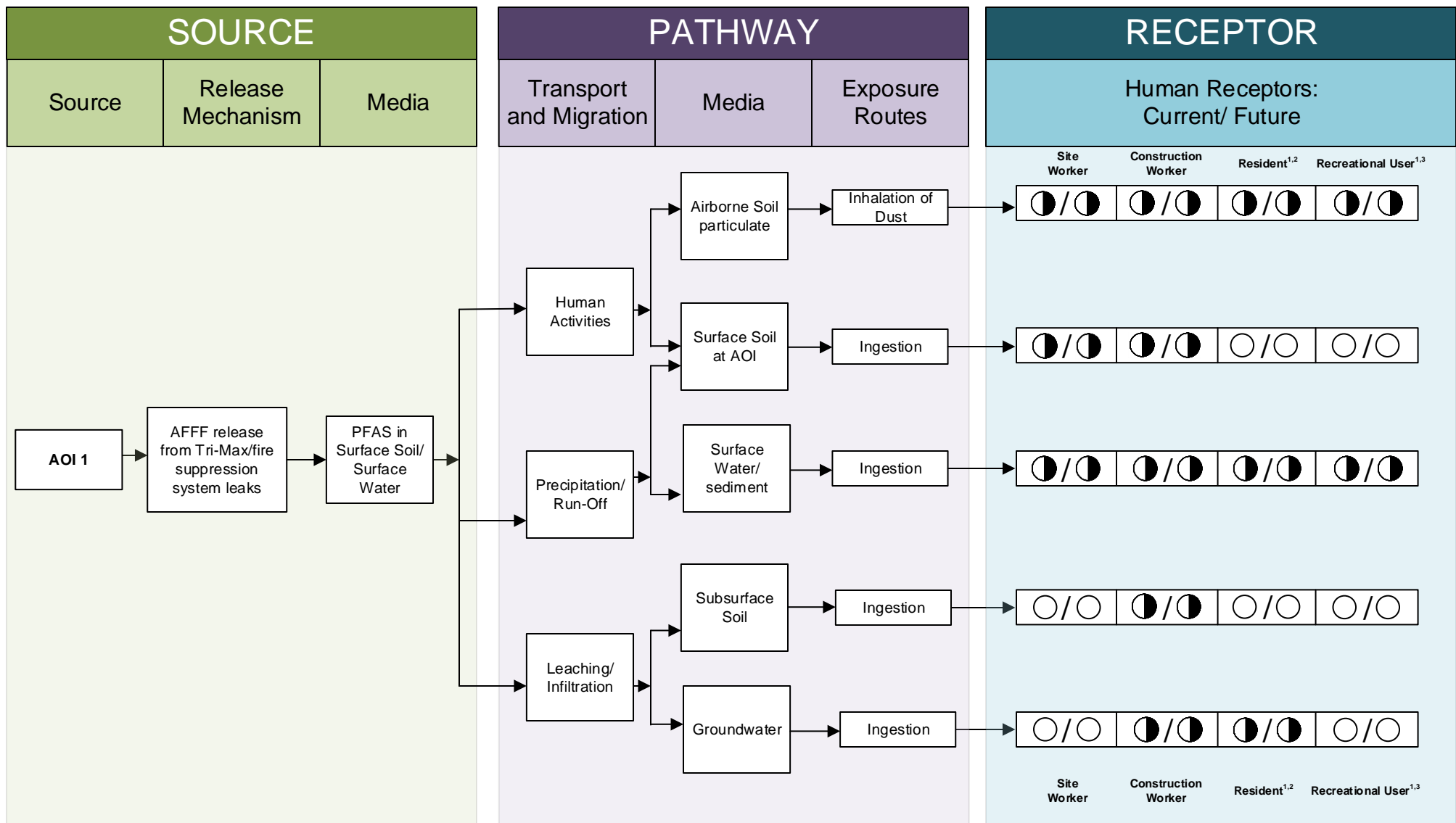
PFAS are water soluble and can migrate readily from soil to groundwater via leaching. No groundwater wells exist at the facility, and the facility receives potable water from American Water Company, which sources its water from the Potomac River and Occoquan Reservoir (Virginia American Water, n.d.). Both sources of water are greater than five miles away and are unlikely

impacted by PFAS releases from AOI 1. However, a public water supply well is located approximately 1 mile north of the facility and may be impacted by PFAS in groundwater; therefore, the groundwater ingestion pathways are potentially complete for residents. Groundwater at the facility is present at shallow occurrences (less than 15 feet bgs), so the groundwater ingestion pathway is potentially complete for construction workers under trenching scenarios. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.

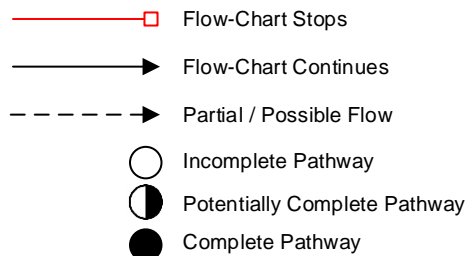


CLIENT		ARNG				Area of Interest		
NOTES		Preliminary Assessment for PFAS at AASF, Fort Belvoir, VA					Figure 6-1	
REVISED	2/12/2020	GIS BY	MS	2/12/2020				
SCALE	1:31,680	CHK BY	ST	2/12/2020				
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	2/12/2020				12420 Milestone Center Drive Germantown, MD 20876

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LEGEND



NOTES

1. The resident and recreational users refer to off-site receptors.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. Human consumption of fish potentially affected by PFAS is possible.

Figure 6-2
Preliminary Conceptual Site Model
AASF, VA

7. Conclusions

This report presents a summary of available information gathered during the PA on the use and storage of AFFF and other PFAS-related activities at the facility. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

One AOI related to potential PFAS release was identified (**Table 7-1**) at the facility during the PA (**Figure 7-1**):

Table 7-1: AOIs at the AASF

Area of Interest	Name	Used by	Potential Release Date
AOI 1	Building 3121 and Aircraft Ramp	DCARNG	Unknown

Based on potential PFAS releases at the AOIs, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for the facility, which presents the potential receptors and media impacted, is shown on **Figure 6-2**.

One potential off-facility source of PFAS, US Army Garrison Fort Belvoir, was considered in the local area surrounding the AASF through interviews or review of previous environmental investigations. US Army Garrison Fort Belvoir is being investigated under a separate PFAS PA Program.

7.2 Uncertainties

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

The conclusions of this PA are based on all available information, including: previous environmental reports, EDRs™, observations made during the VSI, and interviews. Interviews of personnel with direct knowledge of a facility generally provided the most useful insights regarding a facility's historical and current PFAS-containing materials. Sometimes, the provided information was vague or conflicted with site observations. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS were first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, 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, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected.

The following **Table 7-2** summarizes the uncertainties associated with the PA:

Table 7-2: Summary of Uncertainties

Area of Interest	Source of Uncertainty
AOI 1: Building 3121 and Aircraft Ramp	<p>A Safety Data Sheet for BlastGuard 6% Synthetic Foam Concentrate was included with the Tri-Max™ fire extinguisher disposal records (Appendix A); however, it could not be confirmed if this material were used within the Tri-Max™ fire extinguishers and if the material contained PFAS. Although PFAS are not listed on its Safety Data Sheet, the sheet only lists hazardous components and does not definitely state the BlastGuard 6% Synthetic Foam Concentrate does not contain PFAS.</p> <p>The type of AFFF leaked from the fire suppression system tanks in Building 3121 is unknown. Absorbent mats placed underneath the tanks were used to catch the AFFF leaks, but the disposal method for the absorbent mats is unknown.</p>
General	<p>Due to the limitation of interviewee knowledge, facility operations from 1972 (when ARNG began occupying the facility) to 1989 are unknown.</p> <p>US Army Garrison Fort Belvoir is being investigated under a separate PFAS PA Program. However, the findings of the investigation have not been made available as to date of this report.</p>

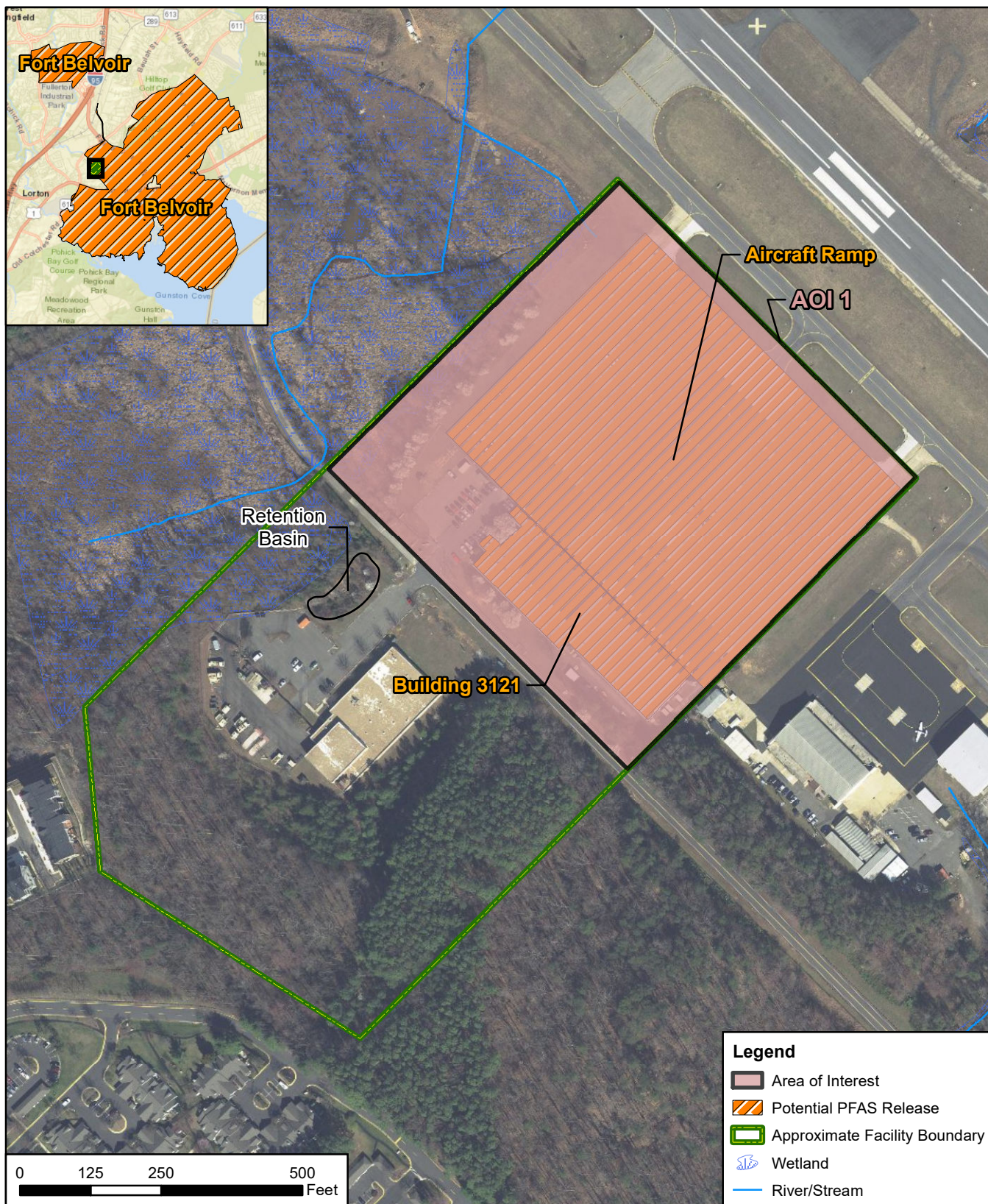
7.3 Potential Future Actions

Interviews and records (covering 1989 to present) indicate that current or former ARNG activities may have resulted in potential PFAS releases at one AOI identified during the PA. Based on the preliminary CSM developed for the AOI, there is potential for receptors to be exposed to PFAS contamination in soil, groundwater, surface water, and sediment at the AOI. **Table 7-3** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo an SI.

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1: Building 3121 and Aircraft Ramp	38°42'56.3"N; 77°11'06.2"W	AFFF leaked from fire suppression system tanks in Building 3121. Tri-Max™ fire extinguishers potentially containing AFFF were stored on the aircraft ramp.	Proceed to an SI, focus on soil, groundwater, surface water, sediment

ARNG will evaluate the need for an SI at the AASF based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources.



CLIENT ARNG				
NOTES Preliminary Assessment for PFAS at AASF, Fort Belvoir, VA				
REVISED	2/12/2020	GIS BY	MS	2/12/2020
SCALE	1:3,000	CHK BY	ST	2/12/2020
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	2/12/2020



Summary of Findings

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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8. References

AECOM Technical Services, Inc. 2018. (AECOM, 2018). *Final Building 3233 Site Characterization Report Addendum, U.S. Army Garrison Fort Belvoir*. November.

Apex Companies, LLC. 2014 (Apex, 2014). *Site Characterization Report, Davidson Airfield, Building 3233, DEQ PC # 2014-3100. Fort Belvoir, Virginia*. October 22.

Avatar Environmental and AECOM Technical Services, Inc. 2018. (Avatar and AECOM, 2018). *Fort Belvoir Davison Army Airfield Area Development Plan*. January.

National Ground Water Association, 2018. *Groundwater and PFAS: State of Knowledge and Practice*. January.

National Weather Service, 2020. *DCA Normals, Means, and Extremes*. <https://www.weather.gov/lwx/dcanme> (Accessed January 2020).

SES Construction and Fuel Services, LLC. 2017. (SES, 2017). *Davison Army Airfield, Facility SWPPP*. July.

United States Environmental Protection Agency (USEPA). 1991. *Guidance for Performing Preliminary Assessments under CERCLA*. September.

UPI Archives, 1984. "An Army executive aircraft crashed short of a runway..." <https://www.upi.com/Archives/1984/12/12/An-Army-executive-aircraft-crashed-short-of-a-runway/5663471675600/> (Accessed January 2020).

US Army, Fort Belvoir, Directorate of Engineering and Housing, 1994. (Fort Belvoir, 1994). *Closure Plan, Davison Army Airfield, Fire Training Facility*. September.

Virginia American Water, n.d. *Alexandria System*. <https://amwater.com/vaaw/about-us/virginia-water-systems/alexandria-system> (Accessed January 2020).

Appendix A

Data Resources

Data resources will be provided separately on CD. Data resources for Army Aviation Support Facility include:

Environmental Data Resources, Inc.™ Geocheck Report

- 2019 Environmental Data Resources, Inc.™ Geocheck Report for Fort Belvoir, VA

DCARNG Leasing Records

- 1972 License for National Guard Purposes, No. DACA-31-3-75-216
- 1987 Supplemental Agreement No. 1 to Department of the Army License No. DACA-31-3-75-216
- 2012 License No. DACA-31-12-092, Department of the Army License for National Guard Purposes, Year Round Training and Support Center, Fort Belvoir, Fairfax County, Virginia

DCARNG Support Agreements

- 1997 Support Agreement No. W26AAA-96100-847
- 2010 Support Agreement No. W26AAA-10144-847

Previous Environmental Investigations

- 1992 Interim Hydrogeologic Study Report, Davison Army Airfield Fire Training Site
- 1998 Ground-water Monitoring Well Closure Report, The Davison Army Airfield Fire Training Area
- 1998 Quarterly Groundwater Sampling, Fire Training Area, Davison Army Airfield, Fort Belvoir
- 1994 Closure Plan, Davison Army Airfield, Fire Training Facility
- 2002 Corrective Action Monitoring Report – First Quarter 2002, Building 3161
- 2012 RCRA Corrective Action, No Further Action Closure Document, Solid Waste Management Units, Main Post, U.S. Army Garrison Fort Belvoir, Virginia
- 2013 Corrective Action Monitoring Reports for Third Quarter 2013
- 2018 Final Building 3233 Site Characterization Report Addendum

Miscellaneous Information

- 2012 Tri-Max Disposal Records
- 2014 Fort Belvoir Integrated Cultural Resources Management Plan
- 2017 Facility SWPPP, Davison Army Airfield
- 2017 Notice of Fire Prevention Code Violation at Aircraft Hangar (DCNG)
- 2018 Fort Belvoir Davison Army Airfield Area Development Plan
- 2018 Fort Belvoir Integrated Natural Resources Management Plan
- 2018 General VPES Permit for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems, General Permit No.: VAR040093
- 2018 USEPA Spill Incident Report Form for DAAF, 6956 Britten Drive (Bldg. 3140, Lakota Hangar)

Appendix B

Preliminary Assessment Documentation

Appendix B.1

Interview Records

PA Interview Questionnaire - Environmental ManagerFacility: AASF DAAF Ft. BelvoirInterviewer: STDate/Time: 10/18/19

Interviewee: <u>see below</u> Title: _____ 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 _____
<p>1. Roles or activities with the Facility/years working at the Facility.</p> <p>CW3 [REDACTED] Maintenance Officer since 1989 (30 years)</p> <p>CW2 [REDACTED] – pilot and AASF ALSE Officer since 2009 (10 years)</p>	
<p>2. Where can I find previous facility ownership information?</p> <p>There are 7 units stationed at the AASF. They have both fixed wing and rotary wing aircraft. They are tenants of the Fort Belvoir Davison Army Airfield. All units will attend training at the same time.</p>	
<p>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.</p> <p>Maintenance Fire Training Areas Firefighting (Active Fire) Crash Fire Suppression Systems (Hangers/Dining Facilities) Fire Protection at Fueling Stations Non-Technical/Recreational/ Pest Management Metals Plating Facility Waterproofing Uniforms (Laundry Facilities) Other</p> <p>AFFF deluge system was never released. They had Tri-Maxes on airfield managed through Fort Belvoir DAAF but Tri-Maxes were never used to their knowledge. Tri-Maxes were turned in to the National Forest Registry in 2012. DAAF would have been responsible for performing maintenance on Tri-Maxes and hydrostatic testing.</p>	
<p>4. Fill out CSM Information worksheet with the Environmental Manager.</p>	
<p>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?</p>	

PA Interview Questionnaire - Environmental ManagerFacility: AASF DAAF Ft. BelvoirInterviewer: STDate/Time: 10/18/19

Both hangars in Building 3121 are connected to same AFFF deluge system. A state technician comes weekly for inspection of deluge system but they are unsure if there's any sensor testing or trips involved in testing. The deluge system was constructed with the building on July 6, 1981. There was an addition made to the building in 1985.

There's some corrosion on the pipes and evidence of leakage from AFFF tanks and water pump. The system was shut down and underwent maintenance in August 2019 to repair the water pump. There have been several repairs on the pump and piping. The technician stated there was always a leak. Pipe analysis was performed between June and July 2019. They believe nobody was refilling the AFFF tank.

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?

Currently charged. Unknown about retrofitting

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

Unknown

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

Unknown

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

Unknown

PA Interview Questionnaire - Environmental ManagerFacility: AASF DAAF Ft. BelvoirInterviewer: STDate/Time: 10/18/19

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?

They do familiarization training on ramp outside with fire marshall annually. Training involves being instructed on how to use the fire extinguishers outside (Purple K), but then they will actually discharge using smaller handheld extinguishers, presumably of the same kind. Sometimes they will discharge into a firebox that is on fire.

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 leakage from deluge system was captured using absorbent mats and then presumably disposed of in proper manner. There are drains in the tank room and in hangar. It is believed at least the drains in the hangar go into an OWS and then the sanitary sewer. The OWS is pumped annually by American Water Co.

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?

Each unit is responsible for own training and everything is all internal.

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

Unknown

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

N/A

PA Interview Questionnaire - Environmental Manager

Facility: AASF DAAF Ft. Belvoir

Interviewer: ST

Date/Time: 10/18/19

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?

Not known. Fire department on DAAF responds to emergencies.

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?

N/A

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

N/A

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?

Not known. There are also Main Post fire personnel that can come to respond to fire emergencies.

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)?

Unknown

PA Interview Questionnaire - Environmental Manager

Facility: AASF DAAF Ft. Belvoir

Interviewer: ST

Date/Time: 10/18/19

<p>20. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?</p> <p>No</p>
<p>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?</p> <p>N/A</p>
<p>22. What other records might be helpful to us (environmental compliance, investigation records, admin record) and where can we find them?</p> <p>N/A</p>
<p>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?</p> <p>No</p>
<p>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.?</p> <p>No</p>

PA Interview Questionnaire - Environmental Manager

Facility: AASF DAAF Ft. Belvoir

Interviewer: ST

Date/Time: 10/18/19

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

Unknown

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

Appendix B.2

Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI:

ST, CM

Recorded by:

ST

ARNG Contact:

BP

Date and Time:

10/18/19

Method of visit (walking, driving, adjacent):

walking

Source/Release Information

Site Name / Area Name / Unique ID:

Building 3121 & Ramp

Site / Area Acreage:

Historic Site Use (Brief Description):

Fixed-wing & rotary-wing aircraft hangar

Current Site Use (Brief Description):

same as above

Physical barriers or access restrictions:

DAAF perimeter gate

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

☒ Y ☐ N

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

leakage from AFFF deluge system tanks

2. Has usage been documented?

☒ Y ☐ N

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

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

~~Industrial / Commercial~~ / Plating / Waterproofing / Residential

3a. Indicate what businesses are located near the site

mainly just Fort Belvoir admin & aviation units

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

☒ Y ☐ N

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

Dawson Army Airfield

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system?

☒ Y / ☐ N

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

Unknown

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

leakage from pipes, tanks, and water pump

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

never replaced

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

hanger drains lead to OWS → Sanitary sewer

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation?

☒ Y / ☐ N

1a. If so, note observation and location:

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

☒ Y / ☐ N

2a. If so, please note observation and location:

ditches on left (west) of Site leading into Accothik Creek

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

☒ Y / ☐ N

3a. If so, please note the location:

near Building 3233

4. Are surface water intakes located near the site?

☒ Y / ☐ N

4a. If so, please note the location:

5. Can wind dispersion information be obtained?

☒ Y / ☐ N

5a. If so, please note and observe the location.

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

☒ Y / ☐ N

6a. If so, please note the source and location.

Fort Belvoir DAAF sources

6b. Will off-site reconnaissance be conducted?

☒ Y / ☐ N

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area?

☒ Y ☐ N

1a. If so, please describe change (ex. Structures no longer exist):

2. Is the site/area vegetated?

☒ Y ☐ N

2a. If not vegetated, briefly describe the site/area composition:

adjacent grassy areas

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:

Receptor Information

1. Is access to the site restricted?

☒ Y ☐ N

1a. If so, please note to what extent:

DAAF perimeter gate

2. Who can access the site?

Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological

2a. Circle all that apply, note any not covered above:

3. Are residential areas located near the site?

☒ Y ☐ N

3a. If so, please note the location/distance:

north ~~east~~ ^{west} and southwest ~~east~~ ^{west} within 1 mile

4. Are any schools/day care centers located near the site?

☒ Y ☐ N

4a. If so, please note the location/distance/type:

Elementary School northwest & southwest ~ 2 miles

5. Are any wetlands located near the site?

☒ Y ☐ N

5a. If so, please note the location/distance/type:

Accotink Creek within 1 mile north

Visual Survey Inspection Log

Additional Notes

Ramp previously had Tri-Max fire extinguishers that were never used and were replaced in 2012 with Purple K extinguishers.
Training for familiarization of extinguishers (Purple K) is performed annually and involves extinguishing fire in firebox.

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

Appendix B.3

Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: DCARNG AASF

Why has this location been identified as a site?

Identified leaking AFFF tanks at previous VSI conducted by Arcadis for US Army Garrison Fort Belvoir

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

The AASF is an enclave of US Army Garrison Fort Belvoir, and activities from Fort Belvoir may impact the AASF

Training Events

Have any training events with AFFF occurred at this site? training events with dry chemical (non-AFFF) extinguishers

If so, how often? Annually

How much material was used? Is it documented? Not documented

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? Northeast

Average rainfall? 40 inches

Any flooding during rainy season? No

Direct or indirect pathway to ditches? Indirect

Direct or indirect pathway to larger bodies of water? indirect

Does surface water pond any place on site? yes

Any impoundment areas or retention ponds? Yes

Any NPDES location points near the site? yes, outfall on unnamed tributary to Accotink Creek

How does surface water drain on and around the flight line? Carried through open channels or stormwater conveyance pipes

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Northeast

Depth to groundwater? 10-13 ft bgs

Uses (agricultural, drinking water, irrigation)? No groundwater use on facility

Any groundwater treatment systems? No

Any groundwater monitoring well locations near the site? yes, near Building 3233

Is groundwater used for drinking water? potentially yes off facility

Are there drinking water supply wells on installation? No

Do they serve off-post populations? No

Are there off-post drinking water wells downgradient? Potentially yes

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? No

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

Do we understand the fate of sludge waste? N/A

Is surface water from potential contaminated sites treated? N/A

Equipment Rinse Water

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

N/A

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?

N/A

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker yes

Construction Worker yes

Recreational User yes

Residential yes

Child yes

Ecological yes

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

Residential areas to south, commercial areas to the west, Davison Army Airfield

Documentation

Ask for Engineering drawings (if applicable).

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



Appendix C

Photographic Log



Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Army Aviation Support Facility	Fort Belvoir, Virginia
<p>Photograph No. 1</p> <p>Date 10/18/2019 Time 11:19</p> <p>Description: Two AFFF tanks are shown in the tank room of Building 3121.</p> <p>Orientation: Northwest</p>	 <p>This photograph shows two large, vertical, white cylindrical tanks in an industrial setting. The tanks are mounted on a metal platform. Various pipes and valves are visible at the base of the tanks. The lighting is somewhat dim, and the background shows other industrial equipment.</p>	
<p>Photograph No. 2</p> <p>Date 10/18/2019 Time 11:13</p> <p>Description: The AFFF tanks have a history of leaking. The AFFF levels in the first tank are marked from August 2012 to June 2014.</p> <p>Orientation: East</p>	 <p>This is a close-up photograph of a white tank surface. It shows several handwritten markings in black ink, which appear to be dates and possibly volume measurements, indicating AFFF levels over time. The markings include: <ul style="list-style-type: none"> - 8-23 - 9-7 - 9-28 - 10-1 - 11/2 - 11/15 - 1-3-13 - 6-18-14 There are also some faint, larger markings that look like "-300" and "-250". </p>	

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Army Aviation Support Facility	Fort Belvoir, Virginia
<p>Photograph No. 3</p> <p>Date 10/18/2019 Time 11:14</p> <p>Description: The AFFF tanks have a history of leaking. The AFFF levels in the second tank are marked from September 2012 to June 2014.</p> <p>Orientation: Southeast</p>		
<p>Photograph No. 4</p> <p>Date 10/18/2019 Time 11:14</p> <p>Description: The fire pump has a history of leaking water and is shown in the tank room of Building 3121.</p> <p>Orientation: Northwest</p>		

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS		Army Aviation Support Facility	Fort Belvoir, Virginia
Photograph No. 5 Date 10/18/2019 Time 11:19 Description: Building 3121 has an overhead AFFF fire suppression system in the hangar. Orientation: East			
Photograph No. 6 Date 10/18/2019 Time 11:26 Description: Trench drains are located on the perimeter of the hangar floor in Building 3121. The trench drains lead into an oil water separator. Orientation: Southeast			

Appendix C - Photographic Log

**Army National Guard, Preliminary
Assessment for PFAS**

Army Aviation Support Facility

Fort Belvoir, Virginia

Photograph No. 7

Date 10/18/2019

Time 11:27

Description:

Three Purple K dry chemical fire extinguishers (non-AFFF) are located on the aircraft ramp outside Building 3121.

Orientation:

West



Photograph No. 8

Date 10/18/2019

Time 11:31

Description:

The aircraft ramp is shown.

Orientation:

Northwest

