Final
Preliminary Assessment Report
1109th TASMG-Groton,
Groton, Connecticut

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

June 2020

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AOI	Area of Interest
ARFF	Aircraft Rescue and Firefighting
ARNG	Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
CTARNG	Connecticut Army National Guard
CTDEEP	Connecticut Department of Energy and Environmental Protection
EDR	Environmental Data Resources, Inc.
FTA	fire training area
GSE	Ground Support Equipment
NAVFAC	Naval Facilities Engineering Command
NOAA	National Oceanic and Atmospheric Administration
OWS	Oil-water separator
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site Inspection
SUBASENLON	Naval Submarine Base New London
TASMG	Theatre Aviation Sustainment Management Group
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VSI	visual site inspection
WWTP	Wastewater treatment plant
WPCF	Water Pollution Control Facility

Executive Summary

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division, Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide*. 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 released as part of firefighting activities, although other PFAS sources are possible.

AECOM completed a PA for PFAS at 1109th Theatre Aviation Sustainment Management Group (TASMG-Groton; also referred to as the "facility"), in Groton, Connecticut, to assess potential PFAS release areas and exposure pathways to receptors. The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases;
- Conducted a site visit on 10 December 2019;
- Interviewed current Connecticut ARNG (CTARNG) personnel during the site visit, including the Facility Administrative Officer, the Facility Environmental Supervisor, a Fire and Life Safety Program Officer, and a member of the Groton-New London Airport Fire Department;
- Completed visual site inspections at suspected PFAS release locations and documented with photographs;
- Developed a preliminary conceptual site model (CSM) to outline the potential release and pathway of PFAS for the Area(s) of Interest (AOIs) and the facility (**Figure ES-1**).

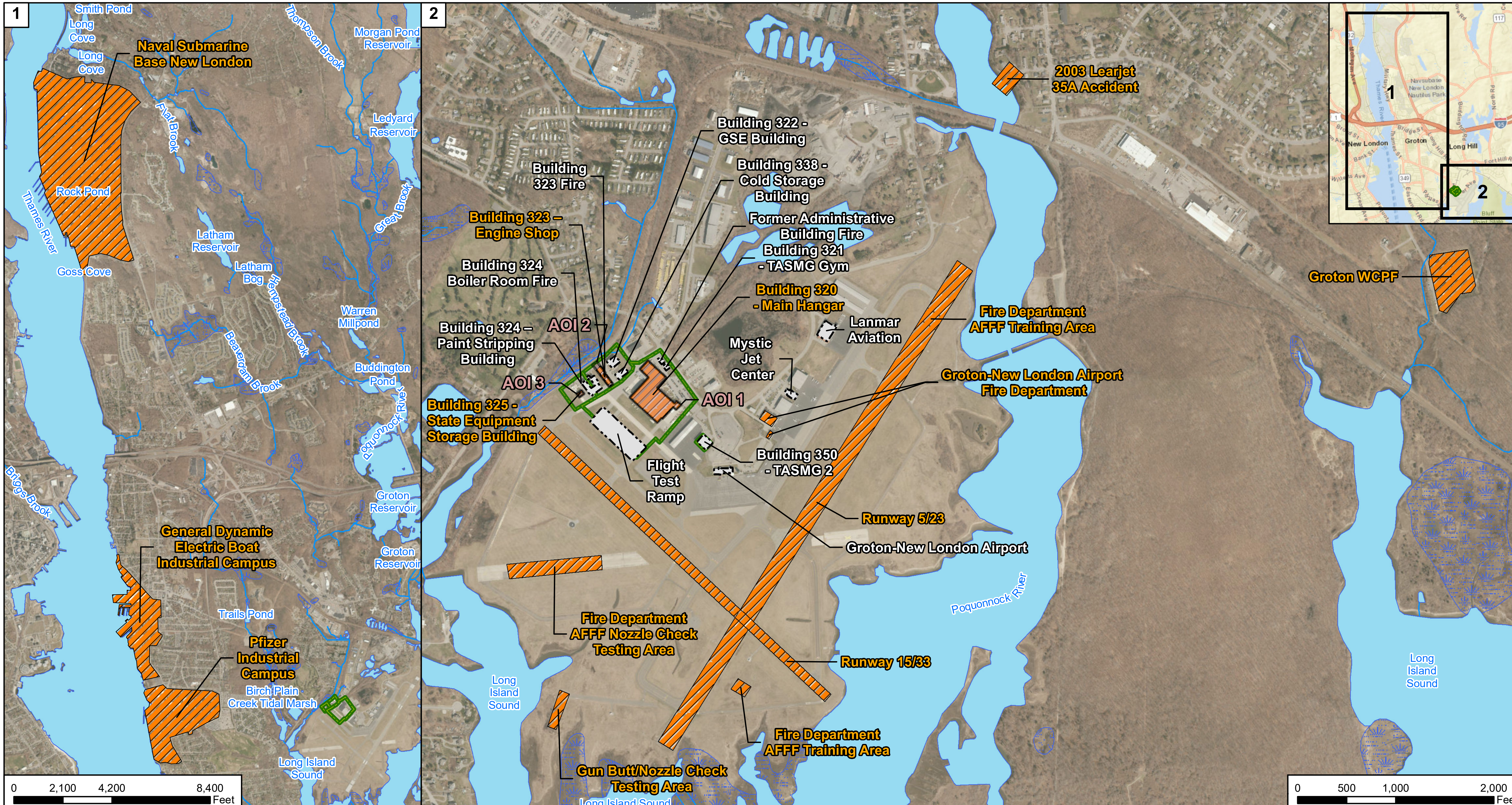
Three AOIs related to potential PFAS release were identified at TASMG-Groton based on PA data (**Figure ES-1**) and are summarized in **Table ES-1** below:

Table ES-1: AOIs at TASMG-Groton

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Building 320	CTARNG	2008-Present
AOI 2	Building 323	CTARNG	2010-2012 and 2014
AOI 3	Building 325	CTARNG	2008-Present

Based on the possible PFAS releases at the AOIs, there is potential for exposure to PFAS contamination in environmental media at the facility to site workers, construction workers, trespassers and off-facility recreational users of the surrounding water bodies. The preliminary CSM for TASMG-Groton, which presents the potential receptors and media impacted, is shown on **Figure ES-2**.

Based on the US Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 data, it was indicated that no PFAS were detected in a public water system above the USEPA's Lifetime Health Advisory level within 20 miles of the facility.



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PROJECT	Preliminary Assessment for PFAS at TASMG Groton, CT				
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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	3/31/2020	

Legend

- Area of Interest
- Potential PFAS Release
- No Suspected Release
- Facility Location
- Water Body
- Wetland
- River/Stream

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Summary of Findings

AECOM 12420 Milestone Center Drive Germantown, MD 20876

Figure ES-1

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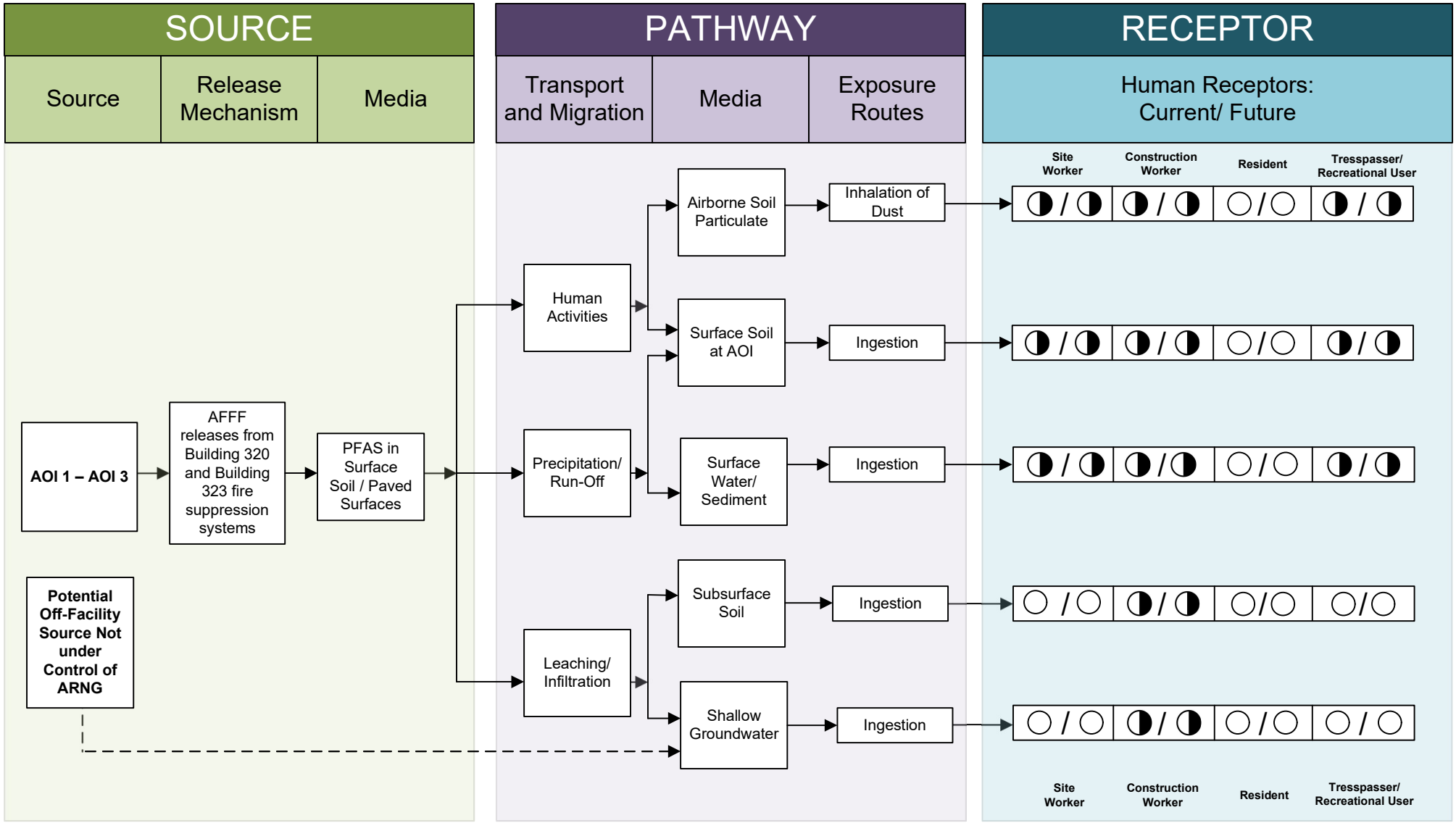


LEGEND

- 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 ES-2
Preliminary Conceptual Site Model
TASMG-Groton, CT

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, 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 facilities that used per- and poly-fluoroalkyl substances (PFAS), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, although other PFAS sources are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of PFAS compounds in the environment varies. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued Drinking Water Lifetime Health Advisories (HAs) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water.

This report presents the findings of a PA for PFAS at 1109th Theatre Aviation Sustainment Management Group (TASMG-Groton; also referred to as the “facility”), in Groton, Connecticut, 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 USACE requirements and guidance.

This PA documents locations where PFAS-containing materials may have been released into the environment at TASMG-Groton. 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 site visit on 10 December 2019;
- Interviewed current Connecticut ARNG (CTARNG) personnel during the site visit including the Facility Administrative Officer, the Facility Environmental Supervisor, a Fire and Life Safety Program Officer, and a member of the Groton-New London Airport Fire Department;
- Completed visual site inspections (VSIs) at suspected PFAS release locations and documented with photographs;
- Developed a preliminary conceptual site model (CSM) to outline the potential release and pathway of PFAS for the Area(s) of Interest (AOIs) and the facility.

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 fire training areas (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

TASMG-Groton is located in the city of Groton, in New London County, Connecticut (**Figure 1-1**). The facility is located on the Groton-New London Airport property, which is situated on a peninsula between the Poquonnock River, Baker Cove, Birch Plain Creek, and the Long Island Sound. TASMG-Groton comprises several buildings, including multiple hangars, office spaces, material storage areas, and a flight test ramp. The facility provides testing, repairs, and maintenance for CTARNG equipment and aircrafts. The facility also provides services to aircraft at the Groton-New London Airport and services ARNG operations in 14 northeastern states and the District of Columbia.

TASMG-Groton is located on state-owned property. The CTARNG established its presence on the property in the 1950s. The facility transitioned from an Aviation Classification and Repair Depot to the TASMG-Groton in 2012 and expanded upon its mission capabilities. A 2012 memorandum for the request of a temporary aviation unit facility to accommodate the expanded mission capabilities, as well as other real property documents, are included in **Appendix A**. TASMG-Groton occupies approximately 16 acres of the northwest corner of the airport. There are two guarded entranceways for vehicle traffic to access the facility. A chain link fence provides security along the north, east, and south sides of the facility. The southwest corner is open to the Groton-New London Airport, which maintains its own security for the area (CTARNG, 2019). Real estate documents were requested but not available at the time this report was prepared.

Groton-New London Airport was established in 1929; it was designated as a major training center for pilots and aircrews during World War II and was later transferred for operation to the Navy. The State of Connecticut resumed airport ownership and operations in 1949. In 1984, the airport was approved to operate commercial air service. The Connecticut Airport Authority maintains the Groton-New London Airport.

1.5 Facility Environmental Setting

TASMG-Groton and the larger Groton-New London Airport are located on a peninsula bordered by the Poquonnock River to the east, Baker Cove to the west and Long Island Sound to the south. Bluff Point and Bushy Point Beach form a breakwater-like barrier, separating the facility and airport property from Long Island Sound. Topography across the facility is generally flat, and topography across the larger airport area generally slopes radially away on the edges of the peninsula towards the surrounding water bodies. The facility is zoned for industrial/commercial use and is surrounded by properties zoned for commercial, industrial, and residential use. (CTARNG, 2019).

1.5.1 Geology

According to the 2005 Quaternary Geologic Map of Connecticut and Long Island Sound Basin, the facility and surrounding airport property is underlain by Poquonnock River deposits. These deposits are ice-marginal, fluviodeltaic sediments of the Long Island Sound Basin. Glacial sediments in the area are measured at thicknesses between 50-100 feet. The USGS generalized bedrock lithologic map indicates that bedrock beneath the facility is comprised of undivided schists and gneisses. The bedrock is mostly light-gray to medium-gray metasedimentary and metaigneous aluminous, felsic intermediate and mafic rocks of Proterozoic to Devonian age (US Geological Survey [USGS], 2005). Geologic materials are shown on **Figure 1-2**.

Virtually all areas at the Groton-New London airport are underlain with artificial fill. Perimeter soils on the edge of the peninsula are tidal and inland wetlands (DeCarlo & Doll, Inc. 1996).

1.5.2 Hydrogeology

The majority of the Connecticut coastline, including the town of Groton, lies within the Long Island Sound Basin and the much larger Long Island Sound Basin. These basins are principally drained by the Long Island Sound. TASMG-Groton and the larger surrounding airport property are underlain by groundwater that is designated as “class GB” by the Connecticut Department of Energy and Environmental Protection (CTDEEP), which indicates that the area has a long history of urban or industrial activity. Class GB groundwater is assumed to be degraded due to likely pollution sources, and it is presumed not to be suitable for human consumption without treatment (Connecticut Airport Authority, 2013). Due to the groundwater designation as class GB, the airport property including TASMG-Groton is supplied water drinking water by the Groton Utilities Water Operations. Groton Utilities Water Operations sources its water from a variety of groundwater wells and surface water reservoirs, some of which are located within 4 miles north and upgradient of the facility.

According to the USGS National Water Information System Mapper, a groundwater well (USGS CT-GT 19) is located approximately 800 feet northwest of TASMG-Groton. Data collected from the well in 2019, which is included in **Appendix A**, indicate that the depth to groundwater at the well location is approximately 15 feet below ground surface (USGS, 2019). Data for groundwater depth directly beneath TASMG-Groton is unavailable, but the depth to groundwater

beneath the facility is presumed to be similar to the depth to water measured at the nearby groundwater well.

Groundwater flow direction at the facility is unknown, but groundwater in the area generally flows south towards the Long Island Sound (**Figure 1-2**). Although no information was provided during this PA that stated groundwater depth at the facility, CTARNG personnel stated during interviews that groundwater is approximately 8-9 feet below ground surface at TASMG-Groton.

Based on the USEPA Unregulated Contaminant Monitoring Rule 3 data, it was indicated that no PFAS were detected in a public water system above the HA within 20 miles of TASMG-Groton.

1.5.3 Hydrology

There are no surface water bodies on the TASMG-Groton property; however, there are several surface water bodies immediately surrounding the property, and the airport lies on a coastal peninsula. The airport is located within the Southeast Costal Drainage Basin (Connecticut Airport Authority, 2013) and falls within the 100-year floodplain of the town of Groton. The area is subject to occasional flooding events during hurricanes and major nor'easters. During these events, floodwaters may extend onto areas surrounding the southern end of the airport runway and taxiway edges. During heavy rainfall events, localized flooding may also occur on the airplane parking ramps (Connecticut Airport Authority, 2013).

A small intermittent stream borders the northwest boundary of the CTARNG property and flows southwest into Birch Plain Creek and Baker Cove. A freshwater pond and forested wetland are present northeast of the parking lot northeast of the facility main gate (**Figure 1-3**) (US Fish and Wildlife Service, 2019). TASMG-Groton generally drains via surface drainage from the east to west. Stormwater runoff is also collected by catch basins throughout the facility. These catch basins channel flow west towards two main outlets near the northwestern portion of the facility that discharge into the small intermittent stream. Runoff entering the stream discharges to Baker Cove and ultimately into the Long Island Sound, directly south of the Groton-New London Airport. Any runoff entering the stormwater drainage system or the intermittent stream has the potential of migrating to the Long Island Sound and wetlands associated with the intermittent stream (CTARNG, 2019).

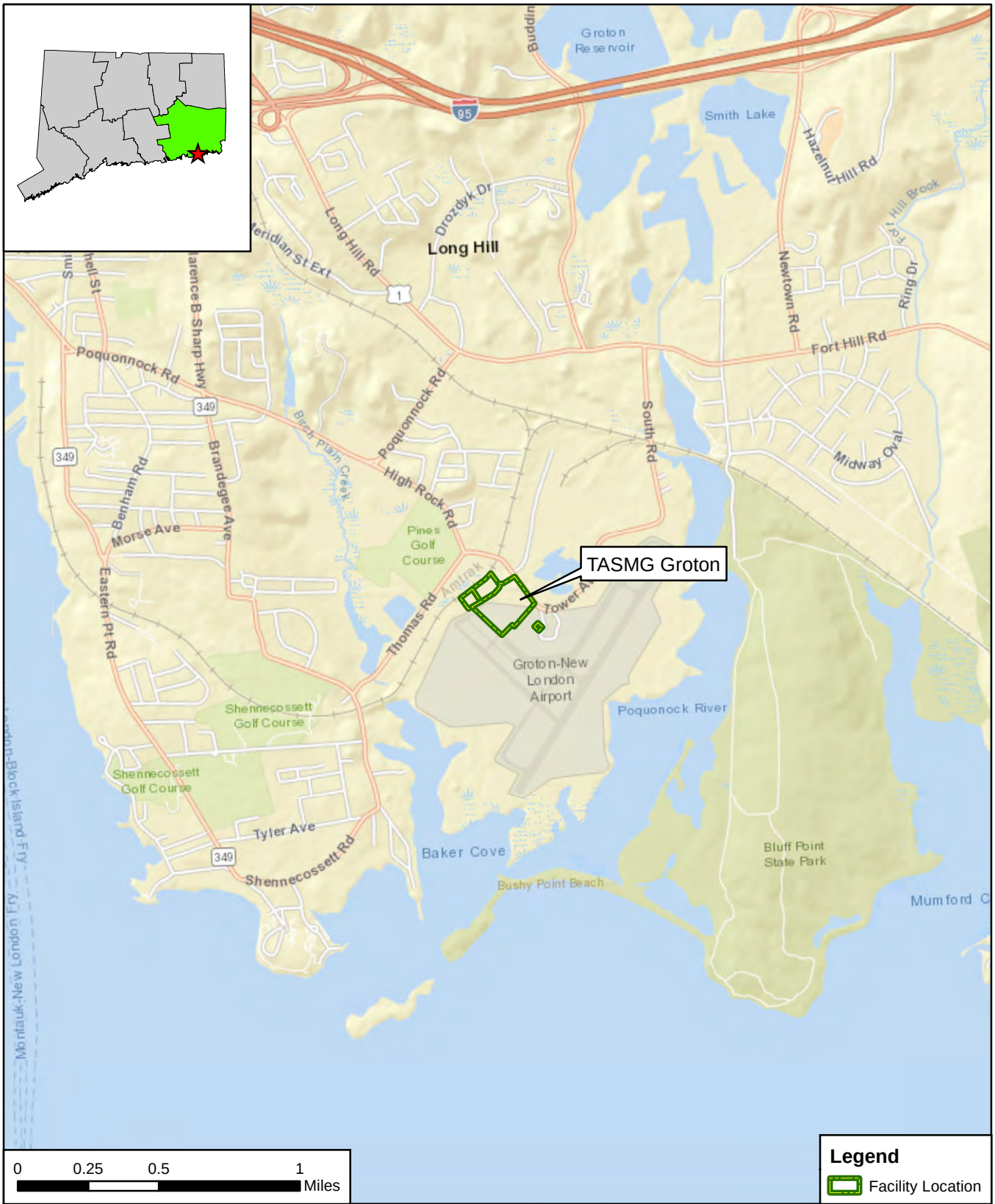
Additionally, discharge from a stormwater outlet pipe located behind Building 322 flows across a stretch of grass prior to entering an area filled with cattails and other vegetation associated with wetlands. This area, located along the fence line behind the building, has not been delineated or identified by USFWS as a wetland (CTARNG, 2019). Several oil-water separators (OWSs) are also positioned throughout the facility. The OWSs connect to municipal sanitary sewer pipes, which ultimately discharged to the Groton Water Pollution Control Facility (WPCF). All OWSs are permitted with CTDEEP under the General Permit for the Discharge of Wastewaters Associated with Vehicle Maintenance activities #GVM-000179 (CTARNG, 2019).

1.5.4 Climate

Data from Groton-New London Airport, Connecticut, indicate that the annual average temperature between 1981 and 2010 in was 50.4 degrees Fahrenheit (ºF) (National Oceanic and Atmospheric Administration [NOAA], 2019). The warmest months are July and August, with normal daily average temperatures of 70.6ºF and 70.4ºF, respectively. January is the coldest month, with an average temperature of 29.5ºF. Average annual precipitation at the airport measured from 1981 to 2010 was 46.49 inches. Average monthly precipitation ranges from 2.86 inches in February to 4.41 inches in April. The average annual snowfall is approximately 24 inches, with January and February usually experiencing the most snow (NOAA, 2019).

1.5.5 Current and Future Land Use

TASMG-Groton currently supports ARNG operations across northeastern states and the District of Columbia, as well as the Groton-New London Airport. Future land use at TASMG-Groton and the surrounding airport property is anticipated to remain the same.



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SCALE	1:31,680	CHK BY	JW	3/11/2020
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	3/11/2020

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Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

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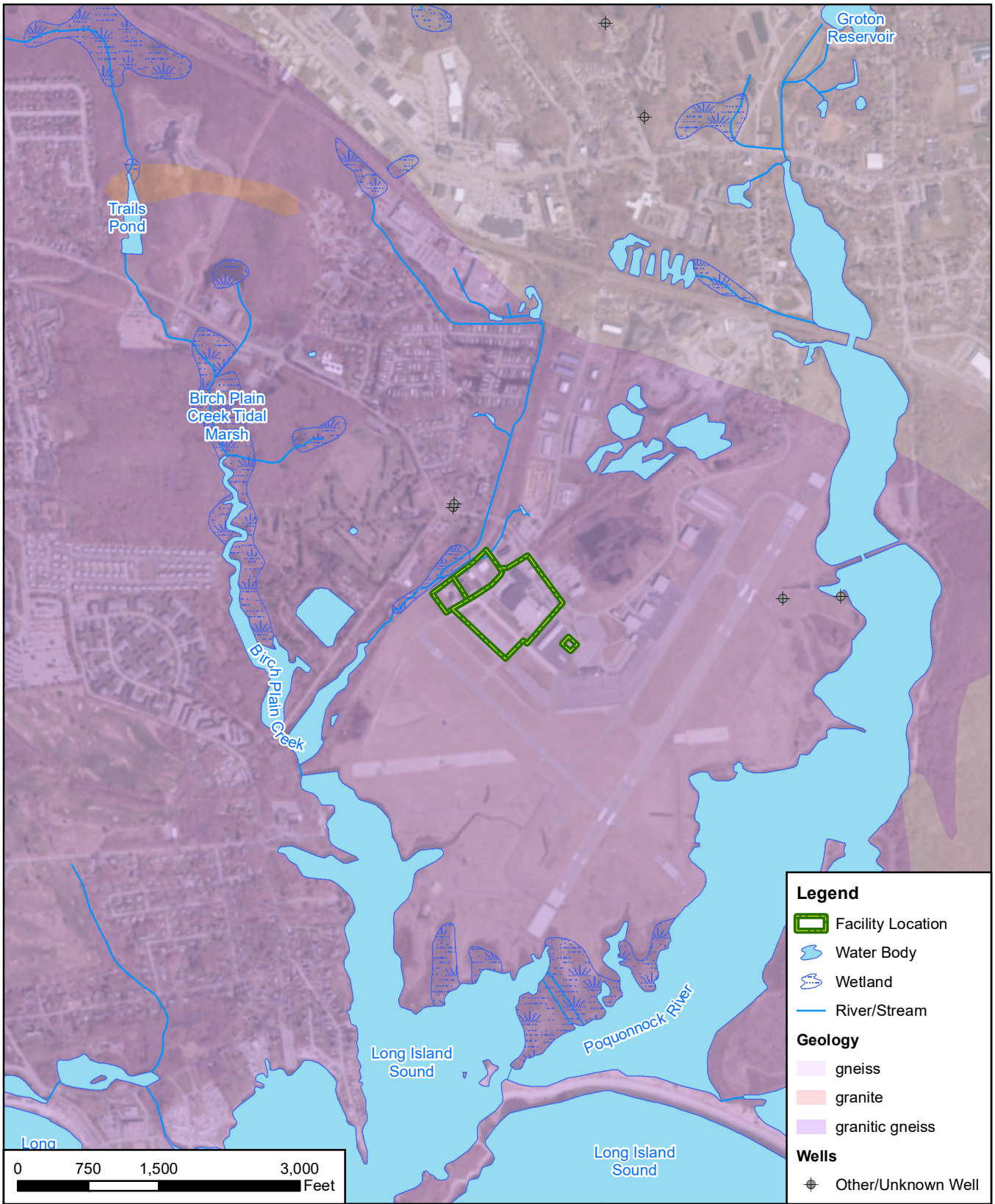

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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	3/31/2020

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Groundwater Features

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Figure 1-2

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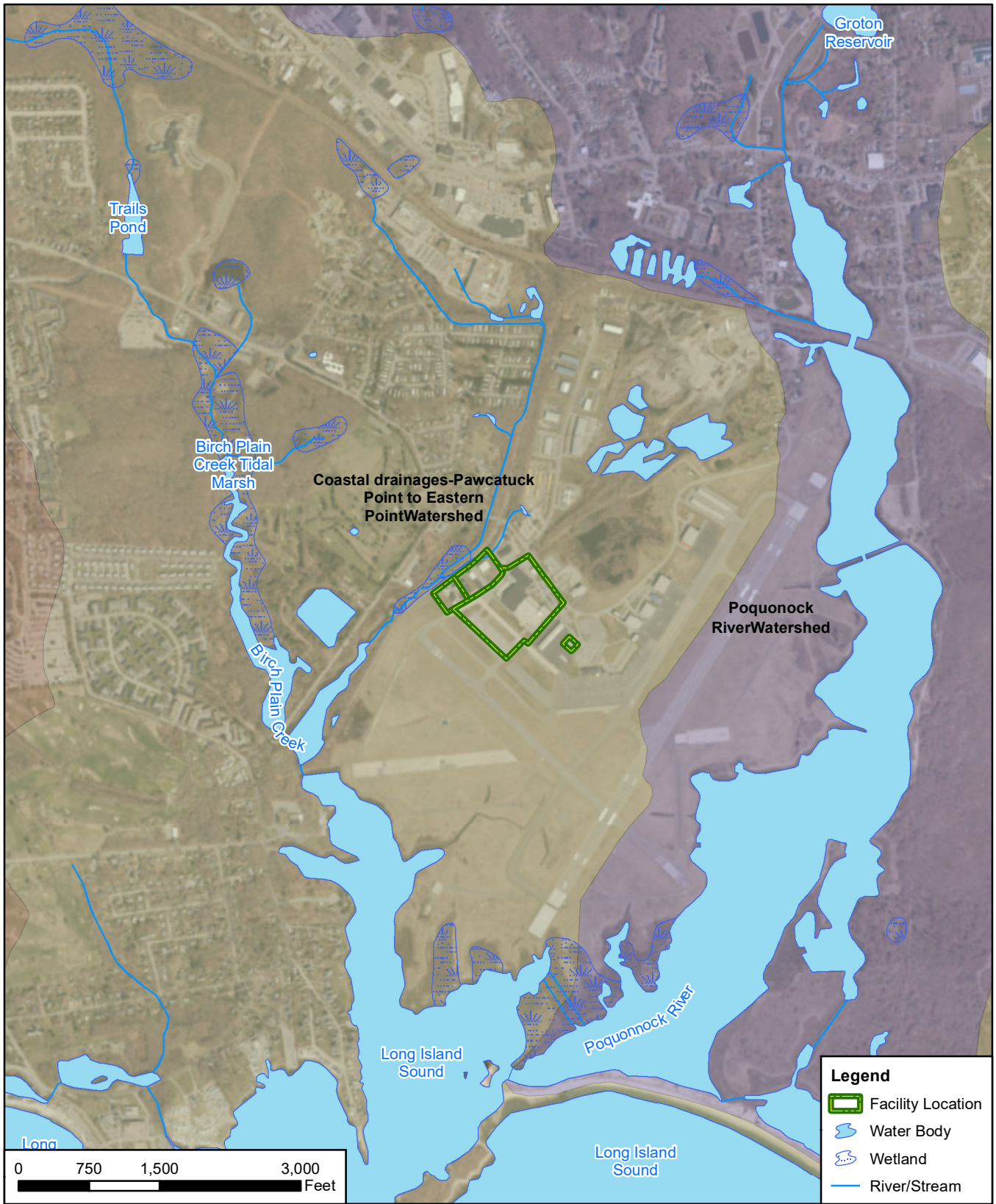

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

FTAs are considered areas where deliberate discharge of AFFF or other firefighting materials is performed for purposes of training personnel. No FTAs were identified at TASMG-Groton during the PA through interviews, review of the Environmental Data Resources, Inc. (EDR) report for a 1-mile radius surrounding the facility (**Appendix A**), and historical document review. According to interviewees whose collective tenure span 1985 to present, joint fire training events are performed at the facility with the Groton-New London Fire Department; however, the training is simulated and does not involve discharge of water or AFFF.

The Groton-New London Airport Fire Department performs fire training within the airport property, but outside the CTARNG facility boundary. FTAs located within the airport property but outside the TASMG-Groton boundary are considered adjacent sources and are discussed in **Section 5**.

3. Non-Fire Training Areas

Several non-FTAs where AFFF could have been potentially stored and/or released were identified during the PA. A description of each non-FTA is presented below, and the non-FTAs are shown on **Figure 3-1**.

3.1 Building 320 – Main Hangar

Building 320 is the main hangar at TASMG-Groton and is located at the center of the CTARNG property; it is divided into Building 320 North and Building 320 South, and includes administrative areas, the mess hall, maintenance shops, and equipment storage rooms in addition to the hangar space. According to facility staff, Building 320 South comprises the original building footprint and was built in 1977. In 1998, the building was renovated, and Building 320 North was constructed as an addition to the hangar. Interviewees, whose collective tenure span 1985-present, stated that the AFFF fire suppression system that serves Building 320 was installed during the 1998 renovation.

The Building 320 AFFF fire suppression system is supplied by a 1,000-gallon AFFF tank that contains Ansul Thunderstorm F-601A 3% AFFF and is stored in the hangar tank room. The tank connects to ceiling sprinklers in the hangar space, as well as two hoses that may be used to direct flow, and test ports located on the building perimeter. A 5-gallon bucket of National Foam Aer-O-Lite 3% AFFF concentrate is also stored within the tank room. It is unknown whether the suppression system was tested after installation in 1998, but interviewees confirmed that the system was tested in 2008. The 2008 test involved a complete discharge of the AFFF system through a system hose that connected directly to a tanker truck provided by a private contractor. Although the system test was completely enclosed, residual AFFF remained in the fire suppression system piping as a result.

Scheduled fire suppression system testing has occurred between 2008 and 2014 at an irregular frequency following the 2008 system test. Since 2014, fire suppression system testing has occurred on a quarterly schedule. System testing involves the discharge of water through test ports located on the building perimeter. Although no AFFF is released during the testing, the water is presumed to contain residual AFFF as a result of the full system test in 2008. According to the facility Environmental Supervisor, barrels are placed beneath the perimeter test ports to collect water that is discharged during the system testing. The barrels are then moved via fork lift to a temporary storage area adjacent to Building 325 until a private contractor removes and disposes of the water. Although the water is captured in barrels during system testing, small releases of PFAS-laden water are suspected at each test port as a result of incidental spillage.

Sanitary system sewers and trench drains are located near several of the test ports. It is possible that PFAS-laden water has entered sanitary system sewers as a result of regular system testing. Sanitary sewers transport water to the Groton WPCF. It is also possible that surface water runoff has transported PFAS away from Building 320 and towards surface soil within the facility.

3.2 Building 321 – TASMG Gym

Building 321 serves as the TASMG-Groton gym and is located in the north-central portion of the facility. The building is not plumbed and does not include a fire suppression system. According to facility staff, no AFFF has ever been stored or used at the gym. No evidence indicates that any activities that may have resulted in PFAS releases to the environment have occurred at Building 321; the gym is not considered a potential PFOSPFOA release area.

3.3 Building 322 – Ground Support Equipment Building

Building 322 is the Ground Support Equipment (GSE) building and is used for the repair of facility ground equipment. The building is located on the western edge of the facility, near the perimeter fence, and was formerly used as a cold storage building. The building does not have a fire suppression system of any kind. According to facility staff, no AFFF has ever been stored or used at Building 322. No evidence indicates that any activities that may have resulted in PFAS releases to the environment have occurred at Building 322; the GSE building is not considered a potential PFOS/PFOA release area.

3.4 Building 323 – Engine Shop

Building 323 is facility Engine Shop, which is used for the cleaning and rebuilding of engines. The building is located on the western edge of the facility, near the perimeter fence. According to interviewees, the building was constructed in 1998, and the building AFFF fire suppression system was installed in 2004. The majority of the building relies on a water-only fire suppression system, but the engine shop portion of Building 323 uses an AFFF fire suppression system. The AFFF fire suppression system is supplied by a 270-gallon 3% AFFF concentrate tank containing Ansul Thunderstorm F-601A 3% AFFF.

According to interviewees, AFFF suppression system releases have occurred at Building 323; however, the number of releases is unclear. Two AFFF system releases (one occurring between 2010 and 2012, and one in 2014) were recounted by interviewees, although some personnel believe only one release occurred.

The first AFFF system release occurred between 2010 and 2012, when a contractor accidentally triggered the water suppression system, covering the building interior in rust-colored water. During cleanup, a contractor power washing the walls accidentally sprayed the AFFF system trigger and released the full 270-gallon AFFF system tank. According to staff present during the release, all of the building doors were closed, and the foam was guided towards the sanitary system drain at the center of the engine shop. The drain connects to an OWS that flows off-facility to the Groton WPCF and is located adjacent to the building. AFFF in the OWS was vacuumed out by a contractor and disposed of off-facility.

On 31 December 2014, the AFFF fire suppression system was also accidentally triggered, resulting in the release of the full 270-gallon AFFF system tank. During this release, the garage door was open, and AFFF flowed west outside the building, towards the facility perimeter fence. The CTDEEP responded to the facility and deemed the private contractor that triggered the release the responsible party for cleanup. The contractor vacuumed the visible AFFF that escaped the garage doors as well as AFFF that escaped via the floor drain to the OWS.

AFFF released during both events escaped to the adjacent OWS, which connects to Groton WPCF. AFFF released during the 2014 event also escaped westward via the open garage door across pavement towards surface soil and may have flowed towards a wetland located approximately 180 feet northeast. Additionally, space was observed between the bottom of the engine shop doors and the floor during the VSI, indicating that AFFF could have potentially escaped the building even during the 2010-2012 release, when all doors were closed. The majority of surface water at TASMG-Groton ultimately flows towards Birch Stream, so it is also possible that AFFF releases at Building 323 have resulted in PFAS migration to surface water.

3.5 Building 324 – Paint Stripping Building

Building 324 is the Paint Stripping Building at TASMG-Groton and is used to strip exterior and interior paint from aircrafts prior to painting. The building is located on the western edge of the facility, near the western property boundary fence. According to interviewees, the building fire suppression system uses only water. The building also includes a wash rack; however, no vehicles at TASMG-Groton use or carry AFFF so no releases of AFFF at the wash rack are expected to have occurred. According to interviewees, a fire occurred between 2013 and 2014 in the boiler room within Building 324; however, only water was used in response to the fire. No evidence indicates that any activities that may have resulted in PFAS releases to the environment have occurred at Building 324; the Paint Stripping building is not considered a potential PFOS/PFOA release area.

3.6 Building 325 – State Equipment Storage Building

Building 325 is located on the western edge of the facility, near the western perimeter fence, and is used for CTARNG equipment storage. The building was constructed in 1954 and is the oldest building on the property. Although AFFF has never been used at Building 325, barrels of PFAS-laden water are stored next to the building following the quarterly Building 320 fire suppression system testing. The barrels that are used to collect Building 320 test port water are transported to a storage area adjacent to Building 325 until they can be emptied by a private contractor via vacuum truck. The water is then disposed of off-facility. The disposal of PFAS-laden water is performed in an enclosed manner by using a hose to connect the truck tank to a port on each barrel. Although the disposal of PFAS-laden water is performed in an enclosed manner, it is possible that spillage may occur. Additionally, the storage area is unsheltered and barrels are subject to corrosion due to the elements. Evidence does not indicate that PFAS releases to the environment have occurred at Building 325; however, there is uncertainty regarding the potential for spills to occur. As such, the State Equipment Storage Building area is considered a potential PFOS/PFOA release area.

3.7 Building 338 – Cold Storage Building

Building 338 is used for equipment storage and as a temporary staging area. The footprint of the building was previously excavated to remediate soils impacted by hydrocarbons. The Cold Storage Building was constructed following the remediation. The use of the building prior to its use as a cold storage building is unknown. According to interviewees, the building does not have an AFFF fire suppression system. No evidence indicates that any activities that may have resulted in PFAS releases to the environment have occurred at Building 338; the Cold Storage Building is not considered a potential PFOS/PFOA release area.

3.8 Building 350 – TASMG 2 Hangar

Building 350 comprises the TASMG 2 Hangar and is the eastern-most building associated with TASMG-Groton located on the Groton-New London airport property. The hangar was formerly leased for commercial purposes and is currently leased by the CTARNG for aircraft maintenance and repair support activities. According to interviewees, the building uses a water-only fire suppression system. No evidence indicates that any activities that may have resulted in PFAS releases to the environment have occurred at Building 350; the TASMG 2 Hangar is not considered a potential PFOS/PFOA release area.

3.9 Flight Test Ramp

The Flight Test Ramp is located south of Building 320 and adjacent to Groton-New London Runway 15/33. The ramp is used for aircraft maintenance as well as fueling and defueling. According to interviewees, no incidents have occurred on the Flight test Ramp requiring AFFF use in response. Fuel spills are not responded to with precautionary AFFF discharge at TASMG-Groton.

A total of six to eight wheeled mobile fire extinguishers are staged between the Flight Test Ramp and a shed located on the ramp. The fire extinguishers contain Purple K extinguishant, which does not contain PFAS. According to interviewees, the Purple K fire extinguishers replaced extinguishers that contained Halon. It is unknown whether mobile fire extinguishers stored at TASMG-Groton have ever stored AFFF. No evidence indicates that any activities that may have resulted in PFAS releases to the environment have occurred at the Flight Test Ramp; the ramp is not considered a potential PFOS/PFOA release area.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at TASMG Groton, CT			
REVISED	3/31/2020	GIS BY	MS	3/31/2020
SCALE	1:3,600	CHK BY	JW	3/31/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	3/31/2020

Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

C:\Users\grace.canham\AECOM Directory\Stankevich, Michael - ARNG_PFAS_GIS_60552172\MXDs\CT\CT_Figures\TASMG_Groton_Figures\Fig_3-1_TASMG_Groton_Non-Fire_Training_Areas.mxd

4. Emergency Response Areas

CTARNG staff described several known incidents requiring emergency response at the TASMG-Groton facility during their collective tenure (spanning 1985-present). Emergency response areas are described below and shown on **Figure 4-1**.

4.1 Building 324 Boiler Room Fire

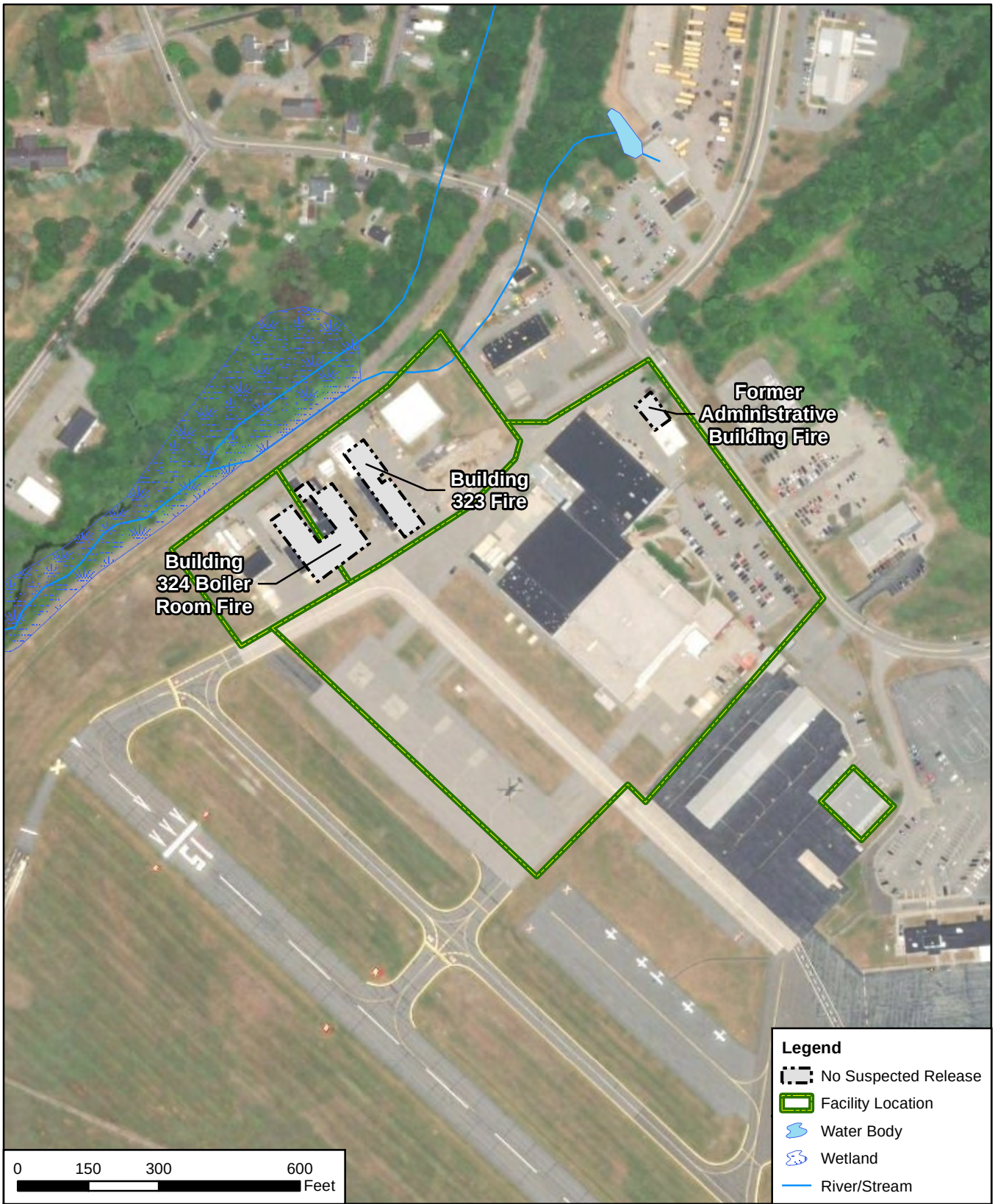
According to interviewees, a fire occurred between 2013 and 2014 in the boiler room within Building 324; however, the Groton-New London Airport Fire Department used only water in response to the fire. No evidence indicates that emergency response activities resulted in PFAS releases to the environment. Building 324 is not considered a potential PFAS release area.

4.2 Former Administrative Building Fire

According to interviewees, a structure fire occurred in the former administrative building between 1985 and 1992. The former administrative building was located adjacent to the current TASMG Gym. The Groton-New London Airport Fire Department used only water in response to the fire. No evidence indicates that emergency response activities resulted in PFAS releases to the environment. The former administrative building area is not considered a potential PFAS release area.

4.3 Building 323 Fire

A fire occurred in the Building 323 engine shop as a result of engine maintenance between 2004 and 2006. According to interviewees, the Groton-New London Airport Fire Department used only water in response to the fire. No evidence indicated that emergency response activities resulted in PFAS releases to the environment. The building is not considered a potential PFAS release area as a result of the fire; however, known AFFF system releases have occurred at Building 323, and the area is considered a potential PFAS release area as a result.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at TASMG Groton, CT			
REVISED	3/11/2020	GIS BY	MS	3/11/2020
SCALE	1:3,600	CHK BY	JW	3/11/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	3/11/2020

Emergency Response Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 4-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\CT\CT_Figures\TASMG_Groton_Figures\Fig_4-1_TASMG_Groton_Emergency_Response_Areas.mxd

5. Adjacent Sources

Several potential off-facility sources of PFAS adjacent to the TASMG-Groton, not under the control of the CTARNG, were identified during the PA through interviews, review of the EDR report for a 1-mile radius surrounding the facility (**Appendix A**), and historical document review. A description of each potential adjacent source is presented below, and the sources are shown on **Figure 5-1**

5.1 Groton-New London Airport

TASMG-Groton is located on the larger Groton-New London Airport property. Groton-New London Airport is a public-use, publicly-owned general aviation airport comprising 489 acres and includes Runway 5/23 and Runway 15/33. The airport has numerous tenant facilities, including the CTARNG TASMG-Groton facility, and was established in 1929. The Groton-New London Airport Fire Department responds to emergencies on the airport property, and from airport tenants, including the TASMG-Groton. According to interviewees, no known crashes that have required the use of AFFF in response have occurred on the airport property; however, several areas of the airport have been used for fire training and nozzle checks by the fire department.

According to Groton-New London Fire Department staff, one area near the north end of Runway 5/23, and one area near the south end of Runway 5/23, have been used for Federal Aviation Administration-required annual fire training that involved the discharge of AFFF. The events occurred circa 2011 and 2017 and involved the discharge of approximately 100-150 gallons of 3% AFFF solution. Other annual training events used only water.

Nozzle check testing has also resulted in the discharge of AFFF to the airport property. According to fire department staff, nozzle check testing that involved the release of AFFF has occurred at the parking apron located west of Runway 15/33 and at the former shooting range colloquially referred to as the “Gun Butt”. Nozzle check testing also occurs on various runway areas but usually involves the discharge of only water. Because the water is sprayed through the same equipment used to spray AFFF, it is possible that this water contains residual AFFF.

As a result of fire training and nozzle check testing at the airport property, several areas are considered potential PFAS release areas. The airport also occasionally hosts dignitaries and holds formal events. During these events, local fire departments may provide firefighting vehicles known to carry AFFF. According to interviewees, no AFFF releases have occurred at any such events. Fire department staff also stated that the airport terminal is used for the storage of extra AFFF in 5-gallon buckets and 55-gallon drums. The total volume stored at the terminal fluctuates, but approximately 500 gallons were stored at the terminal during PA interviews. No known releases have occurred at the airport terminal.

5.2 Groton-New London Airport Fire Department

The Groton-New London Airport Fire Department is located adjacent to the TASMG-Groton facility to the northwest and responds to emergencies at the airport and from airport tenants, including CTARNG. Aircraft rescue and firefighting (ARFF) training is required under the current lease with the CTARNG, according to the airport Master Plan (Connecticut Airport Authority, 2013; **Appendix A**).

The fire department occupied another building within the airport property until the previous facility was damaged in a structure fire in 2011. The former fire department was located adjacent to the private aviation hangars next to Runway 5/23, approximately 1,000 feet east of TASMG-Groton. During the 2011 structure fire, the AFFF tank on a 1998 E One Titan 4x4 ARFF truck

stored at the station was damaged, resulting in the release of 250 gallons of 3% AFFF concentrate. As a result, the former fire station location is considered a potential PFAS release area. The former fire station was repaired and is currently used for the storage of materials, including AFFF in 5-gallon buckets and in 55-gallon drums.

The fire department currently stores two firefighting vehicles: one 2010 Ford Crash Rescue Equipment Services Renegade, and one 1995 T-1500 Oshkosh ARFF Truck. The former stores 40 gallons of AFFF 3% concentrate, which produces 1,200 gallons of foam solution, and the latter stores 208 gallons of 3% AFFF concentrate, which produces 6,000 gallons of foam solution. The two vehicles are typically kept at the current fire department location. The fire department also formerly stored the aforementioned 1998 E One Titan 4x4 ARFF truck, which stored 250 gallons of AFFF concentrate, and a 1990 Oshkosh T-300 ARFF Truck, which went out of service prior to 2013 and stored 360 gallons of AFFF concentrate.

Nozzle check testing and fire training are performed by the fire department on airport property, but staff also confirmed that nozzle check testing is performed at the current fire station. Runoff from the fire station connects to sanitary sewers, which connects to the Groton WPCF. It is possible that residual AFFF has been released as a result of nozzle check testing at the current fire station. The current fire department location is considered a potential PFAS release area.

5.3 Private Aviation Companies at Groton-New London Airport

Several private aviation companies maintain spaces on the northwest side of Groton New-London Airport Runway 5/23, between 0.1 and 0.3 miles east of the TASMG-Groton facility.

Lanmar Aviation maintains hangar space on the northwestern-most end of the runway. Hangar space is available for rent at the Lanmar Aviation location, and the company also provides aircraft washing and detailing services for their customers. It is unknown whether AFFF is used or stored at the Lanmar Aviation facility, or whether emergency responses that used AFFF have occurred at the location.

Columbia Air Services is a fixed-base operator at the Groton-New London Airport that operates out of the Mystic Jet Center on the northwestern side of Runway 5/23. Through the Mystic Jet Center, Columbia Air Services is granted the right to operate at the airport and provide aeronautical services such as fueling, aircraft storage, aircraft rental, aircraft maintenance, flight instruction, and other services. It is unknown whether AFFF is used or stored at the Columbia Air Services/Mystic Jet Center facility, or whether emergency responses using AFFF have occurred at the location.

5.4 Naval Submarine Base New London

Naval Submarine Base New London (SUBASENLON) is a 687-acre facility located on the east bank of the Thames River, approximately 4.2 miles northwest of TASMG-Groton. The Naval facility has been active since 1867 and currently provides support for Navy submarine forces and other naval organizations and tenants. Due to historical use of AFFF at the facility, the Navy has identified fifteen areas where PFAS releases occurred, or potentially occurred (Naval Facilities Engineering Command [NAVFAC], 2019).

The Navy has initiated PFAS sampling at three private wells located outside of the Navy property in the area surrounding SUBASENLON. Data from the three wells indicate that concentrations of PFOS and PFOA in groundwater do not exceed the HA. The investigation of potential PFAS release areas within the Navy property is anticipated to begin in Spring 2020. The Navy PA report for the investigation of PFAS at SUBASENLON has not been approved by

CTDEEP at the time of this PA report (NAVFAC, 2019). The SUBASENLON Drinking Water Investigation Fact Sheet is included in **Appendix A**.

5.5 2003 Learjet 35A Accident

On 4 August 2003, a Learjet 35A crashed into a residential neighborhood approximately 0.75 miles northeast of the north end of Groton-New London Airport Runway 5/23, and approximately 1.2 miles northeast of TASMG-Groton. The aircraft struck several residential homes, a line of trees, and ultimately came to rest in the Poquonnock River. The post-impact fires destroyed two residential homes, two automobiles, and five vessels on the river. Staff from the Groton-New London Fire Department stated that AFFF was likely used in response to the post-crash fires; however, the exact location of the fires and response is unknown. The National Transportation Safety Board Aviation Accident Final Report (Accident Number NYC03FA173) does not specify which entities responded to the post-impact fires or whether AFFF were used in that response. The general area where the crash took place, including the Poquonnock River, is considered a potential PFAS release.

5.6 General Dynamics Electrical Boat Industrial Campus

The General Dynamics Electric Boat industrial campus occupies 118 acres along the Thames River, approximately 1.7 miles northwest of TASMG-Groton. The campus supports engineering and design work as well as new construction and maintenance activities. Electric Boat was established at the Groton location in 1911, and has been a long-time supporter of the nearby naval base (General Dynamics, 2019). According to TASMG-Groton and Groton-New London Airport Fire Department personnel, fires have occurred at the campus that have required AFFF fire suppression. The locations and dates of fires, as well as the volume of AFFF used in response, are unknown. Due to the campus's proximity to the Thames River, it is possible that any PFAS releases on the campus may have migrated into the river.

5.7 Pfizer Industrial Campus

The pharmaceutical corporation Pfizer occupies a 160-acre industrial campus along the Thames River, approximately 1.3 miles west of TASMG-Groton. The campus supports research and development laboratories for Pfizer (Pfizer, 2019). According to TASMG-Groton and Groton-New London Airport Fire Department personnel, fires have occurred at the campus that have required AFFF fire suppression; however, no records of these fires or responses were provided during PA efforts. The locations and dates of fires, as well as the volume of AFFF used in response, are unknown. It is possible that PFAS releases on the campus may have migrated into the river.

5.8 Groton WPCF

There are no wastewater treatment plants (WWTPs) located at TASMG-Groton. The Groton WPCF is the nearest WWTP and is located approximately 1.5 miles to the east. WWTPs are not usually a primary potential release area of PFAS, but sludges and liquids from areas of potential release that are treated at WWTPs may create a secondary source of contamination. Known PFAS releases have occurred at TASMG-Groton that could have resulted in the migration of PFAS in water to the Groton WPCF.

Wastewater at the WPCF is treated using an activated sludge process. Solids are collected, dewatered, and shipped for disposal. Nitrogen is removed from the liquid in a two-step aerobic

and anaerobic process by beneficial bacteria. The wastewater is disinfected with sodium hypochlorite before being released to the Thames River (Town of Groton, 2019).

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at TASMG Groton, CT			
REVISED	3/31/2020	GIS BY	MS	3/31/2020
SCALE	1:12,000	CHK BY	JW	3/31/2020
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	3/31/2020

Legend

- Potential PFAS Release
- No Suspected Release
- Facility Location
- Water Body
- Wetland
- River/Stream

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 AOIs were identified at TASMG-Groton: AOI 1 Building 320 and AOI 2 Building 323. The AOI locations are shown on **Figure 6-1**. The following sections describe the CSM components and the specific preliminary CSM developed for each AOI. 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 are sparse and continue to be the subject of PFAS toxicological study (National Ground Water Association, 2018). Receptors at the TASMG-Groton include site workers, construction workers, trespassers, and off-facility recreational users of the surrounding water bodies. The preliminary CSM diagram for the TASMG-Groton indicates which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1 Building 320

AOI 1 comprises Building 320, the main hangar, and its immediately surrounding areas where known PFAS releases have occurred. PFAS releases are suspected to have occurred during the AFFF fire suppression system test events between 2008 the present. System tests involved the discharge of water suspected to contain residual AFFF through test ports located on the building perimeter.

PFAS-laden water released from the test ports is collected in barrels; however, it is possible that water has been spilled during the many test events. Test ports are located over paved surfaces, but trench drains and catch basins were observed near the test ports during the VSI. The trench drains and catch basins connect to municipal sanitary sewers that discharge to the WPCF. Additionally, surface runoff at the facility generally drains from east to west. Stormwater catch basins channel flow west towards a small intermittent stream that enters Baker Cove and ultimately the Long Island Sound. Although surface water catch basins are not located immediately beneath or adjacent to the building test ports, it is possible that runoff transported PFAS-laden water into the surface water bodies described. As such, surface water and sediment are considered a potentially complete pathway for recreational users of the surface water bodies surrounding TASMG-Groton, and for site workers/construction workers entering the small wetland area within the facility.

PFAS are water soluble and can migrate readily from soil to groundwater via leaching; however, TASMG-Groton and surrounding areas are provided municipal water by the Groton Utilities Water Operations. No drinking water wells exist at the facility. Groundwater is considered an incomplete pathway for PFAS exposure to site workers and residents via ingestion. Groundwater in the area generally flows south and discharges to the Long Island Sound. It is possible that PFAS infiltrating groundwater at the facility are discharging to surface water that is used recreationally south of the facility.

Landscaped areas exist adjacent to Building 320. Surface soil in the landscaped areas near Building 320 may have received surface water runoff containing PFAS as a result of spillage at the test ports during system testing. Surface soil is considered a potentially complete pathway for PFAS exposure to site workers, construction workers, and trespassers via ingestion and inhalation.

AFFF releases at AOI 1 may also have infiltrated subsurface soil via cracks in pavement, joints between areas that are paved with different materials, and the nearby landscaped areas. If AFFF released at the AOI infiltrated the subsurface, then ground-disturbing activities may result in PFAS exposure to construction workers via ingestion and inhalation. Accidental ingestion of groundwater is also considered a potentially complete pathway for exposure to PFAS during construction activities due to the presumed 8- to 9-foot depth to groundwater. The preliminary CSM diagram for AOI 1 is shown in **Figure 6-2**.

6.2 AOI 2 Building 323

AOI 2 comprises Building 323, the Engine Shop, and the area between its garage door and the perimeter fence, where known PFAS releases have occurred. PFAS releases to the environment are suspected to have occurred during the AFFF fire suppression system discharges circa 2010-2012, and 2014. During the events, AFFF escaped the building to floor drains that connect to an OWS and sanitary system sewers, and also out of the open garage door. AFFF may have also escaped beneath entryway doors that appeared to have space between the floor and the bottom of the doors even when closed; this was observed during the VSI.

AFFF that was contained within the building drained to an OWS and possibly municipal sanitary sewers that discharge to the WPCF. Surface runoff escaping the building; however, potentially drained towards a wetland located approximately 180 feet northeast. Elsewhere, surface runoff may have traveled west towards Birch Stream, which drains to Baker Cove and the Long Island Sound. Surface water and sediment are considered a potentially complete pathway for recreational users of the surface water bodies surrounding TASMG-Groton, and for site workers/construction workers entering the small wetland area within the facility as a result of AFFF releases at AOI 2.

Groundwater is considered an incomplete pathway for PFAS exposure to site workers and residents via ingestion due to the lack of drinking water wells at the facility and surrounding area.

Landscaped and wooded areas exist adjacent to Building 323. Surface soil in these may have received AFFF flowing outwardly from the building or surface water runoff containing PFAS as a result of the releases. Surface soil is considered a potentially complete pathway for PFAS exposure to site workers, construction workers, and trespassers via ingestion and inhalation.

AFFF releases at AOI 2 may also have infiltrated subsurface soil in the landscaped and wooded areas. As such, ground-disturbing activities may result in PFAS exposure to construction workers via ingestion and inhalation. Accidental ingestion of groundwater during construction is also considered a potentially complete pathway. The preliminary CSM diagram for AOI 2 is shown in **Figure 6-2**.

6.3 AOI 3 - Building 325 Storage Area

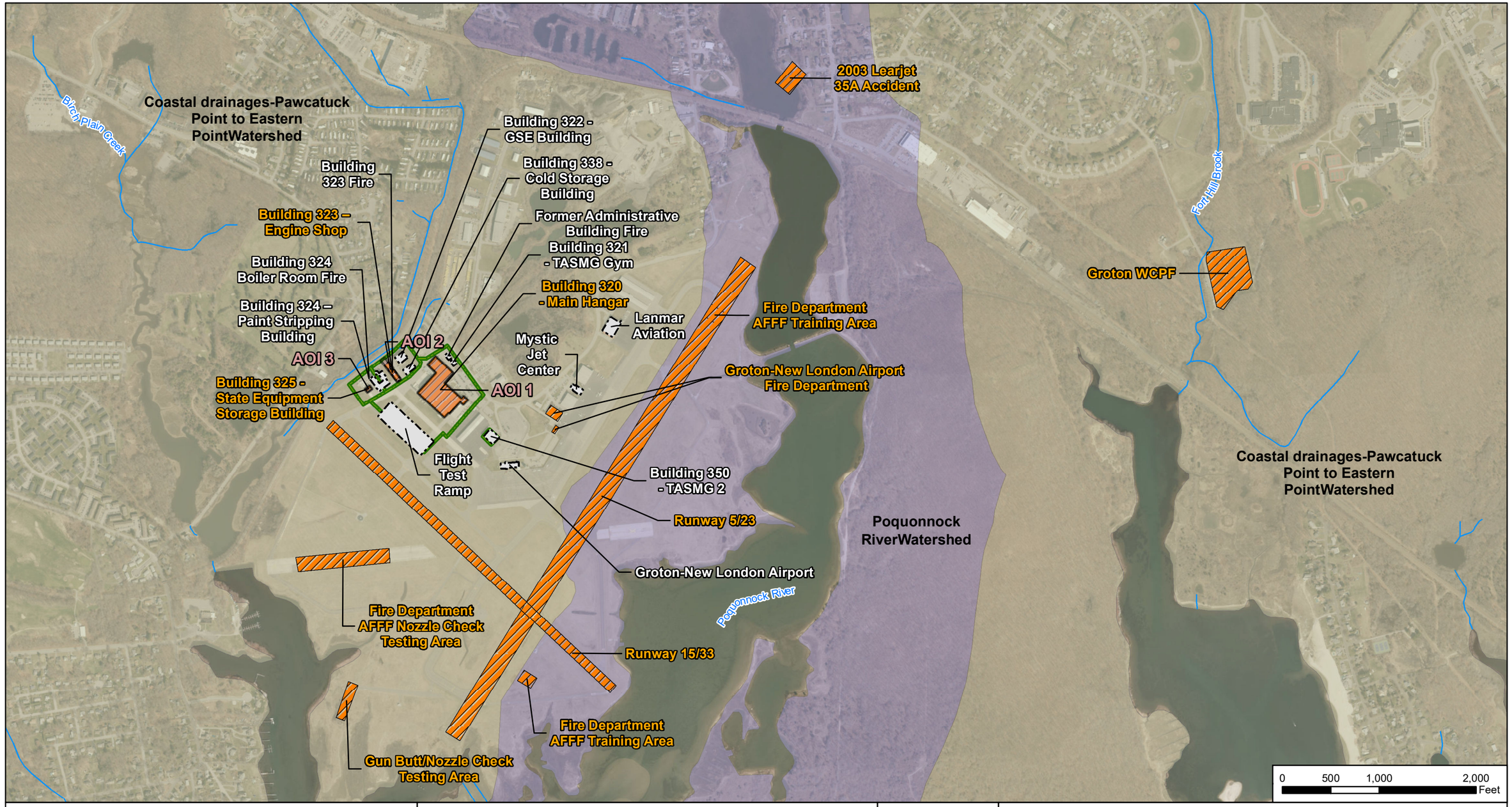
AOI 3 comprises Building 325 and its adjacent storage area where potentially PFAS-laden water is stored in barrels prior to disposal by a private contractor. Although the disposal of PFAS-laden water is performed in an enclosed manner, it is possible that spillage may occur. Additionally, the storage area is unsheltered and barrels are subject to corrosion due to the elements.

According the facility Spill Prevention, Control and Countermeasure Plan, the barrels are stored on spill control pallets, and any liquid spilled is collected in the pallets. If any spills occur outside of the pallets, liquid will flow to the surrounding impervious surfaces. Surface runoff may flow southeast or northwest depending on the location of the spill. Grassy surfaces surround the

storage area to the south, west, and north, and precipitation may facilitate runoff of any PFAS spills to those areas. Surface runoff to the northwest may have traveled west towards the Birch Stream. It is not expected that runoff travels to the wetland to the northeast. Thus, surface water and sediment are considered a potentially complete pathway for recreational users of the surface water bodies surrounding TASMG-Groton.

As previously stated, groundwater is considered an incomplete pathway for all receptors.

Surface soil surrounding AOI3 may have received surface water runoff containing PFAS. As such, it is considered a potentially complete pathway for PFAS exposure to site workers, construction workers, and trespassers via ingestion and inhalation. Additionally, ground-disturbing activities may result in PFAS exposure to construction workers via ingestion and inhalation of subsurface soil, and ingestion of groundwater. The preliminary CSM diagram for AOI 3 is shown in **Figure 6-3**.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at TASMG Groton, CT			
REVISED	3/31/2020	GIS BY	MS	3/31/2020
SCALE	1:12,000	CHK BY	JW	3/31/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	3/31/2020

Legend

- Area of Interest
- Potential PFAS Release
- No Suspected Release
- Facility Location
- River/Stream

N

Areas of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

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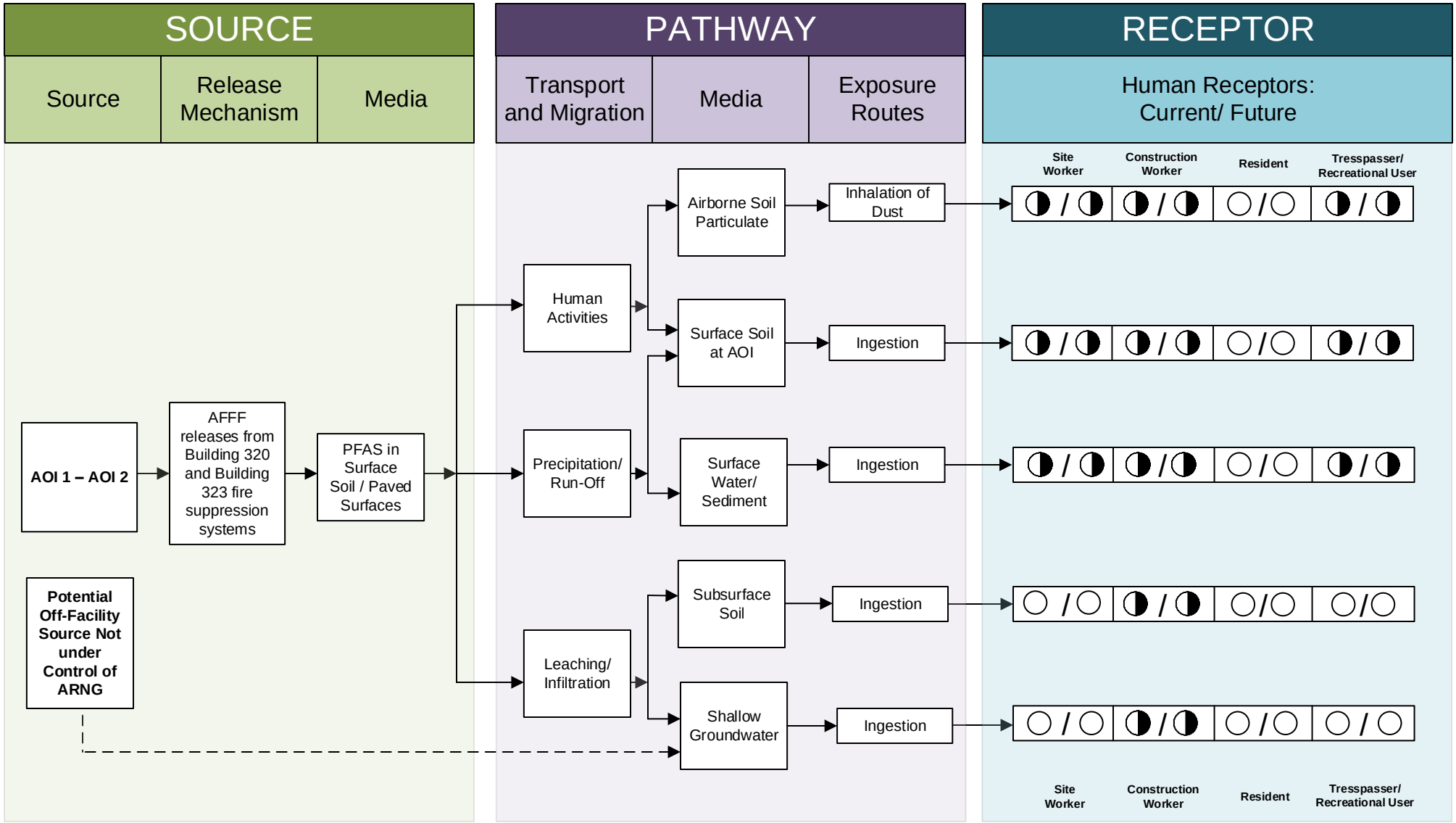


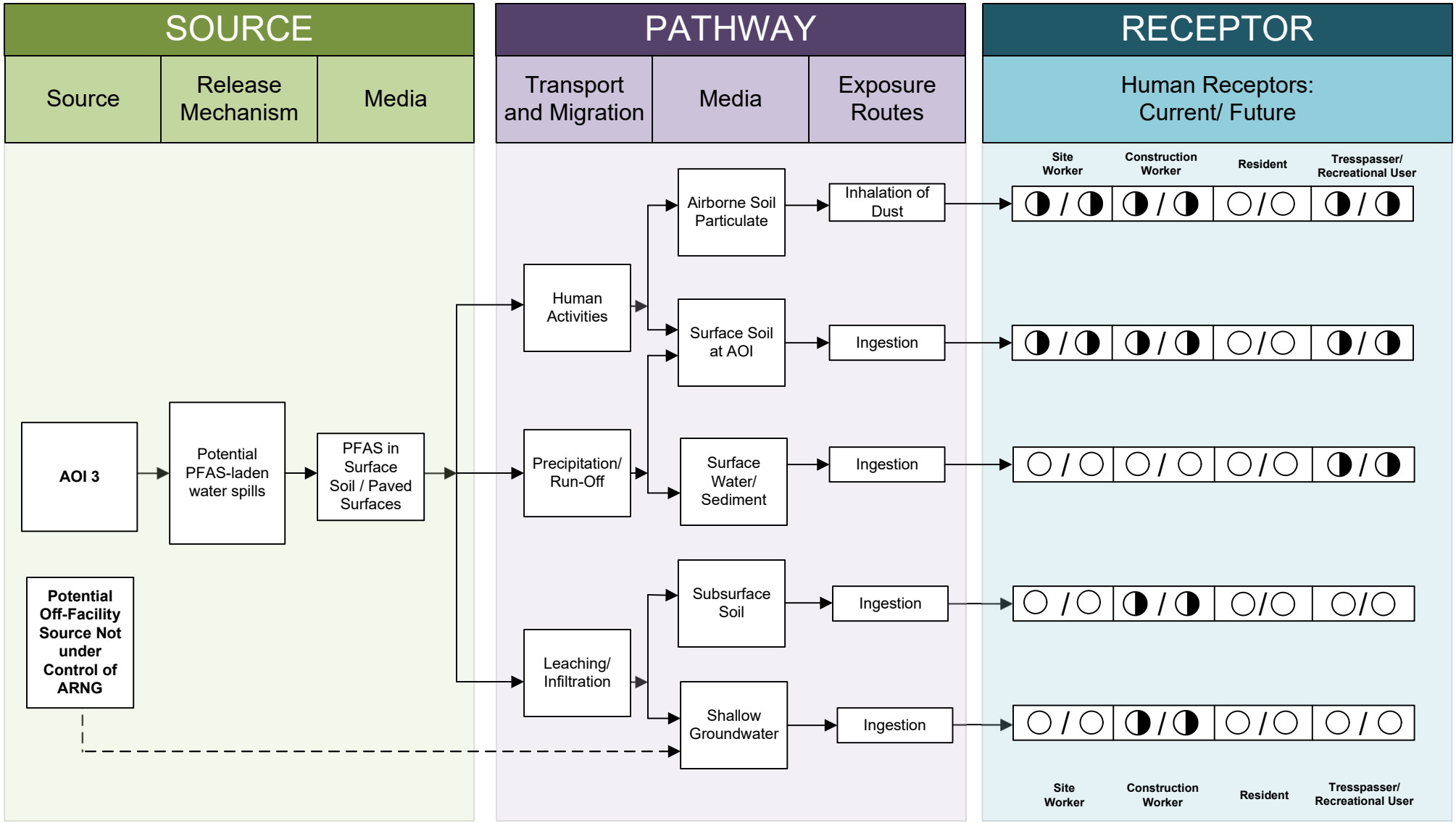
LEGEND

- 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
AOI 1 (Building 320) – AOI 2 (Building 323)



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
AOI 3 (Building 325 Storage Area)

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 TASMG-Groton. The PA findings are based on personnel interviews, environmental investigations and reports, historical documents, and the VSI (**Appendix A** and **Appendix B**).

7.1 Findings

Three AOIs related to potential PFAS releases were identified at TASMG-Groton based on PA data (**Figure 7-1**) and are summarized in **Table 7-1** below:

Table 7-1: AOIs at TASMG-Groton

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Building 320	CTARNG	2008-Present
AOI 2	Building 323	CTARNG	2010-2012 and 2014
AOI 3	Building 325	CTARNG	2008-Present

Based on the possible PFAS releases at the AOIs, there is potential for exposure to PFAS contamination in environmental media at the facility to site workers, construction workers, trespassers and off-facility recreational users of the surrounding water bodies. The preliminary CSM for TASMG-Groton, which presents the potential receptors and media impacted, is shown on **Figure 6-2** and **Figure 6-3**.

The following areas, which were discussed in **Section 3** through **Section 5**, were determined to have no suspected PFAS releases to the environment (**Table 7-2**):

Table 7-2: No Suspected Release Areas

No Suspected Release Area	Used by	Rationale for No Suspected Release Determination
Building 321 – TASMG Gym	CTARNG	Readily available information indicates no evidence of AFFF stored or use at this location.
Building 322 – GSE Building	CTARNG	Readily available information indicates no evidence of AFFF stored or use at this location.
Building 324 – Paint Stripping Building	CTARNG	Readily available information indicates no evidence of AFFF stored or use at this location.
Building 338 – Cold Storage Building	CTARNG	Readily available information indicates no evidence of AFFF stored or use at this location.
Building 35 – TASMG 2	CTARNG	Readily available information indicates no evidence of AFFF stored or use at this location.
Flight Test Ramp	CTARNG	Readily available information indicates no evidence of AFFF stored or use at this location.

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 CTARNG on the storage, use, or disposition of AFFF.

The conclusions of this PA are predominantly based on the information provided during interviews with personnel who had direct knowledge of PFAS use and storage at the facility. Sometimes, the provided information was vague or conflicted with other information sources. For example, the number of AFFF release events recalled by interviewees at Building 323 varied, as did whether the garage door were open during one of the events. 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 were first used by the ARNG (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS storage locations. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding storage of PFAS were reviewed, tenured personnel were interviewed, 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
Building 320 – Main Hangar	It is unknown whether the AFFF system test following the 1998 installation involved AFFF. The frequency of fire suppression system testing between 2008-2014 is unknown. It is unclear if water spilled from the system test ports on the perimeter of the building during AFFF system testing, and if so, how much water was spilled. The exact drainage pattern from each system test port is also unknown.
Building 323 - Engine Shop	It is unclear how many independent AFFF fire suppression system releases have occurred at this location. Interviewee-provided information is conflicting. It is also unclear whether the garage door were open during one of the releases. The exact drainage pattern for surface water exiting the building is unknown.
Building 325 – State Equipment Storage Building	Information about the contractor that provides disposal of the barrels staged in this area was not available during the site visit. It is unknown if PFAS releases have ever occurred as a result of draining barrels at this location.

7.3 Potential Future Actions

Interviews with CTARNG staff, whose first-hand knowledge of the facility span 1985-present, indicate that ARNG activities may have resulted in the release of AFFF and residual AFFF in water at two AOIs identified during the PA. Based on the preliminary CSMs developed for the AOIs, there is potential for PFAS to be exposed to human receptors (see **Section 7.1**). **Table 7-4** summarizes the rationale used to determine if the AOIs should be considered for further investigation under the CERCLA process and undergo an SI.

Table 7-4: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 Building 320	41°20'1.84"N; 72°2'55.63"W	Multiple releases of residual AFFF in water building perimeter between 2008-present	Proceed to an SI, focus on soil, groundwater, surface water and sediment
AOI 2 Building 323	41°20'4.84"N; 72°3'2.61"W	Potentially two AFFF system releases to sanitary sewers and surfaces surrounding the building	Proceed to an SI, focus on soil, groundwater, surface water and sediment
AOI 3 Building 325	41°20'3.30"N; 72°3'5.94"W	Potential PFAS releases during drum content disposal	Proceed to SI, focus on soil and groundwater

ARNG will evaluate the need for an SI at TASMG-Groton 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 TASMG Groton, CT			
REVISED	3/31/2020	GIS BY	MS	3/31/2020
SCALE	1:12,000	CHK BY	JW	3/31/2020
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	3/31/2020

Legend

- Area of Interest
- Potential PFAS Release
- No Suspected Release
- Facility Location
- Water Body
- Wetland
- River/Stream

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 TASMG-Groton include:

Facility Real Property Documents

- 1996 Lease and Operating Agreement for the State of Connecticut Military Department Use and Occupancy of Parcel 1, Parcel 2, and Parcel 3 at Groton-New London Airport
- 2012 Memorandum for the Request for Temporary Aviation Unit Facility Lease and Corresponding Funding
- 2014 TASMG Certificate of Title
- 2014 TASMG Certificate of Title Lease Supplement: Exhibit A
- 2018 Department of the Army License for National Guard Purposes: DACA33-3-18-094
- 2018 Property Map provided by CTARNG

Background Information Sources

- 2005 Quaternary Geologic Map of Connecticut and Long Island Sound Basin
- 2017 Groton-New London Airport Master Plan Update
- 2019 EDR Report for TASMG-Groton

Adjacent Source Information

- 2003 National Transportation Safety Board Aviation Accident Final Report; Accident Number NYC03FA173
- 2019 Naval Submarine Base New London, Groton, Connecticut PFAS Drinking Water Investigation Fact Sheet

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire - Environmental Manager

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/19; 09:00

Interviewee: Multiple; see below **Title:** Multiple; see below **Phone Number:** Multiple; see below **Email:** Multiple; see below	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N Fire Department Staff

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

[redacted] – Facility Administrative Officer, 2010-present [redacted]; [redacted] – Environmental Supervisor (contractor), 34 years' experience at TASMG-Groton [redacted]; [redacted] – Fire/Life Safety Program Officer, stationed in Hartford, responsible for TASMG, 2016-present. Also worked at TASMG-Groton in the 1990s [redacted]

2. Where can I find previous facility ownership information?

This facility is state-owned. Real property documents have been requested through Jordan Martin (CTARNG). According to interviewees, the CTARNG has had a presence at TASMG-Groton since as early as the 1950s in the form of a transportation unit.

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, in the form of testing the fire suppression system. No other maintenance.
Fire Training Areas – TASMG-Groton does not have any fire training areas, nor a fire department
Firefighting (Active Fire) – no known firefighting has occurred on TASMG-Groton with AFFF
Crash – No known crashes have occurred on TASMG-Groton that required AFFF
Fire Suppression Systems (Hangers/DFAC) – Yes, Bldg 320 and Bldg 323 have AFFF systems
Fire Protection at Fueling Stations – Mobile fire extinguishers at facility do not use AFFF
Non-Technical/Recreational/ Pest Management – No non-technical uses known to have occurred
Metals Plating Facility – No metals plating facility has existed at the facility
Waterproofing Uniforms (Laundry Facilities) – No industrial laundry facility has existed at the facility
Other – numerous adjacent sources were discussed

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?

Building 320 has an AFFF suppression system that was likely installed in 1998 during building construction to add the northern portion of the building. The system had a full test in 2008, and has had quarterly testing since 2014. Between 2008-2014, regularly scheduled testing frequency is unknown, but happened less than quarterly. It is unknown if the system received a full test in 1998. PFAS releases are suspected as a result of the quarterly system testing.

Building 323 has an AFFF fire suppression system. Conflicting information was provided from interviewees regarding whether one or two AFFF system releases have occurred at Building 323. One release was described between 2010-2012, resulting in 270 gallons of 3% AFFF concentrate. All doors were closed during the release but AFFF may have escaped under doors, and did escape through floor drains to the OWS. Another release was described on Dec 31, 2014 in which the same volume of AFFF was released and the garage door was open. AFFF escaped the garage door and traveled northwest towards the facility boundary, as well as into the floor drains and OWS.

PA Interview Questionnaire - Environmental Manager

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/19; 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 two previously mentioned AFFF fire suppression systems are charged with Ansulite 3% AFFF. The systems have not been retrofitted for high expansion foam.

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

This information is 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)?

Ansulite 3% AFFF is currently charged in the two fire suppression systems. It is unknown if the type of AFFF has varied historically. It is also unknown if the previous Tri-Max fire extinguishers stored at the facility used AFFF (and if so, what type). A 5-gallon bucket of National Foam Aer-o-lite 3% AFFF is also stored in the tank room. It is possible this was used to top off the former Tri-Max extinguishers.

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 that serves the Building 320 suppression system is stored in a system tank room in a 5,000 gallon tank in Building 320 North. It is also stored in a 5-gallon bucket within that room.

AFFF that serves the Building 323 suppression system is stored within the building in a 270 gallon tank.

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 are located at TASMG-Groton. The facility does not have a fire department staff, but relies upon the local Fire Departments for support. The CAA Groton-New London Airport Fire Department performs a simulated training with TASMG-Groton personnel annually, but no water or AFFF is released during the event.

PA Interview Questionnaire - Environmental Manager

Facility: TASMG-Groton
Interviewer: Witte
Date/Time: 12/10/19; 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?

NA; no hands on fire training exercises occur. When AFFF was released as a result of the 2008 system test in Building 320, it was completely enclosed. The AFFF discharged through a suppression system hose, and straight into a vac-truck operated by a contractor. Residual AFFF remained in system piping however, so quarterly system testing results in PFAS releases from test ports located on the perimeter of the hangar. During quarterly testing (which only releases water), barrels are placed at each test port to catch the PFAS-laden water as it is released. The barrels are then vacuumed out by a contractor for disposal. It is presumed that some spillage of PFAS-laden water occurs at the sample ports during quarterly testing.

When AFFF was released during the 2010-2012 and 2014 events at Building 323, the AFFF was guided towards the building floor drain, which feeds an adjacent OWS. The OWS was then vacuumed out by a private contractor. There is speculation that the garage door was opened by an on-duty technician to allow some AFFF to escape as well. This AFFF would have traveled northwest towards the facility boundary, Birch Stream, and an onsite wetland. Storm drains are also nearby that discharge to Birch Stream.

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 fire departments train at TASMG-Groton, except the simulated training previously described.

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

TASMG-Groton does not have a fire department that trains on-post or off-post. Their personnel are trained on the mobile fire extinguishers that they have.

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?

Besides simulated training, no non-CTARNG units have come onto TASMG-Groton to perform AFFF training. Some fires have occurred at TASMG-Groton, including a boiler room fire and the former administrative building fire. Neither of these fires was responded to with AFFF. To the knowledge of interviewees, no emergencies at TASMG-Groton have required the use of AFFF.

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?

Incident reports have been requested for the fire suppression system releases at Building 323. Incident response reports do not exist for the releases at Building 320 because all AFFF releases at Building 320 were planned.

PA Interview Questionnaire - Environmental Manager

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/19; 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?

TASMG-Groton does not use AFFF to respond to fuel spills. Fuel spill logs are not requested because they are not relevant due to the absence of AFFF during these events.

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

AFFF has not been used in response to forest fires at the facility.

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 CAA Groton-New London Airport Fire Department responds to emergencies at the facility. A formal copy of the document stating such has been requested; it is unknown such a document exists.

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)?

AFFF has been stored and released at Building 320 and Building 323. After quarterly testing occurs, barrels containing PFAS-laden water are transports via forklift to two small buildings near the AVCRAD storage building. From there, the barrels are drained and disposed of via a private contractor through the DLA. No other known storage/release locations exist. It is possible that the former Tri-Max extinguishers staged on the flight ramp contained AFFF. Supporting documentation has been requested, but it is unknown if such documentation exists.

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 at TAMG-Groton.

PA Interview Questionnaire - Environmental Manager

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/19; 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?

A 1996 Environmental Assessment was provided during the interview. Photos were taken. A Spill Prevention, Control, and Countermeasure Plan was also provided prior to the interview. This document is FOUO, and will not be included in any appendices to the PA report.

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

Incident records for the releases at Building 323, and any documentation describing the previous Tri-Max units stored by the facility would be helpful, and have been requested.

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 chrome or metal plating has occurred at this facility.

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.?

NA. The kitchen does have a suppression hood. Information regarding the contents of that system have been requested.

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?

TASMG-Groton disposes AFFF through DLA using a private contractor. The contractor name is unknown, but has been requested. If copies exist of disposal records, they have also been requested.

PA Interview Questionnaire - Environmental Manager

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/19; 09:00

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

CAA Groton-New London Fire Department staff would be able to provide information on the use of AFFF in the areas surrounding TASMG-Groton. It is expected that AFFF use has occurred on the greater airport property, and in numerous other areas within a 5-mile radius.

Additional notes:

While walking to different locations on the property during the site visit, an interviewee recounted a story in which teenagers accidentally trespassed onto the property by by walking through the woods to the west of TASMG-Groton and around the fence line near Long Island Sound. When the teenagers returned north towards the facility, they accidentally walked onto airport/CTARNG property. They were escorted offsite by facility staff.

PA Interview Questionnaire – Fire Station

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/2019, 13:00

Interviewee: [redacted] and FD Personell **Title:** Permission not given **Phone Number:** Permission not given **Email:** Permission not given	Can your name/role be used in the PA Report? Y or **N** Can you recommend anyone we can interview? Y or **N** _____

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

[redacted]'s role is described on a separate interview form.
CAA Groton-New London FD personnel did not give consent to have their name or title used in this PA report.

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) – No known AFFF use in maintenance at TASMG-Groton or airport
Fire Training Areas – AFFF used in fire training in several areas at airport
Firefighting (Active Fire) – AFFF has been used in firefighting at the airport/surrounding areas
Crash – AFFF may have been used in response to the Learjet 35A crash northwest of the main runway
Fire Suppression Systems (Hangers/Dining Facilities) – Not at Fire Station, unknown at other tenants
Fire Protection at Fueling Stations - Unknown
Non-Technical/Recreational/ Pest Management – None known

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?

The fire station is not equipped with an AFFF suppression system TASMG-Groton does have AFFF suppression systems. Whether other private aviation tenants have AFFF suppression systems is unknown.

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

See previous answer.

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

AFFF procurement by the Fire Department was not discussed. The Fire Department is an independent entity, unaffiliated with TASMG-Groton.

PA Interview Questionnaire – Fire Station

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/2019, 13:00

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)?

The type of AFFF used by the fire department is unknown.

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

It is unknown whether the fire department formulates their mixture at the fire station or within their trucks at the scene of the emergency. AFFF is stored on firefighting vehicles. It is also stored in 5-gallon buckets and 55-gallon drums at the old and new fire station. The old fire station caught fire in 2011, and the fire department moved to a new fire station located adjacent to TASMG-Groton.

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?

See previous answer.

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?

AFFF is stored on firefighting vehicles that are kept at the new fire station, but were also previously stored at the former fire station.

10. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located?
Currently stored:
2010 Ford Crash Rescue Equipment Services Renegade (currently functional, stores 40 gallons of AFFF 3% concentrate which produces 1,200 gallons of "finished foam"); **1995 T-1500 Oshkosh ARFF Truck** (currently functional, stores 208 gallons of 3% AFFF concentrate which produces 6,000 gallons of "finished foam");
No longer stored:
1990 Oshkosh T-300 ARFF Truck (out of service prior to 2013 and no longer stored; previously stored 360 gallons of AFFF concentrate); **1998 E One Titan 4x4 ARFF Truck** (caught fire and totaled in 2011 during the former fire station fire, previously stored 210 gallons of 3% AFFF concentrate that was released during the fire).

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?

No known history of leaks. Nozzle testing has occurred with AFFF, and occurs with water that may contain residual AFFF as a result of flowing through the same lines/nozzles. Nozzle testing areas were shown on a map, but included areas on runways, adjacent to runways, and the Gun Butt (former shooting range).

PA Interview Questionnaire – Fire Station

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/2019, 13:00

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?

FTAs at the airport were shown on a map, and included echo and Charlie locations on the main airport runway. AFFF has been used in annual FAA required training at these areas in 2011 and 2017.

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

Unknown.

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?

The frequency of general training by the fire department is unknown; however, FAA-required training occurs annually. The two known uses of AFFF during training occurred in 2011 and 2017 during annual training events.

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?

The CAA Groton-New London Fire Department has a mutual aid agreement with Poquonnock Bridge Fire Department. Othet local fire departments will respond if an emergency merits additional support. There are numerous industrial campuses in Groton, including the Electric Boat campus, Pfizer campus, and Naval Base New London. Many of these campuses have their own fire department.

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?

During training by the fire department, the fire department uses their own materials. During annual joint-training with TASMG-Groton, no AFFF or water is released.

PA Interview Questionnaire – Fire Station

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/2019, 13:00

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

TASMG-Groton does not perform fire training events with AFFF, nor do they travel offsite. The airport fire department may hold training events elsewhere, but that is irrelevant to this PA.

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?

No specific incidents requiring AFFF have occurred at the TASMG-Groton facility. Incident reports for general airport incidents were not requested.

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?

No known fuel-spill related releases of AFFF by the fire department are known.

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)?

AFFF has been stored at the old and new fire station. AFFF releases have occurred at locations shown on a map during nozzle testing (which ran AFFF) and FAA-required training. These areas include the runways, areas adjacent to the runways, the former fire station, and current fire station, and the Gun Butt former shoot range.

PA Interview Questionnaire – Fire Station

Facility: TASMG-Groton
Interviewer: [redacted]
Date/Time: 12/10/2019, 13:00

22. 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.

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?

It is unknown how the fire department disposes of their AFFF.

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

No.

Appendix B.2
Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by: [redacted]

ARNG Contact: [redacted]

Date and Time: December 10, 2019; 12:00pm

Method of visit (walking, driving, adjacent): Walking

Source/Release Information

Site Name / Area Name / Unique ID: TASMG-Groton Building 320

Site / Area Acreage: 3.2 acres (based on Google Earth aerial imagery)

Historic Site Use (Brief Description): TASMG/AVCRAD

Current Site Use (Brief Description): TASMG

Physical barriers or access restrictions: Facility perimeter fence / airport fence

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):

Yes, PFAS-laden water may be released during quarterly testing of fire suppression system. Water may spill onto ground outside building during testing.

2. Has usage been documented? **Y** / **N**

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

No documents have been made available recording system testing.

3. What types of businesses are located near the site? **Industrial** / **Commercial** / **Plating** / **Waterproofing** / **Residential**

3a. Indicate what businesses are located near the site

Airport tenants, industrial campuses nearby (Pfizer, General Dynamic Electric Boat), Naval Submarine Base

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

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

Yes

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:

Yes, the Building 320 fire suppression system is supported by a 5,000 gallon AFFF tank.

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

The system was installed in 1998, and tested in 2008. The test in 2008 was enclosed and no leaks occurred. Quarterly system testing has occurred ever since.

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

The AFFF is not used during the quarterly testing. Only water is released; however, the water may contain residual PFAS. AFFF is not replaced.

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

Floor drains connect to sanitary system sewers for the town of Groton. Stormwater runoff flows towards Birch Stream.

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation? **Y / N**

1a. If so, note observation and location:

Yes, via sanitary system sewers to Groton WWTP, and via runoff/stormwater catch basins to an intermittent stream that connects to Birch Stream/Long Island Sound

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

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

No surface channels. Below ground channelization via stormwater catch basins towards intermittent stream.

3. Are monitoring or drinking water wells located near the site? **Y / N**

3a. If so, please note the location:

No drinking water wells. According to interviewees, monitoring wells exist at Building 338 due to previous hydrocarbon remediation.

4. Are surface water intakes located near the site? **Y / N**

4a. If so, please note the location:

Yes, intermittent stream to Birch Stream to Birch Cove to Long Island Sound. Also a small wetland on the facility, and the Poquonnock River to the east.

5. Can wind dispersion information be obtained? **Y / N**

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

No

6. Does an adjacent non-ARNG PFAS source exist? **Y / N**

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

Yes, multiple. Airport fire department, private tenants, airport runways, industrial campuses, crash location.

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):

No

2. Is the site/area vegetated? **Y / (N)**

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

Building 320 is not vegetated, but some landscaped areas exist near it. PFAS-laden water runoff may reach landscaped areas.

3. Does the site or area exhibit evidence of erosion? **Y / (N)**

3a. If yes, describe the location and extent of the erosion:

No

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:

No, but a wetland exists nearby.

Receptor Information

1. Is access to the site restricted? **(Y) / N**

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

Yes, perimeter fence and airport fence.

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:

Site workers/construction workers/trespassers/ecological receptors

3. Are residential areas located near the site? **(Y) / N**

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

Yes, to the northwest

4. Are any schools/day care centers located near the site? **Y / (N)**

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

West Side Middle School is 0.9 miles northwest. Susan's Family Daycare located 0.4 miles northwest.

5. Are any wetlands located near the site? **(Y) / N**

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

Yes, approximately 600 ft northwest

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by: [redacted]

ARNG Contact: [redacted]

Date and Time: December 10, 2019; 12:00pm

Method of visit (walking, driving, adjacent): Walking

Source/Release Information

Site Name / Area Name / Unique ID: TASMG-Groton Building 323

Site / Area Acreage: 0.24 acres (based on Google Earth aerial imagery)

Historic Site Use (Brief Description): Engine shop

Current Site Use (Brief Description): Engine shop

Physical barriers or access restrictions: Facility perimeter fence / airport fence

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):

Yes, AFFF releases occurred in 2010-2012 and 2014 during accidental fire suppression system releases. AFFF may have escaped the building to the west during releases.

2. Has usage been documented? **Y** / **N**

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

No documents have been made available recording system testing. Records requested.

3. What types of businesses are located near the site? **Industrial** / **Commercial** / **Plating** / **Waterproofing** / **Residential**

3a. Indicate what businesses are located near the site

Airport tenants, industrial campuses nearby (Pfizer, General Dynamic Electric Boat), Naval Submarine Base

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

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

Yes

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:

Yes, the Building 323 fire suppression system is supported by a 270 gallon AFFF tank.

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

The system was installed in 2004. No known releases occur during maintenance or testing.

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

The AFFF is not used and thus not replaced.

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

Floor drains connect to sanitary system sewers for the town of Groton. Stormwater runoff flows towards Birch Stream.

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation? **Y / N**

1a. If so, note observation and location:

Yes, via sanitary system sewers to Groton WWTP, and via runoff/stormwater catch basins to an intermittent stream that connects to Birch Stream/Long Island Sound

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

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

No surface channels. Below ground channelization via stormwater catch basins towards intermittent stream.

3. Are monitoring or drinking water wells located near the site? **Y / N**

3a. If so, please note the location:

No drinking water wells. According to interviewees, monitoring wells exist at Building 338 due to previous hydrocarbon remediation.

4. Are surface water intakes located near the site? **Y / N**

4a. If so, please note the location:

Yes, intermittent stream to Birch Stream to Birch Cove to Long Island Sound. Also a small wetland on the facility, and the Poquonnock River to the east.

5. Can wind dispersion information be obtained? **Y / N**

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

No

6. Does an adjacent non-ARNG PFAS source exist? **Y / N**

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

Yes, multiple. Airport fire department, private tenants, airport runways, industrial campuses, crash location.

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):

No

2. Is the site/area vegetated? **Y / N**

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

Landscaped areas exist on the southwest side, and nearby to the west and north. AFFF runoff may have reach landscaped areas.

3. Does the site or area exhibit evidence of erosion? **Y / N**

3a. If yes, describe the location and extent of the erosion:

No

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:

No, but a wetland exists approximately 250 ft to the northeast

Receptor Information

1. Is access to the site restricted? **Y / N**

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

Yes, perimeter fence and airport fence.

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:

Site workers/construction workers/trespassers/ecological receptors

3. Are residential areas located near the site? **Y / N**

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

Yes, to the northwest

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

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

West Side Middle School is 0.9 miles northwest. Susan's Family Daycare located 0.4 miles northwest.

5. Are any wetlands located near the site? **Y / N**

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

Yes, approximately 250 ft northeast

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: TASMG-Groton

Why has this location been identified as a site?

The site is located on an airport and has a history of aircraft use and maintenance that is typically associated with AFFF.

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

Yes, airport activities (fire department, crashes, training, private tenants), industrial activities (Pfizer, General Dynamic), and DoD (Naval Submarine Base)

Training Events

Have any training events with AFFF occurred at this site? No at the facility, but it has at the airport

If so, how often? 2 known events during annual training. Nozzle check testing also occurs on airport.

How much material was used? Is it documented? 100-150 gallons of AFFF concentrate

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? Generally east to west

Average rainfall? 46.49 inches annually

Any flooding during rainy season? Facility is in a 100-yr floodplain

Direct or indirect pathway to ditches? Direct pathway to wetland, Birch Stream

Direct or indirect pathway to larger bodies of water? Yes, direct to Birch Stream

Does surface water pond any place on site? Wetland exists in northwest corner of property

Any impoundment areas or retention ponds? No impoundment areas

Any NPDES location points near the site? Unknown

How does surface water drain on and around the flight line? Unknown; flightline is not on property

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Generally north to south towards Long Island Sound

Depth to groundwater? 8-9 ft according to facility personnel

Uses (agricultural, drinking water, irrigation)? No known use of groundwater

Any groundwater treatment systems? No

Any groundwater monitoring well locations near the site? Near Cold Storage Building

Is groundwater used for drinking water? No

Are there drinking water supply wells on installation? No, provided by Groton Municipal Water Department

Do they serve off-post populations? No

Are there off-post drinking water wells downgradient No; none known

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? No, the Groton WWTP treats sanitary system water

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

Do we understand the fate of sludge waste? No

Is surface water from potential contaminated sites treated? Runoff from potential releases may reach the Groton WWTP

Equipment Rinse Water

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

No firefighting equipment at the facility is washed on facility

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?

Fire department nozzle testing occurs on the airport, off-property

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker

Construction Worker

Recreational User

Trespassers are also a potential receptor for exposure at TASMG-Groton.

Residential

Child

Ecological

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

Nearest school/daycare is 0.9 and 0.4 miles away, respectively.

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	TASMG-Groton	Groton, Connecticut

Photograph No. 1

Date 12/10/2019

Time 11:10

Description:

5,000-gallon tank of Ansulite 3% AFFF concentrate stored in the tank room within Building 320.

Orientation:

NA

Photograph No. 2

Date 12/10/2019

Time 11:37

Description:

Nested AFFF system test ports used during the quarterly system testing of Building 320.

Orientation:

Northwest

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	TASMG-Groton	Groton, Connecticut

Photograph No. 3

Date 12/10/2019

Time 11:39

Description:

Piping supporting AFFF system test ports at Building 320 used during the quarterly system testing. "Foam" labels visible on system piping.

Orientation:

East

Photograph No. 4

Date 12/10/2019

Time 12:01

Description:

AFFF system release button in Building 323. This was accidentally triggered during the known AFFF system releases within the Engine Room.

Orientation:

Southwest

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	TASMG-Groton	Groton, Connecticut

Photograph No. 5

Date 12/10/2019

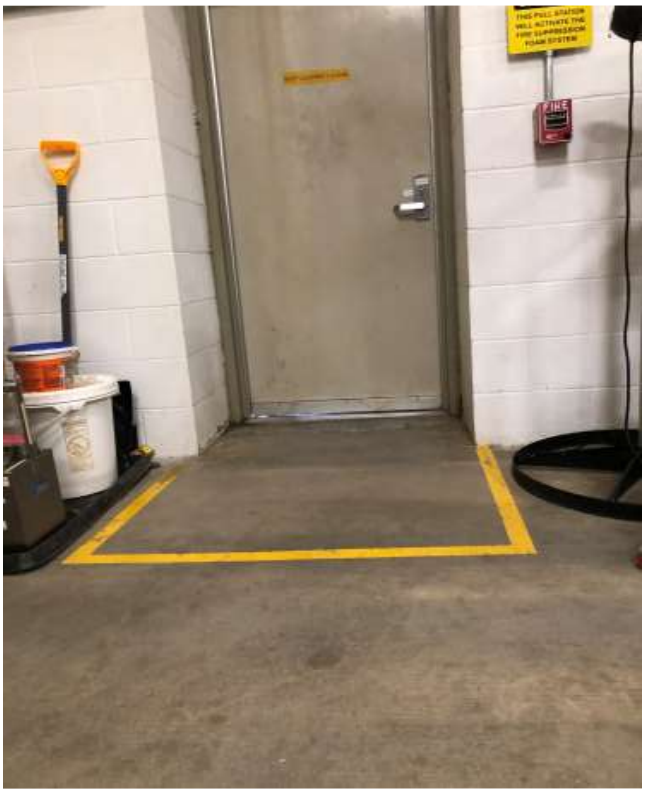
Time 12:09

Description:

Space visible between the floor and the bottom of the door in Engine Room in Building 323.

Orientation:

Northeast



Photograph No. 6

Date 12/10/219

Time 12:10

Description:

270-gallon AFFF concentrate tank stored in the Engine Room - Building 323.

Orientation:

Northeast

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	TASMG-Groton	Groton, Connecticut

Photograph No. 7

Date 12/10/2019

Time 12:15

Description:

TASMG-Groton fence north of Building 323. Wetland visible in the foreground within the fenced area.

Orientation:

Northeast

Photograph No. 8

Date 12/10/2019

Time 12:29

Description:

Mobile fire extinguisher staged on the Flight Ramp adjacent to a storage shed which is sometimes used to store more mobile fire extinguishers.

Orientation:

Southwest

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	TASMG-Groton	Groton, Connecticut

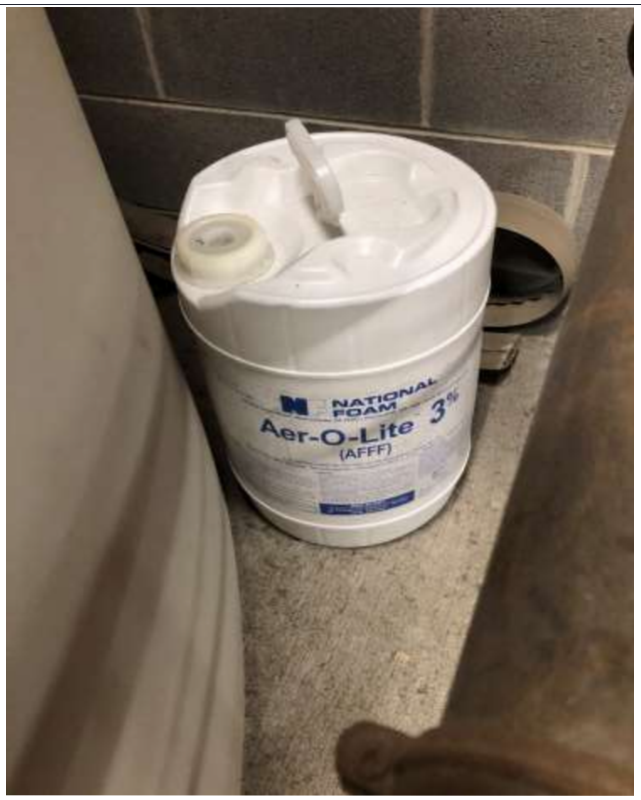
Photograph No. 9

Date 12/10/2019

Time 11:10

Description:
5-gallon bucket of National Foam Aer-O-Lite 3% AFFF concentrate stored within the Building 320 tank room.

Orientation:
NA



Photograph No. 10

Date 12/10/2019

Time 11:11

Description:
5,000-gallon AFFF concentrate tank and 5-gallon bucket of AFFF concentrate stored within the Building 320 tank room.

Orientation:
NA

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	TASMG-Groton	Groton, Connecticut

Photograph No. 11

Date 12/10/2019

Time 11:18

Description:
Ceiling sprinklers connected to the AFFF fire suppression system in the Building 320 hangar.

Orientation:
NA

Photograph No. 12

Date 12/10/2019

Time 11:22

Description:
Building 320 AFFF suppression system hose that was used during the 2008 system test to discharge AFFF straight into the vac-truck of a private contractor.

Orientation:
NA

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	TASMG-Groton	Groton, Connecticut

Photograph No. 13

Date 12/10/2019

Time 11:25

Description:

AFFF system test port used during the quarterly system testing of Building 320. During testing, a barrel is placed beneath the port to catch potentially PFAS-laden water.

Orientation:

Northwest

Photograph No. 14

Date 12/10/2019

Time 11:27

Description:

AFFF system test port used during the quarterly system testing at Building 320. Sanitary drain visible beyond the test port.

Orientation:

Northwest

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	TASMG-Groton	Groton, Connecticut

Photograph No. 15

Date 12/10/2019

Time 11:33

Description:

AFFF system test port used during the quarterly system testing at Building 320.

Orientation:

Southeast

Photograph No. 16

Date 12/10/2019

Time 11:34

Description:

AFFF system test port used during the quarterly system testing.

Orientation:

East