FINAL
Preliminary Assessment Report
AASF #3 Bates Field,
Mobile, Alabama

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

September 2020

Prepared for:

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

UNCLASSIFIED

Table of Contents

Tables

Figures

Appendices

Acronyms and Abbreviations

°F	degrees Fahrenheit
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
ALARNG	Alabama Army National Guard
AOI	Area of Interest
ARNG	Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
EDR™	Environmental Data Resources, Inc.
FTA	fire training area
HA	Health Advisory
MAWSS	Mobile Area Water & Sewer System
NGWA	National Ground Water Association
OWS	oil water separator
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site Inspection
US	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VSI	Visual Site Inspection

Executive Summary

The Army National Guard (ARNG) is performing Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide. A PA for per- and polyfluoroalkyl substances (PFAS)-containing materials was completed for the Army Aviation Support Facility (AASF) #3 Bates Field (also referred to as the "facility"), in Mobile, Alabama, to assess potential PFAS release areas and exposure pathways to receptors. The AASF #3 facility is constructed on a parcel of land owned by the Mobile Airport Authority and leased to the Alabama ARNG (ALARNG). The performance of this PA included the following tasks:

- Reviewed available administrative record documents and Environmental Data Resources, Inc. (EDR)™ report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility.
- Conducted a site visit on 9 April 2019 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current ALARNG personnel, environmental managers, and operations staff;
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

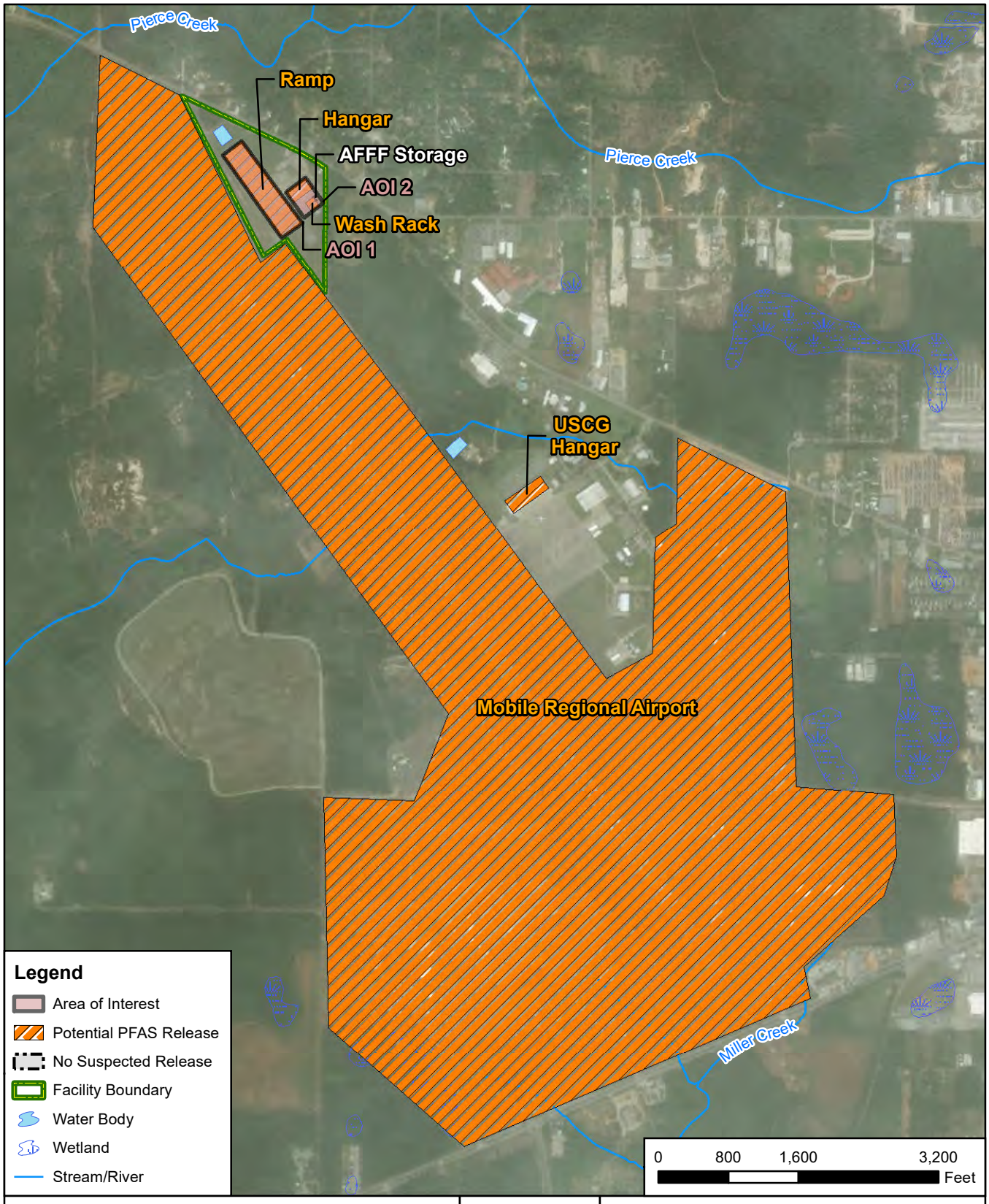
Two AOIs related to potential PFAS releases were identified at the AASF #3 facility during the PA. The AOIs are shown on **Figure ES-1** and described in **Table ES-1**.

Table ES-1: AOIs at AASF #3 Bates Field

Area of Interest	Name	Used by	Potential Release Date
AOI 1	Flight Ramp	ALARNG	2002 to 2008
AOI 2	Hangar Suppression System and Wash Rack	ALARNG	Hangar: 1999 to 2016; Wash Rack: 2002 to 2008

Construction of the AASF #3 facility began in 1996 and was completed in 1999. The original hangar building was equipped with an AFFF dispensing system that was replaced with 3% AFFF from 2016 to 2018 as part of a statewide upgrade effort. Three areas were investigated during this PA: the hangar building & AFFF suppression system, the AFFF storage building, and the flight ramp.

Based on potential PFAS releases at these AOIs, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for the facility, which presents the potential receptors and media impacted, is shown on **Figure ES-2**. Based on the US Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the USEPA's lifetime Health Advisories (HAs) within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bates Field AASF #3, AL			
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SCALE	1:19,200	CHK BY	BM	8/3/2020
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	8/3/2020

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Summary of Findings

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Figure ES-1

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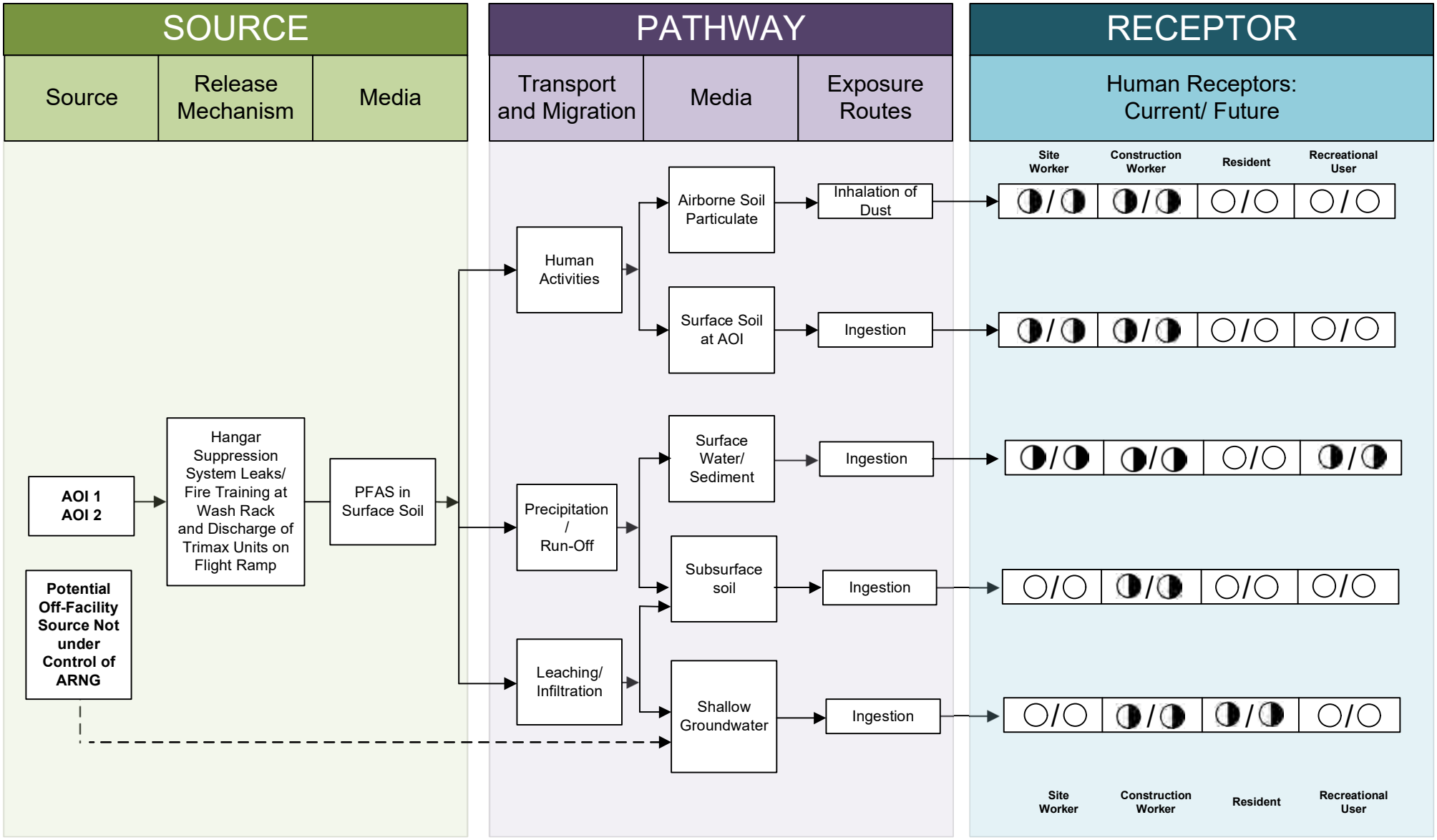


LEGEND

- 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
AASF #3 Bates Field

1. Introduction

1.1 Authority and Purpose

The Army National Guard (ARNG) G9 is the lead agency in performing *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) at Impacted Sites at ARNG Facilities Nationwide*. This work is supported by the United States (US) Army Corps of Engineers (USACE) Baltimore District and their contractor AECOM Technical Services, Inc. (AECOM) under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017.

The ARNG is assessing potential effects on human health related to processes at facilities that used per- and poly-fluoroalkyl substances (PFAS), 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 a Lifetime Health Advisory (HA) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined.

This report presents the findings of a PA for PFAS-containing materials at the current Army Aviation Support Facility (AASF) #3 Bates Field (also referred to as “the facility”), Mobile, Alabama, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations [CFR] Part 300), and Army requirements and guidance.

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

1.2 Preliminary Assessment Methods

The performance of this PA included the following tasks:

- Reviewed available administrative record documents and Environmental Data Resources, Inc. (EDR)™ report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit on 9 April 2019 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current Alabama ARNG (ALARNG) personnel, environmental managers, and operations staff;
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

1.3 Report Organization

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

- **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

The facility is located along Tanner Williams Road in Mobile County, Mobile, Alabama (**Figure 1-1**) and is approximately 12 miles west of downtown Mobile.

According to ALARNG personnel, construction at the facility began in 1996 and was completed in 1999. The facility is situated on a 66-acre parcel of land owned by the Mobile Airport Authority; see **Appendix A** for parcel details provided in the Mobile County property appraiser database. The current AASF #3 facilities include one hangar for the operation, maintenance, and repair of ALARNG rotary-winged aircraft, administrative offices, and classrooms. Water and electric utilities are provided by the City of Mobile.

1.5 Facility Environmental Setting

AASF #3 is situated in the Alluvial-Deltaic Plain district of the Coastal Plain physiographic province. The Alluvial-Deltaic Plain is a flat expanse characterized by sinuous stream courses, swamps, and poorly defined drainage divides. The facility lies in the Southern Coastal Plain ecoregion, which is characterized by meandering, low-gradient, and sandy bottom streams that flow across flat, swampy plains and bottomlands that define the local the topography. The surrounding landscape supports forest and woodland areas with some cropland and pasture. Land cover in the area is mostly longleaf-slash pine forest, oak-gum-cypress forest in some low-lying areas, pasture for beef cattle, and urban areas (US Geological Survey [USGS], 2002).

1.5.1 Geology

Near-surface sediments consist of undifferentiated Holocene and Pleistocene age alluvial, coastal, and low terrace deposits characterized by white, gray, orange, and red very fine- to coarse-grained sand with gravel and gray and orange sandy clay in some places (Geological Survey of Alabama, 1972). Throughout most of the area, these sands are less than 50 feet thick; however, in the Mobile River floodplain, alluvial deposits are as much as 150 feet thick (USGS, 2019).

The Pliocene age Citronelle Formation underlies the undifferentiated Holocene and Pliocene units. The Citronelle formation is characterized by moderate-reddish-brown, deeply weathered, fine to very coarse quartz sand with varicolored, typically mottled, lenticular beds of clay and clayey gravel. Limonite pebbles and lenses of limonite-cemented sand occur locally in weathered exposures. Gravel found in the Citronelle formation is composed of chert and quartz pebbles. (USGS, 2019).

The undifferentiated Miocene Series unconformably underlies the Citronelle Formation and is characterized by moderate-yellowish-orange, thinly bedded to massive, fine to coarse sand, gravelly sand, thin-bedded to massive clay, and sandy clay. Limonite pellets occur in places along clay sand contacts. Gravel in the Miocene Series is composed of quartz and chert granules and pebbles (USGS, 2019).

The Miocene age Pensacola Clay Formation conformably underlies the undifferentiated Miocene Series and is characterized by greenish-gray to light olive-gray, slightly calcareous, slightly micaceous silty to sandy clay, containing beds and lenses of sand (Geological Survey of Alabama, 1985). Geologic units are depicted on **Figure 1-2**.

1.5.2 Hydrogeology

The principal water-bearing sands in the Mobile County are in the undifferentiated Miocene Series and Citronelle Formation, and these sands are referred to collectively as the Miocene Pliocene Aquifer. Groundwater in the vicinity of the facility can be encountered at approximately 5 feet below ground surface. Large capacity wells tapping the aquifer in Mobile County generally range in depth from 150 to 800 feet. Prominent sands in the aquifer are not tapped by wells in many areas because of the availability of adequate supplies at shallower depths (Geological Survey of Alabama, 1972). Groundwater features surrounding the facility are shown in **Figure 1-2**, and general groundwater flow beneath the facility is toward the southwest. According to the Environmental Data Resources, Inc. (EDR™) Report (**Appendix A**), one water well is upgradient of the facility and identified as an inactive USGS well. According to the USGS National Water Information System Mapper, an additional 14 inactive USGS wells have been identified within a 4-mile radius of the facility. Based on the USEPA Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the USEPA HA level within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.

1.5.3 Hydrology

The AASF #3 facility lies within Mobile River Basin. Drainage at the facility consists of sheet flow across the facility to the northwest, toward Pierce Creek and Hamilton Creek, which drain to Big Creek Lake (Geological Survey of Alabama, 2002). Big Creek Lake, also known as Converse Reservoir, is the main source of drinking water for almost 70 percent of Mobile County (Mobile Area Water & Sewer System [MAWSS], 2019). Big Creek Lake is fed by springs, streams, and

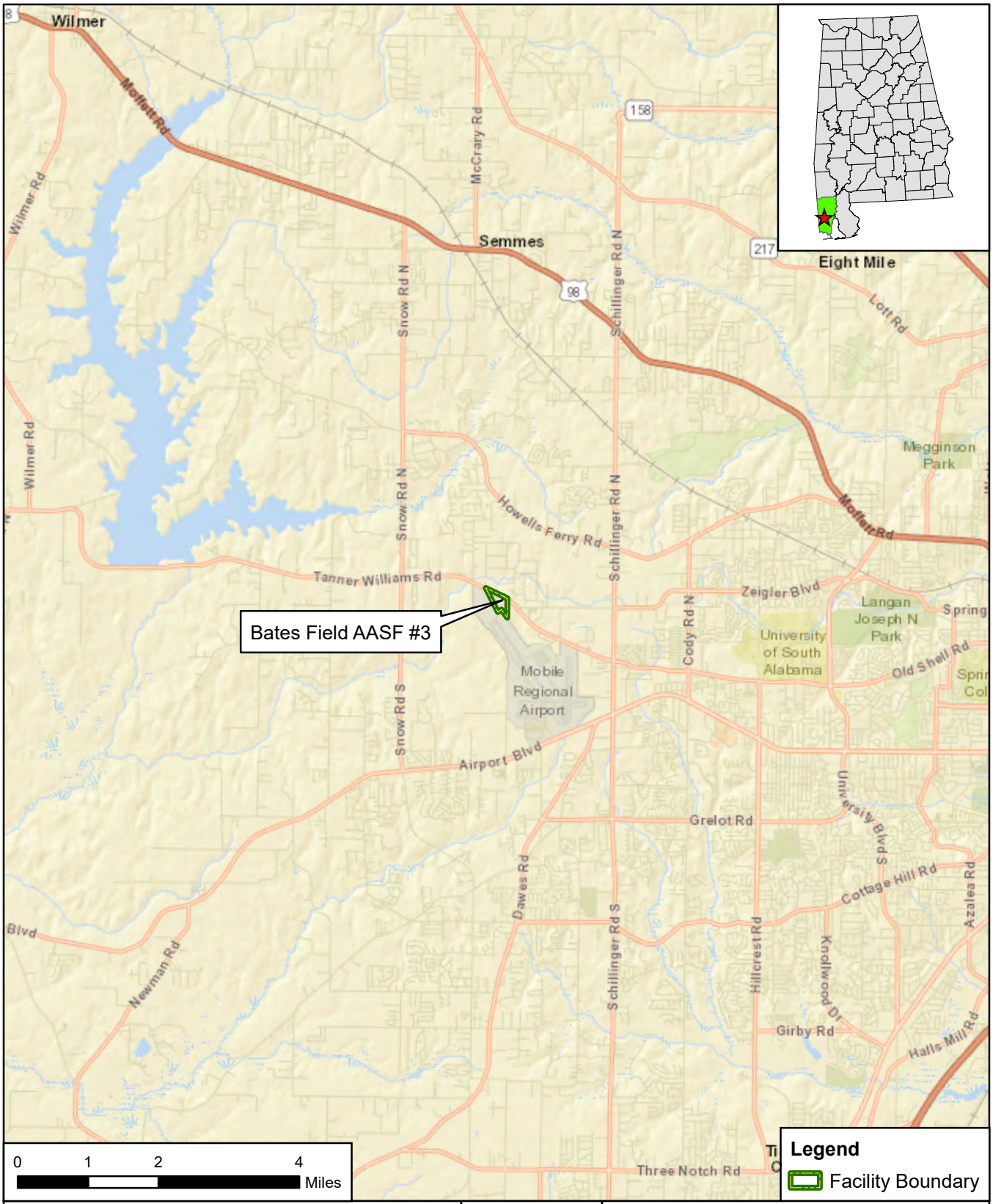
rainfall in the Converse Reservoir Watershed (MAWSS, 2018). Sewer and water services are provided by MAWSS. Surface water features surrounding the facility are shown in **Figure 1-3**.

1.5.4 Climate

Alabama's climate is humid subtropical, with average annual temperatures of about 58 degrees Fahrenheit (°F) in northeastern Alabama to about 68 °F in southwestern Alabama. Rainfall in Alabama usually is abundant and distributed throughout the year (Geological Survey of Alabama, 2002). The average temperature in Mobile is 67.25 °F, with an average high of 77.5 °F and an average low of 57 °F. Mobile receives an average of 66.22 inches of rain per year (WorldClimate.com, 2019).

1.5.5 Current and Future Land Use

The ALARNG AASF #3 facility is adjacent to the Mobile Regional Airport and a US Coast Guard (USCG) facility located southeast of the facility. Properties surrounding the AASF #3 facility primarily consist of commercial properties to the southeast, residential properties to the north, and undeveloped land to the west and southwest. Reasonably anticipated future land use is not expected to change from the current land use.



CLIENT	ARNG			
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Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	9/4/2019

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Facility Location

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Figure 1-1

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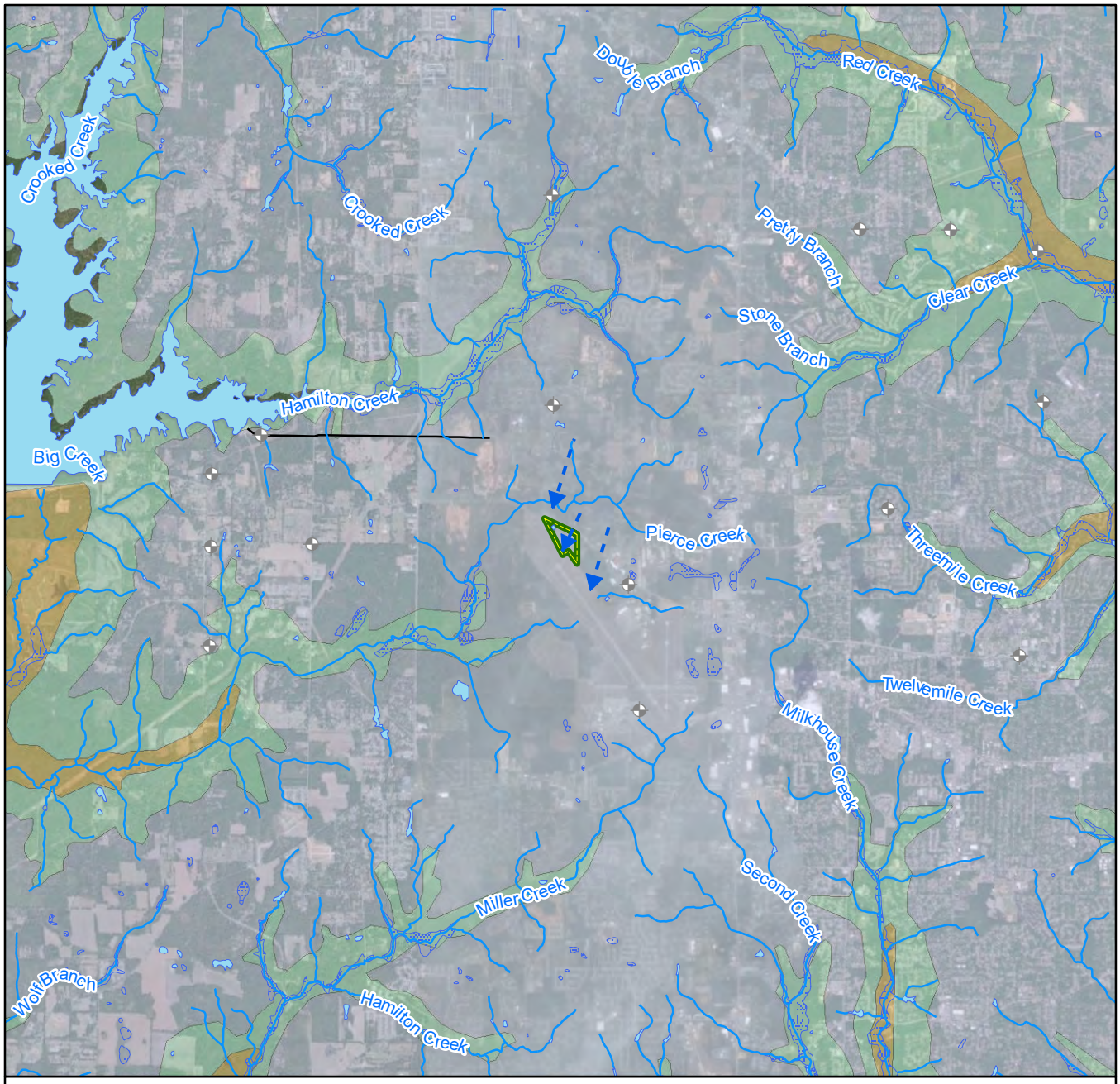

Legend

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

Geology

- Alluvial, coastal, and low terrace deposits
- Citronelle Formation
- Miocene Series undifferentiated

Wells

- USGS Inactive Monitoring Well

0 0.75 1.5 3 Miles

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bates Field AASF #3, AL			
REVISED	8/5/2020	GIS BY	MS	8/5/2020
SCALE	1:95,040	CHK BY	BM	8/5/2020
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	8/5/2020

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Groundwater Features

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Figure 1-2

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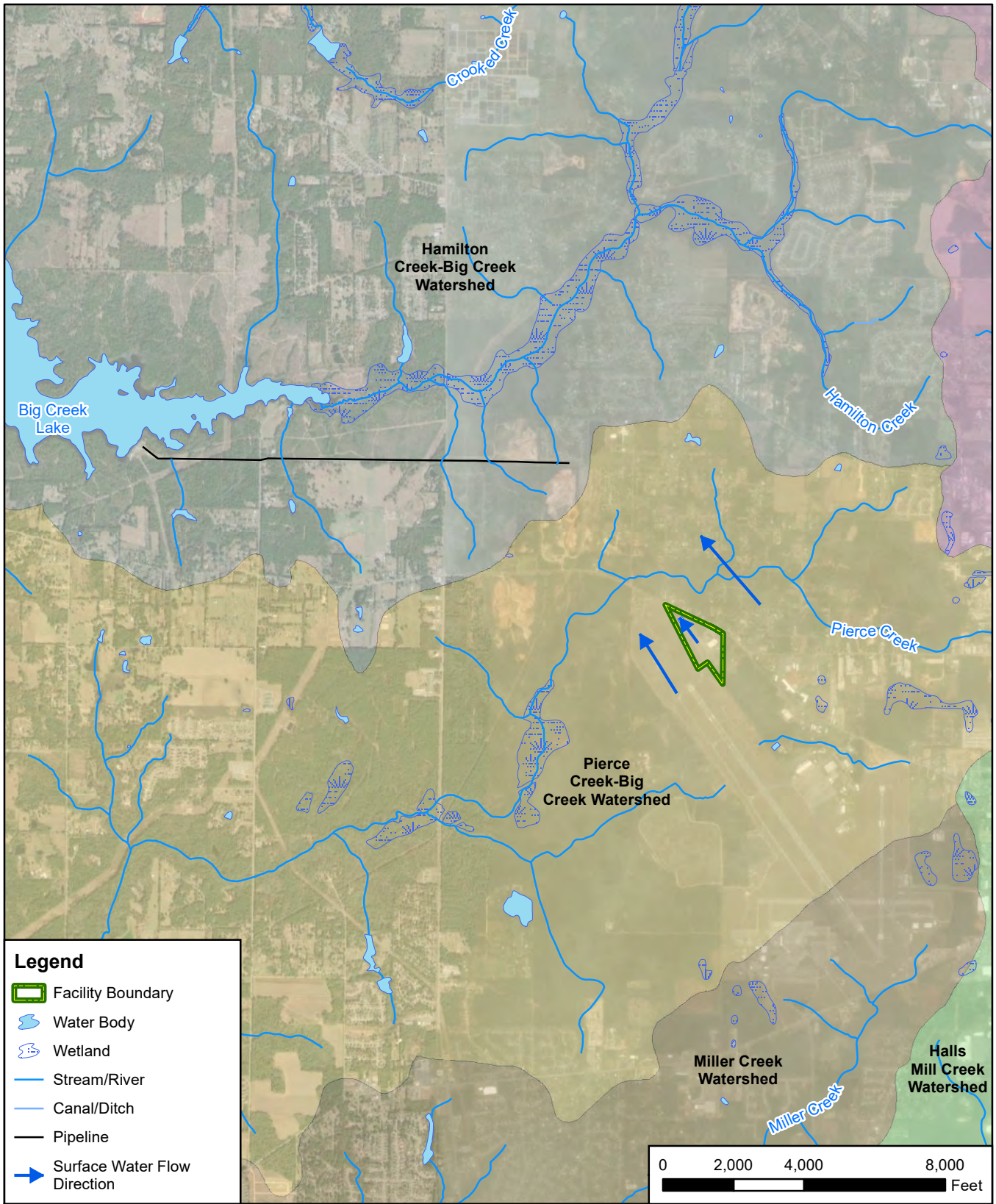

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

One former FTA was identified within the AASF #3 facility during the PA. A description of the FTA is presented below, and its location is shown on **Figure 2-1**. Interview Records appear in **Appendix B**, and photographs appear in **Appendix C**.

2.1 Wash Rack Area

According to ALARNG personnel with knowledge of the property dating back to 2002, annual fire training was conducted at the wash rack area located southeast of the hangar building. The approximate geographic coordinates for the wash rack area are 30°42'18.8"N; 88°15'5.4"W. One storm drain is located at the wash rack. Stormwater collected at this drain discharges to the oil water separator (OWS) and then the stormwater sewer.

According to ALARNG personnel, fire training at the wash rack area was conducted with a burn barrel and Purple K units. As discussed in **Section 3.3**, approximately ten AFFF Tri-Max™ 30 units were historically (until about 2008) staged along the flight ramp located southwest of the hangar building. Although ALARNG personal stated that only Purple K units were used in fire training, there is the possibility that Tri-Max™ 30 units may have been used for fire training until about 2008.

Based on interviews conducted during this PA, no other fire training occurred during ALARNGs operation of the subject property. Based on aerial imagery dating back to 1938 and provided in the EDR™ report (**Appendix A**), features suggesting historical FTAs were not identified.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bates Field AASF #3, AL			
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SCALE	1:3,600	CHK BY	BM	8/3/2020
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	8/3/2020

Fire Training Area

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Figure 2-1

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3. Non-Fire Training Areas

In addition to FTAs, the PA evaluated areas where PFAS-containing materials may have been broadly used, stored, or disposed. This may include buildings with fire suppression systems, paint booths, AFFF storage areas, and areas of compliance demonstrations. Information on these features obtained during the PA are included in **Appendices A** and **B**. Non-FTAs where AFFF was stored and/or potentially 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**. Photographs of the non-FTAs are provided in **Appendix C**.

3.1 Hangar Fire Suppression System

The AASF #3 hangar building contains a fire suppression system equipped with an 800-gallon concentrate tank filled with Chemguard 3% AFFF. Two 60,000-gallon water tanks located approximately 300 feet northeast of the hangar are used as the water supply for the AFFF system. Floor drains in the hanger building drain to the OWS and then discharge to the sanitary sewer system. The geographic coordinates of the hangar are 30° 42' 20.4"N; 88° 15' 7.2"W. The geographic coordinates of the water tanks are 30°42'22.5"N; 88°15'3.7"W. The locations of the hangar building and water supply tanks are depicted on **Figure 3-1**. The current system was installed from 2016 to 2018 and replaced the AFFF system that was part of the original hangar construction in 1999.

During the PA interviews, ALARNG personnel indicated that an unknown type of AFFF was used in the original suppression system. During the replacement of the original suppression system, the following conditions were observed by ALARNG personnel: overhead dispensing nozzles were rusted; the bladder system within the original AFFF concentrate tank was found to be ruptured, but concentrate had not traveled beyond the secondary containment; and the shutoff valve/backflow preventer had been installed backward. Upon discovery of the improperly installed shutoff valve/backflow preventer, ALARNG contracted water sampling at the facility, and drinking water samples were analyzed at a USEPA certified lab for PFOS and PFOA. Results of the all samples indicated that PFOS and PFOA compounds were not detected. The original system was dismantled, and the associated piping, concentrate, and concentrate tank were removed from the facility by a contractor, although it is unknown where the components and concentrate were taken.

Information regarding a full-scale test of the original suppression system could not be ascertained. According to the ALARNG personnel interviewed, a full-scale test of the new system was not conducted, and the system had not been triggered. During the visual inspection, corrosion and rust staining were observed at the floor drain beneath the current AFFF concentrate tank.

3.2 AFFF Storage Area

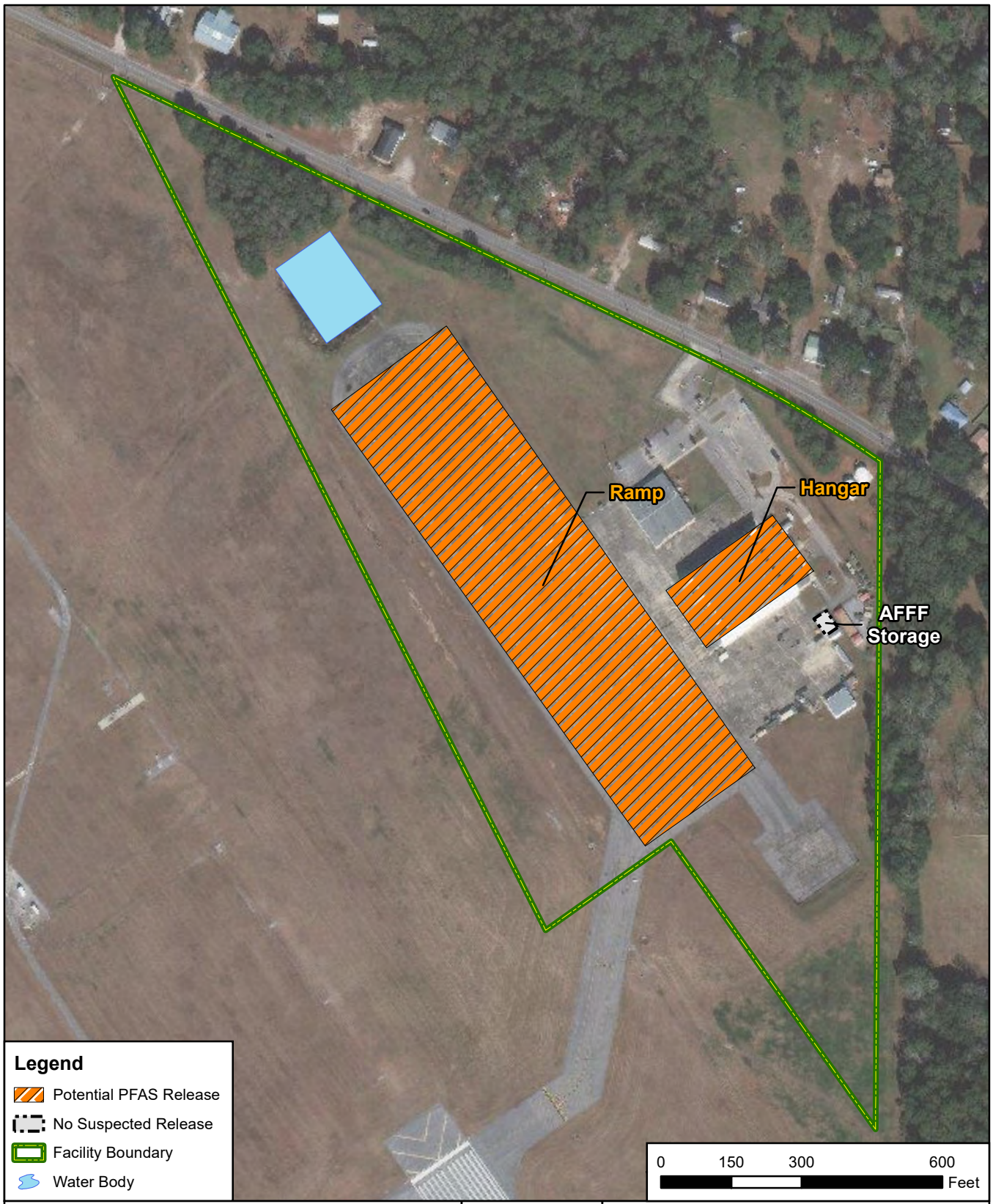
During the PA site visit, ALARNG personnel noted that after the AFFF system upgrade from 2016 to 2018, the contractor tasked with the system upgrade left two 55-gallon drums containing Chemguard 3% onsite. These drums contain leftover concentrate because the tank had been filled to capacity. ALARNG personnel currently stage these drums within a chemical storage building with secondary containment. At the time of the visual inspection, no evidence of drum leaks, rust, or spills were apparent.

The geographic coordinates of the storage building are 30°42'18.1"N; 88°15'4.7"W.

3.3 Flight Ramp

The flight ramp is located west of the hangar, and the geographic coordinates of the ramp are 30°42' 18.1"N; 88°15'10.2"W. According to ALARNG personnel with knowledge of the facility dating back to 2002, approximately ten AFFF Tri-Max™ 30 units were historically (until about 2008) staged along the flight ramp located southwest of the hangar building. The Tri-Max™ 30 units were maintained by a contractor, and ALARNG did not have copies of the disposal documents or knowledge of where the Tri-Max™ 30 units were transported and disposed of. However, ALARNG personnel did indicate that prior to removal of the Tri-Max™ 30 units around 2008, these units were discharged southeast of the hangar building. Currently, dry chemical Purple K units are used on the ramp.

It was noted during the PA that the ramp is not constructed with storm drains. Surface water drainage appears to flow northwest to the retention pond located at the northwest corner of the facility property.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bates Field AASF #3, AL			
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SCALE	1:3,600	CHK BY	BM	11/12/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	11/12/2019

Non-Fire Training Areas

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Figure 3-1

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4. Emergency Response Areas

No emergency response areas were identified within the AASF #3 facility during the PA through interviews of ALARNG personnel with knowledge of the property dating back to 2002 or document review. The City of Mobile Fire Department provides fire emergency services for the AASF #3 facility, Mobile Regional Airport, and the USCG facility. AECOM requested information from the Mobile Fire Department; however, a response was not received.

5. Adjacent Sources

Two potential off-facility source of PFAS adjacent to AASF #3, not under the control of the ALARNG, were identified during the PA. These potential off-facility sources include the USCG facility (located within the Mobile Regional Airport) and all other hangars, ramps, taxiways, runways and facilities located on the Mobile Regional Airport property not associated with ALARNG activity. These potential sources are depicted on **Figure 5-1** and described below.

5.1 United States Coast Guard

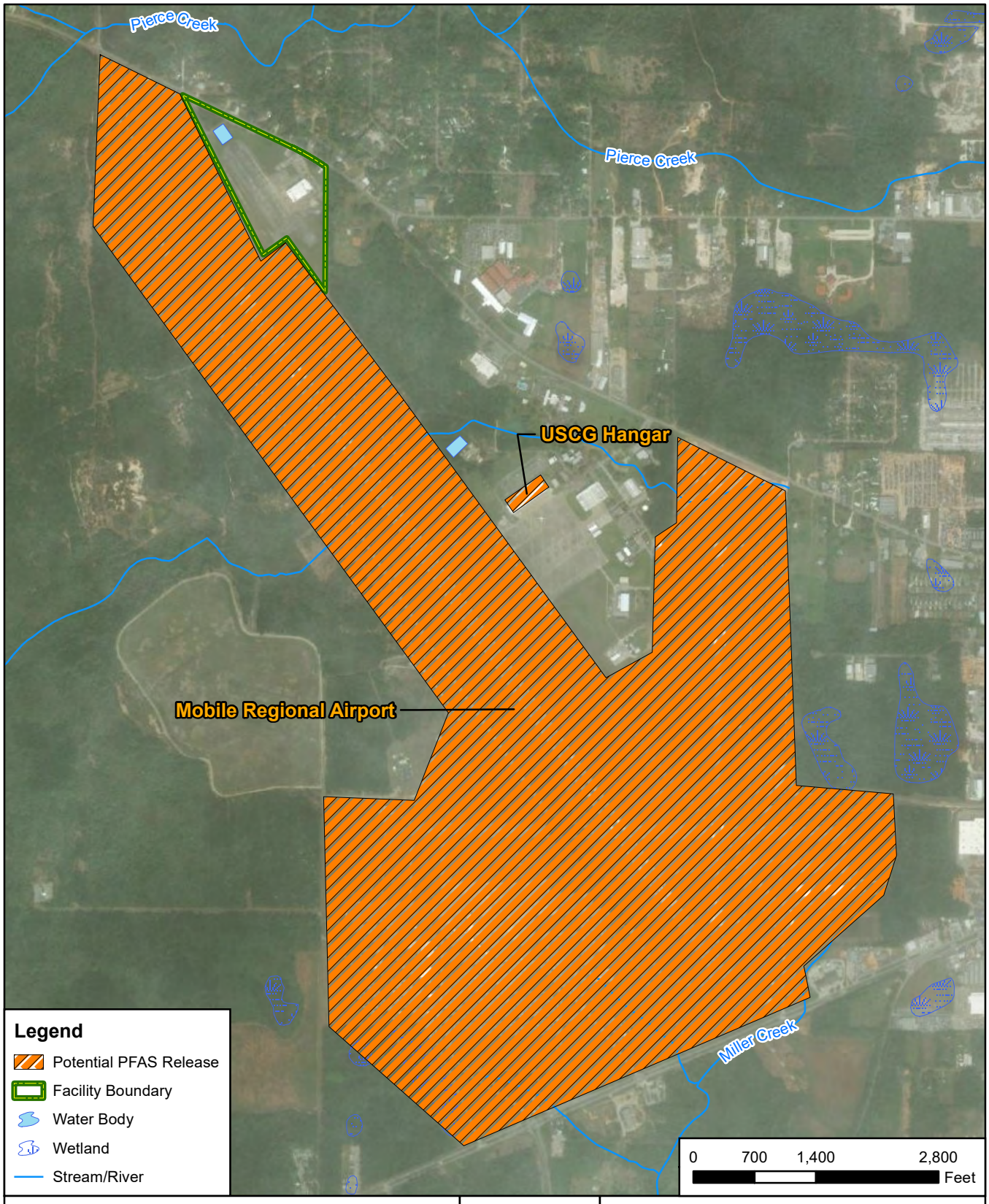
A USCG facility is located within the Mobile Regional Airport property and adjacent to AASF #3, toward the southeast. According to ALARNG personnel interviewed, the hangar at the USCG facility may be equipped with an AFFF dispensing system. ALARNG personnel indicated that between 2014 and 2015, this suppression system was triggered and may have released AFFF. The geographic coordinates for this hangar are 30°41'45.8"N; 88°14'36.9"W. Details of this release could not be ascertained from public records. AECOM requested information from the Mobile Fire Department, but a response was not received.

According to ALARNG personnel, all drainage from the entire airport flows toward the AASF #3 facility, with some surface water being captured by the detention pond located north of AASF #3. Based on this location and ALARNG knowledge of a possible release, this facility is considered a potential off-facility source of AFFF.

5.2 Mobile Regional Airport

The AASF #3 facility is located within the Mobile Regional Airport property. According to ALARNG personnel, some hangars at the airport are suspected to be equipped with AFFF suppression systems; however, the use and storage of AFFF at the Mobile Regional Airport are unknown. Details of a release could not be ascertained form public records. AECOM requested information from the Mobile Fire Department, but a response was not received.

According to ALARNG personnel, all drainage from the entire airport flows toward the AASF #3 facility, with some surface water being captured by the detention pond located north of the AASF. Based upon general airport practices, The Mobile Regional Airport is considered a potential off-facility source of PFAS to the AASF #3 facility.



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Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	8/3/2020

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Adjacent Sources

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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 the AASF #3 facility. The locations of the AOIs are shown on **Figure 6-1**. The preliminary CSM for AOI 1 and AOI 2 is shown on **Figure 6-2.** 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.

6.1 Pathways

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 Groundwater Association [NGWA], 2018).

AFFF releases identified at the AASF #3 facility occurred on both surface soil and paved surfaces. Releases to the paved surfaces could have migrated a short distance onto the surrounding surface soil. Ground-disturbing activities in these grassy areas as well as beneath the pavement may result in potential exposure to surface soils via ingestion and inhalation of dust particles. AFFF releases to the paved surfaces could have infiltrated the subsurface via cracks in the pavement or joints between areas that are paved with different materials. Ground-disturbing activities may result in potential exposure to subsurface soils and groundwater via ingestion.

PFAS are water soluble and can migrate readily from soil to groundwater via leaching; however, drinking water at AASF #3 is provided by MAWSS, which resources water from Big Creek Lake, located approximately 3 miles northwest of the facility. Big Creek Lake is fed by springs, streams, and rainfall in the Converse Reservoir Watershed (MAWSS, 2018). Big Creek Lake is the main source of drinking water for almost 70 percent of Mobile County (MAWSS, 2019). No drinking water wells exist at the AASF #3 facility or the surrounding area, and one well was identified as an inactive USGS well on the adjacent USCG property. It is possible that unregistered, private, domestic wells exist downgradient of the identified AOIs, which may result in potential exposure via ingestion of groundwater.

Surface water runoff at the AASF #3 facility appears to drain to the northwest to the retention pond located at the northwest corner of the facility property. Drainage at the facility could also reach Pierce Creek and Hamilton Creek, which drain to Big Creek Lake. Big Creek Lake, also known as Converse Reservoir, is the main source of drinking water for almost 70 percent of Mobile County (MAWSS, 2019). Although laboratory analysis of the facility's drinking water indicates PFAS and PFOA were not detected, it is possible PFAS could have migrated to these tributaries, which may result in potential exposure via ingestion of surface water and sediment.

6.2 Receptors

Receptors at the AASF #3 facility include site workers, construction workers, off-facility recreational users, and off-facility residents. These receptors, as they pertain to the facility, are described below:

- Site workers *typically work at or use the site and may come into contact with the surface soils*. *Site workers may also and come into contact with surface water in the retention pond*.
- Construction workers are *considered workers who represent a utility worker or other worker who would be exposed to surface and/or subsurface conditions through ground-disturbing activities*.

- Off-facility recreational users *typically identify a person who has infrequent access to the site. Off-facility recreational users could be exposed to sediment and surface water during recreational use*.
- Off-facility residents identify receptors who *occupy properties outside of AASF #3. Off-facility residents may come into contact with groundwater using unregistered, private, domestic wells.*

The preliminary CSM for AASF #3 indicates which specific receptors could potentially be exposed to PFAS. The preliminary CSM for the AOIs at AASF #3 is shown on **Figure 6-2**.

6.3 AOI 1 Flight Ramp

AOI 1 encompasses the flight ramp, located west of the hangar. Releases of AFFF occurred on the ramp between 2002 and 2008. Historically, ten mobile Tri-Max™ 30 units were staged along the ramp. ALARNG indicated the Tri-Max™ 30 units were discharged on the ramp prior to disposal in 2008.

Surface water drainage appears to flow northwest. A release of AFFF could have migrated to the grass areas surrounding the flight ramp, the retention pond, or tributaries feeding Big Creek Lake. Additionally, due to the shallow water table beneath the facility, releases of AFFF to impervious surfaces around the flight ramp could impact groundwater via leaching. As such, the pathways for PFAS exposure in AOI 1 are considered potentially complete for the site worker, construction worker, off-facility resident, and off-facility recreational user.

Potential PFAS exposure pathways resulting from releases at AOI 1 are described in **Table 6-1**.

Table 6-1: Exposure Pathways at AOI 1 and AOI 2

Pathway	Receptor
Surface Soil	Considered a potentially complete pathway to site workers and construction workers via ingestion or inhalation of dust
Subsurface Soil	Considered a potentially complete pathway to construction workers via ingestion or inhalation of dust
Surface Water and Sediment	Considered a potentially complete pathway to site workers, construction workers, and off-facility recreational users via ingestion
Groundwater	Considered a potentially complete pathway to construction workers and off-facility residents via ingestion

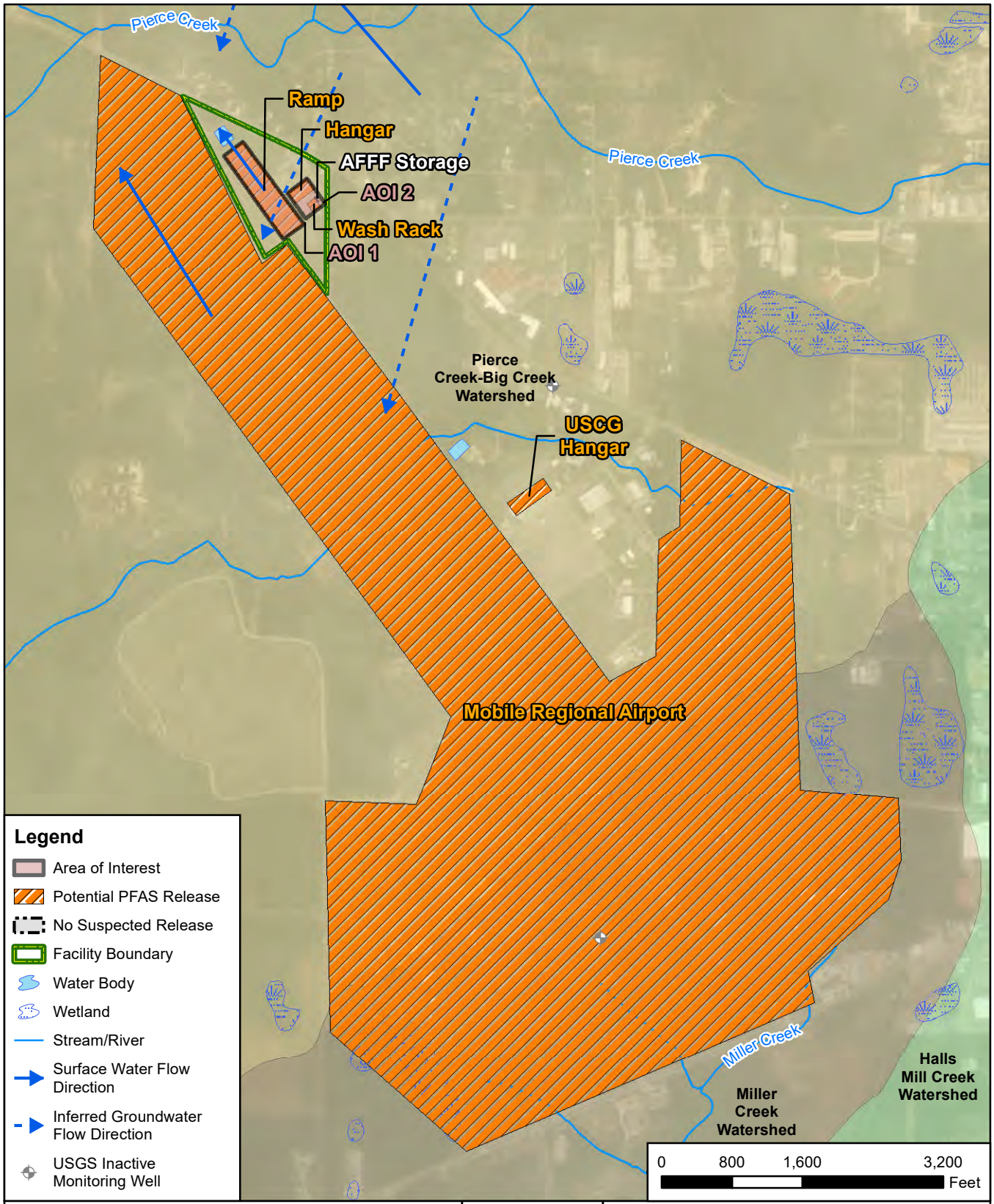
6.4 AOI 2 Hangar Suppression System and Washrack

AOI 2 encompasses the fire suppression system within the hangar building and the wash rack, located southeast of the hangar building. Releases of AFFF may have occurred from the fire suppression system sometime between 1999 and 2018. According to ALARNG personnel, dispensing nozzles from the previous system were rusted, which indicates corrosion from AFFF concentrate. If a release of AFFF from the suppression system occurred, AFFF would have collected in the storm drains within the hangar building. Floor drains in the hanger building drain to the OWS and then discharge to the sanitary sewer system. It is possible AFFF could have traveled outside the hangar and onto the flight ramp and migrated to surrounding grass areas.

Releases of AFFF may have also occurred at the wash rack from around 2002 to 2008. According to ALARNG personnel, annual fire training was conducted with a burn barrel and Purple K units at the wash rack area. It is reasonable to assume that Tri-Max™ 30 units from the flight ramp may have been used for fire training as well. Similar to potential releases in the hangar building, AFFF

could have been collected by the storm drain located in the center of the wash rack and discharged to the sanitary sewer system.

AFFF releases at the hangar building and wash rack not captured by storm drains could migrate to the grass areas surrounding the flight ramp, the retention pond, or tributaries feeding Big Creek Lake. Additionally, due to the shallow water table beneath the facility, releases of AFFF to impervious surfaces around the flight ramp could impact groundwater via leaching. As such, the pathways for PFAS exposure in AOI 2 are considered potentially complete for the site worker, construction worker, off-facility resident, and off-facility recreational user. Potential PFAS exposure pathways resulting from releases at AOI 2 are described in **Table 6-1**.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bates Field AASF #3, AR			
REVISED	8/3/2020	GIS BY	MS	8/3/2020
SCALE	1:19,200	CHK BY	ST	8/3/2020
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	8/3/2020

Area of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

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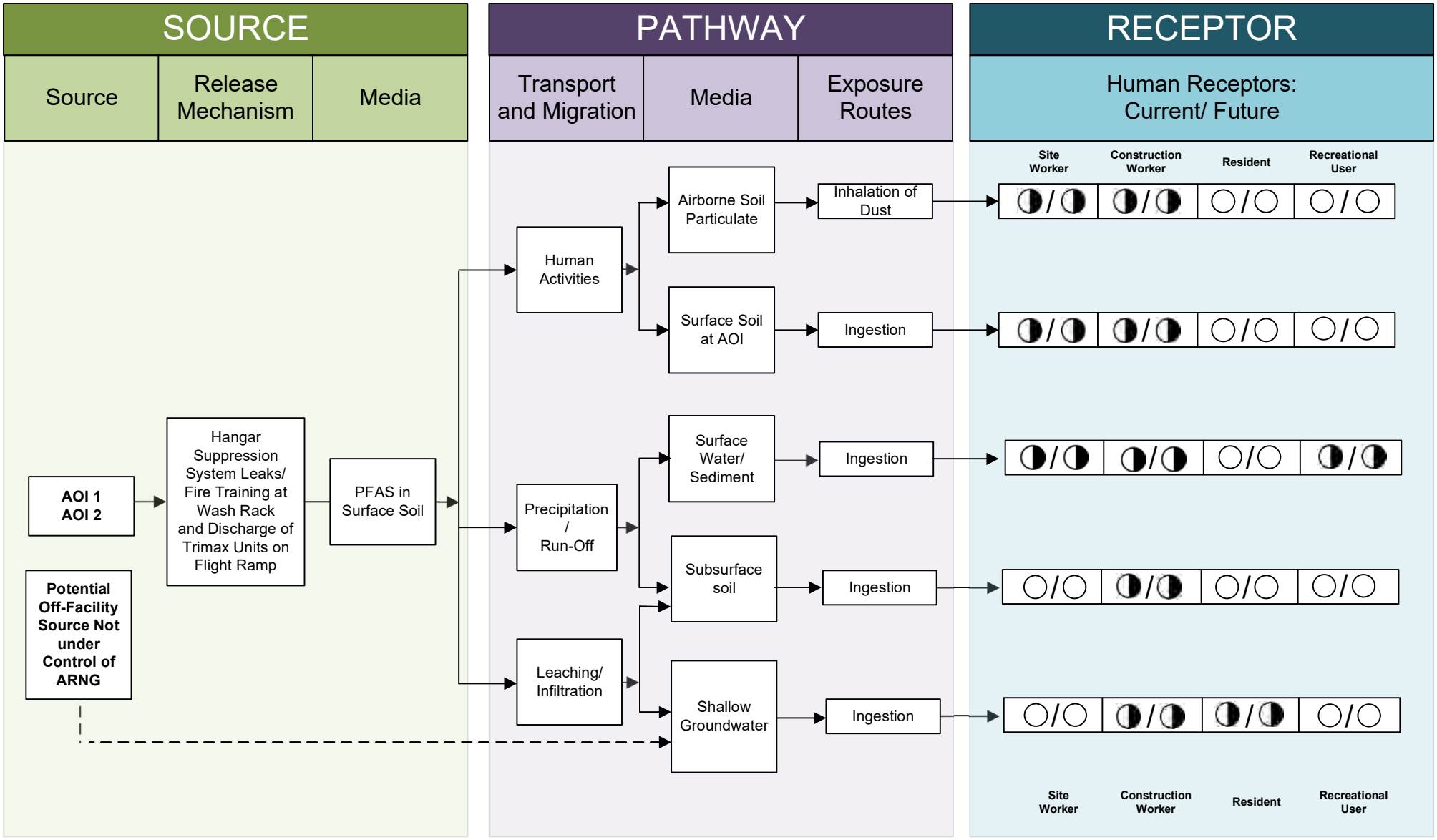


LEGEND

- 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 Flight Ramp and AOI 2 Hangar Suppression System and Wash Rack

7. Conclusions

This report presents a summary of available information gathered during the PA on the use and storage of AFFF and other PFAS-related activities at the AASF #3 Bates Field facility. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

Two AOIs related to potential PFAS releases were identified at AASF #3 during the PA (**Figure 7-1**) and are shown in **Table 7-1** below:

Table 7-1: AOIs at AASF #3 Bates Field

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Flight Ramp	ALARNG	2002 to 2008
AOI 2	Hangar Suppression System and Wash Rack	ALARNG	Hangar: 1999 to 2016; Wash Rack: 2002 to 2008

Based on potential PFAS releases at these AOIs, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for AASF #3, which presents the potential receptors and media impacted, is shown on **Figure 6-2**.

The following area, which was discussed in **Section 3**, was determined to have no suspected release (**Table 7-2**):

Table 7-2: No Suspected Release Areas

No Suspected Release Area	Used by	Rationale for No Suspected Release Determination
AFFF Storage Area	ALARNG	After AFFF suppression system upgrades from 2016 to 2018, two 55-gallon drums containing Chemguard 3% were left onsite. These drums have been stored in the chemical storage building with secondary containment. There was no evidence of a release during the PA visit nor did ALARNG recall a release in this area.

7.2 Uncertainties

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

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

of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, retired and current 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: Uncertainties

Area	Source of Uncertainty
AOI 1: Flight Ramp and AOI 2: Hangar Suppression System and Wash Rack	Construction of the facility began in 1996 and was completed in 1999. ALARNG personnel did not have firsthand knowledge of the facility prior to 2002. Information of facility operation could not be ascertained for the time frame between 1999 to 2002. Additional uncertainties include the disposal of AFFF by the contractor maintaining the Tri-Max™ 30 units and disposal of AFFF from the ruptured AFFF concentrate tank bladder system.
AOI 2: Hangar Suppression System and Wash Rack	According to ALARNG personnel, floor drains in the hangar and wash rack discharge to the OWS and then to the sanitary sewer. However, a drainage pipe located at the northeast corner of the property drains into the stormwater retention pond. The source of the drainage from the pipe is unknown. ALARNG has indicated that a dye tracing study will take place in the future to identify this source.

7.3 Potential Future Actions

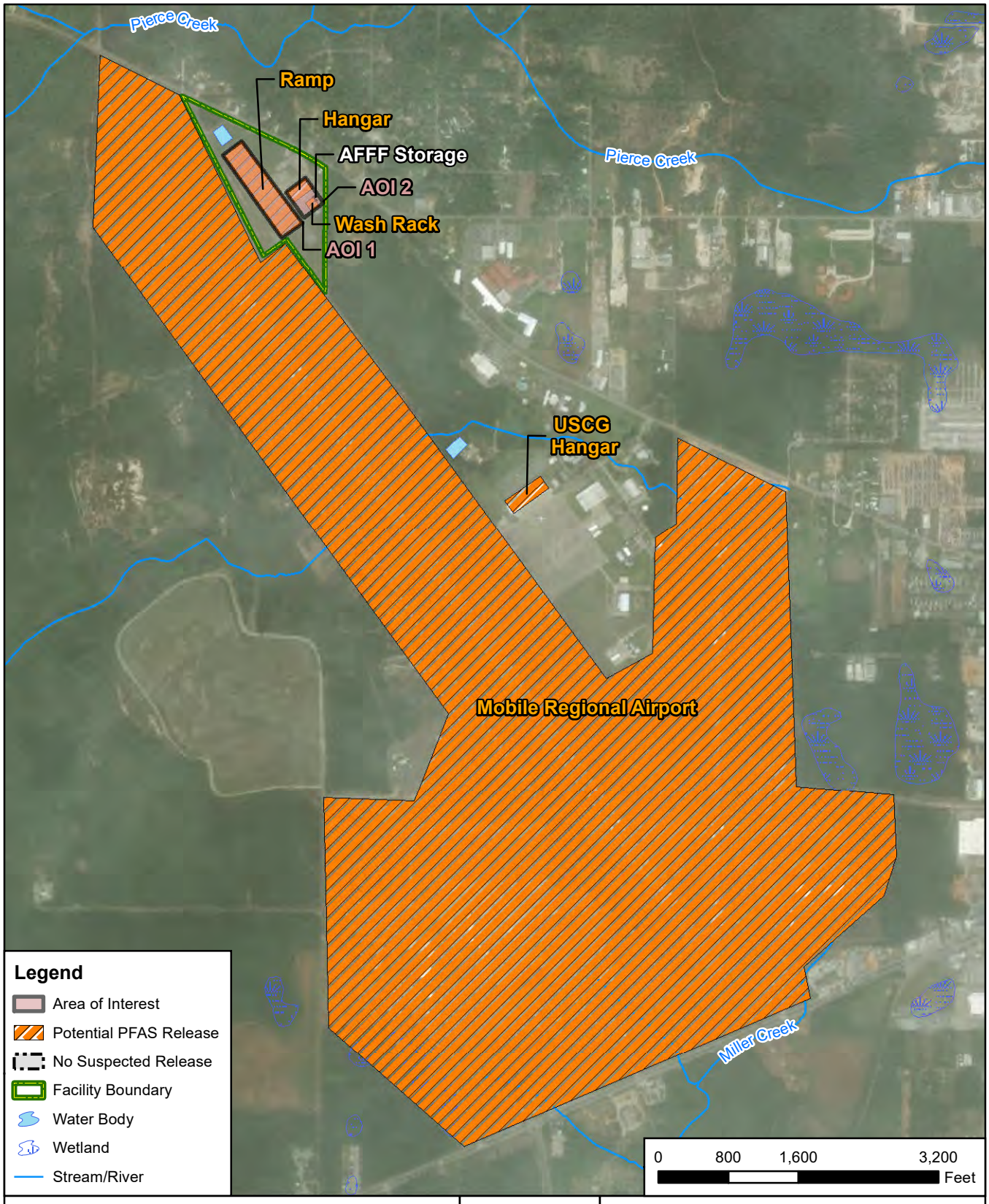
Interviews (of personnel with knowledge of the facility dating back to 2002) indicated that ALARNG activity may have resulted in potential PFAS releases at the AASF #3 Bates Field facility. Based on the preliminary CSM developed for the AOIs, there is potential for receptors to be exposed to PFAS contamination in soil, intermittent surface water and sediment, and groundwater at these AOIs. **Table 7-4** summarizes the rationale used to determine if these AOIs should be considered for further investigation under the CERCLA process and undergo an SI.

ARNG will evaluate the need for an SI at AASF #3 Bates Field based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources.

Table 7-4: PA Summary Findings

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 Flight Ramp	30°42'18.1"N; 88°15'10.2"W	ALARNG indicated the Tri-Max™ 30 units were discharged on the ramp prior to disposal in 2008.	Proceed to an SI, focus on soil, surface water, groundwater,

			sediment, and surface water.
AOI 2 Hangar Suppression System and Wash Rack	30°42'19.5"N; 88°15'6.3"W	During the AFFF fire suppression system replacement from 2016 to 2018, AFFF releases occurred. Fire training was conducted at the wash rack with a burn barrel and Purple K units. It is reasonable to assume that Tri-Max™ 30 units may have been used for fire training until about 2008	Proceed to an SI, focus on soil, surface water, groundwater, sediment, and surface water.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Bates Field AASF #3, AL			
REVISED	8/3/2020	GIS BY	MS	8/3/2020
SCALE	1:19,200	CHK BY	BM	8/3/2020
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	8/3/2020

N

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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WorldClimate.com (2019, December 27). *Average Weather Data for Mobile, Alabama*. Retrieved from WorldClimate.com: http://www.worldclimate.com/climate/us/alabama/mobile

Appendix A
Data Resources

Data resources will be provided separately on CD. Data resources for AASF #3 Bates Field include:

Geologic Documents

- 1972 Water Availability in Mobile County, P.C. Reed and J.F. McCain, Geological Survey of Alabama
- 1985 Depositional Sequences in the Pensacola Clay (Miocene) of Southwest Alabama, Dorothy E. Raymond, Geological Survey of Alabama
- 2002 Water in Alabama (including basic water data), David C. Kopaska-Merkel and James D. Moore, Geologic Survey of Alabama
- 2002 Environmental Setting and Water-Quality Issues of the Mobile River Basin, Alabama, Georgia, Mississippi, and Tennessee, Gregory C. Johnson, Robert E. Kidd, Celeste A. Journey, Humbert Zappia, and J. Brian Atkins, U.S. Geological Survey

Environmental Data Resources, Inc. Geocheck Report

- 2019 Environmental Data Resources, Inc. Geocheck Report for AASF #3 Bates Field, Mobile, Alabama

Miscellaneous Documents

- 2017 Drinking Water Quality, AASF #3, State Military Department Joint Force Headquarters Alabama Army National Guard
- 2018 Drinking Water Quality, Mobile Area Water and Sewer System
- 2019 Simple Steps You Can Take To Protect Our Waters Brochure, Mobile Area Water and Sewer System

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

ALARNG

PA Interview Questionnaire - Environmental Manager

Facility: AASF #3
Interviewer: [redacted]
Date/Time: 4/9/19

Interviewee: See Below, Item 1 **Title:** Contact provided on Preliminary **Phone Number:** Sign in Sheet. **Email:**	Can your name/role be used in the PA Report? (Y) or N Can you recommend anyone we can interview? (Y) or N Sgt. [redacted]

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

[redacted], Fire Marshal, worked at the facility since 2015.
[redacted], Environmental Compliance Manager for about 4 years ≈ 2016.
[redacted], Safety Manager since 2008.
Sgt [redacted], worked at the facility since 2002.

2. Where can I find previous facility ownership information?

will obtain by ALARNG. Mobile Property appraiser shows the property was last sold in 1982 & is under ownership of Mobile Airport Authority Parcel # 27 01 0 003 095.001 total of 66.084 Acres. Deed WD2430 unavailable in public record. Property leased to AL ARNG from the Mobile Airport Authority.

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 on aircrafts (Helicopters)
Fire Training Areas None
Firefighting (Active Fire) None
Crash None
Fire Suppression Systems (Hangers/Dining Facilities) AFFF Surpression System in Hanger
Fire Protection at Fueling Stations No fueling station, contracted with the airport.
Non-Technical/Recreational/ Pest Management None
Metals Plating Facility None
Waterproofing Uniforms (Laundry Facilities) None
Other

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

5. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing the AFFF/suppression system? Do you have "As Built" drawings for the buildings?

The Hanger is equipped with an AFFF Fire Surpession system. The facility was built in 1996 & finished in 1999. The orisgnal system in the Hanger was equipped with AFFF. The system was replaced in 2016-2018 with 3% AFFF. System replacement was a statewide effort. A full scale system test was not conducted. It was tested with only water.

PA Interview Questionnaire - Environmental Manager

Facility: ALARNG AASF #3
Interviewer: [redacted]
Date/Time: 4/9/19

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

System charged with 3%. AFFF System was replaced in a statewide effort from 2016 - 2018

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

Procurement would all through a contracter. Since the system was replaced a contracter has not been back to replace any AFFF. The original tank system was emptied as part of the replacement. It's unknown how the Contracter disposed of the old AFFF. They left 2 55 gal drums containing ~~Ether~~ Chemguard 3%. AFFF.

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)?

3%. Chemguard.

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?

3%. Chemguard. Stored in one 800 gal tank. Stored as concentrated material.

two 3%. Chemguard Drums were left by contracter after system replacement.

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?

ALARNG do not have knowledge of AFFF FTAS at this facility.

Purple K units are on the range now + have been discharged at a burn barrel by the wash rack. Major [redacted] mentioned that ≈ 10 trimax units ~~of~~ were maintained at the facility from the beginning to ≈ 10 years ago. major [redacted] remembers some of these were discharged but the quantity is unknown. It's also assumed by major [redacted] that the trimax units were serviced by a contracter.

PA Interview Questionnaire - Environmental Manager

Facility: ALARNG AASF#3
Interviewer: [redacted]
Date/Time: 4/9/19

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

No measurable amounts of AFFF were released recently. Major [redacted] mention old trimat units were discharged on the ramp in front of the Hanger. During site inspection rusted/ corrosion areas noted at 600 gal tank, and the old system appeared to back into the water supply. Shut off/by pass valve installed backward + the bladder leaked back into system.

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 recollection of on post training by others. Fire department may train on Airport property to the southeast but no knowledge of their process.

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

No recollection of Fire training off-post

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

N/A.

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

No recollection of emergency responses.

PA Interview Questionnaire - Environmental Manager

Facility: AL ARNG AASF #3
Interviewer: [redacted]
Date/Time: 4/9/19

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

No fueling onsite, Nor does any AL ARNG recall washing Spilled fuel with AFFF.

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

NA

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?

Fire Station on Airport property that responds to emergencies. Quarterly they run through drills at the airport but there is No knowledge of using AFFF.

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)?

old AFFF Hanger System backed into the water Supply due to an incorrectly installed shut off/bypass valve. Personell also noticed that the Nozzles in the hanger were corroded. The system was replaced including all the piping from 2016 to 2018. During the upgrade it was noticed that the bladder in the Concentrate tank ruptured but did not leave holding tank. 2 3% AFFF gal drums stored. Ramp once had Trimax units.

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

Not aware of any creative use.

PA Interview Questionnaire - Environmental Manager

Facility: ALARNG AASF #3
Interviewer: [redacted]
Date/Time: 4/9/19

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

None available at the time of interviews.

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

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

No

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

N/A

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?

According to Sgt Major [redacted], old trained units were discharged on the ramp by the Hanger. Contractors maintained these units & assisted to maintain old AFFF Suppression System. No copies of manifests

PA Interview Questionnaire - Environmental Manager

Facility: ALARNG AASF #3
Interviewer: [redacted]
Date/Time: 1/9/19

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

Sgt Major [redacted] has responses are added to this form

Preliminary Assessment Sign-In Sheet

Name	Position	Years at the Facility	Phone Number/Email	May AECOM use your name in the PA Report?
[redacted]	Fire marshal ~~Building~~	2015	[redacted]	yes
[redacted]	State Environmental Services	2 yr. ~~2~~	[redacted]	yes
[redacted]	Environmental Compliance Manager.	4 yrs	[redacted]	yes
[redacted]	Safety manager.	2008	[redacted]	yes
[redacted]		2002	[redacted]	yes.

Appendix B.2
Visual Site Inspection Checklists

Facility ST
Visual Survey Inspection Log

Recorded by: [redacted]
ARNG Contact: [redacted]
Date: 4/9/19

Site Name / Area Name / Unique ID: ALARNG AASF #3 / AFFF Suppression System
Site / Area Acreage:
Historic Site Use (Brief Description): Fire suppression system. unknown 3or 6y. Concentrate.

Current Site Use (Brief Description): Fire suppression system 3y. Chemguard.

1. Was AFFF used at the site/area? (Y) / N
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014*)
   Suppression system from ≈1999 to present. System replaced 2016 - 2018.
2. Has usage been documented? Y / N
   2a. If yes, keep a record (place electronic files on a disk)
   No electronic files.

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y / (N)
   1a. If so, please describe change: (*ex. Structures structures longer exist.*) System & piping was replaced 2016 - 2018.
2. Is the site/area vegetated? Y / (N)
   2a. If not vegetated, briefly describe the site/area composition: Indoor. vegetation by water tanks. (60, cows
3. Does the site or area exhibit evidence of erosion? Y / (N)
   3a. If yes, describe the location and extent of the erosion :
4. Does the site/area exhibit any areas of ponding or standing water? Y / (N)
   4a. If yes, describe the location and extent of the ponding :

Migration Potential:

1. Does site/area drainage flow off installation? (Y) / N
   1a. If so, please note observation and location: Floor drains in hangar go to ows then, Municipal stormwater system
2. Is there standing water or drainage issues within the site/area? Y / (N)
   2a. If so, please note observation and location:
3. Is there channelized flow within the site/area? (Y) / N
   3a. If so, please note observation and location: Floor Drains
4. Have man-made drainage channels been constructed within the site/area? (Y) / N
   4a. If so, please note the location of the channel: Floor Drains

Additional Notes

Old Suppression System backed into water Supply for the Site which is from the City, but to an improperly installed Shut off / backflow preventer. when System was replaced. Bladder at Concentrate tank was found ruptured but did not go past Secondary Containment. Also, old System Nozzles in hangar were replaced with new System. We noticed rust Staining at drain under New 600 gal Concentrate tank.

Facility ST

Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph
1	4/9/19 Pump room	800 gal 3% Concentrate tank.	unknown direction.
2	4/9/19 Pump room	stamp below 800 gal 3% concentrate tank	unknown direction.
3	4/9/19 Hanger	overhead suppression system	unknown direction
4	4/9/19 water tanks	Tanks for AFFF Suppression System	2 60,000 gal capacity tanks looking NE.

Facility ST
Visual Survey Inspection Log

Recorded by: [redacted]
ARNG Contact:
Date: 4/19/19

Site Name / Area Name / Unique ID: ALARNG AASF #3 / AFFF Storage.
Site / Area Acreage:
Historic Site Use (Brief Description): unknown historical use.

Current Site Use (Brief Description): Storage of leftover AFFF left after suppression system upgrade.

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

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y / (N)
   1a. If so, please describe change: (*ex. Structures structures longer exist.*)
2. Is the site/area vegetated? Y / (N)
   2a. If not vegetated, briefly describe the site/area composition:
3. Does the site or area exhibit evidence of erosion? Y / (N)
   3a. If yes, describe the location and extent of the erosion :
4. Does the site/area exhibit any areas of ponding or standing water? Y / (N)
   4a. If yes, describe the location and extent of the ponding : Storm drain next to area. Located of wash rack.

Migration Potential:

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

Additional Notes

After replacement of Originally AFFF System from 2016 to 2018 the Contractor working on the upgrade left 2 55-gal drums containing 3% storm guard. Stored in a Storage Bldg next to wash rack with secondary containment.

Facility ST
Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph
5	4/9/19 Storage Bldg.	2 55 gal Drums of 3% Chemguard AFFF	Looking SE.

Facility ST
Visual Survey Inspection Log

Recorded by: [redacted]
ARNG Contact:
Date: 11/9/19

Site Name / Area Name / Unique ID: ALARNG AASF #3/ Ramp
Site / Area Acreage:
Historic Site Use (Brief Description): Flight line

Current Site Use (Brief Description): Flight Line.

1. Was AFFF used at the site/area? (Y) / N
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014*) Historical
   Knowledge of mobile Trimat units.
2. Has usage been documented? Y / (N)
   2a. If yes, keep a record (place electronic files on a disk)
   Usage not documented or tracked.

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y / (N)
   1a. If so, please describe change: (*ex. Structures structures longer exist.*) Appears to be original Structure.
2. Is the site/area vegetated? (Y) / N
   2a. If not vegetated, briefly describe the site/area composition:
3. Does the site or area exhibit evidence of erosion? Y / (N)
   3a. If yes, describe the location and extent of the erosion :
4. Does the site/area exhibit any areas of ponding or standing water? (Y) / N
   4a. If yes, describe the location and extent of the ponding : No drains on Ramp. Sheet flow off ramp to ditch on the west side

Migration Potential:

1. Does site/area drainage flow off installation? Y / (N)
   1a. If so, please note observation and location: water collects at Stormwater pond at NW Corner of Property
2. Is there standing water or drainage issues within the site/area? (Y) / N
   2a. If so, please note observation and location: Some ponding on ramp.
3. Is there channelized flow within the site/area? (Y) / N
   3a. If so, please note observation and location: Ditch on west side of ramp directs surface water flow.
4. Have man-made drainage channels been constructed within the site/area? (Y) / N
   4a. If so, please note the location of the channel: Ditch on west side of ramp and retention Pond at NW Corner of Property.

Additional Notes

Ramp once had ~ 10 trimat mobile AFFF units. Ramp now has Dry Purple K units.

Facility ST
Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph
6	4/9/19 Ramp	General view of Ramp with Purple K units.	Looking Southeast.
7	4/9/19 Ramp.	General view of Ramp with Purple K units	Looking NW

Facility ST
Visual Survey Inspection Log

Recorded by: [redacted]
ARNG Contact:
Date: 4/9/19

Site Name / Area Name / Unique ID: ALARNG AASF #3 / Stormwater Retention pond
Site / Area Acreage:
Historic Site Use (Brief Description): Unknown. Assumed retention pond

Current Site Use (Brief Description): Retention pond.

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

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

Significant Topographical Features:

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

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

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

4. Does the site/area exhibit any areas of ponding or standing water? (Y) / N
   4a. If yes, describe the location and extent of the ponding : area is a retention pond. All stormwater onsite & impervious appears to flow here.

Migration Potential:

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

3. Is there channelized flow within the site/area? (Y) / N
   3a. If so, please note observation and location: Channelized flows to the retention pond from up gradient
4. Have man-made drainage channels been constructed within the site/area? (Y) / N
   4a. If so, please note the location of the channel: Concrete channels flow to pond.

Additional Notes

All surface water not captured by storm drains appear to flow to this pond from the site as well as up gradient sites.

Facility ST

Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph
8	4/9/19 Retention Pond	Concrete channel to retention pond	Looking NW
9	4/9/19 Retention Pond	" "	" "
10	4/9/19 Retention Pond	General view of Retention Pond	" "

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Alabama AASF #3

Why has this location been identified as a site?

Storage or [redacted] use of AFFF. Suppression system in Hangar is charged with AFFF.

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

Coast Guard + Municipal Airport both located up gradient to the South.

Training Events

Have any training events with AFFF occurred at this site? ALARNG unaware of any FTAs on post.

If so, how often? N/A

How much material was used? Is it documented? N/A

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? Northwest.

Average rainfall? ≈ 66"

Any flooding during rainy season? None. Sheet flow over Ramp to retention pond at NW corner of property.

Direct or indirect pathway to ditches? Slopes to ditch at west side of Ramp.

Direct or indirect pathway to larger bodies of water? None. only a small retention pond at NW corner.

Does surface water pond any place on site? Retention pond at NW corner of site.

Any impoundment areas or retention ponds? Retention pond at NW corner of site.

Any NPDES location points near the site?

How does surface water drain on and around the flight line? water drains to a ditch at the west side of ramp + to the retention pond at the NW corner of the property.

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Assumed to mimick topography, NW.

Depth to groundwater? ≈ 5 feet

Uses (agricultural, drinking water, irrigation)?

Any groundwater treatment systems? NO

Any groundwater monitoring well locations near the site? NO

Is groundwater used for drinking water?

Are there drinking water supply wells on installation? NO

Do they serve off-post populations? NO

Are there off-post drinking water wells downgradient unknown.

Waste Water Treatment Plant:

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

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

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

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

Equipment Rinse Water

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

N/A. Hangar drains go to the OWS then to stormwater system.

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after use? Where does the rinse water flow after cleaning nozzles?

NA rinse water outside of hangar would go to the SW terminal retention pond. at the ramp, storm drain goes to OWS then to City Stormwater.

3. Other? NO back flow preventer in drains so during heavy rains stormwater can back up to the hangar.

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker

Construction Worker

Recreational User

Residential

Child

Ecological Surface water flows to a retention pond at the NW corner of site.

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

Residential areas to the North.

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	AASF #3 Bates Field	Mobile, Alabama

Photograph No. 1

Description:

Unknown direction

General view of 800-gallon concentrate tank

Photo date 4/9/19

Photograph No. 2

Description:

Unknown direction

Staining below 800-gallon concentrate tank

Photo Date: 4/9/19

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	AASF #3 Bates Field	Mobile, Alabama

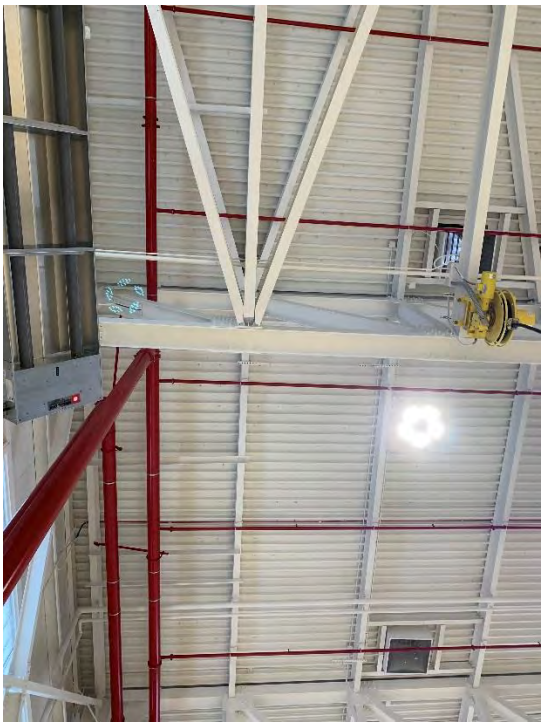
Photograph No. 3

Description:

Unknown direction

General view of overhead fire suppression system

Photo Date: 4/9/19



Photograph No. 4

Description:

Looking Northeast

General view 2 60,000-gallon water tanks supporting suppression system

Photo Date: 4/9/19

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	AASF #3 Bates Field	Mobile, Alabama

Photograph No. 5

Description:

Looking South

One of the 55-gallon drums containing 3% concentrate

Photo Date: 4/9/19

Photograph No. 6

Description:

Looking Southeast

General view of Ramp with mobile Purple K unit

Photo Date: 4/9/19

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	AASF #3 Bates Field	Mobile, Alabama

Photograph No. 7

Description:

Looking Northwest

General view of Ramp with mobile Purple K unit

Photo Date: 4/9/19

Photograph No. 8

Description:

Looking Northwest

General view of retention pond

Photo Date: 4/9/19

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	AASF #3 Bates Field	Mobile, Alabama

Photograph No. 9

Description:

Looking Northwest

General view of retention pond

Photo Date: 4/9/19

Photograph No. 10

Description:

Looking Northwest

General view of retention pond

Photo Date: 4/9/19