

FINAL

Preliminary Assessment Report

Saginaw Facility, Texas

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

May 2022

Prepared for:



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

UNCLASSIFIED

Table of Contents

Executive Summary	1
1. Introduction	4
1.1 Authority and Purpose	4
1.2 Preliminary Assessment Methods	4
1.3 Report Organization	5
1.4 Facility Location and Description	5
1.5 Facility Environmental Setting	6
1.5.1 Soil	6
1.5.2 Geology	6
1.5.3 Hydrogeology	6
1.5.4 Hydrology	7
1.5.5 Climate	7
1.5.6 Current and Future Land Use	8
2. Fire Training Areas	12
3. Non-Fire Training Areas	13
3.1 Former Burn Pits	13
3.2 Hangar and Apron	13
3.3 Former JP-4 Fuel Storage Building	14
3.4 Paint Booth	14
3.5 Former UST	14
3.6 Former Warehouse and Apron	14
3.7 Fuel Point	15
4. Emergency Response Areas	17
5. Adjacent Sources	18
5.1 Former Main Assembly Building	18
5.2 Former Paint and Assembly Building	18
5.3 Blue Mound Fire Department	18
5.4 Saginaw Fire Department	18
5.5 Fort Worth Meacham International Airport	19
5.6 Har-Conn Aerospace	19
5.7 Zips Car Wash	19
6. Preliminary Conceptual Site Model	21
6.1 Pathways	21
6.2 Receptors	21
6.3 AOI 1: Former Burn Pits	22
6.4 AOI 2: Former JP-4 Fuel Storage Building	22
6.5 AOI 3: Hangar and Apron	23
6.6 AOI 4: Former Warehouse, Apron, and UST	24
7. Conclusions	30
7.1 Findings	30
7.2 Uncertainties	30
7.3 Potential Future Actions	31
8. References	34

Figures

Figure ES-1	Summary of Findings
Figure ES-2	Preliminary Conceptual Site Model, Saginaw Facility, TX
Figure 1-1	Facility Location
Figure 1-2	Groundwater Features
Figure 1-3	Surface Water Features
Figure 3-1	Non-Fire Training Areas
Figure 5-1	Adjacent Sources
Figure 6-1	Areas of Interest
Figure 6-2	Preliminary Conceptual Site Model, AOI 1 Former Burn Pits
Figure 6-3	Preliminary Conceptual Site Model, AOI 2 Former JP-4 Fuel Storage Building
Figure 6-4	Preliminary Conceptual Site Model, AOI 3 Hangar and Apron
Figure 6-5	Preliminary Conceptual Site Model, AOI 4 Former Warehouse, Apron, and UST
Figure 7-1	Summary of Findings

Tables

Table ES-1	AOIs at Saginaw Facility
Table 6-1	Exposure Pathways at AOI 1
Table 6-2	Exposure Pathways at AOI 2
Table 6-3	Exposure Pathways at AOI 3
Table 6-4	Exposure Pathways at AOI 4
Table 7-1	AOIs at Saginaw Facility
Table 7-2	Summary of Uncertainties
Table 7-3	PA Findings Summary

Appendices

Appendix A	Data Resources
Appendix B	Preliminary Assessment Documentation
	B.1 Interview Records
	B.2 Visual Site Inspection Checklists
	B.3 Conceptual Site Model Information
Appendix C	Photographic Log

Acronyms and Abbreviations

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
amsl	above mean sea level
AOI	Area of Interest
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSMS	Combined Support Maintenance Shop
CSM	conceptual site model
DoD	Department of Defense
EDR™	Environmental Data Resources, Inc.™
FTA	fire training area
HA	Health Advisory
JESCO	JESCO Environmental and Geotechnical Services, Inc.
JP	jet propellant
NTSB	National Transportation Safety Board
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
RSMS	Regional Sustainment Maintenance Site
SI	Site Inspection
TXARNG	Texas Army National Guard
UCMR3	Unregulated Contaminant Monitoring Rule 3
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
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 Saginaw Facility (also referred to as the “facility”) in Saginaw, Texas, to assess potential PFAS release areas and exposure pathways to receptors. Saginaw Facility has been occupied by the Texas ARNG (TXARNG) since 1992 and leased since 1991. The performance of this PA included the following tasks:

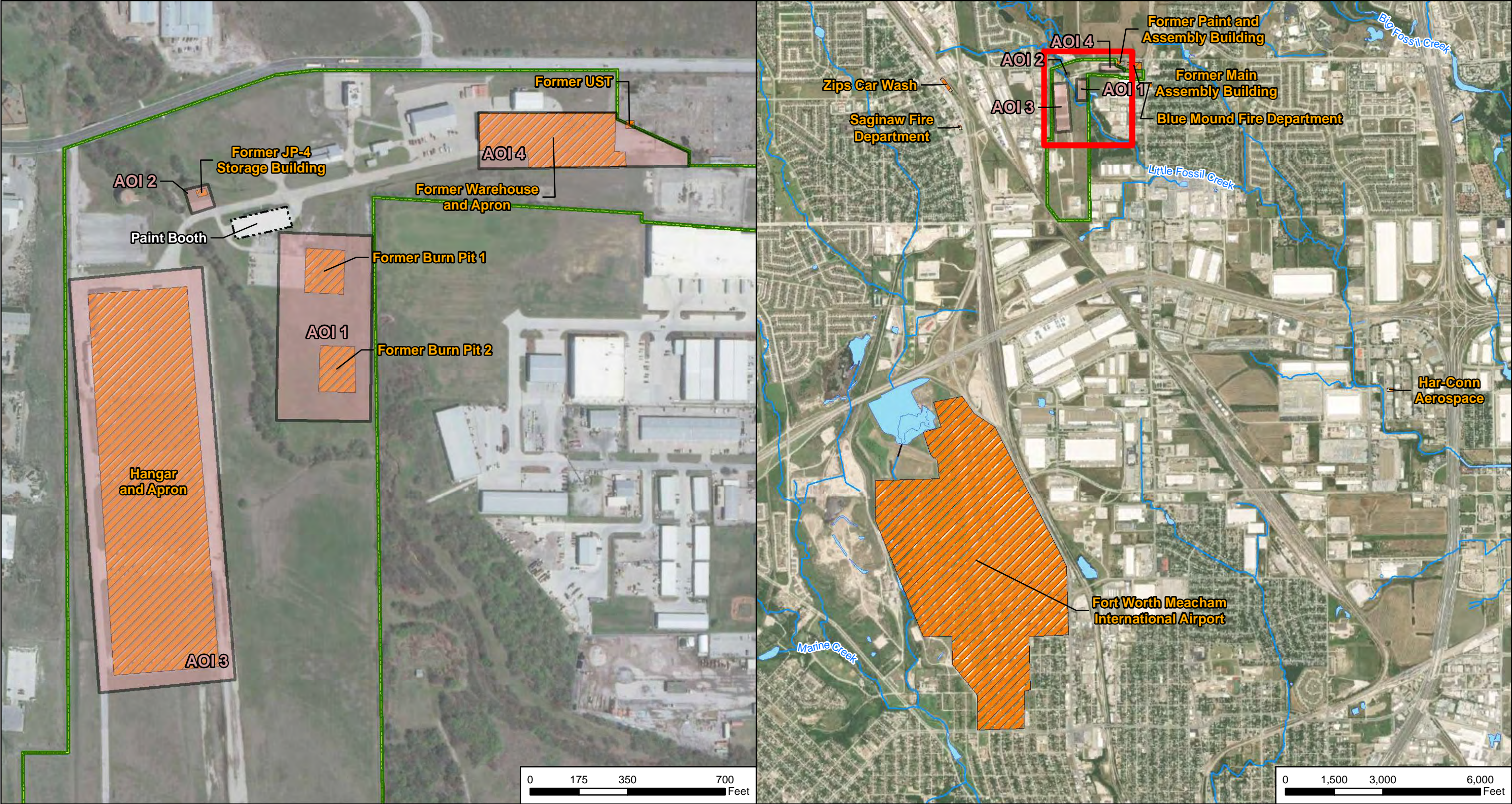
- Reviewed available administrative record documents and Environmental Data Resources, Inc. report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit on 2 June 2021 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current Texas Military Department personnel during the site visit;
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

Four AOIs related to potential PFAS release and/ or storage were identified at Saginaw Facility during the PA. The AOIs are shown on **Figure ES-1** and described in **Table ES-1** below:

Table ES-1: AOIs at Saginaw Facility

Area of Interest	Name	Used by	Potential Release Date
AOI 1	Former Burn Pits	Bell Helicopter-Textron	Approximately between 1957 and 1975
AOI 2	Former JP-4 Storage Building	Bell Helicopter-Textron	Approximately between 1968 and 1990
AOI 3	Hangar and Apron	Bell Helicopter-Textron/ TXARNG	Approximately between 1963 and 1989
AOI 4	Former Warehouse, Apron, and UST	Bell Helicopter-Textron	Approximately 1950 and 1989

Based on potential PFAS releases at the AOIs, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for Saginaw Facility, which presents the potential receptors and media impacted, is shown on **Figure ES-2**. Based on the United States Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the USEPA's lifetime Health Advisories (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			
PROJECT	Preliminary Assessment for PFAS at Saginaw Facility, TX			
REVISED	12/3/2021	GIS BY	MS	12/3/2021
SCALE	1:4,200	CHK BY	ST	12/3/2021
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	CM	12/3/2021

- Area of Interest

Potential PFAS Release

No Suspected Release

Facility Boundary
- Water Body

River/Stream

Canal/Ditch

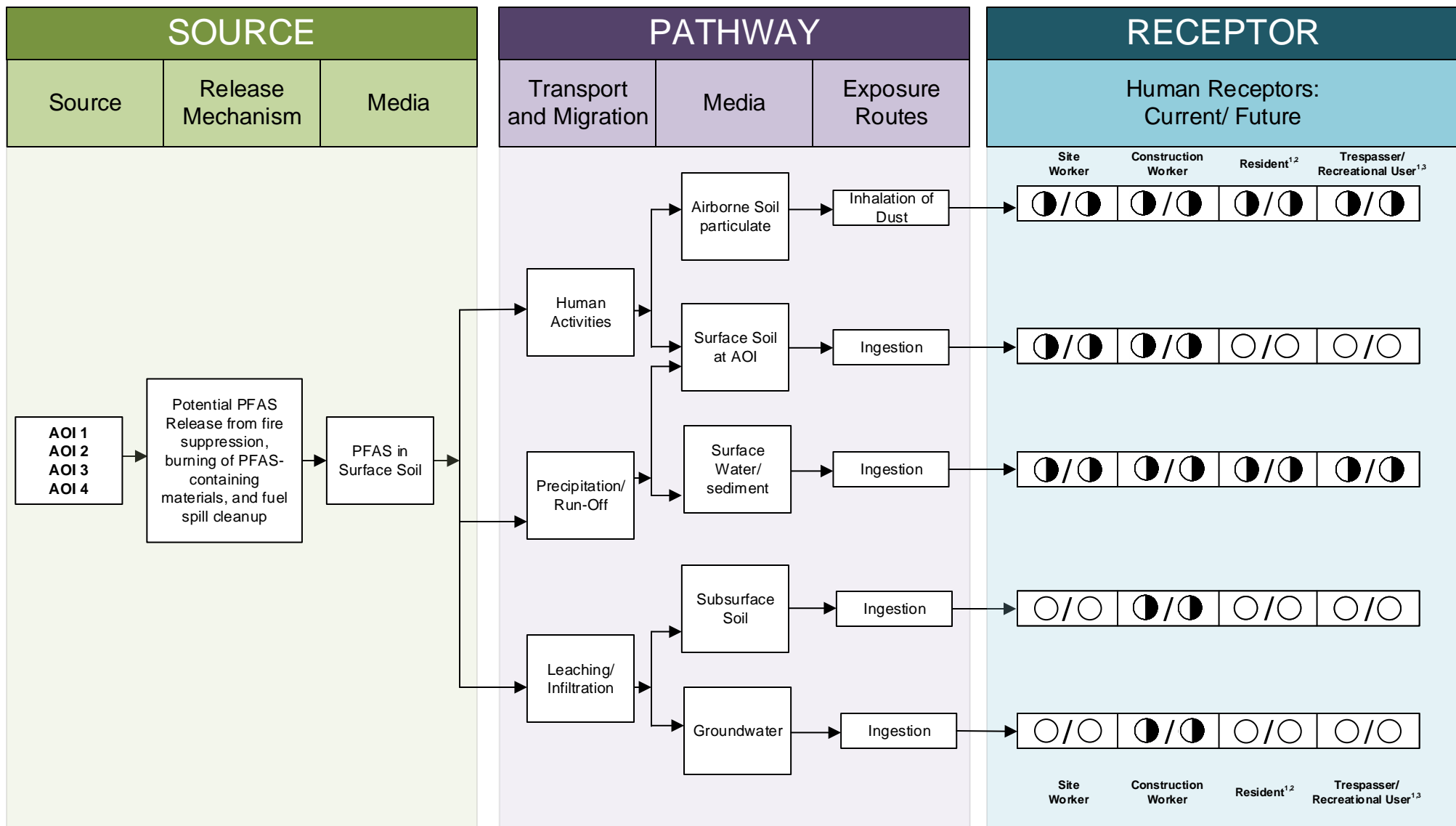
Pipeline



Summary of Findings

AECOM 12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1



LEGEND

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

NOTES

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

Figure ES-2
Preliminary Conceptual Site Model
Saginaw Facility, TX

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

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of PFAS compounds in the environment varies. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued lifetime Drinking Water Health Advisories (HAs) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. 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 Saginaw Facility (also referred to as the “facility”) in Saginaw, Texas, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations [CFR] Part 300), and Army requirements and guidance.

This PA documents the locations where PFAS may have been released into the environment at Saginaw 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)TM report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit on 2 June 2021 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current Texas Military Department personnel during the site visit;

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

1.3 Report Organization

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

- **Section 1 – Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA.
- **Section 2 – Fire Training Areas:** describes the 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

Saginaw Facility is located on East Industrial Avenue in Saginaw, Tarrant County, Texas. **Figure 1-1** illustrates the location of Saginaw Facility, which is in North Central Texas and approximately 10 miles north of Fort Worth, Texas.

The facility was originally established in 1941 as the Saginaw Army Aircraft Plant, which was an Army Material Command facility operated under the US Army Aviation Systems Command. From 1941 to 1949, the facility was leased to Globe Aircraft Corporation and used for aircraft manufacturing and flight testing (Corrigan Consulting, Inc., 2004 and USACE, 2015). In 1949, the facility was deeded to the US Department of the Navy and then subsequently leased to Bell Helicopter-Textron. Bell Helicopter-Textron operated the facility between 1949 and 1989 for flight testing, maintenance, and storage of Department of Defense (DoD) helicopters (JESCO Environmental and Geotechnical Services, Inc. [JESCO], 2017 and JESCO, 2018). In 1991, the US Government entered a lease agreement with Texas ARNG (TXARNG) for the acquirement of 114.31 acres, and in 1996, an additional lease agreement extended the property by 35.35 acres (USACE, 2015) (see land survey included in **Appendix A**).

A figure from 1991 showed various buildings in the northeastern portion of the facility that were used by Bell Helicopter-Textron to service aircraft (EA, 1991). These buildings included a Main Assembly Building, a Paint and Assembly Building, a Warehouse, and an Underground Diesel Fuel Pit, which were all located directly west of Blue Mound Road (EA, 1991). These buildings have been demolished since the transfer of leasing from Bell Helicopter-Textron to TXARNG, and the northeastern property is no longer leased by TXARNG. The 1991 figure also showed a Final Assembly Hangar located on the western portion of the facility, directly west of the chain link security fence that bisected the facility in the center (EA, 1991). Various fueling points and apron parking areas for aircraft were located to the north and south of the Final Assembly Hangar, respectively (EA, 1991). The Final Assembly Hangar, or “Hangar”, is currently used by TXARNG for rigging equipment.

The southern part of Saginaw Facility is currently used by TXARNG as a Combined Support Maintenance Shop (CSMS) (also referred to as the CSMS #1). The primary function of the facility is to maintain military vehicles. Prior to this portion of the facility transitioning to a CSMS, it operated as a Regional Sustainment Maintenance Site (RSMS) for approximately 10 years between 1991 and 2001. The RSMS’s primary mission was to rebuild military equipment.

1.5 Facility Environmental Setting

Saginaw Facility is located in the Coastal Plain physiographic province, and the topography is characterized as relatively flat and developed. The general surface elevation is 692 feet above mean sea level (amsl), with a slight topographic gradient to the east. The surrounding property includes light industrial and commercial areas to the east, south, and west. Open fields and wooded areas also abut the facility to the east and north. The closest residential areas to the facility are approximately 0.3 miles to the east and northwest.

1.5.1 Soil

As indicated in the 2021 EDR™ report (**Appendix A**), the surface soils at Saginaw Facility are from the Purves, Frio, Sanger, Mingo, and Slidell associations. These soils are characterized by clay, silty clay, and clay loam texture and are moderately well-drained to well-drained. Soil borings at the facility have previously encountered clays, silty clays, and fragments of weathered limestone to a depth of 14.5 feet below ground surface (bgs). The clay/silty clay layer at the facility was underlain by competent limestone bedrock, generally encountered at depths of 12 to 15 feet bgs (Corrigan Consulting, Inc., 2004).

1.5.2 Geology

The underlying geology at the facility is associated with the Fort Worth Limestone and Duck Creek Formation as well as the younger-age Weno Limestone and Denton Clay (**Figure 1-2**). These geological formations are also collectively known as the Georgetown Formation, which is characterized by Cretaceous limestone deposits and interbedded clay. The Duck Creek Formation is an aphanitic limestone unit that forms local topographic benches (USACE, 2015). Alluvial deposits near the Little Fossil Creek were deposited from the creek eroding the underlying limestone (Corrigan Consulting, Inc., 2007).

1.5.3 Hydrogeology

The regional source for groundwater and main aquifer is the Trinity Aquifer, which lies several hundred feet beneath the ground surface. A shallow unconfined aquifer exists within the alluvial deposits near Little Fossil Creek, and the underlying competent limestone bedrock acts as an aquiclude. The shallow unconfined aquifer is considered a Class 2 groundwater resource;

however, the aquifer is independent from any nearby production or water supply wells (JESCO, 2018). The shallow unconfined aquifer is laterally discontinuous and ephemerally saturated with generally low water yields. Soil borings east from Little Fossil Creek encountered shallow refusal without reaching groundwater (National Guard Bureau, 2011). Another deeper aquifer was encountered at 56 feet bgs within the facility (USACE, 2015).

Based on previous groundwater monitoring events at the facility, the shallow groundwater flow direction is to the south/southeast (Terracon Consultants, Inc., 2015). The on-facility monitoring wells installed within the shallow unconfined aquifer have been measured dry in times of drought. When groundwater is present, the depth to groundwater is highly variable, depending on seasonal precipitation, and varies from 4 to 15 feet bgs (USACE, 2015). Regional groundwater flow at the facility is towards the southwest (National Guard Bureau, 2011). Groundwater features are presented in **Figure 1-2**.

An EDR™ report conducted a well search for a 1-mile radius surrounding the facility (**Appendix A**). Using additional online resources, such as state and local Geographic Information System databases, wells were researched to a 4-mile radius of the facility. Currently, Saginaw Facility receives potable water from the City of Saginaw, which purchases water from the City of Fort Worth. Several monitoring wells are located at Saginaw Facility; domestic, industrial, irrigation, and public supply wells also exist within a 4-mile radius of the facility. During times of drought, the facility historically used two on-facility potable wells that were approximately 1,100 feet bgs in depth (USACE, 1991). TXARNG plugged and abandoned the two on-facility potable wells in 2003, and the plugging reports appear in **Appendix A**.

1.5.4 Hydrology

Little Fossil Creek bisects the facility in the northwest to southeast direction. Little Fossil Creek is an intermittent, losing stream that runs southeast and lies within the Sycamore Creek-West Fork Trinity River Watershed. Localized, shallow groundwater flow appears to be influenced by Little Fossil Creek, but groundwater does not discharge to surface water at the facility (USACE, 2015). Surface water features are presented in **Figure 1-3**.

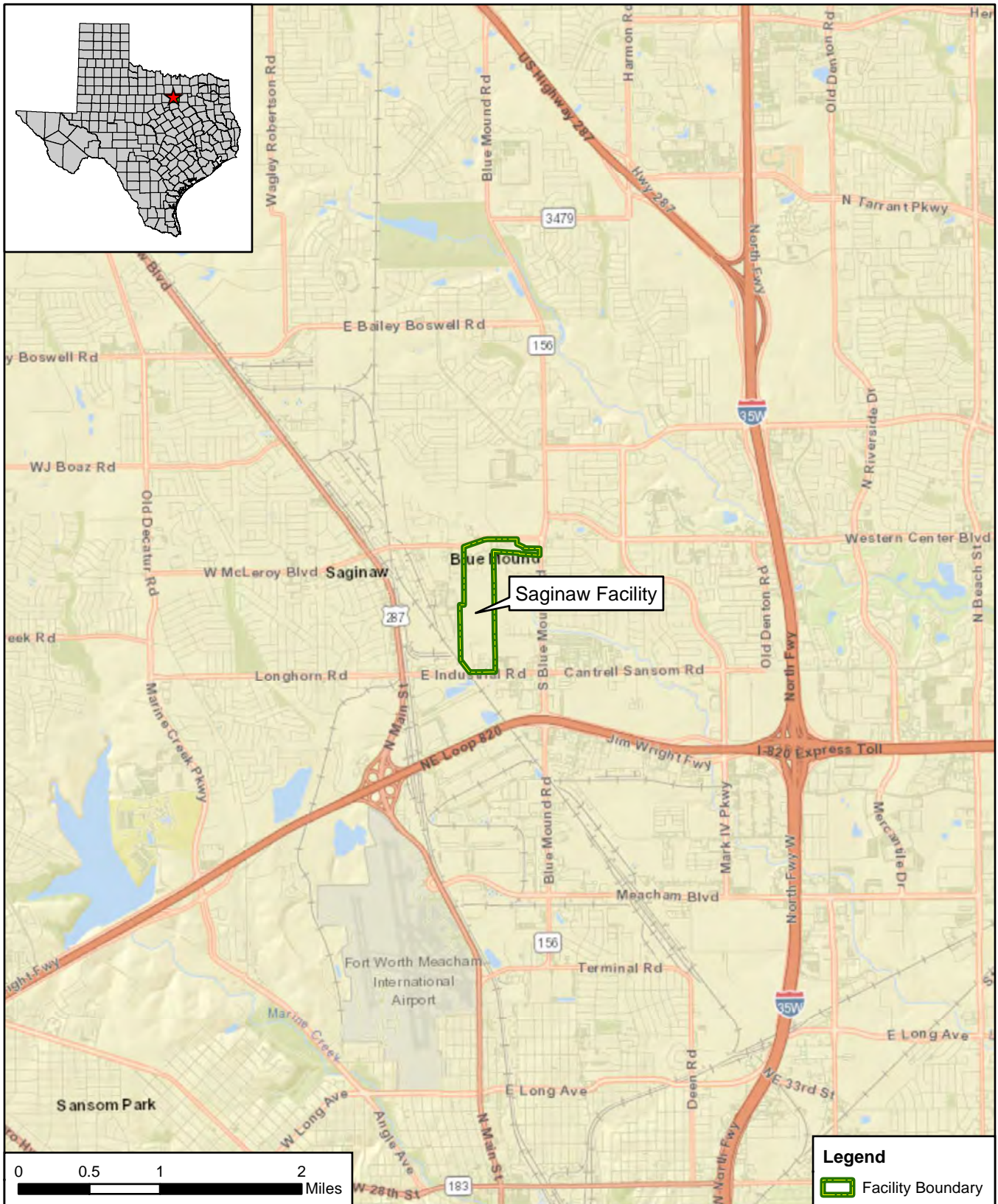
Saginaw Facility receives potable water from the City of Saginaw, which purchases water from the City of Fort Worth. The City of Fort Worth has multiple surface water intakes from various surrounding reservoirs, lakes, and rivers (City of Saginaw, 2020). The Eagle Mountain Reservoir, located approximately 8 miles northwest of the facility, is the main source of drinking water for the facility (Corrigan Consulting, Inc., 2004). The USEPA Unregulated Contaminant Monitoring Rule 3 (UCMR3) data indicate that PFOS/PFOA were not detected in a public water system above the USEPA HA within a 20-mile radius 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.

1.5.5 Climate

Saginaw Facility is in a humid, subtropical climate zone characterized by long and warm summers and short and mild winters; the temperature and precipitation range widely throughout the year. The total monthly precipitation normal ranges from 2.08 inches in July to 4.78 inches in May, and the total annual precipitation normal is 37.01 inches. Summer temperatures peak in August, with an average high of 95.8 degrees Fahrenheit (°F) and an average low of 75.7 °F. Winter temperatures are lowest in January, with an average high of 56.5 °F and an average low of 36.1 °F. Snowfall is rare, but thunderstorms occur throughout the year and more frequently in the spring (National Weather Service Forecast Office, 2018).

1.5.6 Current and Future Land Use

The facility is used by TXARNG primarily as a CSMS. The primary function of the facility is to maintain military vehicles. The property is currently zoned for industrial uses with related infrastructure including buildings, parking lots, roadways, and other paved areas; a few areas of the property remain vacant. Reasonably anticipated future land use is not anticipated to change from the current land use (USACE, 2015).



CLIENT		ARNG			
NOTES		Preliminary Assessment for PFAS at Saginaw Facility, TX			
REVISED	7/20/2021	GIS BY	MS	7/20/2021	
SCALE	1:63,360	CHK BY	ST	7/20/2021	
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	CM	7/20/2021	



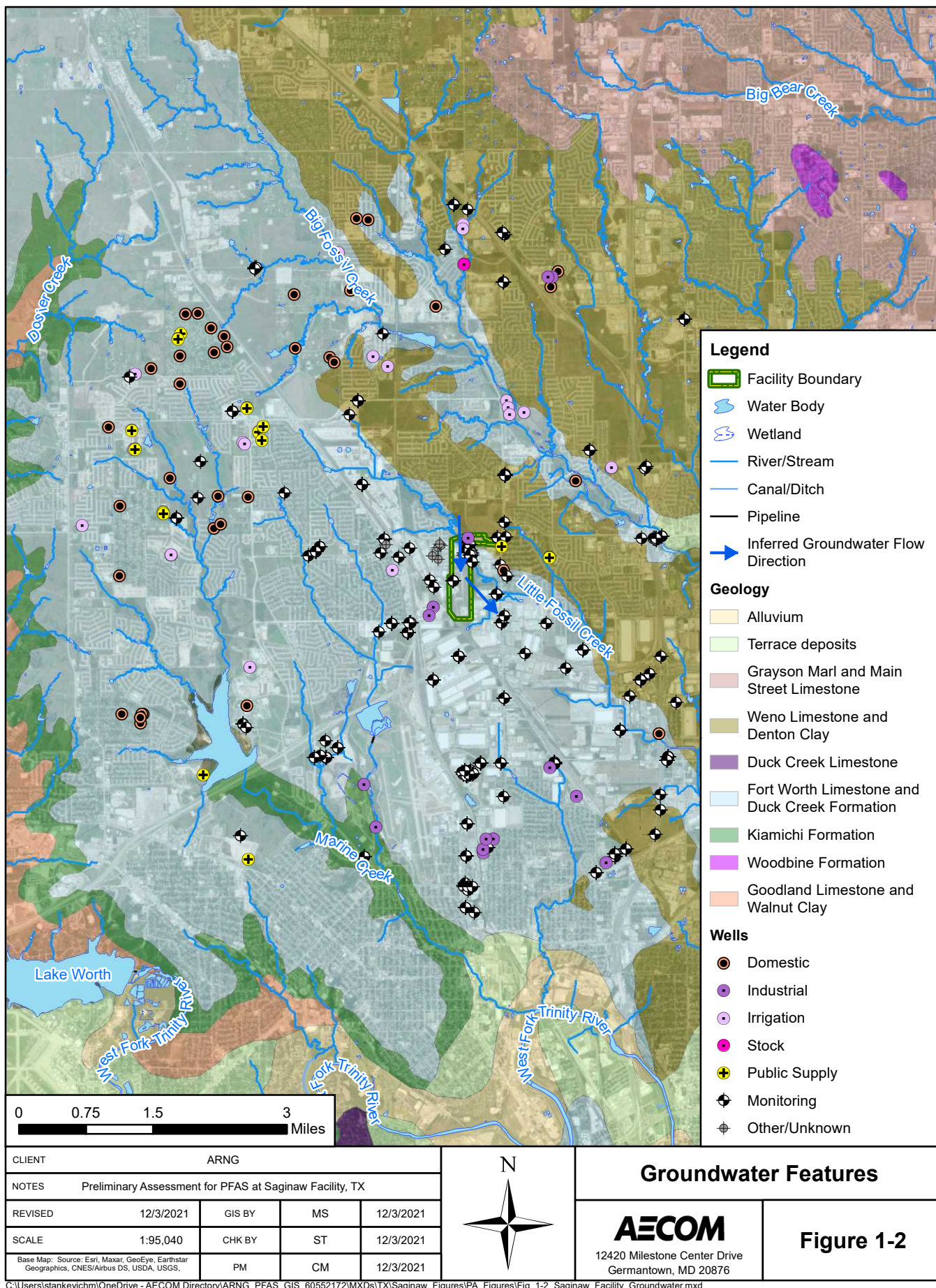
Facility Location

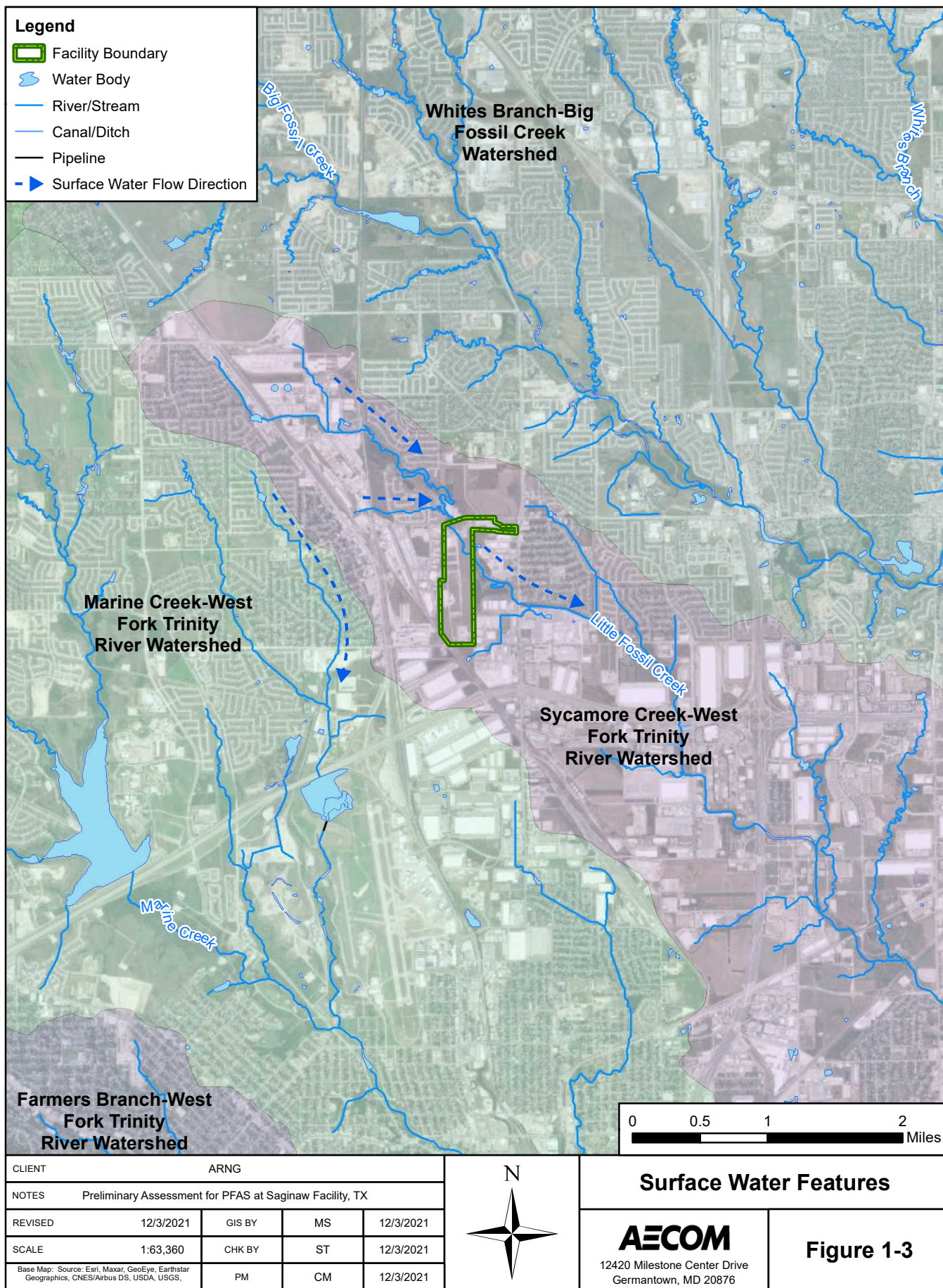
AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

C:\Users\stankevichm\OneDrive - AECOM Directory\ARNG_PFAS_GIS_60552172\MXDs\TX\Saginaw_Figures\PA_Figures\Fig_1-1_Saginaw_Facility_Location.mxd





C:\Users\stankevichm\OneDrive - AECOM Directory\ARNG_PFAS_GIS_60552172\MXDs\TX\Saginaw_Figures\PA_Figures\Fig_1-3_Saginaw_Facility_Surface_Water.mxd

2. Fire Training Areas

No FTAs where AFFF may have been potentially released were identified through record reviews and interviews during the PA. Facility personnel stated during interviews that they do not perform any fire training on-facility, and all fire extinguishers located within the facility are handheld, dry chemical (non-AFFF) fire extinguishers.

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**. Seven non-FTAs were identified during the PA. Although TXARNG currently has no known storage or usage of AFFF at the facility, AFFF or other PFAS-containing materials may have been stored or used by Bell Helicopter-Textron, a former DoD contractor and leaseholder for the facility. A description of each non-FTA is presented below, and the non-FTAs are shown on **Figure 3-1**.

3.1 Former Burn Pits

Two Former Burn Pits are in the area between Little Fossil Creek and the eastern facility fence line. The Former Burn Pits are located on a portion of land acquired by the TXARNG in 1996 (USACE, 2015). Based on aerial imagery provided within the EDR™ report and located in **Appendix A**, the Former Burn Pits are visible as early as 1957. By 1963, the Former Burn Pits appeared significantly filled in, and in 1975, the Former Burn Pits area was filled in and graded; therefore, the Former Burn Pits were presumably closed between 1963 and 1975 (Corrigan Consulting, Inc., 2004).

The Former Burn Pits were used by DoD contractors to burn paper and construction wastes, which may have also included petroleum and halogenated hydrocarbons, lacquers, varnish, metals, paint, inks, dyes, pesticides, polychlorinated biphenyls (PCBs), adhesives, epoxy, dioxins, and furans. Based on investigations and sampling events conducted at the Former Burn Pits between the years 2002 and 2015, the site's groundwater bearing unit is contaminated with volatile organic compounds (VOCs), including 1,1-dichloroethene and trichloroethene (JESCO, 2018). The Response Action Plan (JESCO, 2017) for the site contaminants selected a remedy of In Situ Redox Manipulation with Permeable Reactive Barriers, and the plan was subsequently approved by the Texas Commission of Environmental Quality on 28 September 2017. Both Former Burn Pits are currently grassed over and landscaped with multiple monitoring wells located on and surrounding the Former Burn Pit areas. Monitoring wells also extend to the vacant, off-facility property to the east.

The nature of how fires were extinguished and what exact materials were disposed during the burning activities are unknown, since the usage of the Former Burn Pits predated TXARNG's occupation of the site in 1996. Bell Helicopter-Textron was the DoD contractor leasing the facility during the period of interest; however, little is known about their activities at the Former Burn Pits. Because the Former Burn Pits were used to dispose of various materials, the procedure may have been to allow all contents to burn completely without using any extinguishers. However, if a burn were to become uncontrolled, it is also likely that fire extinguishing methods were close at hand and may have been used. Due to the uncertainty about the nature and history of activities at the Former Burn Pits, the Former Burn Pits are considered potential PFAS release areas.

3.2 Hangar and Apron

The Hangar and Apron are located on the western portion of the facility, between the fence line and Little Fossil Creek. The Hangar, also referred to as the "Final Assembly Hangar" in the 1991 figure (EA, 1991), is currently used to prepare equipment for rigging and contains a fire suppression system that is currently and has always been charged with water only. The fire suppression system is currently out of service, according to a sign observed during the VSI. Ten dry chemical (non-AFFF) extinguishers were also observed within the Hangar. Photographs of one dry chemical fire extinguisher and the fire suppression system are included in **Appendix C**.

Prior to the TXARNG occupation of the facility in 1991, Bell Helicopter-Textron used the Hangar and Apron for their own operations. Helicopters are known to have been parked at an Apron located directly east and south of the Hangar, as seen in historical aerial imagery (EA, 1991; **Appendix A**). The Hangar and Apron were constructed sometime between 1963 and 1968, and the eastern edge of the Apron was built over a former runway that ran north-south (**Appendix A**). Due to the storage of aircraft at the Hangar and Apron, it is possible that AFFF or other PFAS-containing foam were stored or used at the Hangar and Apron for fire suppression purposes in case of aircraft incidents. As a result, the Hangar and Apron are conservatively considered a potential PFAS release area.

3.3 Former JP-4 Fuel Storage Building

The Former Jet Propellant (JP)-4 Fuel Storage Building is located northwest of the Former Burn Pits. Based on aerial imagery provided within the EDR™ report and located in **Appendix A**, the Former JP-4 Fuel Storage Building is visible as early as 1968 and as late as 1990. Bell Helicopter-Textron was the DoD contractor leasing the facility during the period of interest; however, little is known about their activities at the Former JP-4 Fuel Storage Building. Petroleum, oil, and lubricants (JP-4) were stored underground in an undetermined number of tanks; the total capacity of the tanks was 71,000 gallons (EA, 1991). Due to the storage of fuel at this location, it is possible that AFFF or other PFAS-containing materials were stored or used at the Former JP-4 Fuel Storage Building for fire suppression purposes. As a result, the Former JP-4 Fuel Storage Building is considered a potential PFAS release area.

3.4 Paint Booth

The Paint Booth is located northwest of the Former Burn Pits; it is currently inactive but was used when the facility operated as an RSMS. According to Google Earth imagery, the Paint Booth was constructed sometime in the period between July 2003 and March 2005 (Google Earth, 2003). A fire suppression system is located within the Paint Booth and is connected to eight dry chemical (non-AFFF) extinguishers. The dry chemical extinguishers are affixed to the top portions of the walls (see photograph in **Appendix C**). The Paint Booth is not considered to be a suspected release area of PFAS.

3.5 Former UST

A Former Underground Storage Tank (UST), also referred to as the “Underground Diesel Fuel Pit” in the 1991 figure (EA, 1991), was located southwest of the Former Paint and Assembly Building (see **Section 5.2**), on the northern portion of the facility. The Former UST was used by Bell Helicopter-Textron for their aviation-related operations. It is unknown how long the UST was in use or when it was removed. The UST originally contained JP-4 before being converted to a diesel fuel tank with a capacity of 23,000 gallons. During diesel storage operations, a leak was detected, and the tank was opened and repaired (EA, 1991). A leak test conducted after repairs in 1980 found the tank to be in operational condition, and no subsequent leak test for this tank occurred (EA, 1991). Due to the storage of fuel at this location, it is possible that AFFF or other PFAS-containing materials were stored or used at the Former UST for fire suppression purposes. It is also possible that AFFF could have been used for the cleanup of fuel spills, since AFFF is a known surfactant. The Former UST is considered a potential PFAS release area.

3.6 Former Warehouse and Apron



The Former Warehouse and Apron are located in the northern portion of the facility, west of Texas Blue Mound Road. Based on historical aerial imagery, the Former Warehouse and Apron area

was used by Bell Helicopter-Textron from approximately 1950 to 1989, and the Apron contained parking for helicopters (**Appendix A**). According to Google Earth imagery, the Former Warehouse was demolished sometime in the period between November 2018 and October 2019 (Google Earth, 2018). It is possible that AFFF or other PFAS-containing materials were stored at the Former Warehouse and Apron for fire suppression purposes due to the historical presence of nearby aircraft. As a result, the Former Warehouse and Apron are considered a potential PFAS release area.

3.7 Fuel Point

The Fuel Point is situated on the southern portion of the facility near the entrance gate. Two handheld dry chemical (non-AFFF) fire extinguishers are located at the Fuel Point. The fire extinguishers appear to be inspected on a monthly basis and are in good working condition, according to the inspection record tags affixed to the fire extinguishers. A photograph of one dry chemical fire extinguisher is included in **Appendix C**. The Fuel Point is not considered to be a suspected release area of PFAS.



CLIENT		ARNG				Non-Fire Training Areas	
NOTES		Preliminary Assessment for PFAS at Saginaw Facility, TX				<div> 12420 Milestone Center Drive Germantown, MD 20876</div> <div>Figure 3-1</div>	
REVISED	12/3/2021	GIS BY	MS	12/3/2021			
SCALE	1:7,200	CHK BY	ST	12/3/2021			
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	CM	12/3/2021			

C:\Users\stankevichm\OneDrive - AECOM Directory\ARNG_PFAS_GIS_60552172\MXDs\TX\Saginaw_Figures\PA_Figures\Fig_3-1_Saginaw_Facility_Non-Fire_Training_Areas.mxd

4. Emergency Response Areas

Emergency responses to crashes sometimes require flame suppression, which may result in the release of PFAS to the environment in the form of AFFF. No emergency response areas were identified within the facility during the PA through interviews with TXARNG personnel.

5. Adjacent Sources

Seven potential off-facility sources of PFAS adjacent to Saginaw Facility, not under the control of the TXARNG, were identified during the PA. A description of each adjacent source is presented below, and the adjacent sources are shown on **Figure 5-1**.

5.1 Former Main Assembly Building

The Former Main Assembly Building was located in the northeastern portion of the facility, just west of Blue Mound Road, and was used by Bell Helicopter-Textron from approximately 1950-1983 (EA, 1991); The Former Main Assembly Building has been demolished since leasing of the facility transferred to TXARNG, and the area where it existed is not within the boundaries of the current facility. According to the land survey included in **Appendix A**, the property is currently occupied by Icon Texas Development, LLC. During mobilization periods, up to 50 helicopters were produced per month at the Former Main Assembly Building. Additional processes at the Former Main Assembly Building included limited-scale Plexiglas® forming, plaster molding, tooling, and painting operations (EA, 1991). Although it is unknown what fire-suppression systems existed at the Former Main Assembly Building, there is potential for AFFF or other PFAS-containing materials to have been stored or used at the Former Main Assembly Building. As a result, the Former Main Assembly Building is considered a potential PFAS release area.

5.2 Former Paint and Assembly Building

The Former Paint and Assembly Building was located in the northeastern portion of the facility, northwest of the Former Main Assembly Building, and was used by Bell Helicopter-Textron predominantly from 1954-1975. The Former Paint and Assembly Building has been demolished since leasing of the facility transferred to TXARNG (EA, 1991), and the area where the Former Paint and Assembly Building existed is not within the boundaries of the current facility. According to the land survey included in **Appendix A**, the property is currently occupied by Icon Texas Development, LLC. The Former Paint and Assembly Building contained an Alodine wash rack, where Alodine solution was brushed on helicopters and rinsed off with water (EA, 1991). Due to the maintenance of aircraft at the Former Paint and Assembly Building, there is potential for AFFF or other PFAS-containing materials to have been stored at this location. As a result, the Former Paint and Assembly Building is considered a potential PFAS release area.

5.3 Blue Mound Fire Department

The Blue Mound Fire Department is located at 301 South Blue Mount Road, Fort Worth, Texas, less than 1 mile east of Saginaw Facility. An off-facility VSI was not conducted at the fire department, and it is unknown if any fire training activities or AFFF releases have occurred there. The Blue Mound Fire Department is conservatively considered a potential PFAS release area due to the common storage and/or usage of AFFF at fire stations.

5.4 Saginaw Fire Department

The Saginaw Fire Department has a fire station located at 400 South Saginaw Boulevard, Saginaw, Texas, less than 1 mile west of Saginaw Facility. An off-facility VSI was not conducted at the fire department, and it is unknown if any fire training activities or AFFF releases have occurred there. The Saginaw Fire Department is conservatively considered a potential PFAS release area due to the common storage and/or usage of AFFF at fire stations.

5.5 Fort Worth Meacham International Airport

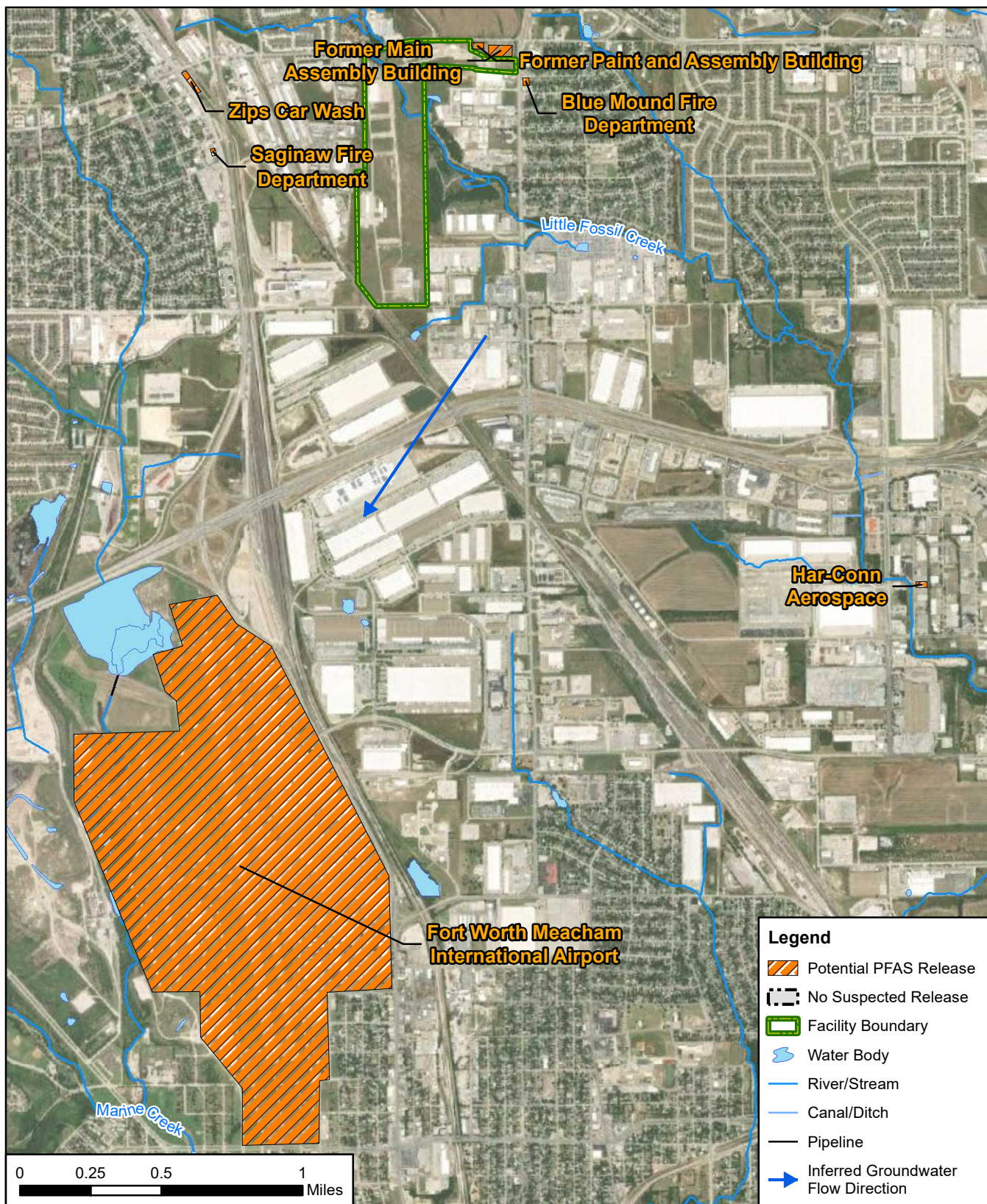
The Fort Worth Meacham International Airport is located approximately 2 miles south of Saginaw Facility. Fort Worth Meacham International Airport contains two full-service Fixed Base Operators, flight schools, and 72 aircraft hangars (Meacham International Airport, n.d.). According to the National Transportation Safety Board (NTSB), two airplane crashes that resulted in fires occurred at the airport in 1989 and 1996, but it is unknown if the emergency responses involved AFFF for flame suppression (NTSB, n.d.-a-b). Airport personnel were not interviewed during the PA, and an off-facility VSI was not conducted because the focus of the assessment was to evaluate potential PFAS-related activities and sources at TXARNG properties; therefore, it is unknown if any fire training activities or AFFF releases have occurred there. Airports have historically been sources of PFAS due to AFFF storage, mandated Federal Aviation Administration AFFF training on aircraft rescue and firefighting vehicles, and emergency responses requiring flame suppression; therefore, the Fort Worth Meacham International Airport has been identified as a potential PFAS release area.

5.6 Har-Conn Aerospace

Har-Conn Aerospace is located at 5000 Augusta Drive, Fort Worth, Texas, approximately 2.5 miles southeast of Saginaw Facility. Har-Conn Aerospace is a chemical processing firm for aerospace industries, and their specialties include chrome anodizing and electroplating services (Har-Conn Aerospace, 2021). PFAS have historically been used in chrome plating operations for chemical fume suppression (Haley & Aldrich, n.d.). Although no off-facility VSI was conducted, Har-Conn Aerospace is conservatively considered a potential PFAS release area due to their known services.

5.7 Zips Car Wash

Zips Car Wash is located at 100 East McLeroy Boulevard, Saginaw, Texas, less than 1 mile west of Saginaw Facility. The car wash business advertises using “eco-friendly soaps and waxes”, and their wash water is treated and not discharged into storm drains (Zips Car Wash, 2019). Car wash businesses are commonly known sources of PFAS due to car wash solutions and products containing PFAS. Although no off-facility VSI was conducted, Zips Car Wash is conservatively considered a potential PFAS release area.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Saginaw Facility, TX			
REVISED	12/3/2021	GIS BY	MS	12/3/2021
SCALE	1:31,680	CHK BY	ST	12/3/2021
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	CM	12/3/2021



Adjacent Sources

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

C:\Users\stankevichm\OneDrive - AECOM Directory\ARNG_PFAS_GIS_60552172\MXDs\TX\Saginaw_Figures\PA_Figures\Fig_5-1_Saginaw_Facility_Adjacent_Sources.mxd

6. Preliminary Conceptual Site Model

Based on the PA findings, four areas were identified where PFAS-containing materials may have been stored, incidentally spilled, or discharged to the ground surface. As such, these AOIs may be potential PFAS source areas. The AOIs are shown on **Figure 6-1** and summarized below:

- AOI 1 – Former Burn Pits
- AOI 2 – Former JP-4 Fuel Storage Building
- AOI 3 – Hangar and Apron
- AOI 4 – Former Warehouse, Apron, and UST

The following sections describe the CSM components and the specific preliminary CSMs 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 Ground Water Association, 2018).

Potential PFAS releases at Saginaw Facility may have occurred on paved or unpaved surfaces. Ground-disturbing activities in the unpaved areas may result in potential exposure to surface soils via ingestion and inhalation of dust particles. Potential PFAS releases to the paved surfaces could have infiltrated the subsurface soil via cracks in the pavement or joints between areas that are paved with different materials or migrated a short distance to the surrounding surface soil. Ground-disturbing activities in the paved areas 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. The regional and localized groundwater flow is generally to the south and southeast, respectively, both of which are upgradient from several domestic and public water supply wells. Although the shallow unconfined aquifer is considered a Class 2 groundwater resource, the aquifer is independent from any nearby production or water supply wells, and the underlying geology is likely to restrict the horizontal and vertical migration of PFAS (JESCO, 2018 and Corrigan Consulting, Inc., 2004). Human exposure to shallow groundwater used as drinking water is unlikely; however, construction workers may encounter shallow groundwater under trenching scenarios, which may result in potential exposure from the ingestion of groundwater.

Potential PFAS releases carried via runoff are likely to migrate to Little Fossil Creek, which traverses the facility and continues off-facility into industrial and residential districts. The ingestion of surface water and/or sediment containing PFAS may result in potential exposure to all receptors. Recreational users may also be exposed to PFAS via the consumption of fish potentially affected by PFAS in surface water.

6.2 Receptors

Receptors for Saginaw Facility include site workers, construction workers, recreational users, trespassers, and off-facility residents.

- Site workers typically work at or use the site and may come into contact with the surface soils. Site workers may also use surrounding areas for recreation (i.e. swimming and/or fishing) and come into contact with surface water.
- 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.
- Trespassers and off-facility recreational users typically identify a person who has infrequent access to the site. Trespassers and off-facility recreational users could be exposed to surface soils and surface water during recreational use.
- Off-facility residents who occupy properties outside of Saginaw Facility. Off-facility residents may use the surrounding areas for recreation and may come into contact with surface water.

The preliminary CSM for the AOI indicates which specific receptors could potentially be exposed to PFAS. The preliminary CSMs for the AOIs at Saginaw Facility are shown on **Figures 6-2 to 6-5**.

6.3 AOI 1: Former Burn Pits

AOI 1 includes two Former Burn Pits that were used by Bell Helicopter-Textron, a DoD contractor and former leasee of the property, for burning paper and various construction wastes between the approximate years of 1957 to 1975. The usage of the Burn Pits predated TXARNG's occupation of the property in 1996. Due to the uncertainty about the nature and history of the Burn Pit activities, which may have involved the use of AFFF as an extinguishing agent or the burning of PFAS-containing materials, the Former Burn Pits are considered potential PFAS release areas. Any potential PFAS release likely occurred within the unpaved surfaces of the Former Burn Pits, which is currently grassed over. The Former Burn Pits are directly east of the Little Fossil Creek, so potential runoff into Little Fossil Creek is very likely.

The preliminary CSM for AOI 1 is shown on **Figure 6-2**. Potential PFAS exposure pathways resulting from releases at AOI 1 are described in **Table 6-1**.

Table 6-1: Exposure Pathways at AOI 1

Pathway	Receptor
Surface Soil	Considered a potentially complete pathway to all receptors via inhalation of dust; considered a potentially complete pathway to site workers and construction workers via ingestion
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 all receptors via ingestion
Groundwater	Considered a potentially complete pathway to construction workers via ingestion

6.4 AOI 2: Former JP-4 Fuel Storage Building

AOI 2 includes the Former JP-4 Fuel Storage Building, which was used by Bell Helicopter-Textron for storage of petroleum, oil, and lubricants (EA, 1991). The JP-4 Fuel Storage Building has since been removed, but the feature was present in historical aerial images as early as 1968 and as late as 1990 (**Appendix A**). Due to the storage of fuel at this location, it is possible that AFFF or other PFAS-containing materials were stored or used at the Former JP-4 Fuel Storage Building for fire suppression purposes.

AOI 2 is surrounded by unpaved and paved surfaces and is located directly east of Little Fossil Creek. Any potential PFAS releases would have likely occurred on these surfaces and/or been carried via run-off into the Little Fossil Creek. The pathways and receptors for AOI 2 are the same as described in **Section 6.1**. The preliminary CSM for AOI 2 is shown on **Figure 6-3**, and **Table 6-2** describes the potential PFAS exposure pathways resulting from releases at AOI 2.

Table 6-2: Exposure Pathways at AOI 2

Pathway	Receptor
Surface Soil	Considered a potentially complete pathway to all receptors via inhalation of dust; considered a potentially complete pathway to site workers and construction workers via ingestion
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 all receptors via ingestion
Groundwater	Considered a potentially complete pathway to construction workers via ingestion

6.5 AOI 3: Hangar and Apron

AOI 3 includes the Hangar and Apron. The Hangar and Apron is currently used by TXARNG for equipment rigging operations and was historically used by Bell Helicopter-Textron for storage of helicopters. Due to the storage of aircraft at the Hangar and Apron, it is possible that AFFF or other PFAS-containing materials were stored or used at the Hangar and Apron for fire suppression purposes in case of aircraft incidents.

AOI 3 is surrounded by unpaved and paved surfaces. Drainage ditches that lead into Little Fossil Creek are also located to the west, south, and east of AOI 3. Any potential PFAS releases would have likely occurred on these unpaved and paved surfaces and/or been carried via run-off into the Little Fossil Creek. The pathways and receptors for AOI 3 are the same as described in **Section 6.1**. The preliminary CSM for AOI 3 is shown on **Figure 6-4**, and **Table 6-3** describes the potential PFAS exposure pathways resulting from releases at AOI 3.

Table 6-3: Exposure Pathways at AOI 3

Pathway	Receptor
Surface Soil	Considered a potentially complete pathway to all receptors via inhalation of dust; considered a potentially complete pathway to site workers and construction workers via ingestion
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 all receptors via ingestion
Groundwater	Considered a potentially complete pathway to construction workers via ingestion

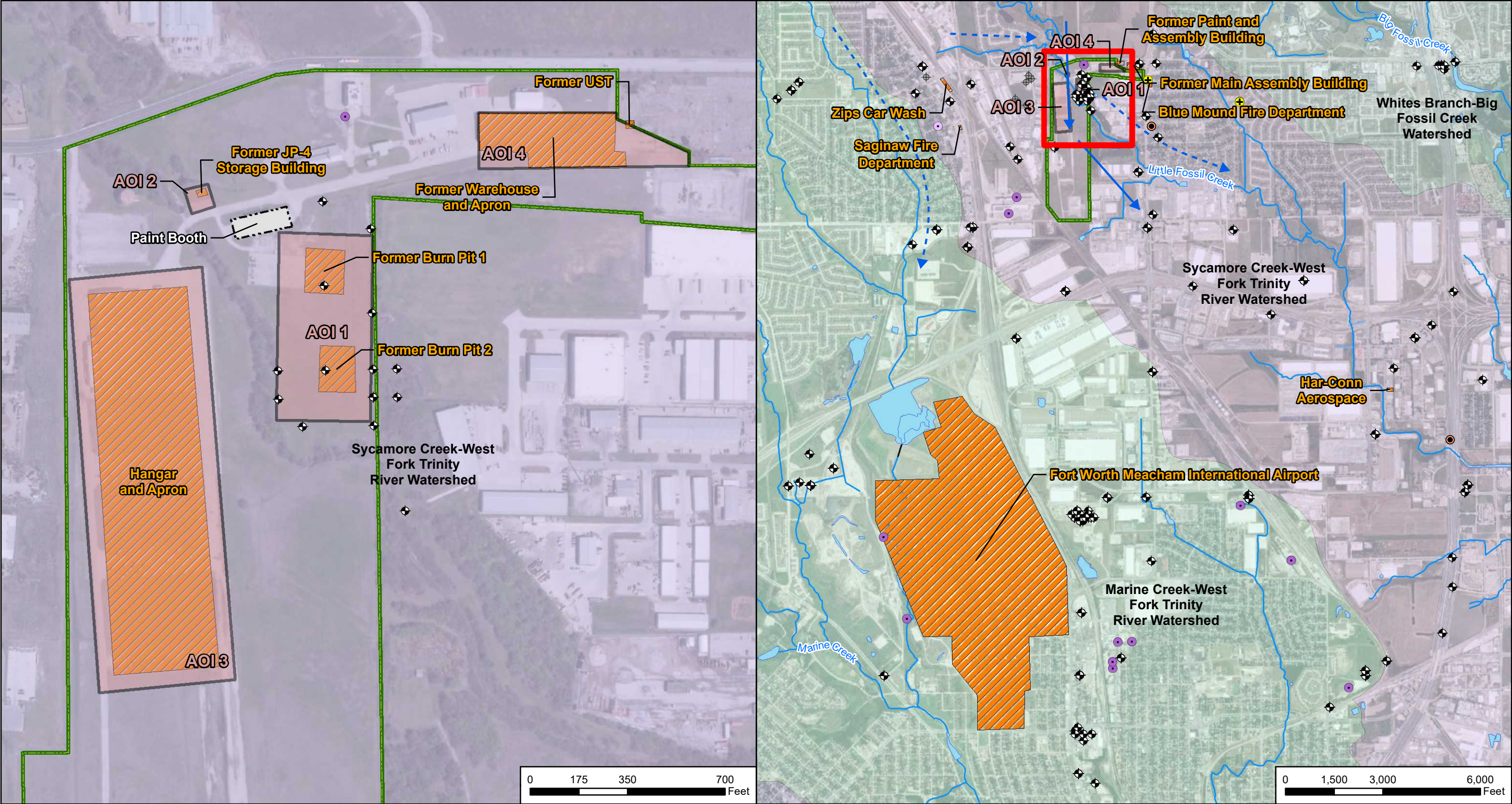
6.6 AOI 4: Former Warehouse, Apron, and UST

AOI 4 includes the Former Warehouse, Apron, and UST. These potential PFAS release areas were formerly used by Bell Helicopter-Textron. The Former Warehouse and Apron were used for parking helicopters, and the Former UST contained JP-4 and then diesel fuel, which was prone to leak. Due to the storage of aircraft and fuel at these locations, it is possible that AFFF or other PFAS-containing materials were used for fire suppression purposes or cleanup of fuel spills.

AOI 4 is surrounded by unpaved and paved surfaces. Drainage ditches that lead into Little Fossil Creek are also located to the west of AOI 4. Any potential PFAS releases would have likely occurred on these unpaved and paved surfaces and/or been carried via run-off into the Little Fossil Creek. The pathways and receptors for AOI 4 are the same as described in **Section 6.1**. The preliminary CSM for AOI 4 is shown on **Figure 6-5**, and **Table 6-4** describes the potential PFAS exposure pathways resulting from releases at AOI 4.

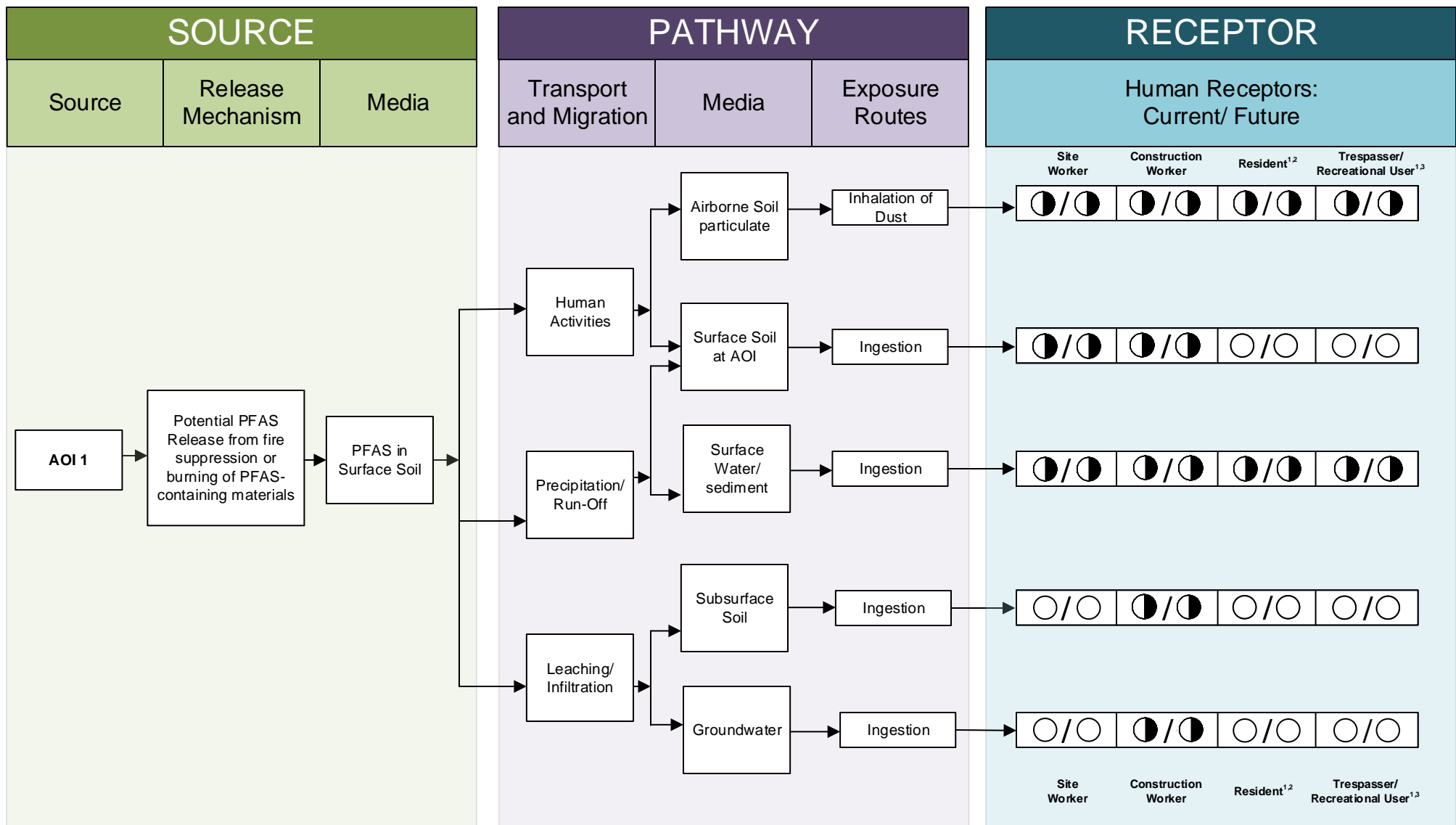
Table 6-4: Exposure Pathways at AOI 4

Pathway	Receptor
Surface Soil	Considered a potentially complete pathway to all receptors via inhalation of dust; considered a potentially complete pathway to site workers and construction workers via ingestion
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 all receptors via ingestion
Groundwater	Considered a potentially complete pathway to construction workers via ingestion



CLIENT					ARNG					<div><div><div><div></div><div>Area of Interest</div></div><div><div></div><div>Potential PFAS Release</div></div><div><div></div><div>No Suspected Release</div></div><div><div></div><div>Facility Boundary</div></div><div><div></div><div>Water Body</div></div><div><div></div><div>River/Stream</div></div><div><div></div><div>Canal/Ditch</div></div><div><div></div><div>Pipeline</div></div><div><div></div><div>Surface Water Flow Direction</div></div><div><div></div><div>Inferred Groundwater Flow Direction</div></div><div><div></div><div>Domestic Well</div></div><div><div></div><div>Irrigation Well</div></div><div><div></div><div>Industrial Well</div></div><div><div></div><div>Monitor Well</div></div><div><div></div><div>Public Supply Well</div></div><div><div></div><div>Other/Unknown Well</div></div></div></div> <div><div>N</div><div></div></div>	Areas of Interest				
PROJECT Preliminary Assessment for PFAS at Saginaw Facility, TX											<div><div><div>AECOM</div><div>12420 Milestone Center Drive Germantown, MD 20876</div></div><div>Figure 6-1</div></div>				
REVISED					12/3/2021		GIS BY		MS						
SCALE					1:4,200		CHK BY		ST						
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community							PM		CM						
									12/3/2021						

C:\Users\stankevichm\OneDrive - AECOM Directory\ARNG_PFAS_GIS_60552172\IMXDS\TX\Saginaw_Figures\PA_Figures\Fig_6-1_Saginaw_Facility_Area_of_Interest.mxd



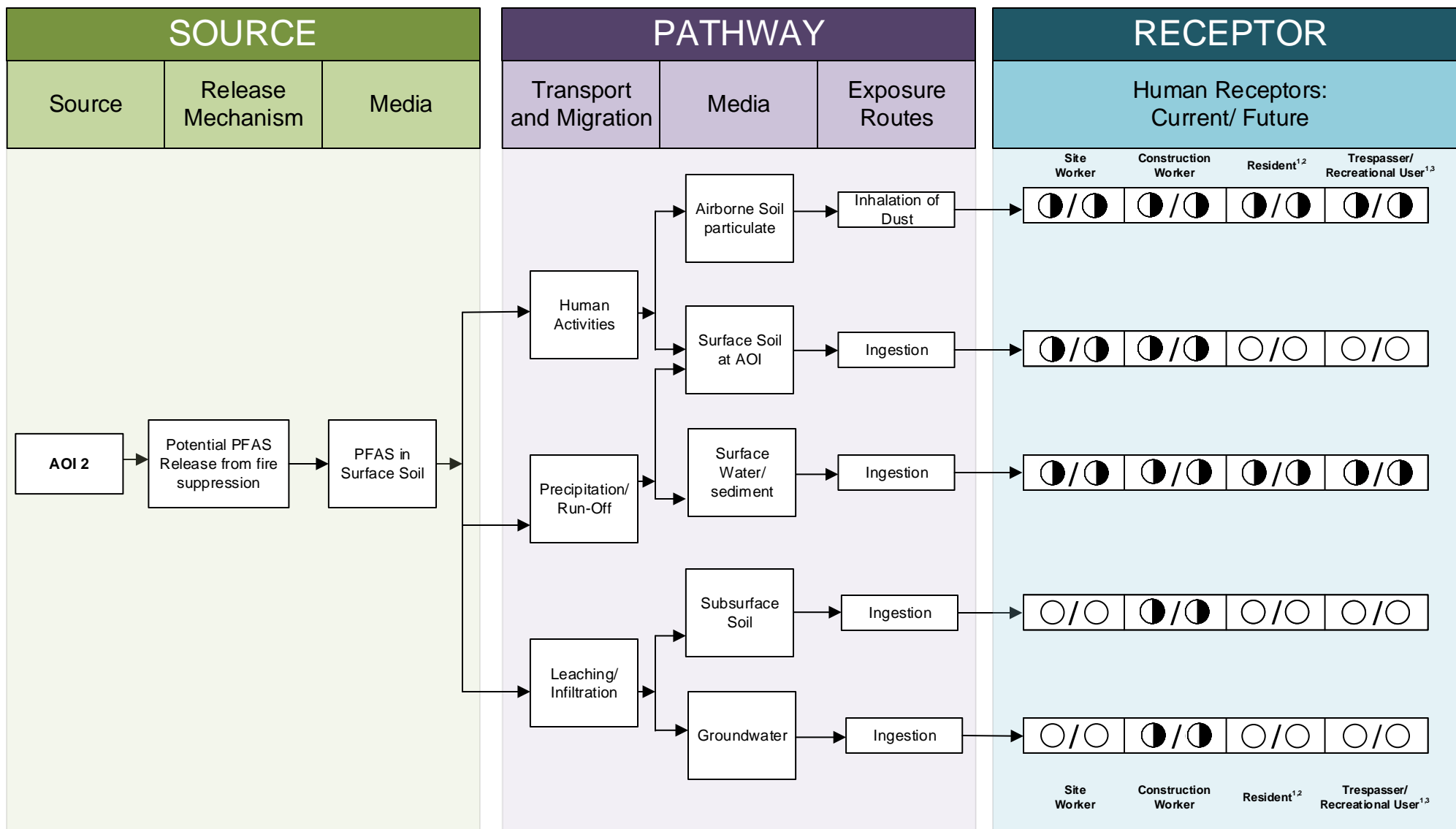
LEGEND

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

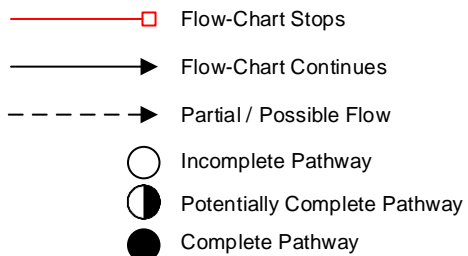
NOTES

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

Figure 6-2
Preliminary Conceptual Site Model
AOI 1 Former Burn Pits



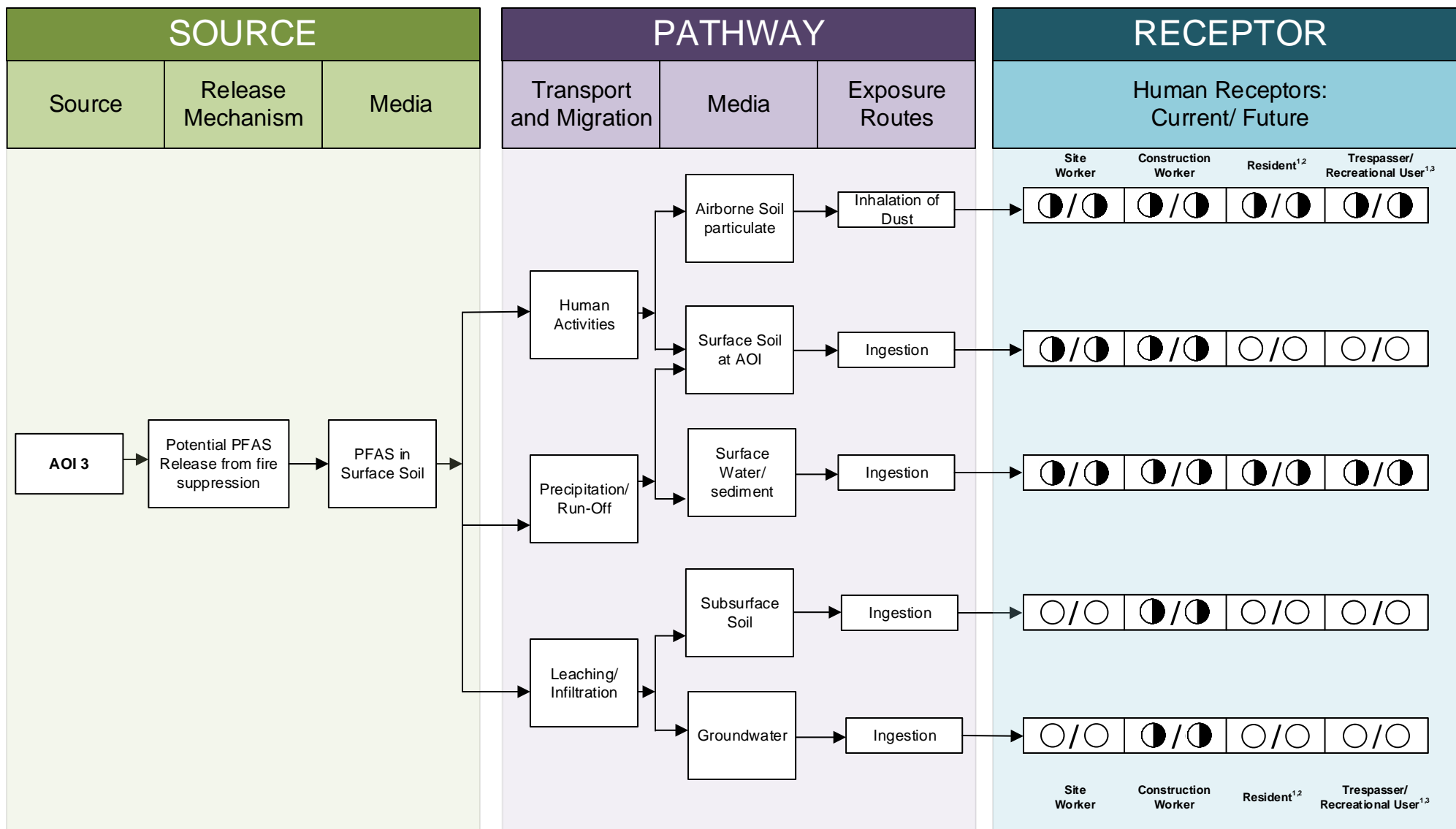
LEGEND



NOTES

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

Figure 6-3
Preliminary Conceptual Site Model
AOI 2 Former JP-4 Fuel Storage Building



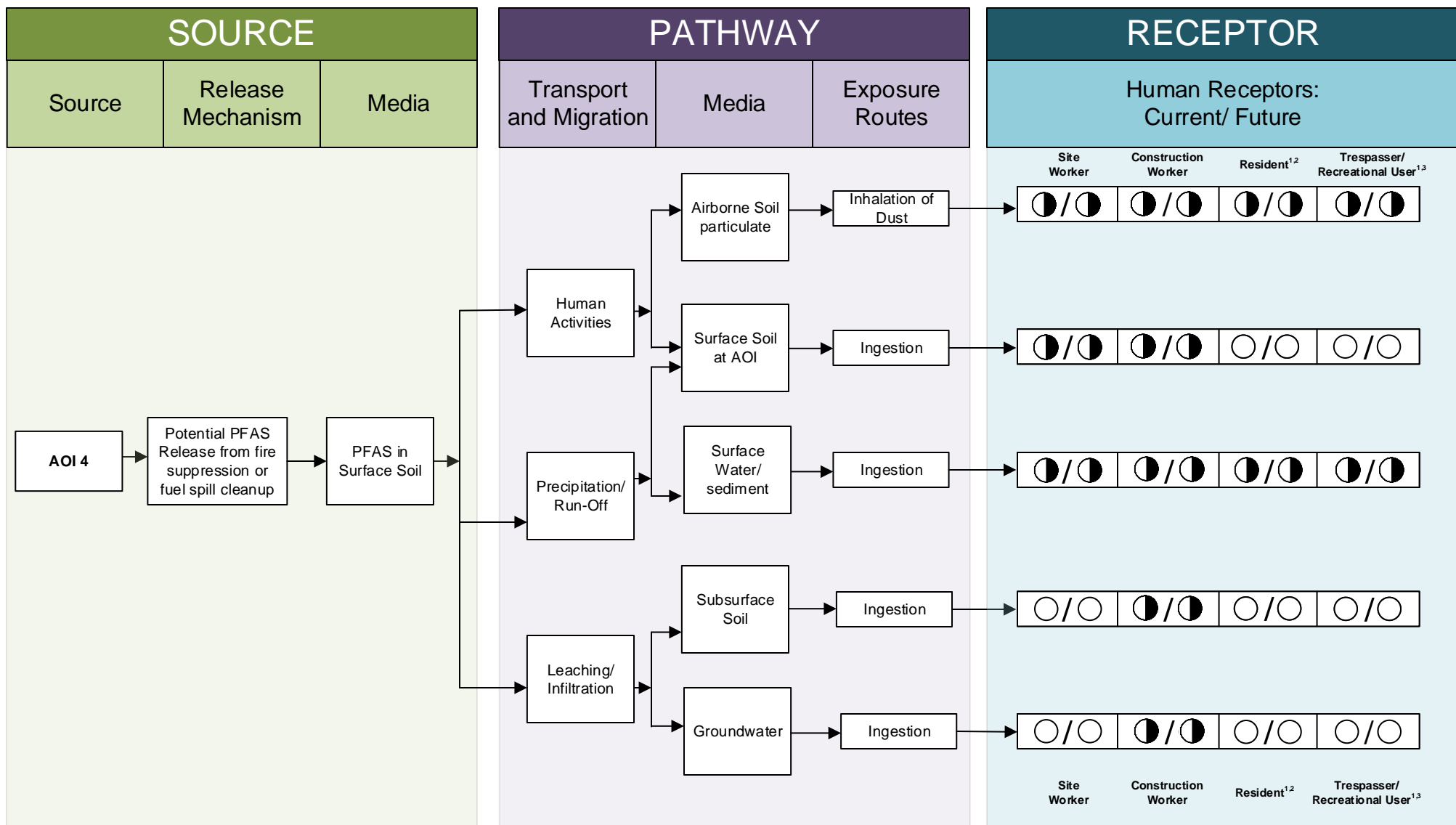
LEGEND

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

NOTES

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

Figure 6-4
Preliminary Conceptual Site Model
AOI 3 Hangar and Apron



LEGEND

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

NOTES

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

Figure 6-5
Preliminary Conceptual Site Model
AOI 4 Former Warehouse, Apron, and UST

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 Saginaw Facility. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

Four AOIs related to potential PFAS release were identified (**Table 7-1**) at Saginaw Facility during the PA (**Figure 7-1**):

Table 7-1: AOIs at Saginaw Facility

Area of Interest	Name	Used by	Potential Release Date
AOI 1	Former Burn Pits	Bell Helicopter-Textron	Approximately between 1957 and 1975
AOI 2	Former JP-4 Storage Building	Bell Helicopter-Textron	Approximately between 1968 and 1990
AOI 3	Hangar and Apron	Bell Helicopter-Textron/ TXARNG	Approximately between 1963 and 1989
AOI 4	Former Warehouse, Apron, and UST	Bell Helicopter-Textron	Approximately 1950 and 1989

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 CSMs for Saginaw Facility are shown on **Figure 6-2** through **Figure 6-5**, which presents the potential receptors and media impacted.

Seven potential off-facility sources of PFAS (Former Main Assembly Building, Former Paint and Assembly Building, Blue Mound Fire Department, Saginaw Fire Department, Fort Worth Meacham International Airport, Har-Conn Aerospace, and Zips Car Wash) were considered as potential PFAS releases in the local area, based on known or inferred current activities. The regional groundwater flow is to the southwest (National Guard Bureau, 2011), but local groundwater flow is influenced by nearby surface water features like Little Fossil Creek (Corrigan Consulting, Inc., 2007).

7.2 Uncertainties

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

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

and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, volume of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, current personnel were interviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected.

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

Table 7-2: Summary of Uncertainties

Location	Source of Uncertainty
AOI 1: Former Burn Pits	The historical activities of Bell Helicopter-Textron at the Former Burn Pits are unknown. Bell Helicopter-Textron operated the facility between 1949 and 1989, and aerial imagery indicates the presence of the Burn Pits approximately between 1957 and 1975. The dates of usage predate the TXARNG occupation of the site in 1996.
AOI 2: Former JP-4 Storage Building	The historical activities of Bell Helicopter-Textron at the Former JP-4 Storage Building are unknown.
AOI 3: Hangar and Apron	The historical activities of Bell Helicopter-Textron at the Hangar and Apron are unknown.
AOI 4: Former Warehouse, Apron, and UST	The historical activities of Bell Helicopter-Textron at the Former Warehouse, Apron, and UST are unknown. It is unknown how long the UST was in use and when the UST was removed.
General	Off-facility VSIs were not conducted, so PFAS usage and/or releases could not be confirmed for the indicated adjacent sources.

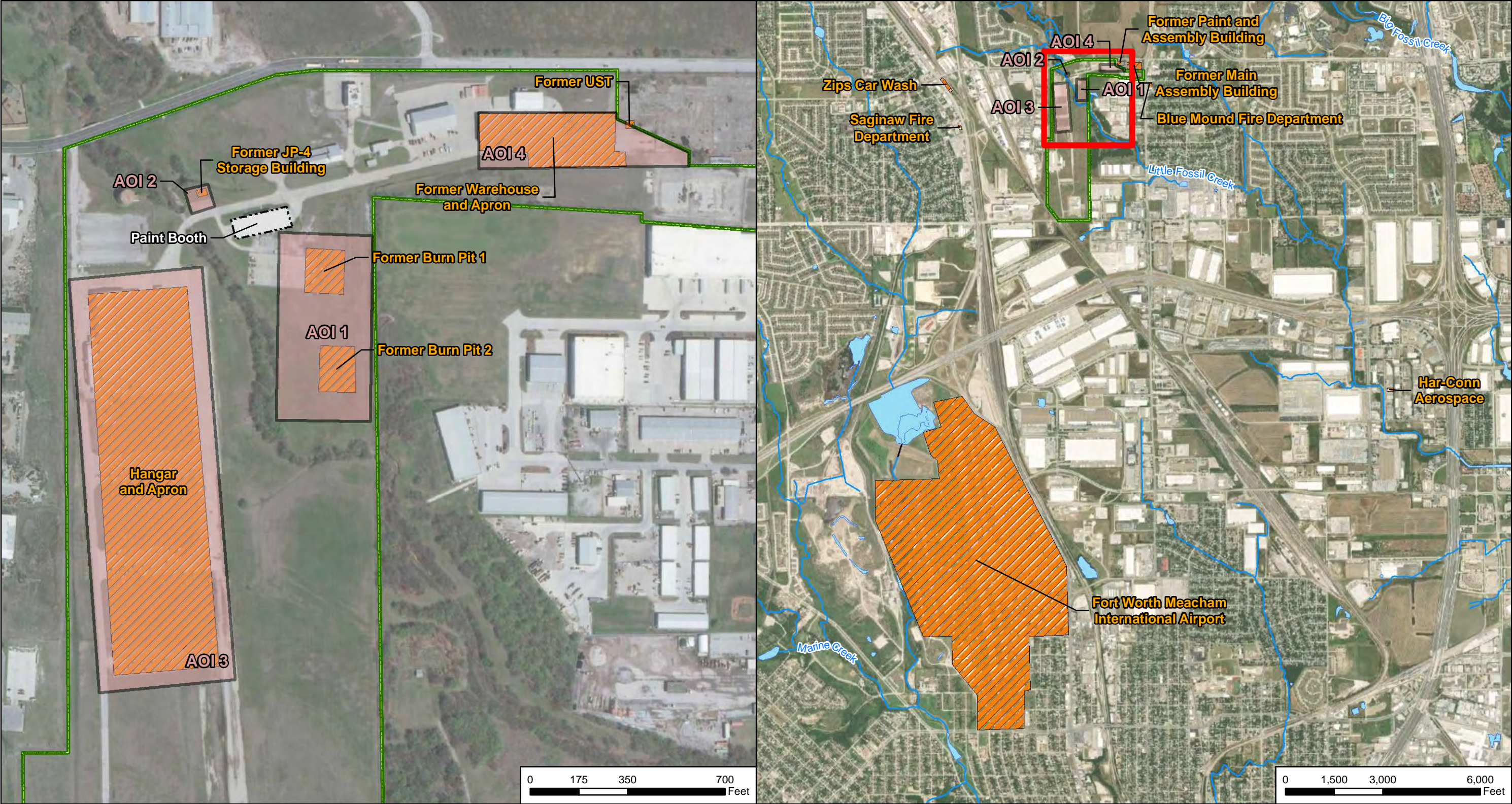
7.3 Potential Future Actions

Interviews with current TXARNG facility staff, whose first-hand knowledge at Saginaw Facility span 1991 – present, and previous environmental documentation indicate that historical activities within on-facility properties may have resulted in a potential PFAS release at the four AOIs identified during the PA. Based on the preliminary CSMs developed for the AOIs, there is potential for receptors to be exposed to PFAS contamination in soil, groundwater, surface water, and sediment at the AOI. **Table 7-3** summarizes the rationale used to determine if the AOIs should be considered for further investigation under the CERCLA process and undergo an SI.

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1: Former Burn Pits	32°51'32.8" N; 97°20'57.5" W	Potential for PFAS releases associated with Former Burn Pit activities	Proceed to an SI, focus on soil, groundwater, surface water, sediment
AOI 2: Former JP-4 Storage Building	32°51'37.5" N; 97°21'02.9" W	Potential for PFAS releases due to historical storage of fuel	Proceed to an SI, focus on soil, groundwater, surface water, sediment
AOI 3: Hangar and Apron	32°51'27.2" N; 97°21'05.3" W	Potential for PFAS releases due to historical storage of aircraft	Proceed to an SI, focus on soil, groundwater, surface water, sediment
AOI 4: Former Warehouse, Apron, and UST	32°51'39.1" N; 97°20'48.2" W	Potential for PFAS releases due to historical storage of fuel and aircraft	Proceed to an SI, focus on soil, groundwater, surface water, sediment

ARNG will evaluate the need for an SI at Saginaw Facility 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 Saginaw Facility, TX			
REVISED	12/3/2021	GIS BY	MS	12/3/2021
SCALE	1:4,200	CHK BY	ST	12/3/2021
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	CM	12/3/2021

- Area of Interest

Potential PFAS Release

No Suspected Release

Facility Boundary
- Water Body

River/Stream

Canal/Ditch

Pipeline



Summary of Findings

AECOM 12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

8. References

- City of Saginaw. 2020. *Annual Drinking Water Quality Report 2020*, Saginaw, TX. <https://www.ci.saginaw.tx.us/ArchiveCenter/ViewFile/Item/1267> (Accessed July 2021).
- Corrigan Consulting, Inc. 2004. *Affected Property Assessment Report, Former Burn Pits Area, Saginaw Facility, Saginaw, Tarrant County, Texas*. August.
- Corrigan Consulting, Inc. 2007. *Status Report, Former Burn Pits Area, Saginaw Facility, Saginaw, Tarrant County, Texas*. August.
- EA. 1991, *Environmental Assessment, Saginaw Army Aircraft Plant, Saginaw, Tarrant County, Texas*. June.
- Google Earth Pro 7.3, 2003, *Saginaw Facility, Texas, 32°51'29.30"N; 91°20'55.57, elevation 860 feet, Accessed 18 November 2021*
- Google Earth Pro 7.3, 2018, *Saginaw Facility, Texas, 32°51'29.30"N; 91°20'55.57, elevation 860 feet, Accessed 24 November 2021*
- Haley & Aldrich. n.d. *PFAS Technical Update: The chrome plating industry*. <https://www.haleyaldrich.com/wp-content/uploads/2020/08/HA-Technical-Update-PFAS-in-the-plating-industry.pdf> (Accessed July 2021).
- Har-Conn Aerospace. 2021. *Services / Processes*. [http://www.hcaerospace.com/Services Processes/](http://www.hcaerospace.com/Services_Processes/) (Accessed July 2021).
- JESCO. 2017. *Final Response Action Plan for Solid Waste Registration Number 82136, Texas Army National Guard Saginaw Facility Former Burn Pit Area*. August.
- JESCO. 2018. *Final Decision Document for Solid Waste Registration Number 82136, Texas Army National Guard Saginaw Facility Former Burn Pit Area*. February.
- Meacham International Airport. n.d. *Services*. <http://meacham.com/airport-guide/> (Accessed July 2021).
- National Ground Water Association. 2018. *Groundwater and PFAS: State of Knowledge and Practice*. January.
- National Guard Bureau. 2011. *Community Involvement Plan for the Investigation and Remediation of the Former Burn Pit Site at the Texas Army National Guard Saginaw Texas Facility*. March.
- National Weather Service Forecast Office. 2018. *Monthly Climate Normals (1991-2020) – Dallas-Forth Worth Area, TX (ThreadEx)*. <https://w2.weather.gov/climate/xmacis.php?wfo=fwd> (Accessed July 2021).
- NTSB. n.d.-a. *National Transportation Safety Board Aviation Accident Final Report FTW89FA117*. <https://app.nts.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20001213X28578&AKey=1&RType=Final&IType=FA> (Accessed July 2021).
- NTSB. n.d.-b. *National Transportation Safety Board Aviation Accident Final Report FTW97FA044*. <https://app.nts.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20001208X07022&AKey=1&RType=Final&IType=FA> (Accessed July 2021).

Terracon Consultants, Inc. 2015. *Response Action Effectiveness Report, Texas Army National Guard, Former Burn Pit Area, 855 East Industrial Avenue, Saginaw, Tarrant County, Texas.* July.

USACE. 1991. *Environmental Assessment, Saginaw Army Aircraft Plant, Saginaw, Tarrant County, Texas.* June.

USACE. 2015. *Final Periodic Review, Texas Army National Guard Saginaw Facility, Saginaw, Tarrant County, Texas.* February.

USEPA. 1991. *Guidance for Performing Preliminary Assessments under CERCLA.* September.

Zips Car Wash. 2019. *Wash Services.* <https://www.zipscarwash.com/wash-services> (Accessed July 2021).

Appendix A

Data Resources

Data resources will be provided separately on CD. Data resources for Saginaw Facility include:

Environmental Data Resources, Inc.™ Geotcheck Report

- 2021 Environmental Data Resources, Inc.™ Geotcheck Report for Saginaw Facility, Texas

Environmental Investigations

- 1991 Environmental Assessment, Saginaw Army Aircraft Plant, Saginaw, Tarrant County, Texas
- 2004 Affected Property Assessment Report (Volume 1 – Worksheets, Attachments & Appendices 1-4), Former Burn Pits Area, Saginaw Facility, Saginaw, Tarrant County, Texas
- 2007 Status Report, Former Burn Pits Area, Saginaw Facility, Saginaw, Tarrant County, Texas
- 2009 Response Action Plan, Texas Army National Guard Saginaw Facility, Saginaw, Tarrant County, Texas
- 2010 Response Action Plan, Texas Army National Guard Saginaw Facility, Saginaw, Tarrant County, Texas (Revised March 2010)
- 2010 Response Action Plan, Texas Army National Guard Saginaw Facility, Saginaw, Tarrant County, Texas (Revised June 2010)
- 2011 Community Involvement Plan for the Investigation and Remediation of the Former Burn Pit Site at the Texas Army National Guard, Saginaw Texas Facility
- 2014 Response Action Effectiveness Report, Texas Army National Guard, Former Burn Pit Area, 855 East Industrial Avenue, Saginaw, Tarrant County, Texas
- 2015 Periodic Review, Texas Army National Guard Saginaw Facility, Saginaw, Tarrant County, Texas
- 2015 Response Action Effectiveness Report, Texas Army National Guard, Former Burn Pit Area, 855 East Industrial Avenue, Saginaw, Tarrant County, Texas
- 2017 Response Action Plan for Solid Waste Registration Number 82136, Texas Army National Guard, Saginaw Facility, Former Burn Pit Area
- 2018 Decision Document, Solid Waste Registration Number 82136, Texas Army National Guard, Saginaw Facility, Former Burn Pit Area

Miscellaneous Information

- Saginaw – Response Action Plan Implementation – Questions and Answers
- State of Texas Plugging Report for Tracking #9958
- State of Texas Plugging Report for Tracking #9959
- 1942 Saginaw Facility Aerial Imagery
- 1950 Saginaw Facility Aerial Imagery
- 1952 Saginaw Facility Aerial Imagery
- 1957 Saginaw Facility Aerial Imagery
- 1963 Saginaw Facility Aerial Imagery
- 1975 Saginaw Facility Aerial Imagery
- 1983 Saginaw Facility Aerial Imagery

- 2009 GeoSearch Texas Water Well Report, TXARNG Saginaw Facility, Saginaw, Tarrant County, Texas 76179
- 2010 Land Survey Maps for Plume Management Zones Parcel A and Parcel B
- 2010 Updated Water Well and Receptor Survey, Former Burn Pit Area, Texas Army National Guard – Saginaw Facility, Saginaw, Tarrant County, Texas

Appendix B

Preliminary Assessment Documentation

Appendix B.1

Interview Records

PA Interview Questionnaire - Other

Facility: Saginaw
 Interviewer: [REDACTED]
 Date/Time: 6/2/21 0915

Interviewee: <u>[REDACTED]</u> Title: <u>Maintenance Supervisor</u> Phone Number: <u>[REDACTED]</u> Email: _____	Can your name/role be used in the PA Report? Y or <u>N</u> Can you recommend anyone we can interview? Y or <u>N</u>
Roles or activities with the Facility/Years working at the Facility:	
<u>Started in 1991 at Saginaw. 1990 state took over control of property.</u> <u>Construction in 1990, finished at end of 1991.</u>	
PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as built), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?	
<u>No mobile fire training carts.</u>	Known Uses
<u>No drums of AFFF.</u>	Use
<u>CSMS or RSMS may have had backpack AFFF</u>	Procurement
<u>fire extinguishers. Never seen those on site.</u>	Disposition
<u>No knowledge of burn pits.</u>	Storage (Mixed)
<u>PCB spill at northern hangar. Hangar was old wood structure - no fire suppression system.</u>	Storage (Solution)
<u>Magas Soogant fire extinguisher at fuel point</u>	Inventory, Off-Spec
<u>Look for 2 fire extinguishers at fuel point. (no AFFF)</u>	Containment
<u>No known crashes/fires/explosions.</u>	SOP on Filling
<u>No metals plating activities. No dining facility.</u>	Leaking Vehicles
<u>Wash rack uses recycled water.</u>	Nozzle and Suppression System Testing
<u>No maintenance of fire trucks.</u>	Dining Facilities
<u>No City of Saginaw fire training activities.</u>	Vehicle Washing
<u>No waxing of floors.</u>	Ramp Washing
<u>Has always been ^{on} city sewer.</u>	Fuel Spill Washing and Fueling Stations
<u>No waxes used in wash bay/wash rack.</u>	Chrome Plating or Waterproofing

Appendix B.2

Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI

and

Recorded by:

ARNG Contact:

Date and Time: 6/2/21 0900

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

Source/Release Information

Site Name / Area Name / Unique ID:

Saginaw Facility

Site / Area Acreage:

Historic Site Use (Brief Description):

RSMS. Previously site was used by Bell Helicopters

Current Site Use (Brief Description):

CSMS / CIF (central distribution for
Hangars, Riggers, USPFO Sattelick Warehouse
equip)

Physical barriers or access restrictions:

Security gates

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):

2. Has usage been documented?

Y/N

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

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

Industrial / Commercial / Plating / Waterproofing / Residential

3a. Indicate what businesses are located near the site

Food processing, meat processing,
pallet company, trucking company

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

Y/N

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

Bell Helicopters at north end of property. Shut down late 70s-early
Water tower and pump house at hangar for fire suppression. 80s
No AFFF use known.

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: No AFFF used - water only
fire suppression system in hangar.

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

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

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

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation?

☒ Y / ☐ N

Little Fossil

1a. If so, note observation and location: off site to Creek

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

☒ Y / ☐ N

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

ditches lead to Little Fossil Creek

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

☒ Y / ☐ N

3a. If so, please note the location: Drinking water wells abandoned - not
for drinking, for fire suppression. Monitoring wells located near burn pits.

4. Are surface water intakes located near the site?

☒ Y / ☐ N

4a. If so, please note the location:

5. Can wind dispersion information be obtained?

☒ Y / ☐ N

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

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

☒ Y / ☐ N

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

Not aware of nearby chrome-plating shops. One car wash nearby

6b. Will off-site reconnaissance be conducted?

☒ Y / ☐ N

Drove to east of facility where 3 additional MWs are located.

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): Buildings demo'd at north side of facility

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:

Receptor Information

1. Is access to the site restricted?

☒ Y / ☐ N

1a. If so, please note to what extent: key pad broken
Typically closed Open gate on north side, otherwise restricted access

2. Who can access the site?

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

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

3. Are residential areas located near the site?

☒ Y / ☐ N

3a. If so, please note the location/distance: To the northwest (2-3 years ago)

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

☒ Y / ☐ N

4a. If so, please note the location/distance/type: High school to the north

5. Are any wetlands located near the site?

☐ Y / ☒ N

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

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description
1	6/2/21 Saginaw Facing E	Burn Pit 1. Monitoring Well in center of burn pit.
2	6/2/21 Saginaw Facing S	Burn Pit 2. 10 MWs in this area (red and yellow stick ups)
3	6/2/21 Off-site to E	3 MWs on east side. Facing W toward Little Fossil Creek.
4	6/2/21 Hangar	Dry chem fire extinguisher in hangar.
5	6/2/21 Hangar	Fire water suppression system (No AFFF)
6	6/2/21 Paint booth	Fire extinguishers in paint booth (no AFFF)
7	6/2/21 Fuel point	Fire extinguishers at fuel point (no AFFF)

Appendix B.3

Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Saginaw Facility

Why has this location been identified as a site?

Historic use of 2 burn pits

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

Car wash located to east of site

Training Events

Have any training events with AFFF occurred at this site? No

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? Toward Little Fossil Creek

Average rainfall?

Any flooding during rainy season? Yes

Direct or indirect pathway to ditches? Direct

Direct or indirect pathway to larger bodies of water?

Does surface water pond any place on site? In ditches

Any impoundment areas or retention ponds? No

Any NPDES location points near the site?

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

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? South

Depth to groundwater? ~25 ft bgs

Uses (agricultural, drinking water, irrigation)? None

Any groundwater treatment systems? No

Any groundwater monitoring well locations near the site? Yes ~15 MWs

Is groundwater used for drinking water? No

Are there drinking water supply wells on installation? No

Do they serve off-post populations? No

Are there off-post drinking water wells downgradient

Waste Water Treatment Plant:

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

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

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

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

Equipment Rinse Water

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

N/A

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

N/A

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker ✓

Construction Worker ✓

Recreational User X

Residential X

Child X

Ecological X

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

High school north of site (1 km)

Residential development directly NW of site.

Documentation



Ask for Engineering drawings (if applicable). N/A

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



Appendix C

Photographic Log



Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS		Saginaw Facility	Saginaw, TX
Photograph No. 1			
Date 6/2/2021 Time			
Description: Burn Pit 1, facing east. A monitoring well is located in the center of the burn pit.			
Orientation: East			
Photograph No. 2			
Date 6/2/2021 Time			
Description: Burn Pit 2, facing south. Several monitoring wells are located in the vicinity of the area.			
Orientation: South			

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Saginaw Facility	Saginaw, TX
<p>Photograph No. 3</p> <p>Date 6/2/2021 Time</p> <p>Description: Three monitoring wells are located east of the property and off-facility.</p> <p>Orientation: West</p>		
<p>Photograph No. 4</p> <p>Date 6/2/2021 Time</p> <p>Description: A dry chemical fire extinguisher located in the hangar.</p> <p>Orientation: Unknown</p>		

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Saginaw Facility	Saginaw, TX
<p>Photograph No. 5</p> <p>Date 6/2/2021 Time</p> <p>Description: Fire suppression system charged with water within the hangar. Out of service sign is displayed.</p> <p>Orientation: Unknown</p>		
<p>Photograph No. 6</p> <p>Date 6/2/2021 Time</p> <p>Description: Fire suppression system in paint booth charged with dry chemical extinguishers affixed to the wall.</p> <p>Orientation: Unknown</p>		

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Saginaw Facility	Saginaw, TX
<p>Photograph No. 7</p> <p>Date 6/2/2021</p> <p>Time</p> <p>Description: Dry chemical fire extinguisher near fuel point.</p> <p>Orientation: South</p>	