

FINAL

Preliminary Assessment Report Sustained Airborne Training Facility Salt Lake City, Utah

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

September 2020

Prepared for:



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UNCLASSIFIED

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AOI	Area of Interest
ARFF	Aircraft Rescue and Fire Fighting
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
EDR™	Environmental Data Resources, Inc.™
FTA	fire training area
HA	Health Advisories
HAZMAT	Hazardous Materials
NCO	Non-Commissioned Officer
NOAA	National Oceanic & Atmospheric Administration
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
ppt	parts per trillion
SATF	Sustained Airborne Training Facility
SI	Site Inspection
UCMR3	Third Unregulated Contaminant Monitoring Rule
UDWR	Utah Division of Water Rights
US	United States
USAAF	United States Army Air Force
USACE	United States Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTANG	Utah Air National Guard
UTARNG	Utah Army National Guard

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 Utah ARNG (UTARNG) Sustained Airborne Training Facility (SATF; the “facility”) that is located at the Salt Lake City International Airport in Salt Lake City, Utah to assess potential PFAS release areas and exposure pathways to receptors. 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 1-day site visit on 18 July 2019 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current SATF personnel during the site visit including the UTARNG Safety Non-Commissioned Officer (NCO) /Hazardous Materials (HAZMAT) Training Manager, the UTARNG Environmental Manager, the Base Civil Engineer, and the Det 4/Det 50 Commander;
- Identified an Area of Interest (AOI) 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 the AOI.

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

Table ES-1: AOI at SATF

Area of Interest	Name	Used by	Release Dates
AOI 1	Building 10	UTARNG	2014

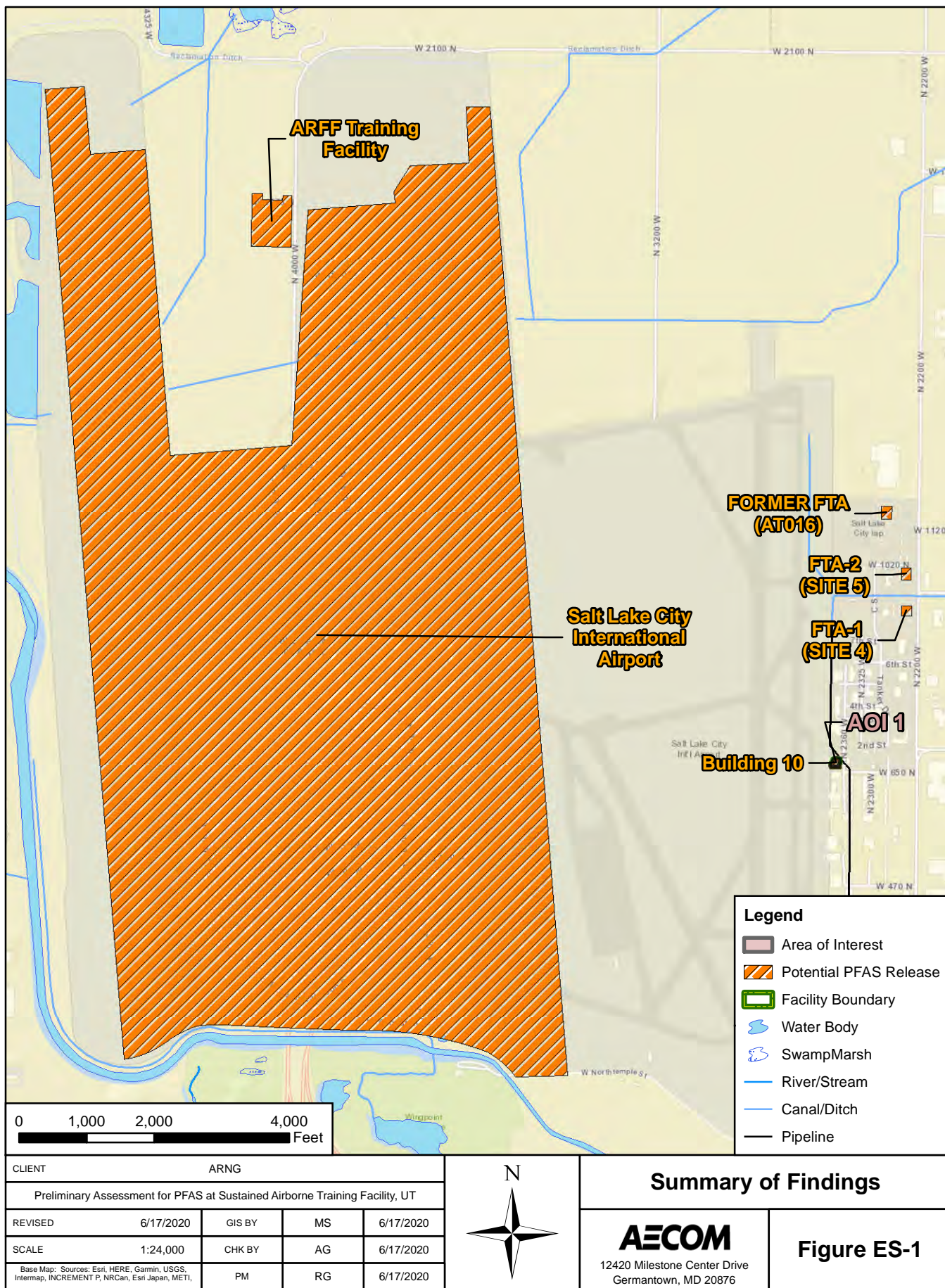
Based on information obtained during the PA, there is potential for exposure to PFAS contamination in surface and subsurface soil to construction workers via ingestion and inhalation; surface water to offsite residents via ingestion, and groundwater to all receptors via ingestion. The preliminary CSM for the SATF is shown on **Figure ES-2**.

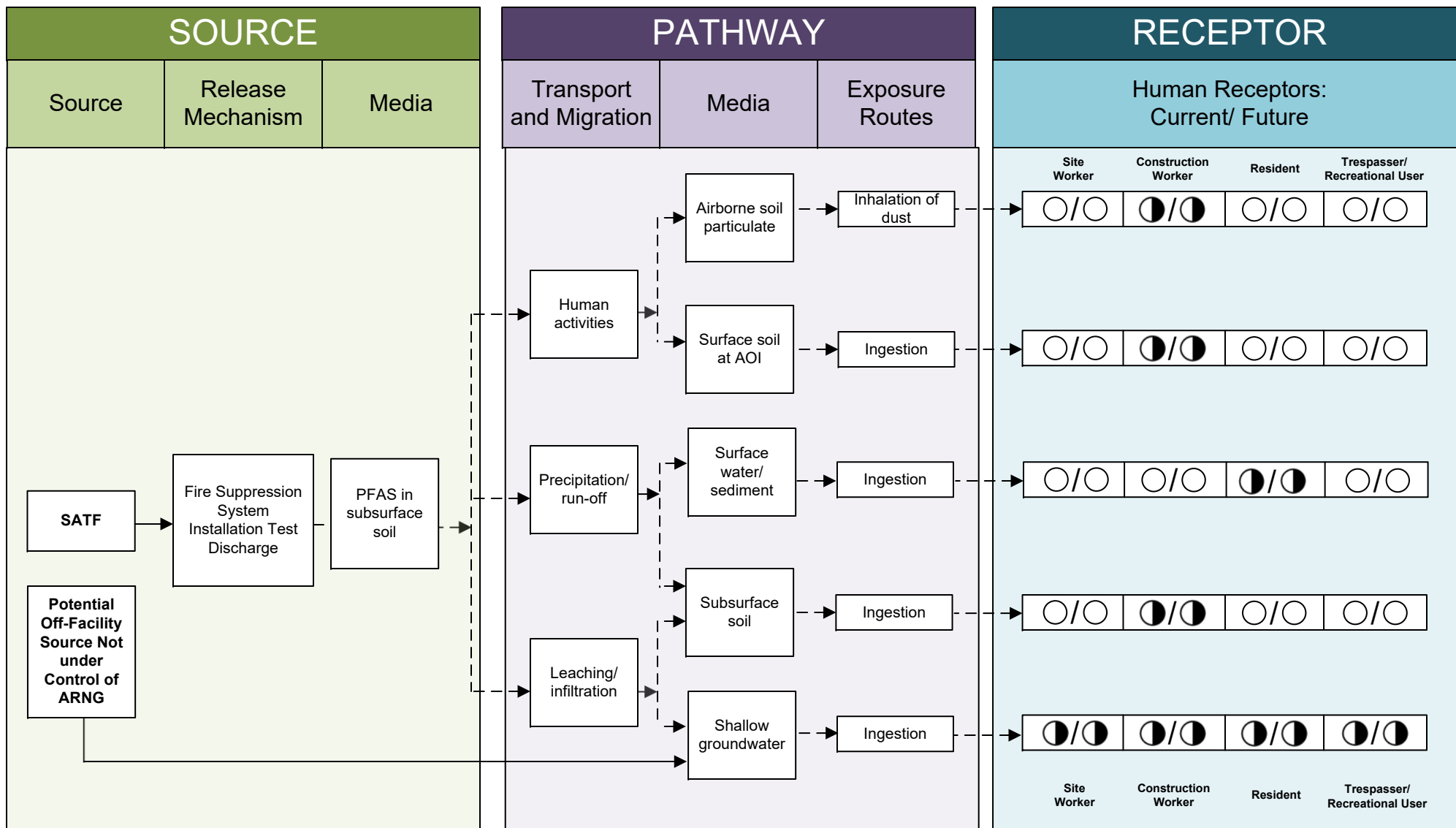
The PA identified two adjacent potential PFAS source areas: the Aircraft Rescue and Fire Fighting (ARFF) Training Center and the Salt Lake City International Airport.

The ARFF is considered a potential adjacent PFAS source area due to its heavy use of aqueous film forming foam (AFFF) from 1998-2018. The Salt Lake City International Airport is considered a potential adjacent source area due to the use of AFFF to extinguish approximately 10 emergency incidents on the runways of the airport, and various system discharges at airport hangars. These potential adjacent PFAS source areas are shown on **Figure ES-1**.

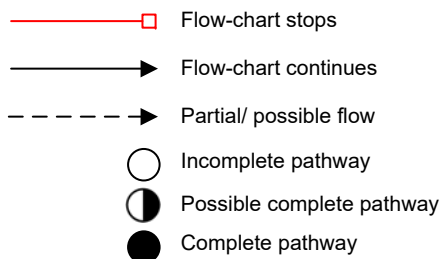
One public well and a number of stock watering, irrigation, domestic, and non-production groundwater wells have been identified in the vicinity of the SATF. The third Unregulated Contaminant Monitoring Rule (UCMR3) data were reviewed to identify nearby sites that exceed

US Environmental Protection Agency (USEPA) lifetime Health Advisory of 70 parts per trillion for PFOA and PFOS, individually or combined; however, none were identified (USEPA, 2017). PFAS analysis 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.





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Notes:

- The resident receptor refers to an off-site resident.
- Current risk practice suggests the exposure pathway for dermal contact is insignificant compared to ingestion, but supporting data is sparse and continues to be studied.
- Based on the topography and water bodies in the vicinity of the SATF, it is assumed groundwater moves from west to east or northeast, towards the Jordan River. The Jordan River is the main source of irrigation water for farms in the Jordan Valley; therefore, the exposure pathway for surface water to the off-facility resident receptor via ingestion is potentially complete.

Figure ES-2
Preliminary Conceptual Site Model
SATF, UT

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 their facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily releases of aqueous film forming foam (AFFF) (used for safety mitigation and emergency response efforts) although other sources of PFAS are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of these PFAS compounds in the environment will vary. The regulatory framework at both federal and state levels continues to evolve. In May 2016, the US Environmental Protection Agency (USEPA) issued lifetime Drinking Water Health Advisories (HAs) of 70 parts per trillion (ppt) for individual and combined PFOA and PFOS in drinking water.

This report presents findings of a PA for PFAS-containing materials at the Utah ARNG (UTARNG) Sustained Airborne Training Facility (SATF; the “facility”) at the Salt Lake City International Airport in Salt Lake City, Utah, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300), and Army requirements and guidance.

This PA documents the known fire training areas (FTAs) as well as additional locations where PFAS may have been released to the environment at the SATF. 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 1-day site visit on 18 July 2019 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current SATF personnel during the site visit including the UTARNG Safety Non-Commissioned Officer (NCO) /Hazardous Materials (HAZMAT) Training Manager, the

UTANRG Environmental Manager, the Base Civil Engineer, and the Det 4/Det 50 Commander.

- Identified an Area of Interest (AOI) 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.

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 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 Off-Facility Sources:** describes sources of potential PFAS release adjacent to the facility that are not under the control of the ARNG.
- **Section 6 – Preliminary Conceptual Site Model:** describes the pathways of PFAS transport and receptors at each AOI.
- **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 History

The SATF is located in Salt Lake County, approximately 6 miles west of Salt Lake City, Utah. The facility is situated southeast adjacent to the Salt Lake City International Airport, at geographic coordinates 40°47'03.1"N; 111°57'28.4"W, in Salt Lake City, Utah, 84116 (**Figure 1-1**).

According to the knowledge of interviewees, the facility was first constructed in the 1940s and used as a US Army Air Force (USAAF) facility until circa 1980, when the Air National Guard acquired the facility and used it as their fire department. The building was used to store firetrucks and AFFF under the jurisdiction of the Air Force. In approximately 2013, the facility was leased to the Army and remodeled with the installation of a fire suppression system. The leasing documentation available in **Appendix A** describes the property leasing by Salt Lake City to the US Government for use of the Utah Air National Guard (UTANG), US Air Force, and Army Aviation flight activities. The lease term began on 1 January 1988 and extends until 30 September 2037.

The SATF building, also referred to as “Building 10”, is the location of Site 8, a remedial site managed by the Air National Guard as an operable unit. The site is the location of two former underground storage tanks containing aviation gasoline, jet fuel (JP-4), or diesel. The source of contamination at Site 8 is attributed to possible releases from an oil-water separator. Groundwater monitoring is currently ongoing at Site 8 following groundwater remediation activities performed during 2014, which consisted of subsurface injection to promote anaerobic reductive dechlorination of contaminants of concern (CH2M Hill, 2015).

1.5 Facility Environmental Setting

The SATF occupies approximately 1 acre which is composed entirely of impervious surfaces (concrete and asphalt). The areas surrounding the SATF are primarily Air National Guard, Air Force, and various facilities in support of the operations of the Salt Lake City International Airport to the west. The facility sits at an elevation of 4,221 feet above mean sea level, with a very slight topographic slope to the northeast. The Great Salt Lake is located approximately 11 miles west of the facility, and the foothills of the Wasatch mountains are located approximately 5.5 miles east of the facility.

1.5.1 Soil

According to the US Department of Agriculture (USDA) soil map, the soils at the facility generally consist of “made land” (USDA, 2019). Because the facility was once inundated by Lake Bonneville during the Pleistocene epoch, the soils underlying any paved surface and imported fill would be silty clay loam, silt loam, and fine sandy loam.

1.5.2 Geology

The SATF is located in the Basin and Range physiographic province. The province is generally composed of northerly-trending, fault-block ranges and intervening, drier basins (Woods et al., 2001). The underlying geology is dominated by deltaic (silt, sand, and clay) and lake deposits. Geologic units are depicted on **Figure 1-2**.

1.5.3 Hydrogeology

The Basin and Range physiographic province is internally drained by ephemeral streams. Based on a review of the topographic map, local groundwater flow in the vicinity and beneath the facility is generally expected to be towards the north and east. Groundwater features are presented on **Figure 1-2**.

Groundwater beneath and in the vicinity of the SATF is not used as a drinking water source. More than 60% of Salt Lake City’s water originates in the mountain streams of the Wasatch Mountains, supplemented with deep wells throughout the Salt Lake Valley. 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. The EDR™ database search returned one public well and a number of stock watering, irrigation, domestic, and non-production groundwater wells in the vicinity of the facility (**Figure 1-2**). The closest underground wells for domestic use are located approximately 0.5 miles east of the facility. Data regarding US Geological Survey (USGS) wells in the area recorded depth to groundwater exists less than 10 feet below ground surface (bgs) (Utah Division of Water Rights [UDWR], 2019).

The third Unregulated Contaminant Monitoring Rule (UCMR3) data were reviewed to identify nearby sites that exceeded the HAs of 70 parts per trillion for PFOA and PFOS, individually or combined; however, none were identified (USEPA, 2017). 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.

1.5.4 Hydrology

The facility is located within the Jordan Hydrologic Unit. The majority of groundwater recharge most likely comes from mountain precipitation and surface waters. The nearest surface water to the subject property is the Jordan River, located approximately 1.1 miles east of the subject property, and which flows into the Great Salt Lake to the north. Stormwater is expected to flow offsite to stormwater drains or runoff in a northeasterly direction down a moderate grade. Surface water features are presented on **Figure 1-3**.

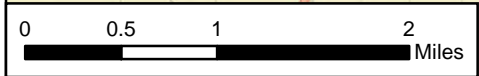
Based on a desktop review of the National Wetlands Inventory online mapping system (<http://wetlands.fws.gov/>; see **Appendix A**), the facility does not contain any mapped wetlands or surface waters; however, there are approximately 465 acres of wetlands west of the airport that were created in the 1990s to compensate for natural wetlands impacted by runway construction (Salt Lake City International Airport, 2019). Due to the close proximity to the wetlands, the depth to groundwater at the facility is expected to be very close to the surface.

1.5.5 Climate

The facility is located in an area characterized by a dry, mid-latitude desert climate, which is marked by hot summers and mild winters (Woods et al., 2001). The annual average high temperature in Salt Lake City is 78.7 degrees Fahrenheit (°F), and the annual low temperature is 29.5 °F, with an annual average temperature of 52.7 °F. The average annual precipitation is 16.10 inches, with most of it falling during the spring (March-May); the driest month is July, with average precipitation of 0.61 inches. The average annual snowfall is 56.2 inches (National Oceanic and Atmospheric Administration [NOAA], 2020).

1.5.6 Current and Future Land Use

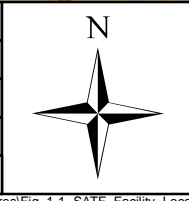
The facility currently operates as a UTARNG Sustained Airborne Training Facility and is comprised of a hangar, maintenance and storage areas, and an administrative office area. Reasonably anticipated future land use is not expected to change significantly from the current land use described above.



Legend

Facility Boundary

CLIENT		ARNG			
Preliminary Assessment for PFAS at Sustained Airborne Training Facility, UT					
REVISED	6/19/2020	GIS BY	MS	6/19/2020	
SCALE	1:63,360	CHK BY	AG	6/19/2020	
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	6/19/2020	



Facility Location

12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1



2. Fire Training Areas

UTARNG personnel confirmed there have been no fire training activities with AFFF at the facility since at least 2013, when the ARNG first occupied the facility. Interviewees had knowledge of operations dating back to 2013.

One FTA used by all airport units (including the UTARNG) exists within the vicinity of the UTARNG property and is discussed in **Section 5**.

3. Non-Fire Training Areas

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

3.1 Building 10

Building 10 was used as the UTANG fire station since the 1940s until approximately 2009. During the time this building was being used as a fire station, AFFF for the fire engines was stored onsite in 55-gallon drums and a 1,000-gallon trailer. Fire truck washing was also performed at the site. A building floor drain system captured liquids and transported them to the municipal sewer system (CH2M Hill, 2015).

A fire suppression system was installed at the facility when it was renovated circa 2014, and one full scale discharge test was conducted at installation. After the test, the foam was reportedly washed down the trench drains in the building, which flow to the oil/water separator before discharging to the municipal sewer system.

The sanitary sewer system is serviced by the Salt Lake City Public Utilities Department. Wastewater is conveyed to the Salt Lake City Water Reclamation Facility, which provides secondary wastewater treatment, and discharges to Farmington Bay.

During the renovation of the building, the sewage pipes were accidentally hooked to the oil/water separator and were replumbed circa 2015. During the replumbing activities, a break in the pipe was discovered. It is unknown if the break in the pipe were already existing or a result of the replumbing activities. The oil/water separator was reportedly damaged, and a bladder was inserted. During the system test, the drains were hooked to the oil/water separator; it is unknown if the discharge path of the foam were affected by the break in the pipe.

One AFFF tank containing 55 gallons of Jet-X 2% high expansion foam concentrate was observed in the building's mechanical room. Corroded concrete observed below the tank faucet indicated a slow leak coming from the tank. There were no signs that the leak had ever flowed farther than the immediate vicinity of the concrete directly below the tank, and therefore, there is no suspected release to soil, groundwater, or to drains leading to the sanitary sewer system.



CLIENT		ARNG			
Preliminary Assessment for PFAS at Sustained Airborne Training Facility, UT					
REVISED	6/17/2020	GIS BY	MS	6/17/2020	
SCALE	1:2,400	CHK BY	AG	6/17/2020	
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	6/17/2020	



Non-Fire Training Area

12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

4. Emergency Response Areas

No emergency response areas for incidents involving the use of AFFF were identified within the footprints of the SATF during the PA based on interviewee knowledge dating back to 2013. Emergency response locations have been identified in areas surrounding the facility and are described in **Section 5**.

5. Adjacent Off-Facility Sources

Two potential off-facility sources of PFAS adjacent to the facility were identified during the PA through interviews. A description of each potential adjacent source identified during the PA interviews is presented below, and the sources are shown on **Figure 5-1**.

5.1 Aircraft Rescue and Fire Fighting Training Center

The Aircraft Rescue and Fire Fighting (ARFF) Training Center is located approximately 2 miles northwest of the facility, at the Salt Lake City International Airport. The ARFF training center operated as an international fire-fighting training center from 1997-2018. The ARFF training center has a replica aircraft and burn pit where firefighters can train for fire emergencies. Firefighters at Fire Station 11 stated that various types and quantities of AFFF were used in this location on a daily basis. All firetruck and hose cleaning after the use of AFFF was conducted at the ARFF. Approximate geographic coordinates for fire training activities (based on description) are 40°48'21"N; 111°59'18"W.

5.2 Salt Lake City International Airport

Fire Station 11 provides fire support for the Salt Lake City International Airport and surrounding areas. Station 11 firefighters stated that in the last ten years, there have been less than ten emergency incidents that required the use of fire-fighting foam on the runways of the Salt Lake City International Airport. These firefighters also reported knowledge of two to three foam system discharges at the Delta Hangar in the last ten years. The firefighters and airport personnel both stated that all foam training and equipment cleanup took place at the ARFF, and that only water was deployed in the fire stations.

Since the exact location of the emergency incidents and system discharges at the Salt Lake City International Airport are unknown, the entire airport is considered a potential adjacent source.

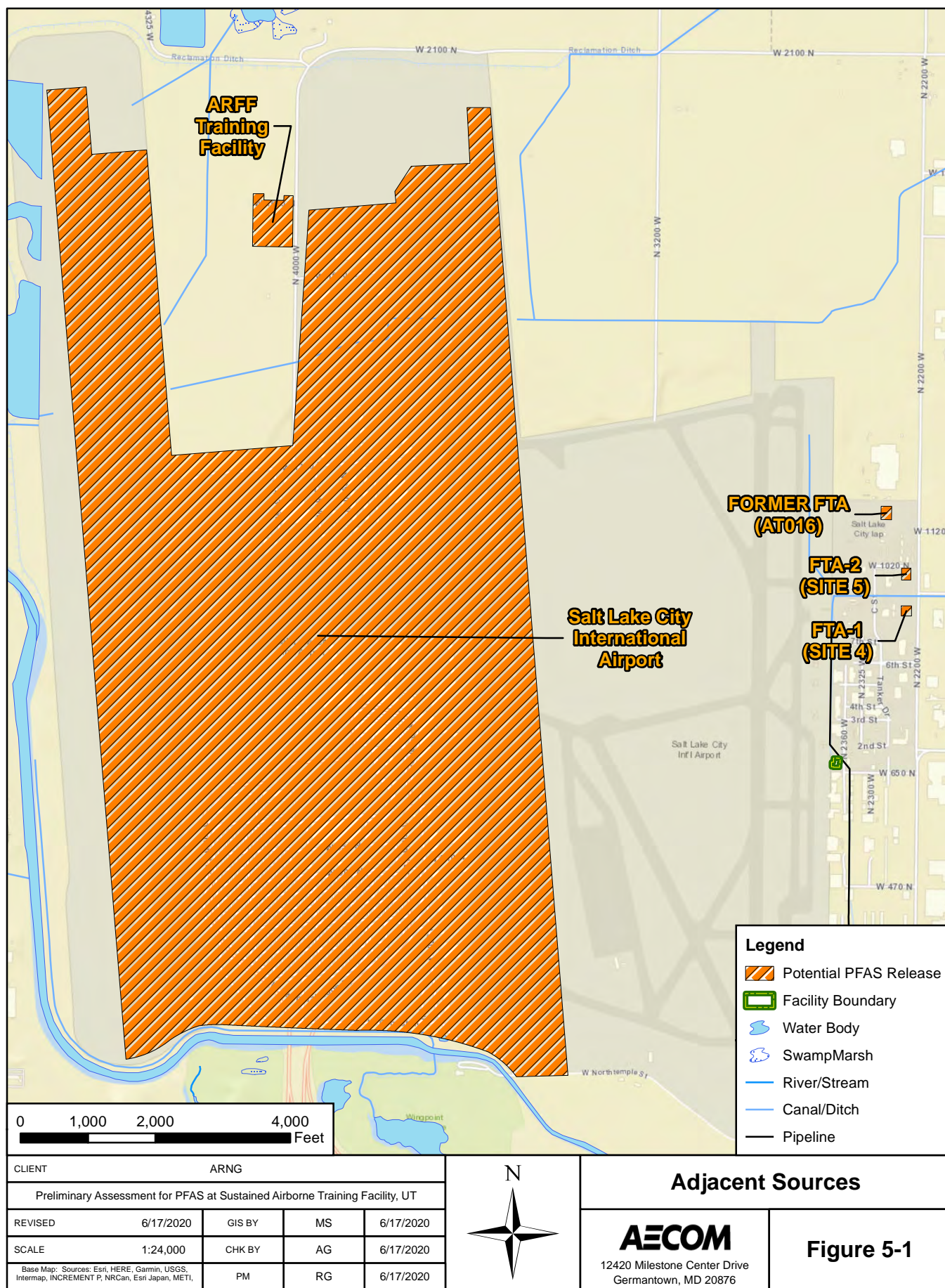
5.3 Former Fire Training Areas

Three former fire training areas were investigated during a Site Inspection of AFFF conducted by the Utah Air National Guard in 2018 as listed below.

- Area 1 - Former FTA-1 (Site 4): Located 0.45 miles northeast of the SATF at approximate geographic coordinates 40°47'26.3"N 111°57'15.3"W. Currently a paved parking lot used for recreational vehicle storage. Used for annual fire training exercises from 1947 to 1972.
- Area 2 - Former FTA-2 (Site 5): Located 0.54 miles northeast of the SATF at approximate geographic coordinates 40°47'31.3"N 111°57'14.9"W. Currently a paved parking area for heavy machinery. Used two or three times for firefighting training between 1973 and 1975.
- Area 3 - Former FTA (AT016): Located 0.7 miles northeast of the SATF at approximate geographic coordinates 40°47'39.6"N 111°57'18.8"W. Currently an open area with low vegetation. Used for annual fire training from 1978 to approximately 1983.

These three areas were selected for SI based on potential or known use of AFFF during training activities; however, quantities of AFFF discharged were unknown. All three areas were found to have a potentially complete groundwater pathway for human digestion. An expanded SI was recommended for all three areas to determine whether groundwater impacted with PFOA/PFOS from previous on-base fire-fighting activities is migrating off base and presents a possible threat

to human health via ingestion of contaminated drinking water, followed by advancement into Remedial Investigation.



6. Preliminary Conceptual Site Model

Based on the PA findings, there was one fire suppression system test at the facility with a confirmed discharge of AFFF to the trench drains in the building. The trench drains discharge to the oil/water separator, which was subsequently found to be damaged. It is unknown if the piping were damaged at the time of the AFFF release. As such, the soil under the SATF building has been determined an AOI and a possible PFAS source area. The AOI and preliminary CSM for the AOI are shown on **Figures 6-1** and **6-2**, respectively, and are summarized below.

The following sections describe the CSM components and the specific preliminary CSM developed for the AOI. The CSM identifies the three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

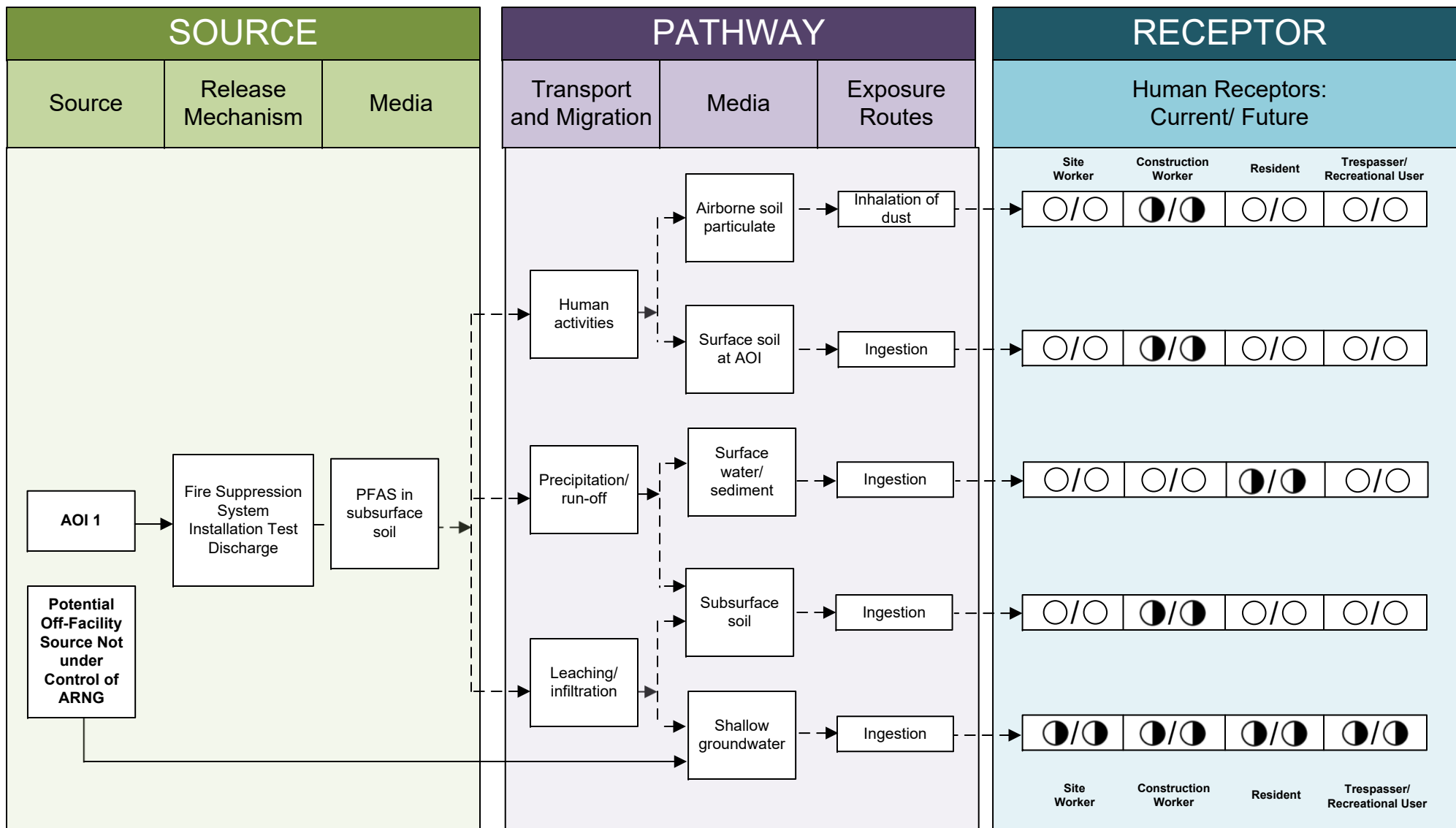
In general, the potential PFAS exposure pathways are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the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

6.1 AOI 1: Building 10

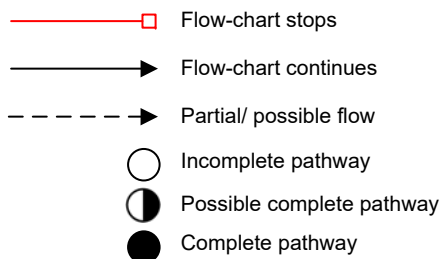
AOI 1 comprises the footprint of Building 10. The UTANG used the building as a fire station since the 1940s until 2009. The fire station had stored AFFF and AFFF-capable trucks that may have resulted in releases to the ground surface or municipal sewer system.

Since the UTARNG has occupied the building, there has been one known discharge of AFFF. The discharge of AFFF in the hangar area during the fire suppression system test in 2014 may have resulted in a release to a potentially broken pipe and subsequently, directly into the subsurface.

PFAS are water soluble and can migrate readily from soil to groundwater or surface water via leaching and run-off. If PFAS releases to the subsurface soil occurred, it is possible that PFAS have migrated from subsurface soil at AOI 1 to groundwater and waters in the Jordan River, and therefore, the exposure pathway for groundwater to the off-facility resident receptor is potentially complete. Based on the topography and water bodies in the vicinity of the SATF, it is assumed groundwater moves from west to east or northeast, towards the Jordan River. The Jordan River is the main source of irrigation water for farms in the Jordan Valley; therefore, the exposure pathway for surface water to the off-facility resident receptor via ingestion is potentially complete. Ground-disturbing activities to subsurface soil could present another potentially complete exposure pathway to construction workers via ingestion of subsurface soil. There is no exposed surface soil present at the facility. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.



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Notes:

- The resident receptor refers to an off-site resident.
- Current risk practice suggests the exposure pathway for dermal contact is insignificant compared to ingestion, but supporting data is sparse and continues to be studied.
- Based on the topography and water bodies in the vicinity of the SATF, it is assumed groundwater moves from west to east or northeast, towards the Jordan River. The Jordan River is the main source of irrigation water for farms in the Jordan Valley; therefore, the exposure pathway for surface water to the off-facility resident receptor via ingestion is potentially complete.

Figure 6-2
Preliminary Conceptual Site Model
SATF, UT

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

7.1 Findings

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

Table 7-1: AOI at SATF

Area of Interest	Name	Used by	Release Dates
AOI 1	Building 10	UTARNG	2014

Based on information obtained during the PA at this AOI, there is potential for exposure to PFAS contamination in subsurface soil to construction workers via ingestion and inhalation; surface water to offsite residents via ingestion, and groundwater to all receptors via ingestion. There were no suspected PFAS releases to the environment by the UTARNG outside the SATF building.

Adjacent potential PFAS release areas were identified within the vicinity of the SATF. The ARFF is considered a potential adjacent PFAS source area due to its heavy use of AFFF from 1998-2018. The Salt Lake City International Airport is considered a potential adjacent source area due to the use of AFFF to extinguish approximately ten emergency incidents on the runways of the airport and various system discharges at airport hangars. These potential adjacent PFAS source areas are shown on **Figure 7-1**.

7.2 Uncertainty

A number of information sources were investigated during this PA to determine the potential for PFAS-containing materials to have been present, used, or released at the facility. Historically, documentation of PFAS use was not required because PFAS were considered benign. Records were not typically kept by the ARNG on the use of PFAS in emergency response or by non-ARNG units during training events at ARNG facilities.

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. The conclusions of this PA are predominantly based on the information provided during interviews with personnel who had direct knowledge of PFAS use at the facility or its surrounding areas. Sometime, 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. 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 at adjacent sources were reviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected. **Table 7-2** summarizes the uncertainties associated with the PA:

Table 7-2: Uncertainties within the PA

Location	Source of Uncertainty
SATF (the Facility)	<p>Foam was discharged down the building drains which flow to the oil/water separator. It is unknown if the discharge path of the foam were affected by a break in the pipe found during subsequent replumbing activities. The location was also previously used by the Air Force as a fire station. It is likely that AFFF was used and/or stored on site. The type, volume, and concentration of AFFF used or stored at the facility during Air Force possession are unknown. It is also unknown if equipment testing, nozzle testing, equipment washing, and line purging occurred at the facility.</p> <p>It is unknown if AFFF were stored or discharged onsite prior to 1980 when the building was used as USAAF facility.</p> <p>The building operated as an Air Force fire station circa 1980 until 2013. It is unknown if AFFF was discharged onsite.</p>
Aircraft Rescue and Fire Fighting Training Center – off facility	The type, volume, and concentration of AFFF used to extinguish the training fires are unknown.
Salt Lake City International Airport (Various Runway Crashes) – off facility	The exact location of the various runway crashes at the Salt Lake City Airport since the 1940s is unknown. The type, volume, and concentration of AFFF used to extinguish the fires are unknown.
Former Fire Training Areas – off facility	It is unknown if groundwater impacted with PFOA/PFOS from previous on-base fire-fighting activities is migrating off base and presents a possible threat to human health via ingestion of contaminated drinking water.

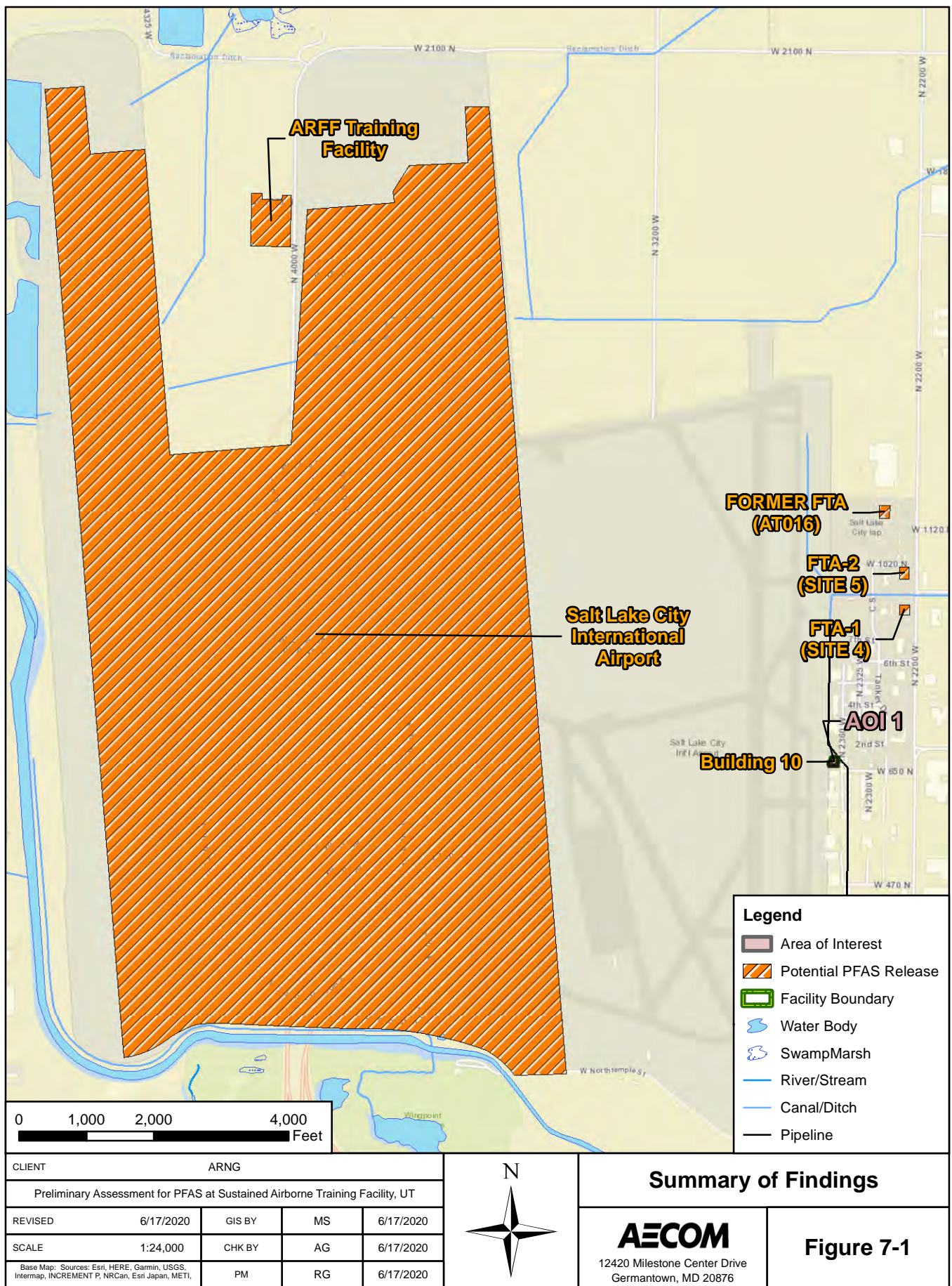
7.3 Potential Future Action

Interviews and records (covering 1994 to present) indicate that current or former ARNG activities may have resulted in a potential PFAS release at the AOI identified during the PA. Based on the preliminary CSM developed for the AOI, there is potential for receptors to be exposed to PFAS contamination in soil, surface water, sediment, and groundwater at the AOIs. **Table 7-3** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo an SI.

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1: Building 10	40°47'03.1"N 111°57'28.4"W	Confirmed location of AFFF system test by interviewee with direct knowledge.	Proceed to an SI, focus on soil, surface water, sediment, and groundwater.

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



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8. References

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Appendix A

Data Resources

Data resources will be provided separately on CD. Data resources for Sustained Airborne Training Facility, Utah include:

Environmental Data Resources, Inc.TM Geospatial Report

- 2019, Environmental Data Resources, Inc.TM Geospatial Report for SATF, N 2380 W Street, Salt Lake City, UT 84116.

Lease Information

- 1988, U.S. Government Lease for Real Property. City and County Building, Salt Lake City, Utah 84101. Approved May 24, 1988.

Utah Air National Guard Reports

- 2015, Preliminary Assessment Report for Perfluorinated Compounds at Utah Air National Guard, Salt Lake City, Utah. June 2015.
- 2018, Site Inspection Report of Aqueous Film Forming Foam Areas at Utah Air National Guard, Salt Lake City, Utah. October 2018.

Appendix B

Preliminary Assessment Documentation

Appendix B.1

Interview Records

PA Interview Questionnaire - Environmental Manager Facility: Sustained Airborne Training Facility (SATF)

Interviewer: [REDACTED]

Date/Time: 07/19/2019 / 0900

Interviewee: [REDACTED] Title: Deputy Environmental Program Manager (Water Engineer)/Environmental Management Phone Number: [REDACTED] Email: [REDACTED]	Can your name/role be used in the PA Report? (Y) or N Can you recommend anyone we can interview? Y or (N)
<p>1. Roles or activities with the Facility/years working at the Facility.</p> <p>Deputy EPM (Water Engineer)/Environmental Management. Has been involved with the property since 2014 when the building was acquired.</p>	
<p>2. Where can I find previous facility ownership information?</p> <p>Property was previously used by the Air Force.</p>	
<p>3. What can you tell us about the history of PFAS including aqueous film forming foam (AFFF) at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.</p> <p>Maintenance Fire Training Areas Firefighting (Active Fire) Crash Fire Suppression Systems (Hangers/Dining Facilities) Fire Protection at Fueling Stations Non-Technical/Recreational/ Pest Management Metals Plating Facility Waterproofing Uniforms (Laundry Facilities) Other</p>	
<p>4. Fill out CSM Information worksheet with the Environmental Manager.</p>	
<p>5. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing the AFFF/suppression system? Do you have "As Built" drawings for the buildings?</p> <p>Foam system was put in approximately 5 years ago. Only discharge once at installation.</p>	

PA Interview Questionnaire - Environmental Manager Facility: Sustained Airborne Training Facility (SATF)

Interviewer: [REDACTED]

Date/Time: 07/19/2019 / 0900

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

Currently charge with AFFF.

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

Not Applicable.

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)?

High Expansion foam concentrate.

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?

Stored within system.

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?

None at this building.

PA Interview Questionnaire - Environmental Manager Facility: Sustained Airborne Training Facility (SATF)

Interviewer: [REDACTED]

Date/Time: 07/19/2019 / 0900

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?

Foam from initial system discharge was washed down the drain. No other releases.

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?

Not aware of any since the army leased the building.

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

None.

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

Not Applicable.

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

No known crashes on site since 2014.

PA Interview Questionnaire - Environmental Manager Facility: Sustained Airborne Training Facility (SATF)

Interviewer: [REDACTED]

Date/Time: 07/19/2019 / 0900

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 fuel spills since 2014.

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

Fire management is conducted by Fire Station 11.

18. Are there mutual aid/use agreements between county, city, and local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement?

Not applicable.

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)?

None.

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

None

PA Interview Questionnaire - Environmental Manager Facility: Sustained Airborne Training Facility (SATF)

Interviewer: [REDACTED]

Date/Time: 07/19/2019 / 0900

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.

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

No records.

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

No

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

Not Applicable.

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

Not Applicable.

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

Not Applicable

PA Interview Questionnaire - Other**Facility:** Sustained Airborne Training Facility (SATF)**Interviewer:** [REDACTED]**Date/Time:** 07/18/2019 / 0830

Interviewee: [REDACTED] Title: Det 4/Det 50 Commander Phone Number: _____ Email: _____	Can your name/role be used in the PA Report? <input checked="" type="radio"/> Y or N Can you recommend anyone we can interview? Y or <input checked="" type="radio"/> N _____
Roles or activities with the Facility/Years working at the Facility:	
Det 4/Det 50 Commander; 5 years at facility	
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?	
<p>Army did not control building prior to five years ago. Fire fighting efforts at this facility were done by the air force.</p> <p>Building was remodeled 5 years ago when the army took possession of the facility. Groundwater samples were taken at this time.</p> <p>AFFF system was put in 5 years ago before the renovation; the building likely just had sprinklers before that. Foam in hangar is 5 years old, and has only been discharged during the full scale test at installation. [REDACTED] heard from a friend who filmed on his phone that it went well past 8 feet, the room filled up in seconds. According to the mechanics consulted by [REDACTED] during the interview, they just washed it down the drain. No accidental discharges have occurred since then. No issues with bladder in tank or system at all.</p> <p>Drains go to oil/water separator. During the renovation, sewage was accidentally hooked to the oil/water separator and had to be dug out approximately 4 years ago. There was a break in the pipe. The o/w separator was damaged, so a bladder was inserted. The o/w separator goes to sewer system. They don't drain oil into the drain, it's just for wash water. Sump has probably been pumped out a couple times. For the first year and a half or 2 years, the sump pump kept tripping the breaker and there would be backup but that hasn't happened in a few years. O/w separator gets pumped out every 6 months or as needed; about once a year.</p> <p>Mobile extinguishers are owned by air force. Might be Halon. One in the hangar.</p>	

PA Interview Questionnaire - Other**Facility:** Sustained Airborne Training Facility (SATF)**Interviewer:** [REDACTED]**Date/Time:** 07/18/2019 / 0830

Interviewee: [REDACTED] Title: Safety Non-Commissioned Officer (NCO) and Hazardous Materials (HAZMAT) Manager Phone Number: _____ Email: _____	Can your name/role be used in the PA Report? <input checked="" type="radio"/> Y or N Can you recommend anyone we can interview? Y or <input checked="" type="radio"/> N _____
Roles or activities with the Facility/Years working at the Facility:	
[REDACTED] has worked with the facility since 1994. Brother was firefighter here for 16 years	
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?	
<p>The army never had their own fire truck at the facility. Fire protection is by ANG fire station. No joint fire training here. Last emergency was in the early 80s, handled by fire department. Had to put an aircraft fire out on the concrete. [REDACTED] is not aware of any other crashes in the area.</p> <p>There is an oil refinery 4 miles away. Firefighting training facility is on the west side, approx. a mile and a half away at the airport. Regular training and discharge there. Guard has used it in the past for joint training. Landfill to the north, another 3.5 miles southwest.</p> <p>No bulk storage of AFFF at the facility, only what's in the system tank. No wash rack onsite. Only wash in the hangar. No significant fuel spills.</p>	

PA Interview Questionnaire - Other**Facility:** Sustained Airborne Training Facility (SATF)**Interviewer:** [REDACTED]**Date/Time:** 07/18/2019 / 0900

Interviewee: [REDACTED] Title: Base Civil Engineer Phone Number: _____ Email: _____	Can your name/role be used in the PA Report? <input checked="" type="radio"/> Y or N Can you recommend anyone we can interview? Y or <input checked="" type="radio"/> N _____
Roles or activities with the Facility/Years working at the Facility:	
6 Years Base Civil Engineer at the facility	
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?	
When ARNG took over the facility they accepted all conditions of the building, but it only includes the building. Building was included in a survey for air guard. Since it was an old fire station it likely had chemicals here, [REDACTED] to look into this. Not aware of any on base crashes. Mostly testing and training. No well on the base. Only municipal water. There are number of sampling wells onsite.	

Appendix B.2

Visual Site Inspection Checklists

Facility ST
Visual Survey Inspection Log

Recorded by: [REDACTED]
ARNG Contact: [REDACTED]

Date: 7/18/19

Site Name / Area Name / Unique ID:

SATF

Site / Area Acreage:

1 acre

Historic Site Use (Brief Description):

Army until 1980. Air Force Fire Station until 2013

Current Site Use (Brief Description):

UTARNG Sustained Airborne Training Facility

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)

System test @ installation circa 2014

2. Has usage been documented?

☒ Y ☐ N

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

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.)

Remodeled in 2013/2014

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 :

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:

4. Have man-made drainage channels been constructed within the site/area?

☒ Y ☐ N

4a. If so, please note the location of the channel:

Additional Notes

Appendix B.3

Conceptual Site Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: SATF

Why has this location been identified as a site? Release of AFFF during system test, washed down drains, potential break in pipe

Are there any other activities nearby that could also impact this location? West adjacent airport, Aircraft Rescue and Fire Fighting Training Center to northwest.

Training Events

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

If so, how often? NA

How much material was used? Is it documented? NA

Identify Potential Pathways: Do we have enough information to fully understand over land surface water flow, groundwater flow, and geological formations on and around the facility? Any direct pathways to larger water bodies?

Surface Water:

Surface water flow direction? Northeast

Average rainfall? 18.6 inches annually

Any flooding during rainy season? No

Direct or indirect pathway to ditches? No

Direct or indirect pathway to larger bodies of water? Potentially

Does surface water pond any place on site? No

Any impoundment areas or retention ponds? No

Any NPDES location points near the site? Wetlands to west & north

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

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Northeast

Depth to groundwater? <10 ft

Uses (agricultural, drinking water, irrigation)? Domestic, stockwater, irrigation

Any groundwater treatment systems? yes

Any groundwater monitoring well locations near the site? yes

Is groundwater used for drinking water? No

Are there drinking water supply wells on installation? No

Do they serve off-post populations? NA

Are there off-post drinking water wells downgradient? yes

Waste Water Treatment Plant:

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

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

Do we understand the fate of sludge waste? NA

Is surface water from potential contaminated sites treated? NA

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go? Done onsite. previous use as fire station - All washing reportedly done at ARFF

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?

Previous use as fire station - All nozzle testing/cleaning done at ARFF

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker *yes*

Construction Worker *yes*

Recreational User *yes*

Residential *yes*

Child *yes*

Ecological *yes*

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

Mixed use area, all of the above

Documentation



Ask for Engineering drawings (if applicable).

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



Replumbing occurred 2014/2015, Sewage incorrectly piped to oil/water separator

Appendix C

Photographic Log

Appendix C - Photographic Log		
Army National Guard, Preliminary Assessment for PFAS	Sustained Airborne Training Facility	Salt Lake City International Airport, UT
Photograph No. 1 Date 7/18/2019 Time 10:28 Description: Photograph depicts the exterior of the SATF. Orientation: West		
Photograph No. 2 Date 7/18/2019 Time 10:22 Description: Photograph depicts the airground directly outside the facility, with the Salt Lake City International Airport in the background. Orientation: West		

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Sustained Airborne Training Facility	Salt Lake City International Airport, UT
<p>Photograph No. 3</p> <p>Date 7/18/2019 Time 10:12</p> <p>Description: Photograph depicts a 200 gallon tank containing Jet-X 2% high expansion foam concentrate, with evidence of a leak on the concrete under tank.</p> <p>Orientation: Northeast</p>	 <p>The photograph shows a large, red, horizontal cylindrical tank mounted on a concrete pad. The tank has several red lifting eyes and a red valve assembly on the left end. A white label with red text is visible on the side of the tank. The ground around the base of the tank appears wet, indicating a leak. The background shows an industrial setting with various pipes and equipment.</p>	
<p>Photograph No. 4</p> <p>Date 7/18/2019 Time 10:18</p> <p>Description: Photograph depicts the room housing the fire suppression system.</p> <p>Orientation: North</p>	 <p>The photograph shows a room filled with fire suppression equipment. In the foreground, there are several red fire pumps and associated piping. In the background, there are large red tanks and more complex piping systems. The room has a high ceiling and large windows, and the equipment is organized in a systematic manner.</p>	

Appendix C - Photographic Log

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

Sustained Airborne Training Facility

**Salt Lake City International
Airport, UT**

Photograph No. 5

Date 7/18/2019

Time 10:19

Description:

Photograph depicts the mobile Amerex unit observed in the hangar.



Orientation:

Southeast

Photograph No. 6

Date 7/18/2019

Time 10:25

Description:

Photograph depicts the trench drains and two monitoring wells observed in the hangar.



Orientation:

North