FINAL
Preliminary Assessment Report
High Altitude Aviation Training Site, Gypsum, Colorado

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

October 2020

Prepared for:

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

UNLCASSIFIED

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AMEC	AMEC Earth and Environmental, Inc.
AOI	Area of Interest
ARFF	Aircraft Rescue and Firefighting
ARNG	Army National Guard
CAF	Compressed Air Foam
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COARNG	Colorado Army National Guard
CSM	conceptual site model
EDR™	Environmental Data Resources, Inc.
EGE	Eagle County Regional Airport
ERWVFA	Eagle River watershed valley-fill aquifer
FAA	Federal Aviation Administration
FTA	fire training area
GA	general aviation
HAATS	High Altitude Aviation Training Site
HAZMAT	Hazardous materials
NOAA	National Oceanic and Atmospheric Administration
OWS	Oil-water separator
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site Inspection
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VVJC	Vail Valley Jet Center
WWTP	Wastewater treatment plant

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 High Altitude Aviation Training Site (HAATS; also referred to as the "facility"), in Gypsum, Colorado, 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)™ 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 telephone interviews on 18 December 2019 with current Colorado ARNG (COARNG) personnel, including the Environmental Protection Specialist, the Facility Unit Environmental Compliance Officer, and the Western Region Maintenance Supervisor stationed at the facility;
- 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.

No documented releases of PFAS-containing materials were identified nor did interviewees recall any undocumented release AFFF at the facility; however, three AOIs related to potential PFAS release were identified at HAATS based on PA data (**Figure ES-1**) and are summarized in **Table ES-1** below:

Table ES-1: AOIs at HAATS

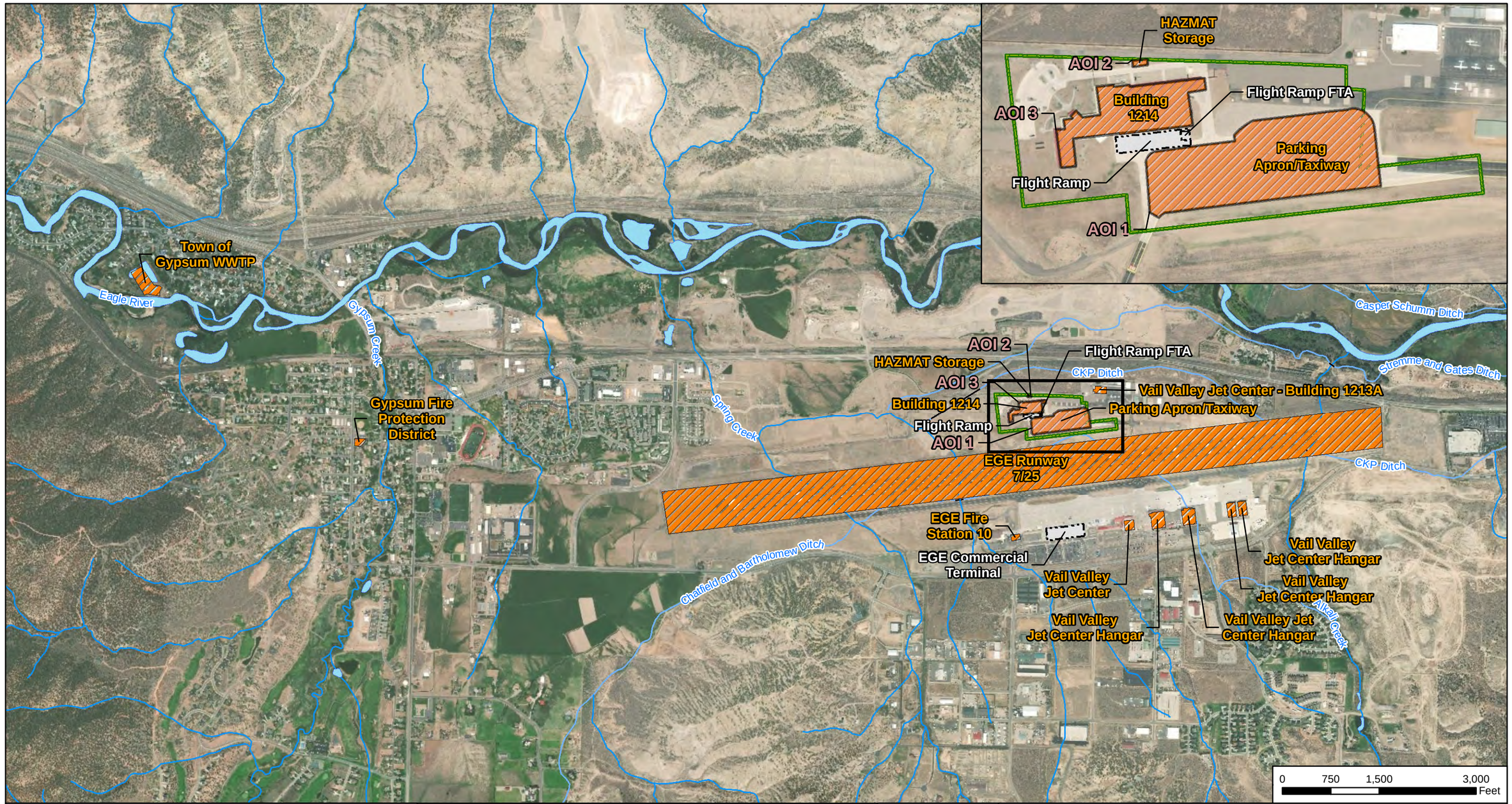
Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Parking Apron/Taxiway	COARNG	2013 – present
AOI 2	HAZMAT Storage Area	COARNG	2013 – present
AOI 3	Building 1214	COARNG	2013 – present

Based on the possible PFAS releases at the AOIs, there is potential for exposure to PFAS contamination in surface soil to site and construction workers, and trespassers via ingestion and inhalation; in subsurface soil to construction workers via ingestion and inhalation; and in surface water and sediment to off-facility residents and recreational users via ingestion. Additionally, commercial and domestic wells located cross-gradient and downgradient of HAATS create a potentially complete pathway for PFAS exposure to off-facility residents via ingestion of groundwater. The preliminary CSM for HAATS, which presents the potential receptors and media impacted, is shown on **Figure ES-2**.

The HAATS facility is located within the larger Eagle County Regional Airport (EGE) property, and several adjacent sources of potential PFAS release were identified within the airport property and surrounding areas including: the EGE runway, EGE Fire Station 10, Vail Valley Jet Center Hangar areas, the Gypsum Fire Protection District fire station, and the Town of Gypsum Wastewater Treatment Plant. It is possible that a potential PFAS release at one of the adjacent sources

identified may have contributed to PFAS within soil, groundwater, surface water, or sediment at the HAATS facility, the airport property, and surrounding areas.

Based on the United States (US) Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data it was indicated that no PFAS were detected in a public water system above the USEPA's lifetime Health Advisories (HAs) within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at HAATS, CO			
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SCALE	1:18,000	CHK BY	JW	4/8/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	4/8/2020

Legend

- Area of Interest
- Potential PFAS Release
- No Suspected Release
- Facility Boundary
- Water Body
- River/Stream
- Canal/Ditch
- Pipe

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Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1

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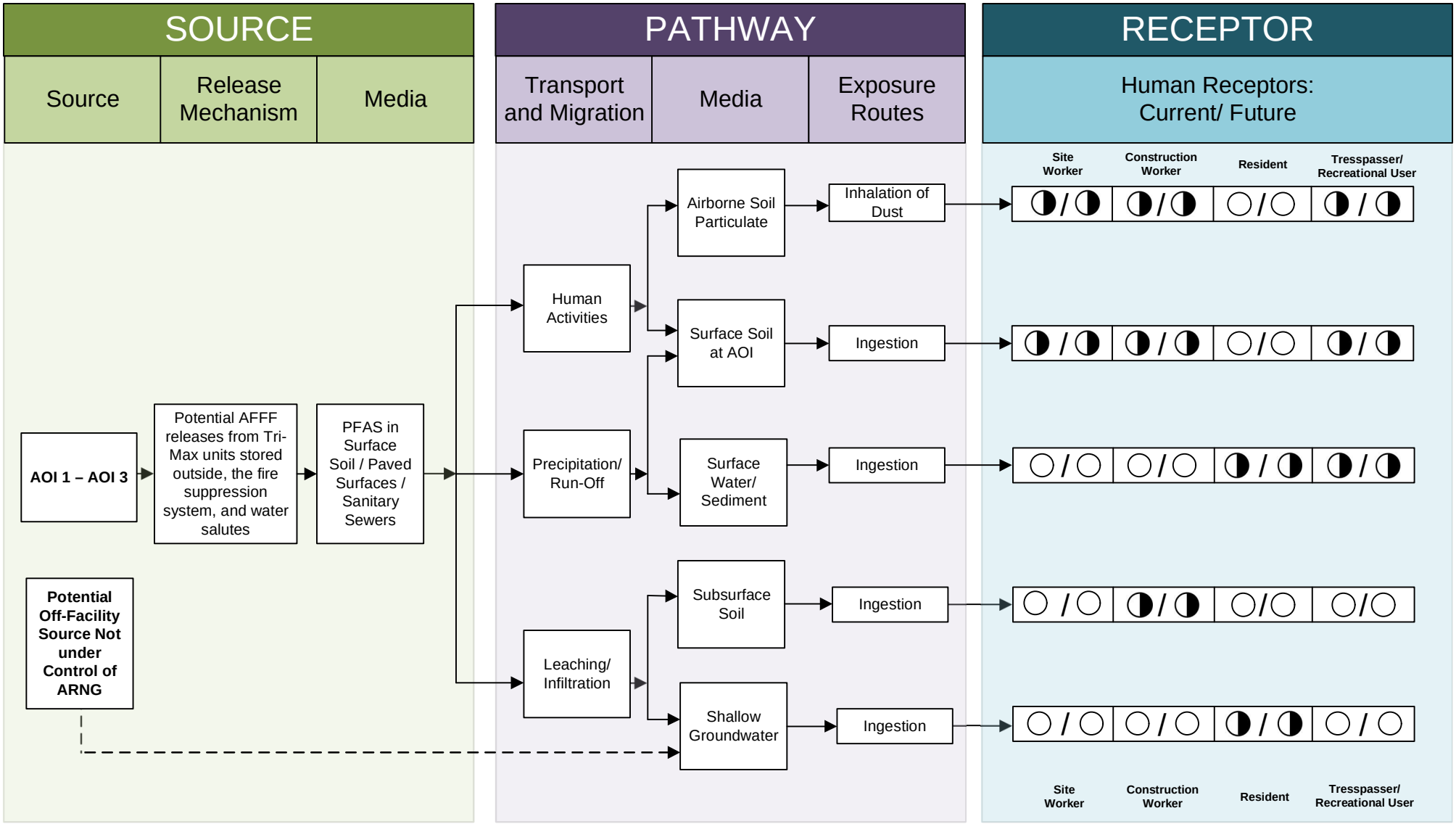


LEGEND

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

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. The site worker and construction worker receptors refer only to COARNG HAATS site and construction workers.
3. Dermal contact exposure pathway is incomplete for PFAS.

Figure ES-2
Preliminary Conceptual Site Model
HAATS, CO

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 Drinking Water Lifetime Health Advisories (HAs) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. 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 High Altitude Aviation Training Site (HAATS) (also referred to as the "facility"), in Gypsum, Colorado, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations [CFR] Part 300), and Army requirements and guidance.

This PA documents locations where PFAS-containing materials may have been released into the environment at HAATS. 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 telephone interviews on 18 December 2019 with current Colorado ARNG (COARNG) personnel, including the Environmental Protection Specialist, the Facility Unit Environmental Compliance Officer, and the Western Region Maintenance Supervisor stationed at the facility;

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

1.4 Facility Location and Description

The HAATS property encompasses approximately 20 acres leased from the Eagle County Regional Airport (EGE) for COARNG use in the town of Gypsum, within Eagle County, Colorado (**Figure 1-1**). The facility includes hangar space, classrooms, administrative areas, hazardous material storage, a parking apron and taxiway, and is designed to train military pilots in high altitude mountainous terrain. The facility and surrounding airport property are zoned as a planned unit development (AMEC Earth and Environmental, Inc., [AMEC], 2010). Real property documents for the facility are included in **Appendix A**.

The COARNG HAATS facility originally included Building 1213A, which is no longer maintained or operated by the COARNG. Building 1213A was constructed in the 1970s and was used as the main hangar for the Mountain Flying Service until the building was leased to the COARNG in 1990 for use as a HAATS facility. In 2013, the COARNG moved their HAATS facility to Building 1214, following completion of its construction, and Building 1213A was transferred to the Vail Valley Jet

Center (VVJC). Currently, the VVJC maintains operations of Building 1213A, and Building 1214 serves at the COARNG HAATS facility main hangar.

The original EGE runway was built in the 1930s as an emergency landing strip and was dedicated in 1947 to provide general aviation (GA) services. Today, EGE is a publicly owned facility consisting of 632 acres; EGE continues to operate as a commercial airport and is subject to Federal Aviation Administration (FAA) guidance (EGE, 2014).

1.5 Facility Environmental Setting

HAATS and the area surrounding the larger EGE complex are a mix of industrial and commercial properties, undeveloped land, agricultural land, and residential areas. The Eagle River is located approximately 0.5 miles north of the COARNG property and flows west, and Highway 6 is located approximately 400 feet north of the facility. The HAATS facility sits within the Eagle River Valley on the western slope of the Colorado Rocky Mountains. Topography across the site has been graded to drain to the northwest, and the greater area surrounding the facility generally slopes northwest towards the Eagle River (AMEC, 2010).

Most of the HAATS facility is paved with asphalt or concrete, with the exception of some gravel and grassy areas surrounding the improved portions of the facility. The HAATS property is bounded on the north side by a chain-link fence. Sanitary sewer service and potable water are provided to the facility by the Town of Gypsum.

The adjoining properties to the east, west, and south are all included within the Eagle County Airport, which is zoned as a planned unit development. The VVJC Maintenance Hangar, which formerly operated as the COARNG HAATS facility, is located immediately to the east. The property to the west includes the air traffic control tower. The runway and taxiways are located to the south of the HAATS property. The Eagle County Airport commercial terminal is located further to the south, across the runway. The property to the north, between the facility and Highway 6, is undeveloped and zoned as industrial (AMEC, 2010).

1.5.1 Geology

According to the 1978 Geologic Map of the Leadville Quadrangle compiled for the US Geological Survey (USGS), the primary geologic unit occurring in the vicinity of the HAATS facility is the unconsolidated gravel and alluvium deposited as stream, terrace, and outwash material during the Quaternary Period (USGS, 1978). The much older Eagle Valley Evaporite, a series of gypsum, anhydrite, and interbedded siltstone and dolomite, make up the valley walls not far from the HAATS facility and likely lie beneath the unconsolidated surficial deposits at the facility. Local geologic units are shown on **Figure 1-2**.

Based on soil survey data published by the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), the primary soil type at the subject property is the Dotsero sandy loam, which forms on terraces and toes of mountain slopes through the weathering of colluvium derived from basalt and other igneous rocks. The Dotsero sandy loam forms with 1 to 12 percent slopes and is typically well drained with moderate infiltration rates and high conductivity. Runoff is classified as low, and the frequency of flooding or ponding is low to none. The depth to the water table in the soil type is greater than 80 inches (USDA, 2019).

1.5.2 Hydrogeology

Groundwater flow direction at the HAATS facility is unknown; however, the inferred groundwater flow direction in the vicinity of the facility is likely to the northwest due to topography and the influence of the Eagle River (**Figure 1-2)**. According to a well database search performed as part of a Phase I Environmental Assessment of the HAATS facility in 2010, the depth to groundwater in the vicinity of the facility varies from 32 to 86 feet below ground surface. The depth to groundwater measured in the closest alluvial well is 86 feet below ground surface (AMEC, 2010).

The Town of Gypsum overlies the Eagle River watershed valley-fill aquifer (ERWVFA). The ERWVFA is an unconfined aquifer found within the alluvial deposits along the Eagle River and its tributaries, starting near the town of Vail, CO and heading west to Dotsero, CO (USGS, 2009). Being unconfined, recharge of the aquifer across HAATS occurs through direct infiltration of precipitation and/or irrigation and drainage ditch water. Deep groundwater at HAATS is found in bedrock aquifers comprised of the hydrogeologic units associated with the Eagle Basin-Central Colorado Trough. The uppermost group includes the Weber Aquifer, Maroon-Minturn Aquifer, and the Belden-Molas confining unit. The primary water-bearing rock type in this group is sandstone (Barkmann et al., 2020).

Potable and non-potable water is provided to EGE and its tenants through the Town of Gypsum; no onsite wells provide drinking water to COARNG personnel. Potable water provided is used for drinking water at HAATS, and non-potable water is strictly used for irrigation. The water is owned by the Town of Gypsum and stored in various large water tanks throughout the town. Gypsum receives its water from three main sources: Mosher Springs, Gypsum Creek, and the Eagle River. Most of the known intake points associated with Mosher Springs and Gypsum Creek are unaffected by potential PFAS releases at the HAATS facility because they are located upstream from the creek's confluence with the Eagle River. Gypsum Creek's Norgaard Water Treatment Plant and associated intake point; however, are located approximately two miles west and potentially downgradient of the facility. Additionally, the locations of the Eagle River intake, which is mentioned in the 2016 Town of Gypsum water quality report and the airport master plan, as well as the T2 well identified in the town water quality report are unknown.

The airport receives its water through several water mains located on the south side of the airfield to support the commercial terminal area and on the north airfield to support the HAATS and GA hangars (EGE, 2014). 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 GIS databases, wells were researched to a 4-mile radius of the facility. Numerous wells of various use exist in all directions surrounding the facility.

Based on the United States Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, no PFAS were detected in a public water system above the USEPA lifetime Health Advisory (HA) within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.

1.5.3 Hydrology

There are no surface water bodies located within the HAATS facility property boundary, but there are several nearby surface water areas designated by the US Fish and Wildlife Service (USFWS)

National Wetlands Inventory (USFWS, 2019). The “Chattfield and Bartholomew Ditch” is designated as a freshwater emergent wetland or as riverine habitat, depending on location, and encroaches on the southern and western boundaries of the facility. The “CKP Ditch” is also designated as both freshwater emergent wetland and riverine habitat depending on location, and it encroaches on the northern and western boundaries of the facility as well (USFWS, 2019). Nearby surface water bodies are shown on **Figure 1-3**.

The HAATS 2017 Spill Prevention, Control, and Countermeasure Plan indicates that surface runoff flow generally flows to the northwest, with some local flow to the southwest, on the flight ramp to the immediate south of Building 1214 (COARNG, 2014). The facility also includes two stormwater inlets on the north side of Building 1214 and an oil-water separator (OWS) near the northeast corner of Building 1214. Surface water entering the stormwater inlets passes the OWS and discharges to the storm system to the north that directs flow towards Eagle River (COARNG, 2014).

Stormwater runoff across the airport property drains to the north and west, into the Eagle River, towards the Town of Gypsum. The EGE stormwater system is composed of open channels and pipes directing the flow of water, and drainage basins to collect runoff. The majority of the airport drains to the northwest, while the eastern edge of the airfield drains east before turning north towards the Eagle River (EGE, 2014).

Sanitary services are provided through the Town of Gypsum, Public Works Department. Wastewater is collected and processed through the Town’s nitrification/de-nitrification wastewater treatment plant (WWTP) located approximately 2.6 miles west of the HAATS facility (EGE, 2014). Sludge disposal is performed by a third party contractor.

Flood Insurance Rate Maps for Eagle County and the region immediately surrounding the airport indicate that no flood zones are located within airport property. The nearest flood zone is north of the airport by approximately one half mile (EGE, 2014).

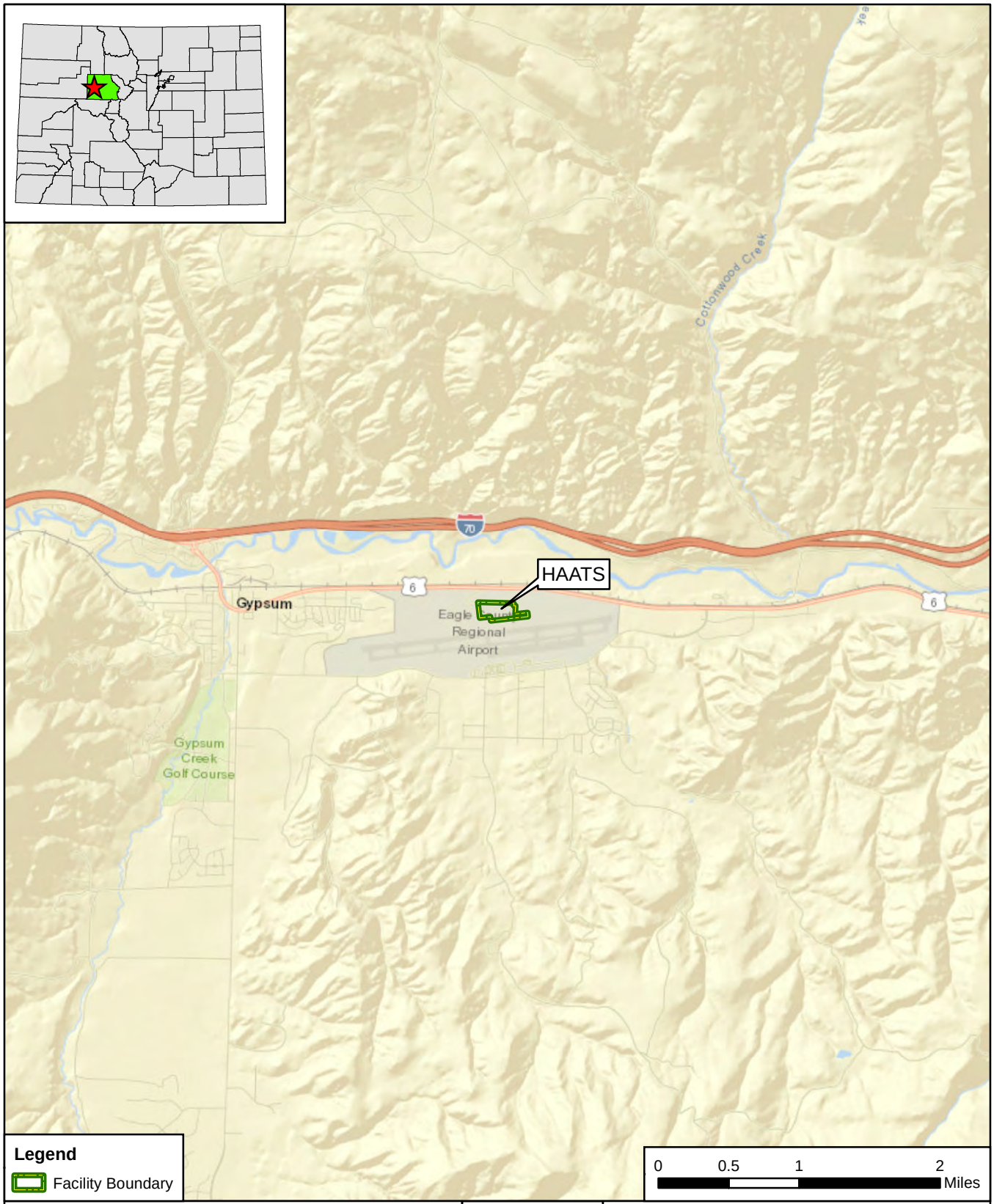
1.5.4 Climate

Data from the EGE weather station indicate that the annual average temperature between 1981 and 2010 was 44.7 degrees Fahrenheit (ºF) (National Oceanic and Atmospheric Administration [NOAA], 2020). The warmest months are July and August, with normal daily average temperatures of 67.2ºF and 66.0ºF, respectively. January is the coldest month, with an average temperature of 21.3ºF. Average annual precipitation measured from 1981 to 2010 at the airport was 11.31 inches, with the most rain occurring July through September (NOAA, 2020). The average annual snowfall for EGE, as reported by the Western Regional Climate Center, is 48 inches (Western Regional Climate Center, 2020). The majority of snowfall occurs between December and January.

1.5.5 Current and Future Land Use

HAATS is the primary training center for ARNG helicopter pilots conducting high-altitude flying in flying in mountainous terrain and/or high temperatures. HAATS is the only Department of Defense Aviation Training site for high altitude power management environmental training. The facility trains over 400 aircrews annually from all branches and components for the National Guard Bureau and Fort Rucker as well as active Army, Army Reserves and International military aircrews. The facility was recently expanded to add entirely new features and amenities, with the ability for continued expansion. Future use of the HAATS facility is anticipated to remain the same.

EGE is the major conduit for commercial airline passengers to and from the Vail Valley. The airport's location provides access to the heart of the Colorado Rocky Mountains and is a short drive to the Vail & Beaver Creek Ski Resorts, making EGE a primary gateway for tourists during both winter and summer seasons (EGE, 2014). Future use of EGE is anticipated to remain the same.



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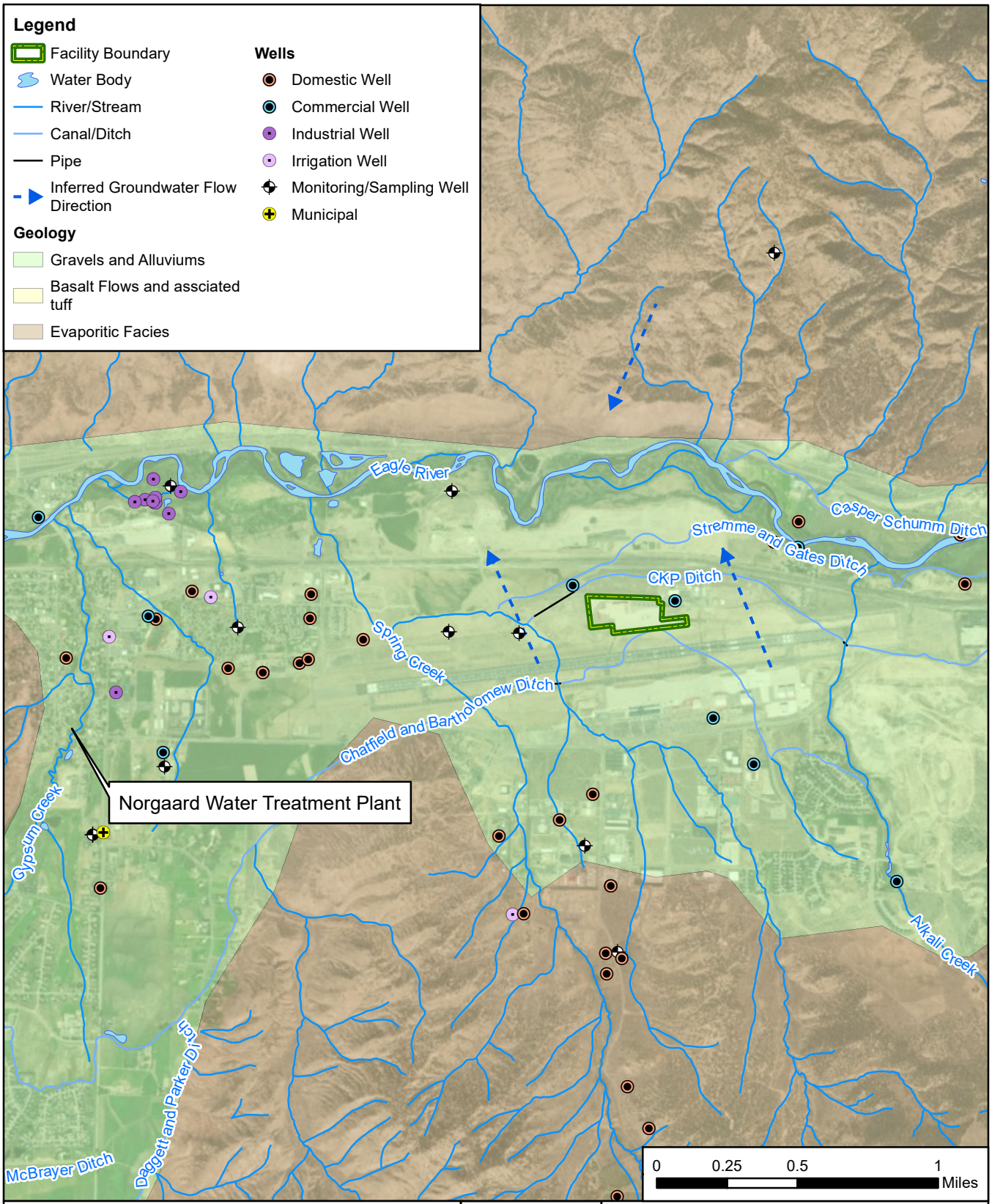
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	1/13/2020

Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1



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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/14/2020

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Groundwater Features

AECOM
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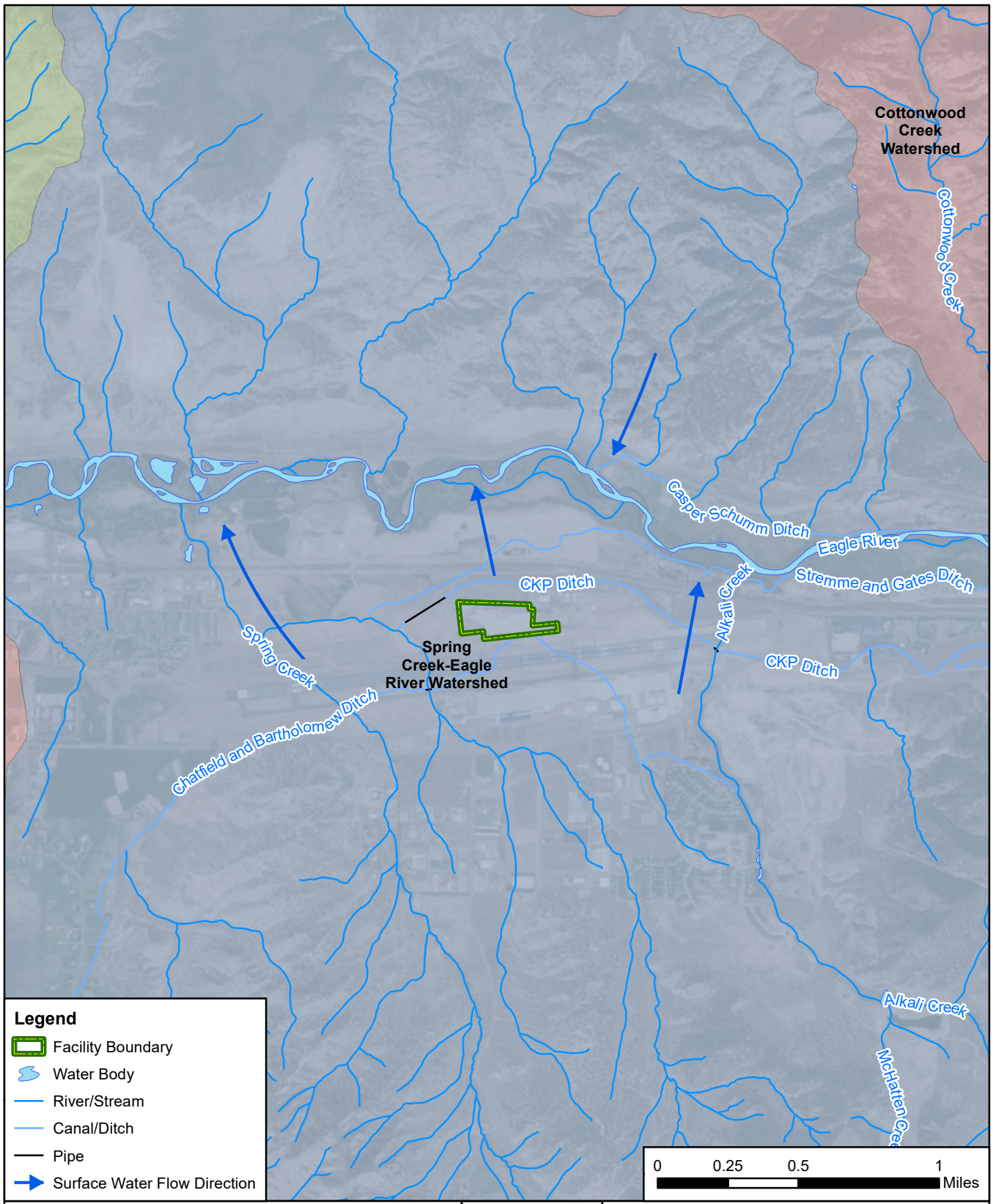
Germantown, MD 20876

Figure 1-2



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Surface Water Features

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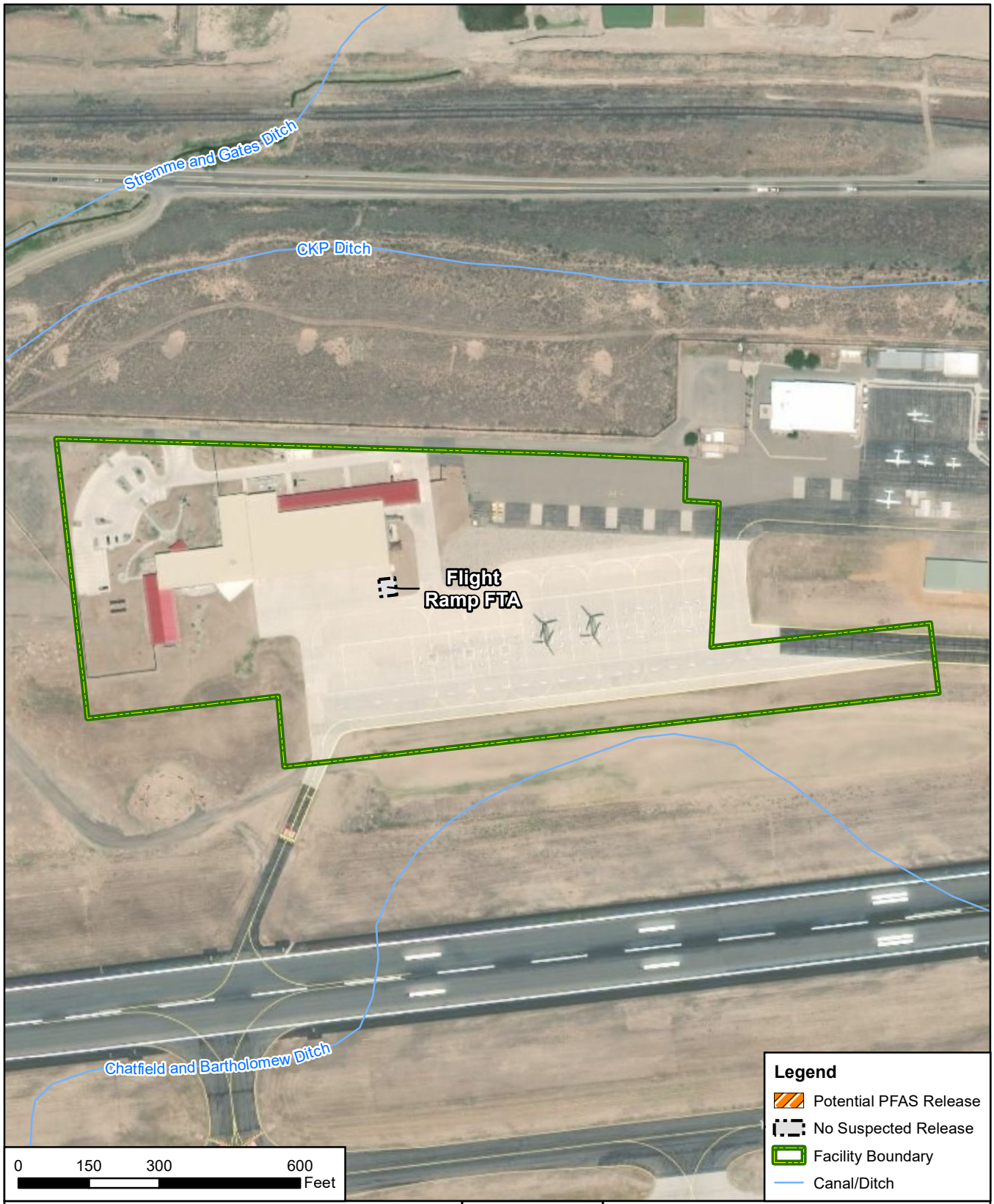
Figure 1-3

2. Fire Training Areas

FTAs are considered areas where deliberate discharge of AFFF or other firefighting materials is performed for purposes of training personnel. One COARNG FTA was identified at the HAATS facility during the PA through interviews and review of the EDR™ report for a 1-mile radius surrounding the facility (**Appendix A**). Using additional online resources, such as state and local GIS databases, wells were researched to a 4-mile radius of the facility. The FTA is shown on **Figure 2-1**. According to interviewees, the EGE Fire Department responds to emergencies across the airport property; however, the fire department performs their fire training activities in Denver, Colorado. The EGE Fire Department Fire Station 10 is located south, across the runway from the HAATS facility and is discussed in **Section 5**.

2.1 Flight Ramp FTA

HAATS facility personnel stated during interviews that annual fire training is performed near the southeastern corner of Building 1214 on the flight ramp. The fire training involves the lighting of diesel fuel in a drip pan and the subsequent extinguishing of the flames using ABC dry chemical handheld fire extinguishers. According to interviewees whose collective tenure span the entire history of the new HAATS facility (2013-present), no AFFF has ever been used during the annual fire training. Records are not kept to document the annual training. Mobile Tri-Max™ 30 Cold Compressed Air Foam (CAF) fire extinguishers that contain AFFF are stored at the HAATS facility, but they have never been used for fire training purposes. The extinguishers are capable of using Class A foams, which do not include PFAS, but facility personnel stated that the Tri-Max™ units contain AFFF. Photographs of the Tri-Max™ units, which were provided by COARNG, are included in **Appendix A**. The Flight Ramp FTA is not considered a potential PFAS release area.



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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	2/28/2020

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Fire Training Area

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Germantown, MD 20876

Figure 2-1

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

3.1 Building 1214

Construction of Building 1214 was completed in 2013, and the building is located on the western end of the COARNG property. The building serves as the HAATS main hangar and includes classroom areas, administrative office areas, and billets. The building is constructed with an AFFF suppression system that contains Buckeye Premium 3% Military Specification AFFF concentrate. Although the Safety Data Sheet for the AFFF product indicates that it does not contain PFOS or PFOA, it is unknown whether it may contain or degrade into other PFAS compounds. The size of the AFFF tank serving the fire suppression system is unknown. A data sheet for the AFFF product is included in **Appendix A**. A 55-gallon drum containing the same AFFF concentrate product is also stored within Building 1214. According to facility personnel whose collective tenure span the entire history of Building 1214, the fire suppression system has never been tested in a manner that released AFFF, nor has it been used in response to an emergency. The fire suppression system is tested annually in an enclosed manner that cycles the AFFF concentrate without a release. Regular maintenance of the alarm, pumps, and valves is also conducted without release.

Fueling of aircraft stored in Building 1214 occurs on the flight ramp south of Building 1214. Facility personnel stated that fuel spills in the area are uncommon, and that AFFF is not used as a precautionary measure in response to fuel spills. The EGE Fire Department responds to emergencies at the HAATS facility, but no emergencies have occurred at Building 1214 requiring emergency response.

Floor drains in Building 1214 connect to municipal sanitary sewers. Surface runoff that does not enter floor drains at Building 1214 flows generally to the northwest, except on the southern side of the building, where it flows southwest. Although AFFF is stored indoors at Building 1214, and the fire suppression system undergoes regularly scheduled maintenance, the building has been identified as a location for further PFAS investigation due to the storage of materials that potentially contain PFAS.

3.2 HAZMAT Storage Area

Hazardous materials (HAZMATs) stored by the COARNG at the HAATS facility are kept in the HAZMAT storage area located on the north side of Building 1214. The area is also used for the storage of waste, and an aboveground storage tank containing diesel fuel is also staged in the area. According to facility personnel, one Tri-Max™ 30 Cold CAF fire extinguisher containing AFFF is stored in the HAZMAT storage area; however, the Tri-Max™ has never been used. The Tri-Max™ unit is in good condition, has no history of spills or leaking, and is inspected monthly for integrity; however, based on the corrosive nature of AFFF and the storage of the Tri-Max™ outside, it is possible that AFFF may have been released to the HAZMAT storage area. Tri-Max™ inspection records were not available for inclusion in this PA report. No emergencies requiring the use of the

Tri-Max™ have occurred in the HAZMAT storage area, or anywhere else on the HAATS facility. Additionally, COARNG personnel do not train with the Tri-Max™ units. The EGE Fire Department responds to emergencies at the facility. The type and concentration of AFFF stored within the unit is unknown. A fire hydrant is also stationed adjacent to the HAZMAT storage area for use in response to an emergency.

Due to the corrosive nature of AFFF and the storage of the Tri-Max™ fire extinguisher outside, the HAZMAT storage area is has been identified as a location for further PFAS investigation.

3.3 Flight Ramp

The Flight Ramp is located on the south side of Building 1214. The ramp is used for aircraft maintenance as well as fueling and defueling. Fueling of the aircrafts is contracted to the VVJC. According to interviewees, fuel spills are not responded to with precautionary AFFF discharge at the HAATS facility. No incidents requiring AFFF use in response have occurred on the Flight Ramp. Annual fire training with ABC dry chemical fire extinguishers is performed on the east end of the ramp near the gravel area and taxiway.

Due to the non-use of the Tri-Max™ fire extinguishers and absence of emergencies occurring on the Flight Ramp requiring AFFF use, the Flight Ramp has not been identified as a location for further PFAS investigation.

3.4 Parking Apron/Taxiway

The HAATS facility parking apron is located southeast of Building 1214 and is circumvented by a taxiway. The apron is used for aircraft staging and maintenance. According to interviewees, no incidents requiring AFFF use in response have occurred on the parking apron. Four Tri-Max™ wheeled mobile fire extinguishers containing AFFF are staged on the taxiway on the north side of the parking apron. According to facility personnel, the Tri-Max™ units are in good condition, have no history of leaks or spills, have never been used at the HAATS facility, and are inspected monthly for integrity; however, based on the corrosive nature of AFFF and the storage of the Tri-Max™ units outside, it is possible that AFFF may have been released to the Parking Apron area. Monthly inspection records for the Tri-Max™ extinguishers were not made available for this PA report. The type and concentration of AFFF stored within the Tri-Max™ extinguishers are unknown.

Occasionally, water salutes are performed for retiring pilots on the taxiway on the southside of the parking apron. The salutes involve EGE fire department firetrucks spraying water across the taxiway while a grounded aircraft is taxiing. The water sprayed during the salutes likely travels across the taxiway and parking apron on the HAATS property. Only water is sprayed during the water salutes; however, it is possible the water is sprayed from EGE firetrucks that also store AFFF.

Due to the corrosive nature of AFFF and the storage of the Tri-Max™ units outside, and the performance of water salutes across the facility's southern taxiway, the Parking Apron has been identified as a location for further PFAS investigation.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at HAATS, CO			
REVISED	4/8/2020	GIS BY	MS	4/8/2020
SCALE	1:3,600	CHK BY	JW	4/8/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	4/8/2020

N

Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

4. Emergency Response Areas

COARNG staff confirmed that no known incidents requiring AFFF fire suppression have occurred during their collective tenure spanning 32 years at the current and former HAATS facility. Emergency responses to crashes sometimes require flame suppression, which may result in the release of PFAS to the environment in the form of AFFF.

5. Adjacent Sources

Several potential off-facility sources of PFAS adjacent to the HAATS facility, not under the control of the COARNG, were identified during the PA through interviews, review of the EDR™ report for a 1-mile radius surrounding the facility (**Appendix A**), and historical document review. Using additional online resources, such as state and local GIS databases, wells were researched to a 4-mile radius of the facility. A description of each potential adjacent source is presented below, and the sources are shown on **Figure 5-1**

5.1 Vail Valley Jet Center

EGE has one fixed base operator on the airfield, the VVJC. The VVJC main hangar is located south of the runway and east of the EGE commercial terminal. Services performed at the VVJC include aircraft line service, apron parking, hangar storage space, on-site catering, and flight planning. The VVJC also provides aircraft fueling along with aircraft maintenance and deicing. The VVJC owns and operates two aboveground fuel storage tanks on the north airfield GA Apron to support its fueling services, which includes fueling for HAATS aircraft operations. The VVJC also occupies the former HAATS facility, Building 1213A. The VVJCs operation of Building 1213A began in 2013, when the current HAATS facility finished construction. Building 1213A was previously occupied by the COARNG and served as the former HAATS facility between 1990 and 2013. The VVJC currently uses Building 1213A for additional hangar space.

Information provided from an interview with the EGE Fire Department firefighter indicates that Building 1213A had an AFFF bladder system that was never used or tested; however, COARNG personnel stated during telephone interviews that no known AFFF was ever used or stored in the building. The tenure of COARNG personnel interviewed span the use of both the current and former HAATS facility over 32 years.

It is unknown whether the main VVJC hangar space located on the south side of the runway uses an AFFF suppression system, or whether AFFF has ever been used or stored in the area in general. Due to the lack of available data surrounding both VVJC areas, they are considered potential PFAS release areas.

5.2 Eagle County Regional Airport

EGE is a publicly owned facility consisting of 632 acres that operate as a commercial airport, and its airfield configuration consists of one active runway, designated as Runway 7/25, that is positioned nearly east/west. The asphalt taxiway system consists of one full length parallel taxiway on the south side of Runway 7/25, one partial parallel taxiway on the north side, and several connector taxiways. There are several aprons serving different needs at EGE. Both the Commercial Aviation Apron and the GA Apron for the fixed base operators at the airport are located south of the runway. There are two aprons located on the north side of Runway 7/25. These aprons include the COARNG apron, which supports the HAATS facility, as well as an additional GA Apron to the east of the HAATS facility, serving the associated GA hangars and the VVJC.

The EGE commercial terminal was constructed in 1996, but the runway was dedicated for GA services in 1947. The terminal is located on the west end of the main Commercial Aviation Apron. Five airlines currently lease space throughout the terminal: American, Continental, Delta, United, and United Express

EGE has several hangars on the airfield. VVJC provides the majority of hangar space on the main GA Apron with four hangars. There is also one additional privately-owned corporate hangar on the east end of the main GA Apron. On the GA Apron north of the runway, there are nine medium-sized hangars that are either airport or privately owned. In addition to the hangars, there are ten airport-owned, T-Hangar style aircraft storage units.

Representatives of EGE were not interviewed as a part of this PA. As such, it is unknown whether the any of the EGE facility hangars store or use AFFF or any other known PFAS-containing materials.

A review of available information online indicated that several crashes have occurred at EGE. In 1983, a Learjet 25D was unable to stop on the snowy runway and continued down a 15-foot bank and ran into a small ravine. No fire resulted from the crash. In 2005, a Gates Learjet 35A crashed and came to rest in a shallow ravine approximately 331 feet north of the runway. The crash fire was responded to by EGE Fire Department. In 2010, a Dassault Falcon 20C aborted its takeoff attempt, was unable to stop on the runway, and eventually came to a rest on snow-covered terrain beyond the runway. No fire resulted from the crash. In 2015, an amateur-built aircraft crashed into a VVJC hangar and came to rest on the hangar parking ramp; no fires occurred. In 2017, a private Cessna crashed onto a small road east of the EGE runway; it is unknown whether a fire occurred during the crash. It is unknown if AFFF were used in response to any of these crashes, whether as an extinguishant for fires or as a precautionary measure. Summary reports available for the crashes are included in **Appendix A**.

The EGE Fire Station 10, which is located on the south side of the EGE runway and west of the commercial terminal, responds to emergencies at the airport and for airport tenants, including COARNG. Due to the lack of available data regarding responses to crashes on the EGE runway and its surrounding areas, and the propensity for runways to be used during nozzle testing and fire training by airport fire departments, Runway 7/25 is considered a potential PFAS release area.

5.3 Eagle County Regional Airport Fire Department

The EGE Fire Station 10 is located south of the runway at the southwest corner of the EGE Commercial Apron. The building was built in 1989 and serves as the administrative offices for EGE staff, as well as the airport administration office, maintenance facility, and operations center. Storage for airport snow removal equipment is located both inside the fire station and outside, immediately adjacent to the west end of the building. Maintenance on equipment occurs at the fire station inside the vehicle bays. There is additional storage for fire department equipment on the north airfield, in storage buildings located between the HAATS facility and the GA hangars to the east; however, firefighters with the EGE Fire Department stated that Aircraft Rescue and Firefighting (ARFF) equipment has only ever been stored in the fire station on the south side of the runway.

As a commercial airport, the EGE Fire Department must comply with FAA safety and emergency requirements, including ARFF services. To comply with FAA ARFF requirements, the EGE Fire Department has four active ARFF response vehicles for aircraft emergencies. According to the 2014 EGE Master Plan, these vehicles include one 2006 Oshkosh Striker 3000, one 1988 Oshkosh T-1500, one 1993 Oshkosh T-1500, and one 2004 Tote ARFF foam trailer (EGE, 2014).

According to interviewees, the EGE Fire Department trains in Denver, Colorado; however, it is unknown whether the fire department has ever trained within the EGE airport property, or whether

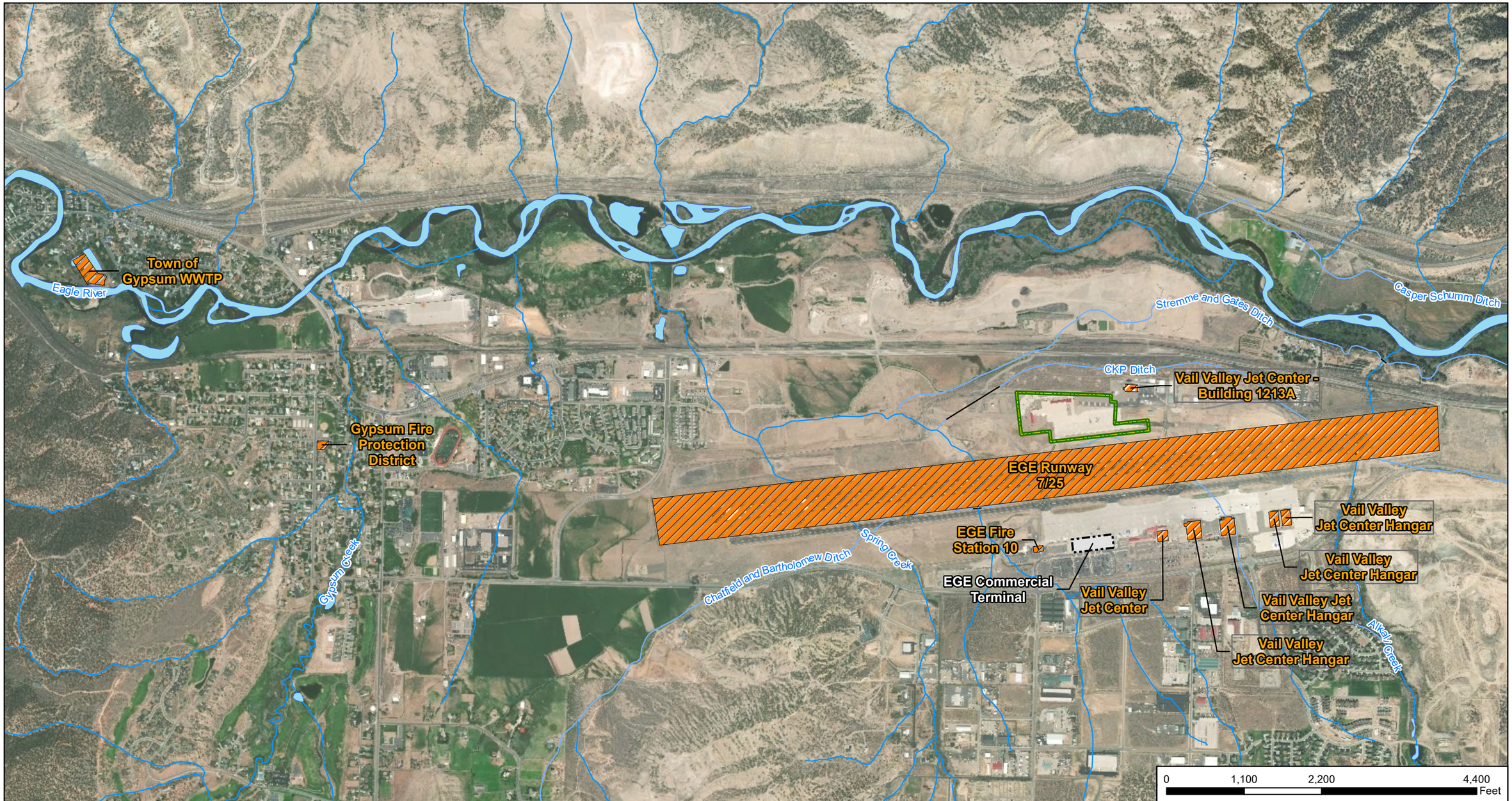
it has ever been necessary to use AFFF in response to an emergency on EGE property. According to the EGE master plan, the fire department performs vehicle maintenance at Fire Station 10 ; however, it is unclear if any other maintenance, such as nozzle tests, are performed elsewhere at the airport. Due to the likelihood that AFFF has been stored and/or released at the fire station as a result of training and maintenance exercises, Fire Station 10 is considered a potential PFAS release area.

5.4 Gypsum Fire Protection District

The Gypsum Fire Protection District is a combination fire department comprised of full-time and part-time personnel as well as volunteer firefighters serving the Town of Gypsum. The Gypsum Fire Protection District fire station is located approximately 2 miles west of the HAATS facility, in the Town of Gypsum. It is unknown whether the fire department stores or uses AFFF during training or emergency response. Given the tendency for local fire departments to store AFFF for emergency purposes, it is possible AFFF is stored at the Gypsum Fire Protection District fire station. It is also unclear whether the fire department performs vehicle maintenance, such as nozzle tests, at the fire station. Due to the likelihood that AFFF has been stored and/or released at the fire station as a result of potential training and maintenance, the Gypsum Fire Protection District fire station is considered a potential PFAS release area.

5.5 Town of Gypsum WWTP

There are no WWTPs located at the COARNG HAATS facility. The Town of Gypsum WWTP is the nearest WWTP and is located approximately 2.6 miles to the west, along the Eagle River. WWTPs are not usually a primary potential release area of PFAS, but sludges and liquids from areas of potential release that are treated at WWTPs may create a secondary source of contamination. No known PFAS releases have occurred at the HAATS facility, but AFFF releases may have occurred elsewhere on the larger EGE property and could have resulted in the migration of PFAS in water to the Town of Gypsum WWTP. If undocumented releases of AFFF have entered floor drains at the HAATS facility, then it is possible the facility has contributed to PFAS migration to and through the WWTP. The WWTP uses nitrification/de-nitrification technology to treat wastewater. Sludge generated at the WWTP is removed and disposed of by a third party contractor. The location of disposed sludge is unknown. Due to the potential for AFFF releases to have occurred elsewhere on the EGE property and in the town of Gypsum, the WWTP is considered a potential PFAS release area.



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PROJECT	Preliminary Assessment for PFAS at HAATS, CO			
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SCALE	1:16,510	CHK BY	JW	2/28/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	2/28/2020

Legend

- Potential PFAS Release
- No Suspected Release
- Facility Boundary
- Water Body
- River/Stream
- Canal/Ditch
- Pipeline

N

Adjacent Sources

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Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings, two AOIs were identified at the COARNG HAATS facility: AOI 1 Parking Apron/Taxiway and AOI 2 HAZMAT Storage Area. The AOI locations are shown on **Figure 6-1**. The following sections describe the CSM components and the specific preliminary CSM developed for the AOIs. A CSM identifies three components necessary for an exposure pathway: (1) source, (2) pathway, (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

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

6.1 AOI 1 Parking Apron/Taxiway

AOI 1 includes the HAATS facility parking apron and taxiway where potential PFAS releases may have occurred. Although no PFAS releases are known to have occurred since the construction of the HAATS facility in 2013, the storage of Tri-Max™ units outdoors on the parking apron and the history of water salutes performed at the AOI may have led to environmental releases of AFFF.

If any releases of AFFF occurred on the parking apron, they would have occurred on the paved apron surface and may have migrated to the unpaved or gravel surfaces surrounding the parking apron depending on the location of the release. As such, it is possible that PFAS infiltrated subsurface soil via cracks in pavement, joints between areas that are paved with different materials, and surface soil in the unpaved and gravel areas surrounding the apron. If AFFF released at the AOI infiltrated surface soil, then surface soil presents a potential pathway for PFAS exposure to site workers, construction workers, and trespassers via ingestion and inhalation if any PFAS has been released. If AFFF infiltrated subsurface soil, then ground-disturbing activities may result in PFAS exposure to construction workers via ingestion and inhalation. Accidental ingestion of groundwater during ground-disturbing activities is not considered a potential pathway for exposure to PFAS due to the depth to groundwater at the HAATS facility.

Stormwater runoff at HAATS generally flows to the northwest with some local flow to the southwest on the flight ramp near the northeast corner of AOI 1. Surface water runoff migrating off-facility ultimately flows towards the Eagle River. As such, off-facility recreational users of the Eagle River could ingest PFAS if any is present. Because the locations of the potential Eagle River intake and T2 well are unknown, it is possible that PFAS migrating off-facility via surface water may impact these water sources. As such, there is a potential pathway for PFAS exposure to residents via ingestion of surface water if any PFAS has been released.

PFAS are water soluble and can migrate readily from soil to groundwater via leaching. Potable and non-potable water are provided to EGE and its tenants (including the HAATS facility) through the Town of Gypsum; no onsite wells provide drinking water to COARNG personnel. Two commercial wells exist within several hundred feet of the facility to the north and northwest, and two domestic wells and a commercial well exist within approximately 0.5 miles to the northeast. Because of the presumed flow of groundwater north towards the Eagle River, these wells may be

cross-gradient or downgradient of the facility. As such, groundwater is considered a potential exposure pathway for PFAS to off-facility residents using the domestic wells.

The AOI location is shown on **Figure 6-1** and the preliminary CSM diagram for AOI 1 is shown in **Figure 6-2**.

6.2 AOI 2 HAZMAT Storage Area

AOI 2 includes the HAATS facility HAZMAT storage area where potential PFAS releases may have occurred. Although no PFAS releases are known to have occurred since the construction of the HAATS facility in 2013, the storage of one Tri-Max™ unit outdoors in the HAZMAT storage area may have led to environmental releases of AFFF.

If any releases of AFFF occurred in the HAZMAT storage area, they may have occurred on paved, grassy or gravel surfaces depending on the location of the release. As such, it is possible that PFAS infiltrated subsurface soil via cracks in pavement, joints between areas that are paved with different materials, and surface soil in the unpaved and gravel areas. As such, surface soil presents a potentially exposure pathway for PFAS to site workers, construction workers, and trespassers via ingestion and inhalation. Ground-disturbing activities may result in PFAS exposure to construction workers via ingestion and inhalation of subsurface soil; however, they are unlikely to create a pathway for construction workers to PFAS via ingestion of groundwater due to the depth to groundwater at the HAATS facility.

Stormwater runoff at the AOI generally flows northwest but may also enter two stormwater inlets on the north side of Building 1214. Surface water entering the stormwater inlets passes through the OWS and discharges to the storm system to the north that directs flow towards Eagle River. As such, off-facility recreational users of the Eagle River and residents may be exposed to PFAS via ingestion.

PFAS may migrate readily from the surface to groundwater through infiltration. Groundwater at the facility may flow towards commercial and domestic wells to the northwest and northeast. The wells may be cross-gradient or downgradient of the facility depending on the local flow of groundwater. As such, groundwater is considered a potential exposure pathway for PFAS to off-facility residents using the domestic wells. Groundwater may also discharge as surface water to the Eagle River, presenting another pathway for PFAS exposure to recreational users of the Eagle River.

The AOI location is shown on **Figure 6-1** and the preliminary CSM diagram for AOI 2 is shown in **Figure 6-2**.

6.3 AOI 3 Building 1214

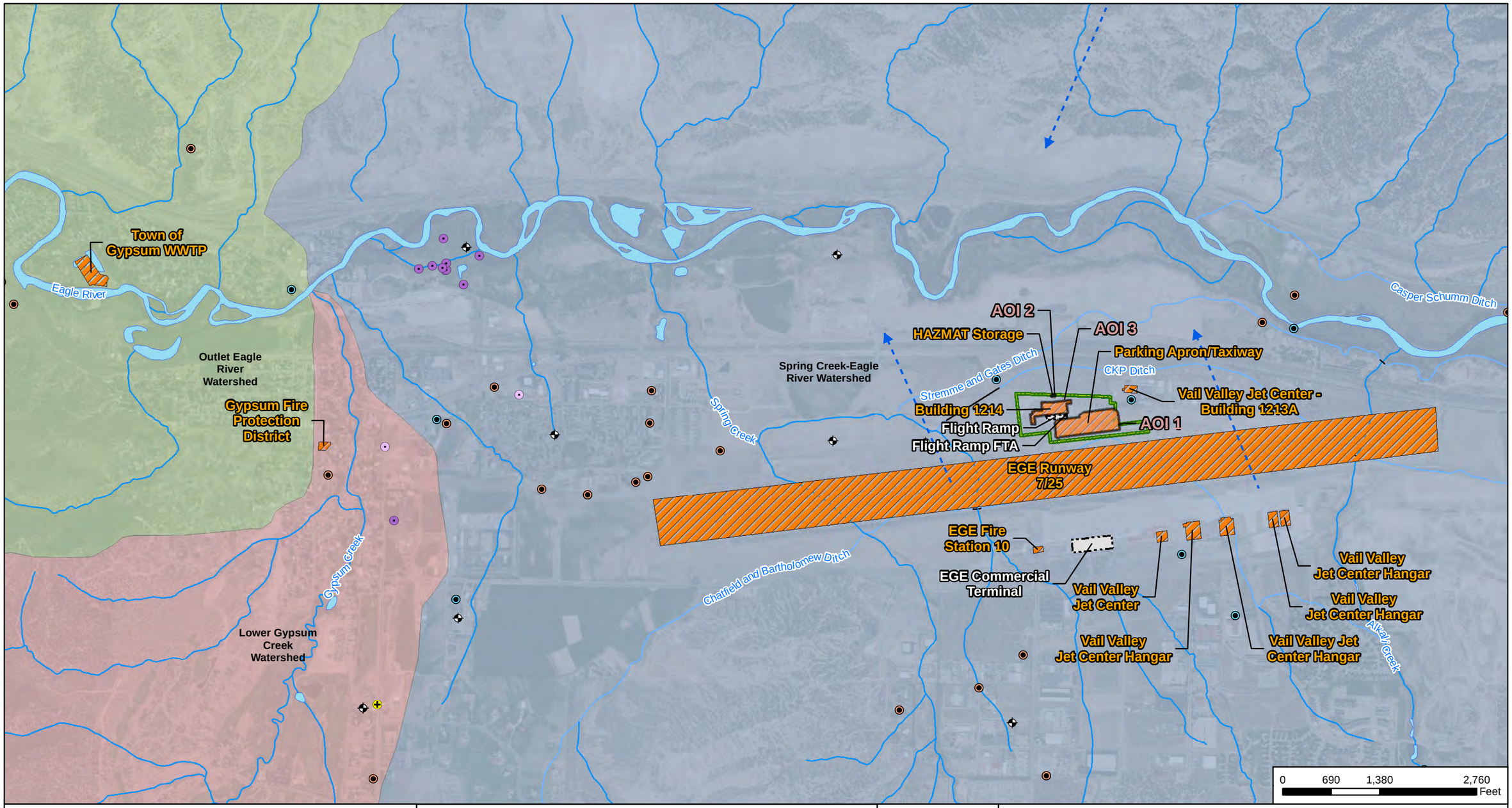
AOI 3 comprises Building 1214, which is constructed with an AFFF suppression system that contains Buckeye Premium 3% Military Specification AFFF concentrate. The building also stores one 55-gallon drum containing the same AFFF product. No known AFFF releases have occurred at Building 1214 since its construction, but it is conservatively considered an AOI based on the potential for undocumented releases.

If any releases of AFFF occurred at AOI 3, they presumably occurred within the confines of the building. Building 1214 floor drains connect to municipal sanitary sewers. AFFF entering sanitary sewers may migrate to the Town of Gypsum WWTP and ultimately be discharged to the Eagle

River. As a result, downstream recreational users of the Eagle River may be exposed to PFAS in surface water and sediment. Because the locations of the potential Eagle River intake and T2 well are unknown, it is also possible that PFAS discharged as effluent from the WWTP may impact these water sources. As such, surface water presents a potential exposure pathway for PFAS to residents via ingestion.

PFAS is not expected to have escaped the Building 1214 confines based on the lack of known AFFF system releases. Any AFFF releases are presumed to be of low volume and confined to the tank room. As such, AFFF is not expected to have migrated to surface or subsurface soil surrounding or beneath the building. PFAS is also not expected to have migrated to groundwater as a result of potential AFFF releases at AOI 3.

The AOI location is shown on **Figure 6-1** and the preliminary CSM diagram for AOI 3 is shown in **Figure 6-3**.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at HAATS, CO			
REVISED	4/8/2020	GIS BY	MS	4/8/2020
SCALE	1:16,560	CHK BY	JW	4/8/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	4/8/2020

Potential PFAS Release
No Suspected Release
Facility Boundary
Water Body
River/Stream
Canal/Ditch
Pipe
Domestic Well
Commercial Well
Industrial Well
Irrigation Well
Monitoring/Sampling Well
Municipal

N

Area of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

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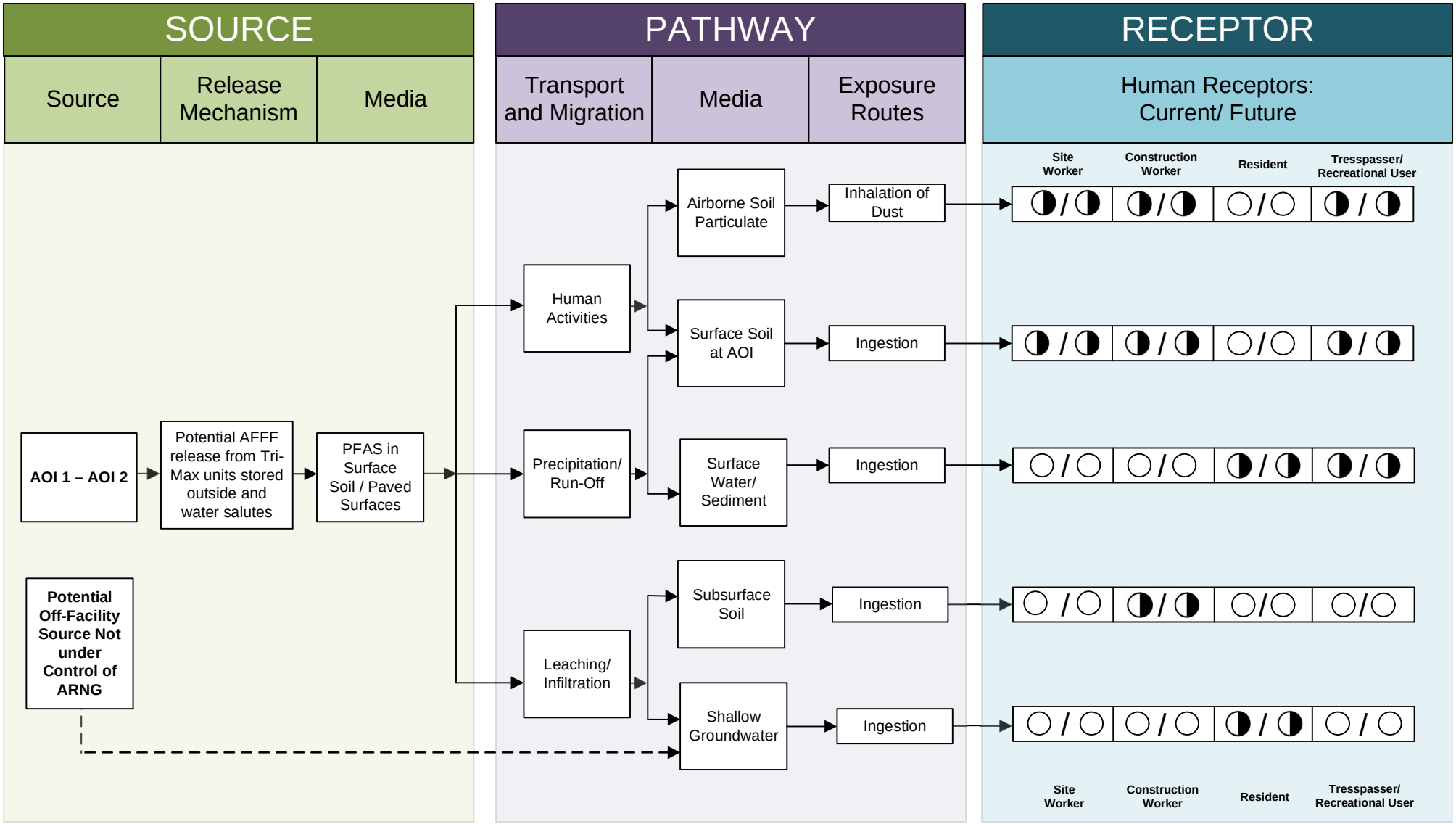


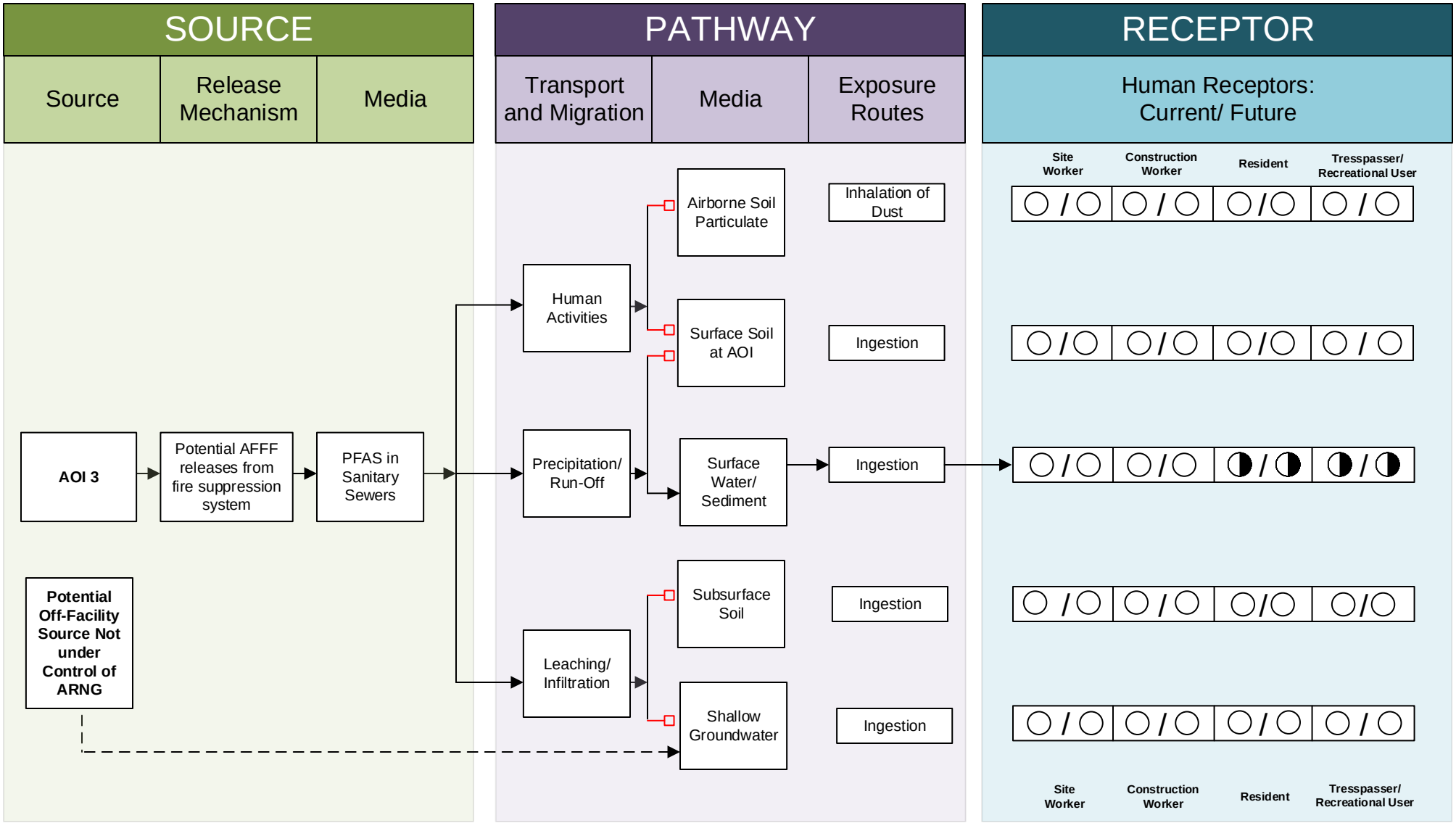
LEGEND

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

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. The site worker and construction worker receptors refer only to COARNG HAATS site and construction workers.
3. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-2
Preliminary Conceptual Site Model
AOI 1 (Parking Apron) and AOI 2 (HAZMAT Storage Area)



LEGEND

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

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. The site worker and construction worker receptors refer only to COARNG HAATS site and construction workers.
3. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-3
Preliminary Conceptual Site Model
AOI 3 (Building 1214)

7. Conclusions and Data Uncertainty

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 COARNG HAATS facility. The PA findings are based on personnel interviews, environmental investigations and reports, and historical documents (**Appendix A** and **Appendix B**).

7.1 Findings

Three AOIs related to potential PFAS releases were identified at the HAATS facility based on PA data (**Figure 7-1**) and is summarized in **Table 7-1** below:

Table 7-1: AOIs at HAATS

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Parking Apron/Taxiway	COARNG	2013 – present
AOI 2	HAZMAT Storage Area	COARNG	2013 – present
AOI 3	Building 1214	COARNG	2013 – present

Based on the possible PFAS releases at the AOIs, there is potential for exposure to PFAS contamination in surface soil to site and construction workers, and trespassers via ingestion and inhalation; in subsurface soil to construction workers via ingestion and inhalation; and in surface water and sediment to off-facility residents and recreational users via ingestion. Additionally, commercial and domestic wells located cross-gradient and downgradient of HAATS create a potentially complete pathway for PFAS exposure to off-facility residents via ingestion of groundwater.

Several adjacent sources of potential PFAS release were identified within the EGE airport property and surrounding areas. It is possible that a potential PFAS release at one of the adjacent sources identified may have contributed to PFAS within soil, groundwater, surface water, or sediment at the airport property and surrounding areas, including the HAATS facility. Potential adjacent sources are shown on **Figure 7-1**.

The following areas discussed in **Section 2** and **Section 3** were determined to have no suspected PFAS releases to the environment (**Table 7-1**):

Table 7-2: No Suspected Release Areas

No Suspected Release Area	Used by	Rationale for No Suspected Release Determination
Flight Ramp	COARNG	Readily available information indicates no evidence of AFFF stored or use at this location.

7.2 Uncertainties

A number of information sources were investigated during this PA to determine the potential for PFAS-containing materials to have been present, used, or released at the facility. Historically,

documentation of PFAS use was not required because PFAS were considered benign. Therefore, records were not typically kept by the COARNG on the storage, use, or disposition of AFFF.

The conclusions of this PA are based on all available information, including: previous environmental reports, EDRs™ 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 other information sources. For example, information provided from an interview with the EGE Fire Department firefighter indicated that the adjacent Building 1213A had an AFFF bladder system that was never used or tested; however, COARNG personnel stated during telephone interviews that no known AFFF was ever used or stored in the building. Gathered information has a degree of limitation due to the absence of written documentation, the limited number of personnel with direct knowledge, the time passed since PFAS were first used by the ARNG (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS storage locations. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

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

Table 7-2 summarizes the limitations in data associated with areas identified within the COARNG property:

Table 7-3: Sources of Uncertainties

Location	Source of Uncertainty
Building 1214	The size of the AFFF tank serving the building fire suppression system is unknown, and the total volume of AFFF stored within the facility is unknown. Inspection and maintenance records for the AFFF fire suppression system were not made available during this PA, and the fire suppression system condition is based on interviewee-provided information. It is also uncertain whether the AFFF concentrate product stored in Building 1214 contains any PFAS compounds.
HAZMAT Storage Area	The type and concentration of AFFF stored within the Tri-Max™ unit stored in the Hazmat storage area are unknown.
Parking Apron/Taxiway	The type and concentration of AFFF stored within the Tri-Max™ units stored on the parking apron are unknown. It is also unknown whether water salutes performed on the taxiway south of the parking apron are performed with fire department vehicles that also use AFFF, or whether water from these salutes migrates onto the COARNG property.
Town of Gypsum WWTP	No documentation stating that effluent from the Town of Gypsum WWTP discharges to the Eagle River was obtained for this PA, but effluent is presumably discharged to the Eagle River based on the WWTP location.

7.3 Potential Future Actions

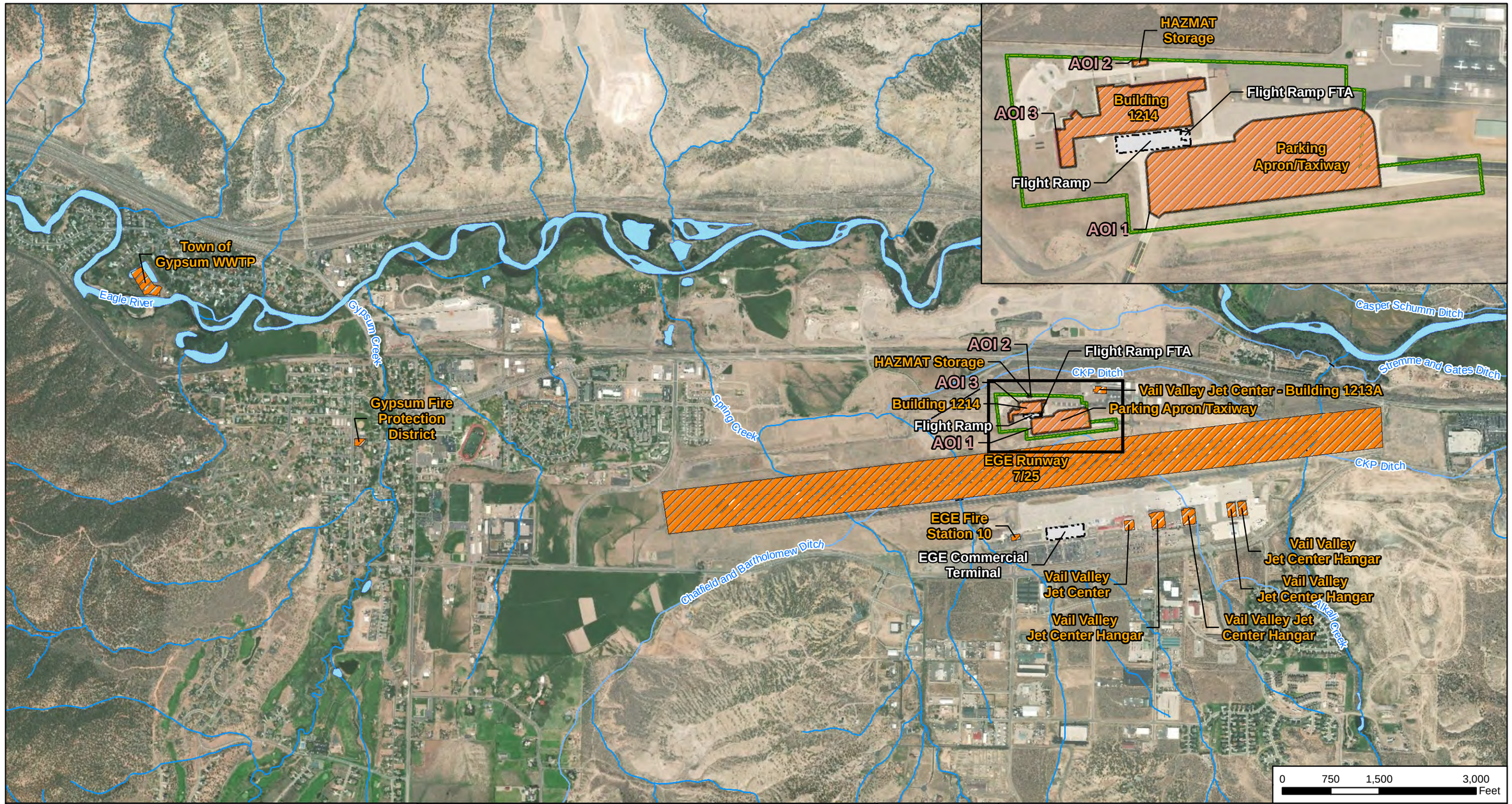
Interviews with HAATS facility personnel, whose collective tenure span 32 years at the current and former HAATS facility, and records indicate that current or former ARNG activities have not resulted in PFAS releases at the HAATS facility. Based on the storage of AFFF Tri-Max™ units outside and the history of water salutes performed however, incidental PFAS releases may have

occurred at the facility. Based on the preliminary CSM developed for the AOIs, there is potential for PFAS to be exposed to human receptors (see **Section 7.1**). **Table 7-4** summarizes the rationale used to determine if the AOIs should be considered for further investigation under the CERCLA process and undergo an SI.

Table 7-4: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 Parking Apron/Taxiway	39°38'41.54"N; 106°54'48.54"W	Potential AFFF releases from Tri-Max units stored outside.	Proceed to an SI, focus on soil and groundwater.
AOI 2 HAZMAT Storage Area	39°38'45.51"N; 106°54'55.54"W	Potential AFFF releases from Tri-Max units stored outside.	Proceed to an SI, focus on soil and groundwater.
AOI 3 Building 1214	39°38'43.50"N; 106°54'56.06"W	Potential AFFF releases from fire suppression system and drum.	Proceed to an SI, focus on surface water.

ARNG will evaluate the need for an SI at HAATS 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 HAATS, CO			
REVISED	4/8/2020	GIS BY	MS	4/8/2020
SCALE	1:18,000	CHK BY	JW	4/8/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	4/8/2020

Legend

- Area of Interest
- Potential PFAS Release
- No Suspected Release
- Facility Boundary
- Water Body
- River/Stream
- Canal/Ditch
- Pipe

N

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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Appendix A
Data Resources

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

Facility Real Property Documents

- 2016 HAATS Facility Parcel Consolidation Lease Amendment

Background Information Sources

- 2010 Phase I Environmental Site Assessment for the HAATS Facility – Gypsum, Colorado
- 2016 Town of Gypsum Drinking Water Quality Report
- 2017 HAATS Spill Prevention, Control and Countermeasure Plan
- 2019 EGE Fire Department Interview Questionnaire
- 2019 HAATS Facility Personnel Interview Questionnaire

EDR™ Report

- 2020 HAATS EDR™ Report

Facility PFAS Material Information

- Buckeye Premium 3% Military Specification AFFF Concentrate Data Sheet
- Buckeye C6-3% Mil Spec AFFF Safety Data Sheet
- HAATS Facility Tri-Max 30 Unit Label Photograph
- HAATS Facility Tri-Max 30 Unit Photograph

Aircraft Crash Reports

- 2005 National Transportation Safety Board Aviation Accident Final Report; Accident Number DEN05LA111
- 2010 National Transportation Safety Board Aviation Accident Final Report; Accident Number CEN10LA093
- 2015 National Transportation Safety Board Aviation Accident Final Report; Accident Number CEN15FA257

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

ARNG Preliminary Assessments for PFAS
Telephone Interviews
Colorado ARNG Facilities: Fort Carson, HAATS, Buckley AASF
18 December 2019
1000 to 1145 hrs

Name	Affiliation	Facility Role
[redacted]	ARNG	NA
CPT [redacted]	ARNG	NA
[redacted]	USACE	NA
[redacted]	USACE	NA
[redacted]	AECOM	NA
[redacted]	AECOM	NA
[redacted]	AECOM	NA
[redacted]	Arcadis	NA
[redacted]	Arcadis	NA
CPT [redacted]	COARNG	Environmental Protection Specialist
[redacted]	COARNG	Environmental Compliance Manager
CPT [redacted]	COARNG	153rd Military Police Battalion Sustainment Officer
SGT [redacted]	COARNG	Unit Environmental Compliance Officer
SSG [redacted]	COARNG	1157th Engineer Company Supply Sergeant
[redacted]	COARNG	Environmental Protection Specialist (retired)
1SG [redacted]	COARNG	Unit Environmental Compliance Officer at HAATS
[redacted]	COARNG	Western Region Maintenance Supervisor at HAATS
[redacted]	COARNG	Facility Maintenance Supervisor at Buckley AFB

HAATS Discussion:

1SG [redacted] (32 years' experience) **–** Building 1213A is the former HAATS but is no longer owned/operated by the COARNG; it was turned over to the Vail Valley Jet Center. The COARNG HAATS property no longer encompasses that hangar. Building 1213A was first occupied by the COARNG circa 1990. It did not have an AFFF system, or AFFF storage at the time. It was previously used as a hangar for non-DoD purposes.

Building 1214 is the current HAATS, which was first occupied by the COARNG in 2013 after its construction. The building has an AFFF suppression system that uses Buckeye 3% AFFF concentrate. There have been no known AFFF system tests that resulted in the release of AFFF. AFFF is cycled annually in an enclosed manner for maintenance. The system test alarm/pump/valves also undergo regular maintenance, but no known releases have occurred. A 55-gallon drum of Buckeye 3% AFFF concentrate is also stored within Building 1214. The building is connected to sanitary system sewers.

Eagle County has a fire department located at the airport that is the first responder to emergencies at HAATS as well as the larger airport property. The fire department has never had to respond to an emergency at HAATS with AFFF. The county fire department performs their fire training in

Denver, CO. No crashes have occurred at the HAATS facility that would require AFFF response. It is unknown whether any significant crashes have occurred elsewhere on the airport property.

5 mobile fire extinguishers (trimaxes) are stored at the HAATS facility 1 trimax is stored near the hazardous material storage on the north side of Building 1214, the other 4 are stored on the taxiway on the north side of the flight ramp near the gravel area. The trimaxes will be emptied into 55-gallon drums for disposal in the future. They all appear in good shape, and have no history of spills or leaking. They are inspected monthly for integrity.

Annual fire training is performed on the flight ramp/taxiway area near the southeastern corner of Building 1214. The training involves the lighting of diesel fuel in a drip pan and extinguish the flames with ABC fire extinguishers. No AFFF is used.

Fueling of HAATS aircraft is performed on the ramp south of Building 1214. The work is contracted to Vail Valley Jet Center who provides the fuel. Fuel spills are rare, and no AFFF has ever been used in response to a fuel spill.

Water salutes are performed for retiring pilots occasionally on the HAATS facility. The event involves fire trucks spraying water across the flight ramp/taxiway during the landing of an aircraft. Water is likely sprayed onto the HAATS facility from fire trucks.

[redacted] – The former HAATS building was occupied by COARNG in 1990. Prior to that, it was used as a private hangar space. It was renovated for COARNG use, but the type and contents of the prior suppression system are unknown. Mr. [redacted] has observed the former HAATS in recent ("last few") years and observed no AFFFF.

There are no metal plating or industrial laundry facilities at HAATS. There have been no known creative/non-technical uses of AFFF at HAATS.

CPT [redacted] (2009-present) – The HAATS facility is served by the by the Town of Gypsum public utilities/drinking water. There are no monitoring wells at the facility. Depth to water and other information may be available in 2010 ESA.

Summary:

- There is no known use or accidental release of AFFF at HAATS.
- AFFF is stored in the Building 1214 fire suppression system and in a 55 gallon drum stored in Building 1214.
- Trimax units are stored at the facility near the hazardous material storage area and the flight ramp. The trimaxes contain AFFF.
- The airport fire department, which may have AFFF, has never used AFFF at HAATS.
- The former HAATS, which is no longer a part of the COARNG property, has never stored AFFF to the knowledge of interviewees. No known use has occurred at the former HAATS.

Appendix B.2
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: High Altitude Aviation Training Site (HAATS)

Why has this location been identified as a site?

The site is located at an airport and stores aviation assets.

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

Yes, the facility is located at the Eagle County Regional Airport (EGE)

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? Generally north towards Eagle River

Average rainfall? 11.31 inches

Any flooding during rainy season? None

Direct or indirect pathway to ditches? Direct (stormwater networks, drainage ditches)

Direct or indirect pathway to larger bodies of water? Indirect (stormwater network connects to Eagle River)

Does surface water pond any place on site? No

Any impoundment areas or retention ponds? No

Any NPDES location points near the site? Unknown

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

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Inferred to flow north

Depth to groundwater? 86 ft bgs

Uses (agricultural, drinking water, irrigation)? Groundwater not used on facility.

Any groundwater treatment systems? No at HAATS

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

Commercial and domestic wells located downgradient

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? No, wastewater is transferred to the Gypsum WWTP

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? The location of sludge disposal is unknown

Is surface water from potential contaminated sites treated?

The town of Gypsum WWTP potentially treats PFAS-laden water offsite in the town of Gypsum

Equipment Rinse Water

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

HAATS does not store firetrucks, but does have Tri-Max units. They are inspected monthly for integrity. No known washing/rinsing occurs.

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?

Nozzle testing does not occur.

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker No known releases, no potential receptors

Construction Worker No known releases, no potential receptors

Recreational User No known releases, no potential receptors

Residential No known releases, no potential receptors

Child No known releases, no potential receptors

Ecological No known releases, no potential receptors

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

Residential areas approximately 1 miles west, elementary and high schools approximately 1.5 miles west, and

Documentation

Ask for Engineering drawings (if applicable).

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

Former HAATS facility was located approximately 900 ft east of the current building, which is now operated by the Vail Valley Jet Center. The current HAATS was constructed in 2013.