FINAL
Preliminary Assessment Report
Mather AASF, California

Perfluorooctane-Sulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA) Impacted Sites
ARNG Installations, Nationwide

February 2020

Prepared for:

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Acronyms and Abbreviations

AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFB	Air Force Base
AFFF	aqueous film forming foam
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
amsl	above mean sea level
AOI	area of interest
ARFF	Aircraft Rescue and Firefighting
ARNG	Army National Guard
ASE	Aviation Support Equipment
bgs	below ground surface
BRAC	Base Realignment and Closure Commission
CAARNG	California Army National Guard
CAL FIRE	California Department of Forestry and Fire
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
EDR	Environmental Data Resources, Inc.
°F	degrees Fahrenheit
ft	feet
ft/ft	feet per feet
FTA	fire training area
MGD	million gallons per day
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
ppt	parts per trillion
SDS	safety data sheet
SI	Site Inspection
UCMR3	Third Unregulated Contaminant Monitoring Rule
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VSI	visual site inspection

Executive Summary

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

AECOM completed a PA for PFAS at the Mather Army Aviation Support Facility (AASF; also referred to as the "facility") in Mather, California, to assess potential PFAS release areas and exposure pathways to receptors. The current AASF is constructed on a parcel of land formerly part of Mather Air Force Base. Occupation of the property by California ARNG (CAARNG) began in 1985, and the licensing term was amended in 1994 to extend indefinitely. 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
- Conducted a 1-day site visit on 4 March 2019
- Interviewed current Mather AASF personnel during the site visit including the CAARNG Instructor Pilot, Commander, and Sergeant; and Mather Aircraft Rescue and Firefighting (ARFF) Firefighters
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs
- Identified Areas of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI

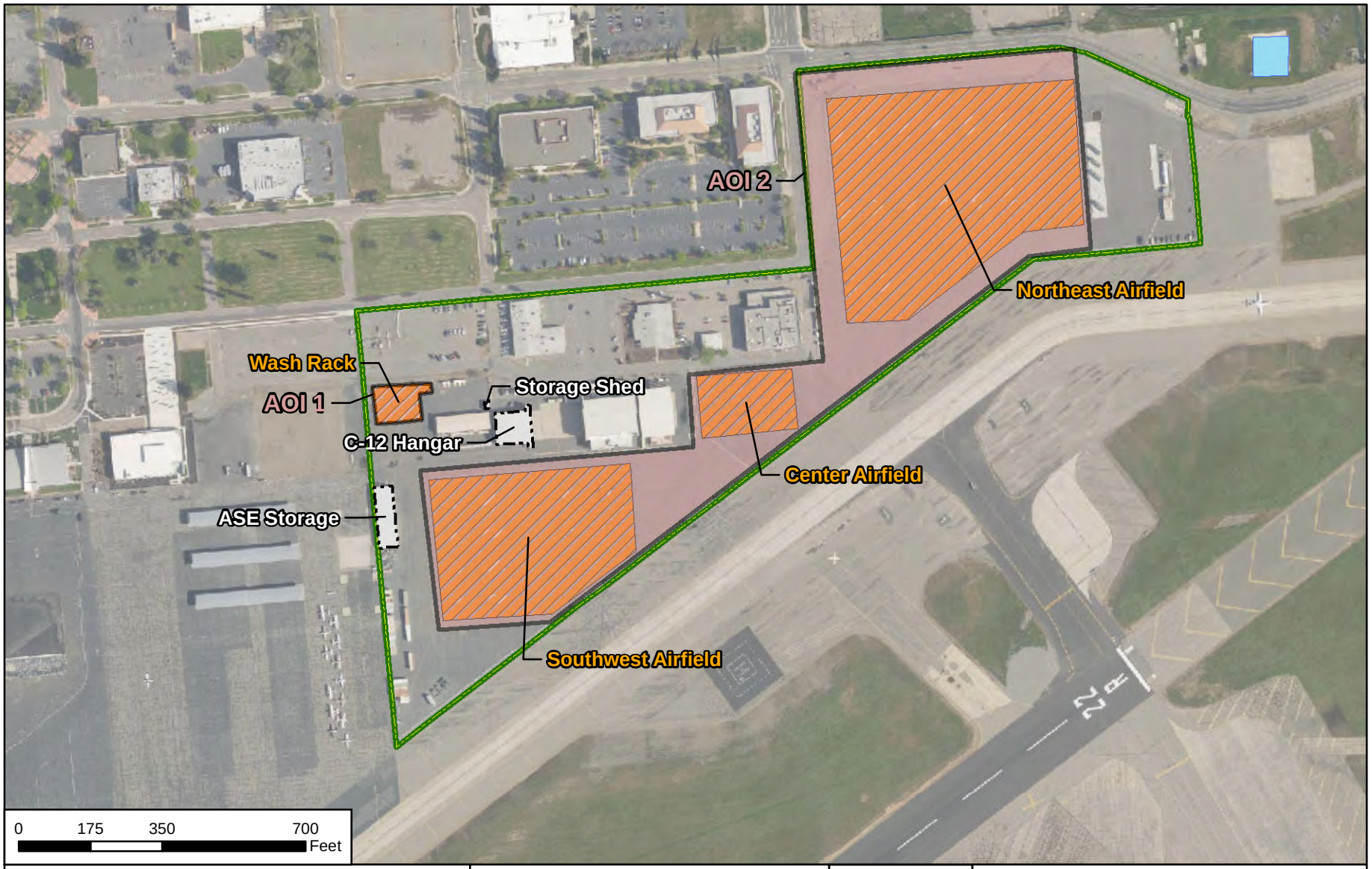
Two AOIs related to potential PFAS releases were identified at Mather AASF during the PA. The AOIs are shown on **Figure ES-1** and in **Table ES-1** below:

Table ES-1: AOIs at Mather AASF

Area of Interest	Name	Used by	Release Dates
AOI 1	Wash Rack	CAARNG	Approximately 2010
AOI 2	Airfields	CAARNG	Potentially as early as 1998 until approximately 2003

Based on information obtained during the PA, there is potential for exposure to PFAS contamination in media at or near the facility. PFAS sources adjacent to the AASF are shown on **Figure ES-2**, and the preliminary CSM for Mather AASF, which presents the potential receptors and media impacted, is shown on **Figure ES-3**. Based on the US Environmental Protection Agency (USEPA) third Unregulated Contaminant Monitoring Rule data, it was indicated that PFAS

were detected in a public water system above the USEPA lifetime Health Advisories within 5 miles of the facility.



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NOTES	Preliminary Assessment for PFAS at Mather AASF, CA			
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SCALE	1:4,200	CHK BY	MS	11/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	11/6/2019

Area of Interest
Potential PFAS Area
No Suspected Release
Facility Boundary
Water Body

N

Summwary of Findings

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Figure ES-1

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CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Mather AASF, CA			
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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	11/6/2019

Legend

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

N

Summary of Findings - Adjacent Sources

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Figure ES-2

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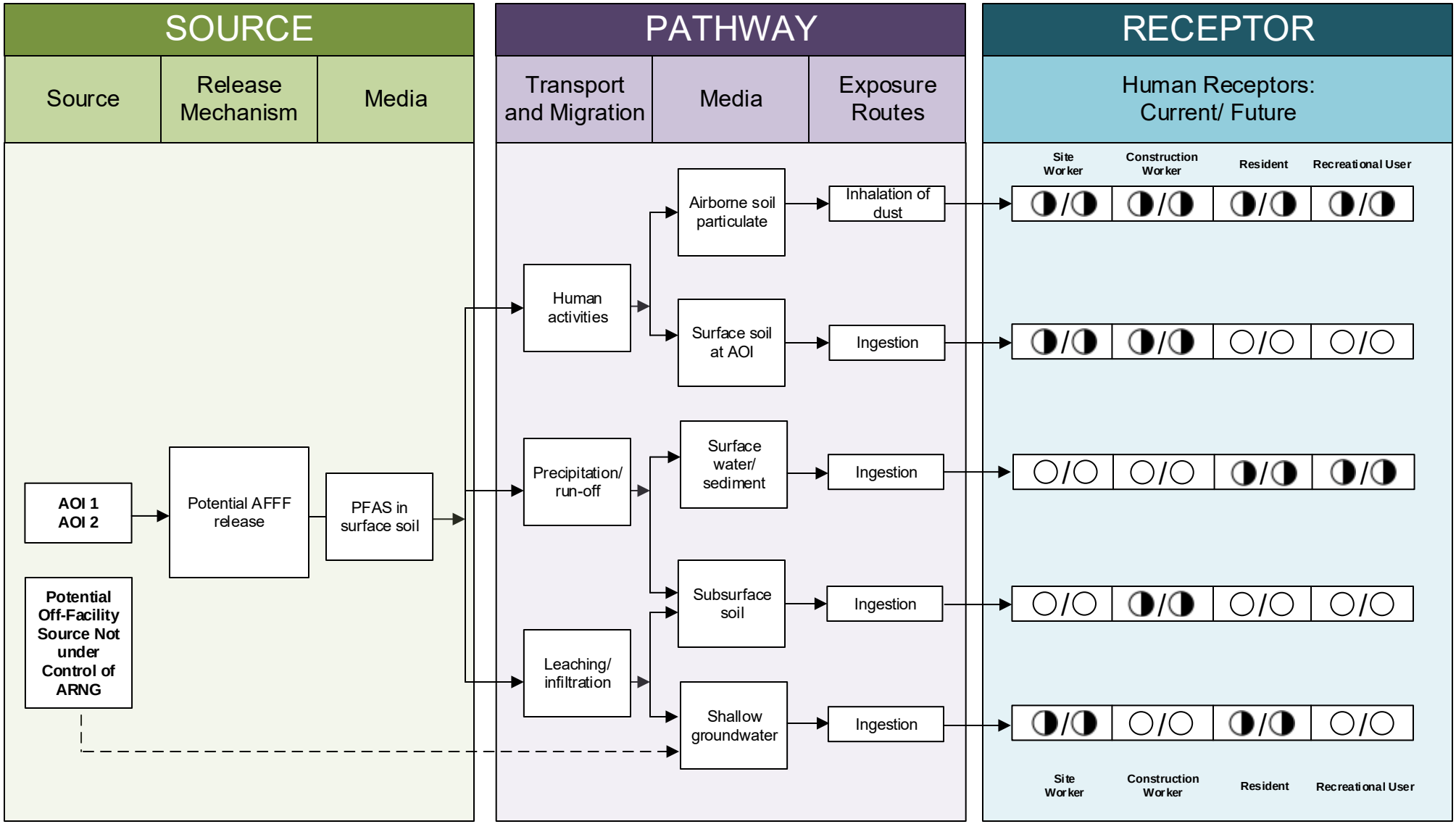


LEGEND

- Flow-chart stops
- Flow-chart continues
- Partial/ possible flow
- Incomplete pathway
- Possible complete pathway
- Complete pathway

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. 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.

Figure ES-3
Preliminary Conceptual Site Model
Mather AASF, CA

1. Introduction

1.1 Authority and Purpose

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division, Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide* under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017. The ARNG is assessing potential effects on human health related to processes at their facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily releases of aqueous film forming foam (AFFF) 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. The US Environmental Protection Agency (USEPA) issued Drinking Water Health Advisories for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. In the absence of federal maximum contaminant levels, some states have adopted their own drinking water standards for PFAS. On 13 July 2018, under the authority of the Deputy Director of the Division of Drinking Water, California issued drinking water notification levels of 14 parts per trillion (ppt) for PFOA and 13 ppt for PFOS. Notification levels are non-regulatory health-based advisory levels established for contaminants in drinking water for which maximum contaminant levels have not been established.

This report presents findings of a PA for PFAS at California ARNG (CAARNG) Mather Army Aviation Support Facility (AASF; also referred to as the “facility”) in Mather, CA, 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 USACE 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 Mather AASF. The term PFAS will be used throughout this report to encompass all PFAS chemicals being evaluated, including PFOS and PFOA, which are key components 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
- Conducted a 1-day site visit on 4 March 2019
- Interviewed current Mather AASF personnel during the site visit including the CAARNG Instructor Pilot, Commander, and Sergeant; and, Mather Aircraft Rescue and Firefighting (ARFF) Firefighters
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs

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

1.3 Report Organization

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

- **Section 1** – **Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA.
- **Section 2** – **Fire Training Areas:** describes the FTAs at the facility identified during the site visit.
- **Section 3** – **Non-Fire Training Areas:** describes other locations of potential PFAS releases at the facility identified during the site visit.
- **Section 4** – **Emergency Response Areas:** describes areas of potential PFAS release at the facility, specifically in response to emergency situations.
- **Section 5** – **Adjacent Sources:** describes sources of potential PFAS release adjacent to the facility that are not under the control of ARNG.
- **Section 6** – **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 Description

Mather AASF is an operational maintenance shop for CAARNG aircraft located at 10616 Superfortress Avenue, Mather, CA 95655. The facility is in Mather Field, which was the former flightline operations area of Mather Air Force Base (AFB) and was granted for use and occupation by CAARNG under a 25-year land license beginning on 1 November 1985. Mather AFB was designated for realignment under the Base Realignment and Closure Commission (BRAC) in 1988 and closure was received in 1993 (Amec Foster Wheeler Environment & Infrastructure, Inc. [Amec Foster Wheeler], 2015). Following closure, the AASF was officially transferred from the Department of the Air Force to the Department of the Army with the disclaimer that the Department of the Air Force would be responsible for the remediation of any environmental contamination caused by and resulting from Air Force activities. In 1994, the license for Mather AASF was amended to extend the licensing term indefinitely. Leasing records are included in **Appendix A**.

The facility borders the Sacramento Mather Airport to the northeast and is situated in the Sacramento metropolitan area and Sacramento Valley (**Figure 1-1**). The facility is about 11 miles east of Sacramento.

1.5 Facility Environmental Setting

Mather AASF occupies 31 acres of land, approximately 97% of which is composed of impervious surfaces (HazCon, 2017). The areas surrounding Mather AASF are primarily the cargo and general aviation facilities at the Sacramento Mather Airport. Other surrounding areas include the Mather Regional Park, Mather Commerce Center, a Veteran Affairs hospital complex, day care and elementary schools, churches, and residential communities to the north and south (Amec Foster Wheeler, 2015). The facility sits at an elevation of 92 feet (ft) above mean seal level (amsl), with a slight general topographic gradient to the west/southwest. There are no significant natural topographic features surrounding the facility.

1.5.1 Soil

The soils at Mather AASF generally consist of gravelly loam and loam with well-developed, moderately to strongly weathered, and low erosion potential characteristics. Varying amounts of clay and gravel also exist in the soils. The clay content increases with depth and coarse gravel may be encountered at depths greater than 20 ft below ground surface (bgs) (Amec Foster Wheeler, 2015). The soils are primarily derived from American River valley and stream terrace deposits (US Department of Agriculture, 1954).

1.5.2 Geology

Mather AASF is located within the Great Valley geomorphic province, an alluvial plain located between the uplands of the Coast Ranges and the Sierra Nevada provinces (California Geological Survey, 2002). At the facility, Pleistocene-aged terrace sand, gravel, and cobbles overlie the deeper Pliocene-aged Laguna Formation, which unconformably overlies the Early Pliocene Mehrten Formation (Amec Foster Wheeler, 2016; Marchand and Allwardt, 1981; **Figure 1-2**).

The uppermost geologic units at Mather AASF comprise three alluvial terrace deposits, which, from youngest to oldest, include the Riverbank, undifferentiated alluvial gravel, and Arroyo Seco formations (Shlemon et al., 2000). These deposits occur within nested fluvial-fill terraces and ancient and active river channels and are each characterized by sand, gravel, and cobbles within silt and clay matrices of varying thickness and lateral extent. The Arroyo Seco Formation truncates the underlying Laguna Formation, which is a westward thickening alluvial wedge of interbedded clay and silt, sand, and gravel within a sandy to silty matrix (Marchand and Allwardt, 1981). The Laguna Formation directly overlies and is coeval to the Mehrten Formation, which comprises two interbedded units of gray to black sand and blue to brown clay, silt, and sand with some gravel. In the vicinity of Mather AASF, the Laguna Formation ranges from 200 to 400 ft thick, and the Mehrten Formation ranges from 200 to 500 ft thick (Amec Foster Wheeler, 2016).

1.5.3 Hydrogeology

The following hydrogeologic units have been identified through previous investigations at Mather AFB (Amec Foster Wheeler, 2016):

- Unit Ap (upper unit of the Laguna Formation)
- Unit A (upper unit of the Laguna Formation)
- Unit Bu (middle unit of Laguna Formation)
- Unit B (middle unit of the Laguna Formation)
- Unit C (lower unit of the Laguna Formation)
- Unit D (lower unit of the Laguna Formation)

- Mehrten Formation

Unit Ap contains a perched water-bearing zone, and Unit B generally has the highest potential for contaminant migration due to a high transmissivity. Units A through C are transected by the water table going from east to west (Amec Foster Wheeler, 2016). Two primary aquifers exist within the unconsolidated deposits of the Laguna and Mehrten Formations. The majority of potable wells are screened within the Mehrten Formation, which is the primary source of drinking water for the surrounding area (Amec Foster Wheeler, 2015).

Regional groundwater flow is generally in the southwest direction but may be influenced by groundwater pumping in the city of Elk Grove. Localized groundwater is also generally in the southwest direction, with an average hydraulic gradient of 0.002 feet per feet (ft/ft) (Amec Foster Wheeler, 2015). However, a large potentiometric depression has formed along the northwestern installation boundary of former Mather AFB due to remedial pumping in extraction wells; therefore, local groundwater variations are expected (URS Group, Inc., 2014). Depth to groundwater is measured at approximately 40 ft bgs for the perched aquifer and 90 ft bgs for the deeper aquifer (Amec Foster Wheeler, 2015). Groundwater features are presented on **Figure 1-2**.

Mather AASF is located in the Sacramento County Water Agency's Zone 40 North Service Area, which receives potable water from the existing water distribution system at former Mather AFB. The Mather AFB water distribution system was conveyed in 1998 via an easement to the Sacramento County. Currently, the water distribution system includes two groundwater wells and a six million gallon per day (MGD) water treatment plant located at the Independence of Mather residential development (USACE, 2012). However, potable water was additionally derived from wells located in the weapons storage area/K-9 compound prior to Mather AFB closure and from four main base wells prior to 1997 (Amec Foster Wheeler, 2015).

1.5.4 Hydrology

A drainage ditch is located near the northeastern portion of the AASF and drains to the Folsom South Canal. The Folsom South Canal flows southerly, supplying agricultural lands to the south. Storm water in the northeastern airfield and refueling pads is drained in the northeast direction, towards the drainage ditch. All other storm water is diverted to storm drain inlets on and around the AASF that connect to the drainage system of Mather Field (HazCon, 2017). There are no identified wetlands within the AASF property, but several seasonal wetlands exist in undeveloped portions of Mather Field due to the presence of an underlying impermeable soil layer of clay or hardpan (Amec Foster Wheeler, 2015).

Surface water runoff generally follows the slope of the American River valley and drains west-southwest. Mather AASF is primarily in the Lake Greenhaven-Sacramento River Watershed, but the southwestern portion of the facility is in the Upper Morrison Creek Watershed. Morrison Creek is located approximately 1.5 miles to the southeast and is a tributary of Sacramento River, located approximately 12 miles west of Mather AASF. Surface water in the drainage system of Mather Field is also captured in various drainage ditches such as the West Ditch and South Ditch. Surface water features are presented on **Figure 1-3**.

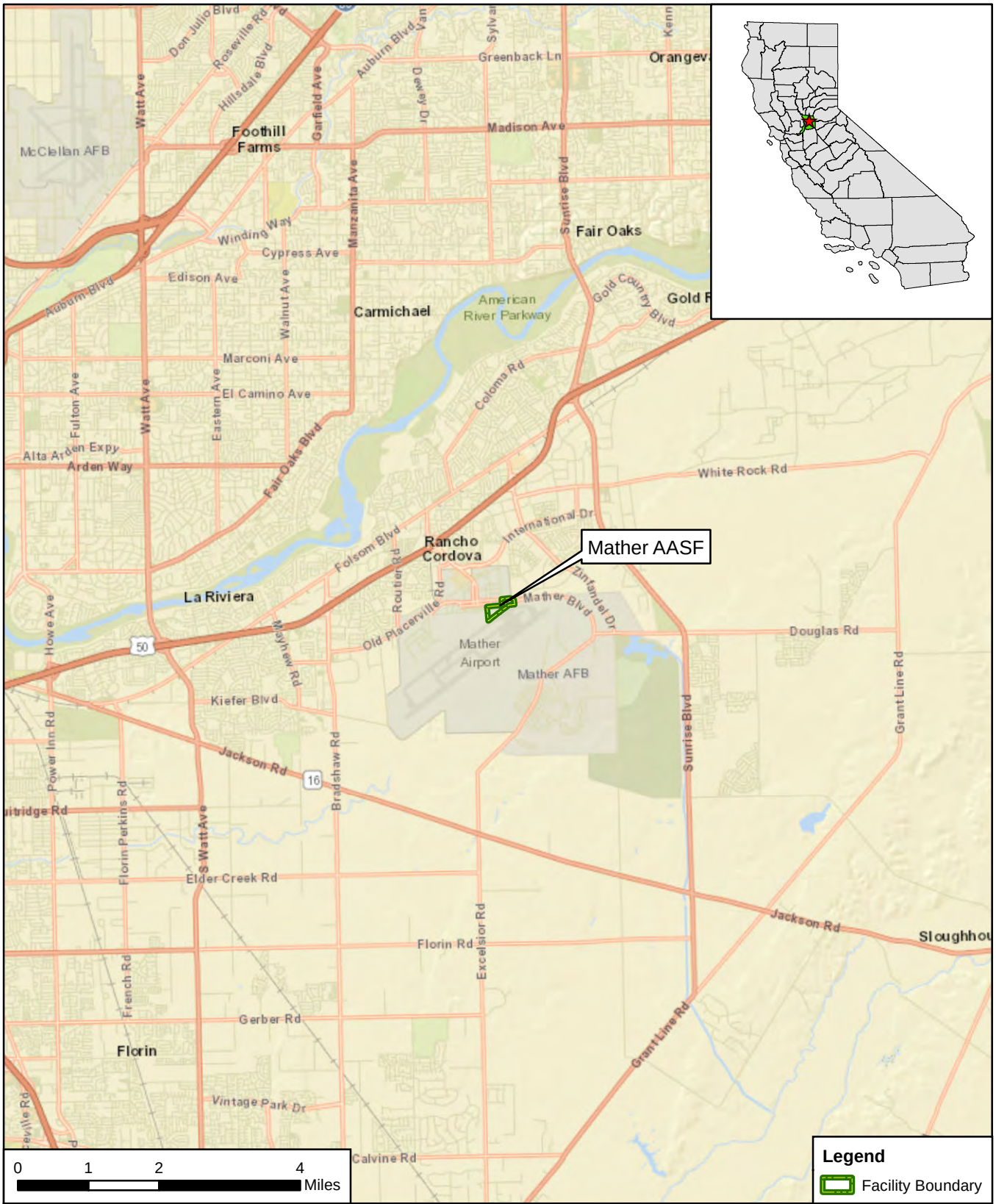
1.5.5 Climate

Mather AASF is in a semi-arid, Mediterranean climate zone. The winter "rainy season" extends from November to February, and the summer "dry season" extends from June to August. The average annual rainfall is approximately 20 inches. Summer temperatures peak in July, with an average high of 94 degrees Fahrenheit (°F) and an average low of 61 °F. Winter temperatures are lowest in December with, an average high of 55 °F and an average low of 40 °F. Prevailing wind speeds are southerly year-round due to the orientation of the Sacramento Valley and

influence of the Sierra Nevada Mountains. Snowfall is extremely rare, but frost occasionally occurs (Cline, Neigher, and Bellinder; 2010).

1.5.6 Current and Future Land Use

Mather AASF serves as a CAARNG aviation maintenance and storage facility for rotary and fixed wing aircraft. Mather AASF is comprised of a hangar, maintenance and storage areas, operations and administrative buildings, and related infrastructure including parking lots, aircraft parking areas, wash rack, and refueling pads. The AASF is categorized as a small-quantity hazardous waste generator, because it manages a variety of hazardous materials. Reasonably anticipated future land use is not expected to change from the current land use described above.



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Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	6/6/2019

Facility Location

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Figure 1-1

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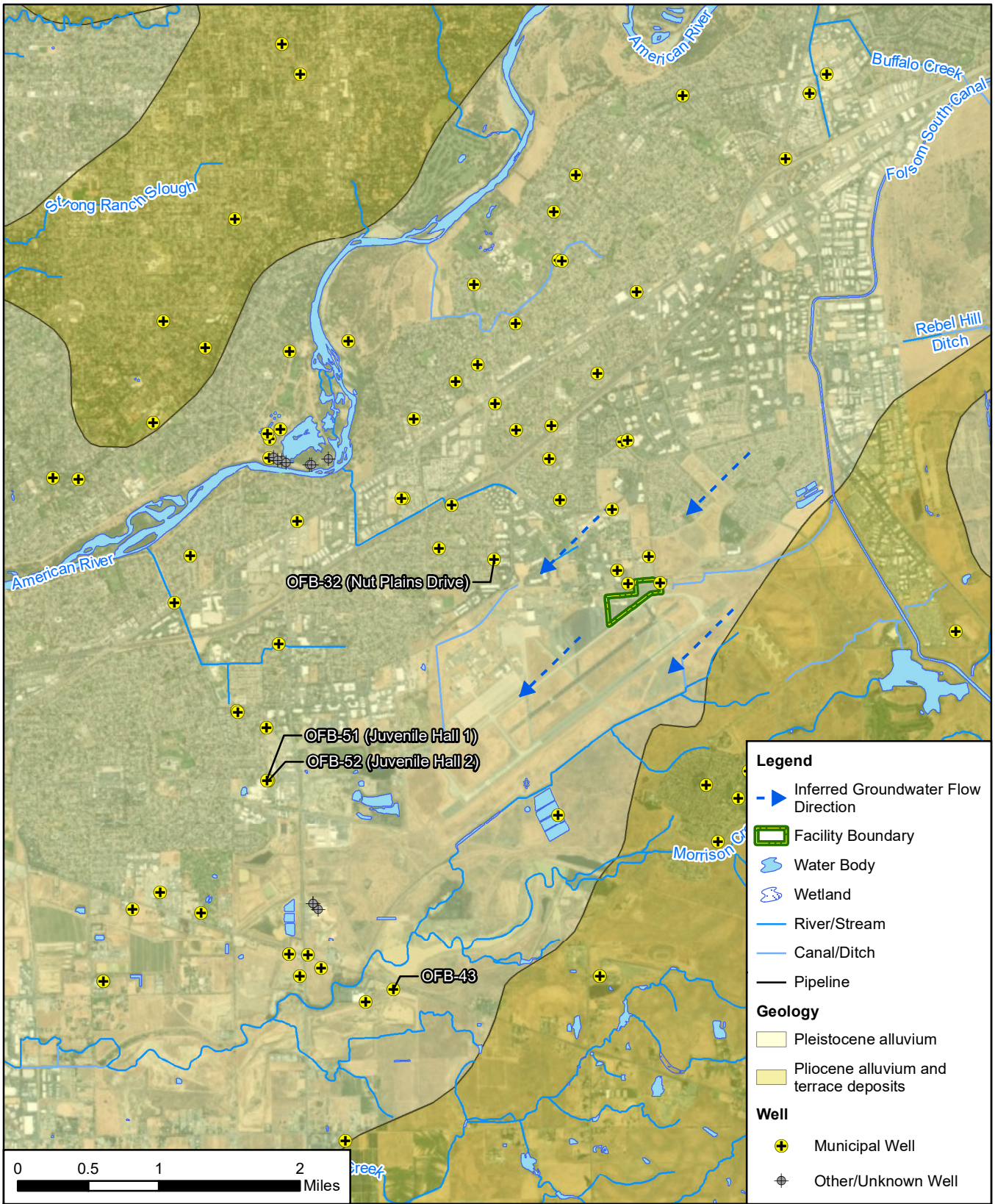

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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	6/13/2019

Groundwater Features

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Figure 1-2

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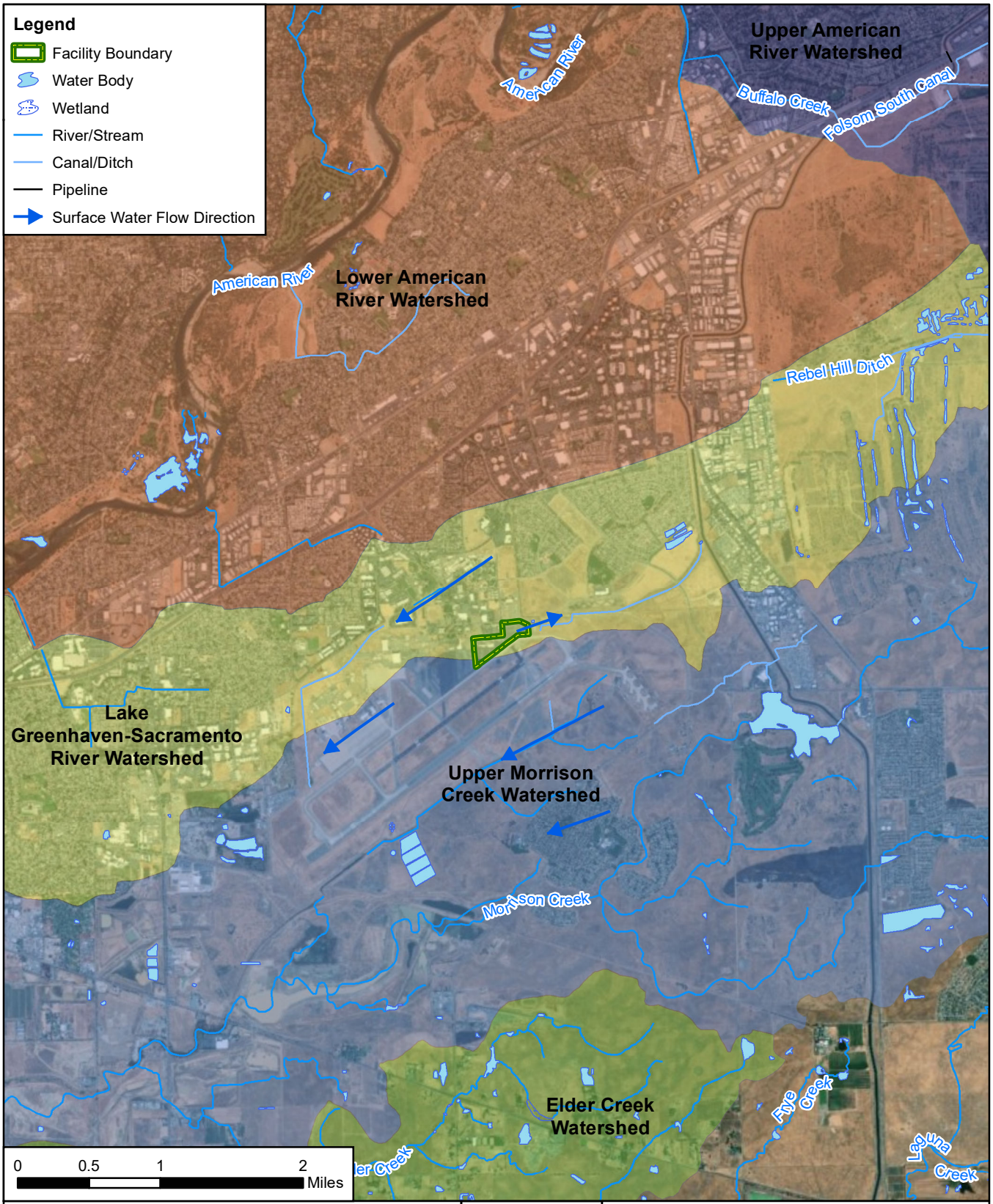

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

One former FTA was identified through record reviews during the PA. A description and the location of the FTA are shown on **Figure 2-1**. PA interview and VSI documents are included in **Appendix B,** and photographs are included in **Appendix C**.

2.1 Wash Rack

The wash rack was identified as an FTA during an interview with the CAARNG Staff Sergeant. The Staff Sergeant stated that there was a single fire training event conducted at the wash rack in approximately 2010. The fire training event involved the discharge of Tri-Max™ fire extinguishers, reportedly filled with Ansul SILV-EX Class A Foam (non-AFFF). However, some uncertainty about the contents of the Tri-Max™ fire extinguishers used in the training was introduced after the VSI found evidence of AFFF storage at the facility (see **Section 3.4** for more details). Therefore, the exact contents and amount of discharge from the Tri-Max™ fire extinguishers are unknown. Any foam that was discharged during the training was left in place to evaporate or disperse with the wind.

The wash rack is located at geographic coordinates 38°33’53.1”N; 121°17’39.1”W. The drains in the wash rack area lead to an oil water separator, which then flows into the sanitary sewer system. One Tri-Max™ fire extinguisher was observed next to the wash rack drain during the VSI. The Tri-Max™ extinguisher remains equipped with presumably either Class A foam or AFFF. The CAARNG Fire Safety Sergeant stated that the Tri-Max™ extinguishers have not been hydrostatically tested or replaced during his tenure of six years at the facility.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Mather AASF, CA			
REVISED	6/6/2019	GIS BY	GC	6/6/2019
SCALE	1:4,800	CHK BY	MS	6/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	6/6/2019

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Fire Training Area

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Figure 2-1

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3. Non-Fire Training Areas

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

3.1 Airfields

Three separate airfields are located at the AASF: Northeast Airfield, Center Airfield, and Southwest Airfield. The geographic coordinates and designations of the three airfields are as follows:

- Northeast Airfield (38°33'57.7"N; 121°17'22.1"W)
- Center Airfield (38°33'53.0"N; 121°17'28.4"W)
- Southwest Airfield (38°33'49.6"N; 121°17'34.9"W)

Training sessions where personnel would familiarize themselves with discharging the Tri-Max™ fire extinguishers, also referred to as "familiarization training" were conducted in the three airfields. According to the CAARNG Instructor Pilot, a single training session would involve the discharge of approximately one Tri-Max™ fire extinguisher. Familiarization training was conducted approximately annually and sometimes more often. The CAARNG Instructor Pilot had knowledge of the training occurring during the years 1998 to 2003.

The contents of the Tri-Max™ fire extinguishers (Class A foam or AFFF) used during familiarization training are unknown. Any foam that was discharged during the familiarization training was left in place to evaporate or disperse with the wind.

Approximately six Tri-Max™ fire extinguishers were observed on or in the vicinity of the airfield during the VSI. Most of the Tri-Max™ extinguishers were stationed next to helipads on the airfield. The Tri-Max™ extinguishers remain equipped with presumably either Class A foam or AFFF. The CAARNG Fire Safety Sergeant stated that the Tri-Max™ extinguishers have not been hydrostatically tested or replaced during his tenure of six years at the facility.

3.2 ASE Storage Building

The Aviation Support Equipment (ASE) Storage Building is an approximately 6,800 square ft space located on the western installation boundary at geographic coordinates 38°33'50.4"N; 121°17'39.5"W. The building is shared between the AASF and the National Guard unit stationed at the facility.

During the VSI, four Tri-Max™ fire extinguishers were observed stored in the AASF side of the building. The Tri-Max™ fire extinguishers were out of commission at the time and not indicated to have ever leaked or been used within the building.

3.3 C-12 Hangar

The C-12 Hangar is an approximately 7,100 square ft building located at geographic coordinates 38°33'52.4"N; 121°17'35.6"W. The C-12 Hangar is used for the support of Mather AASF operations.

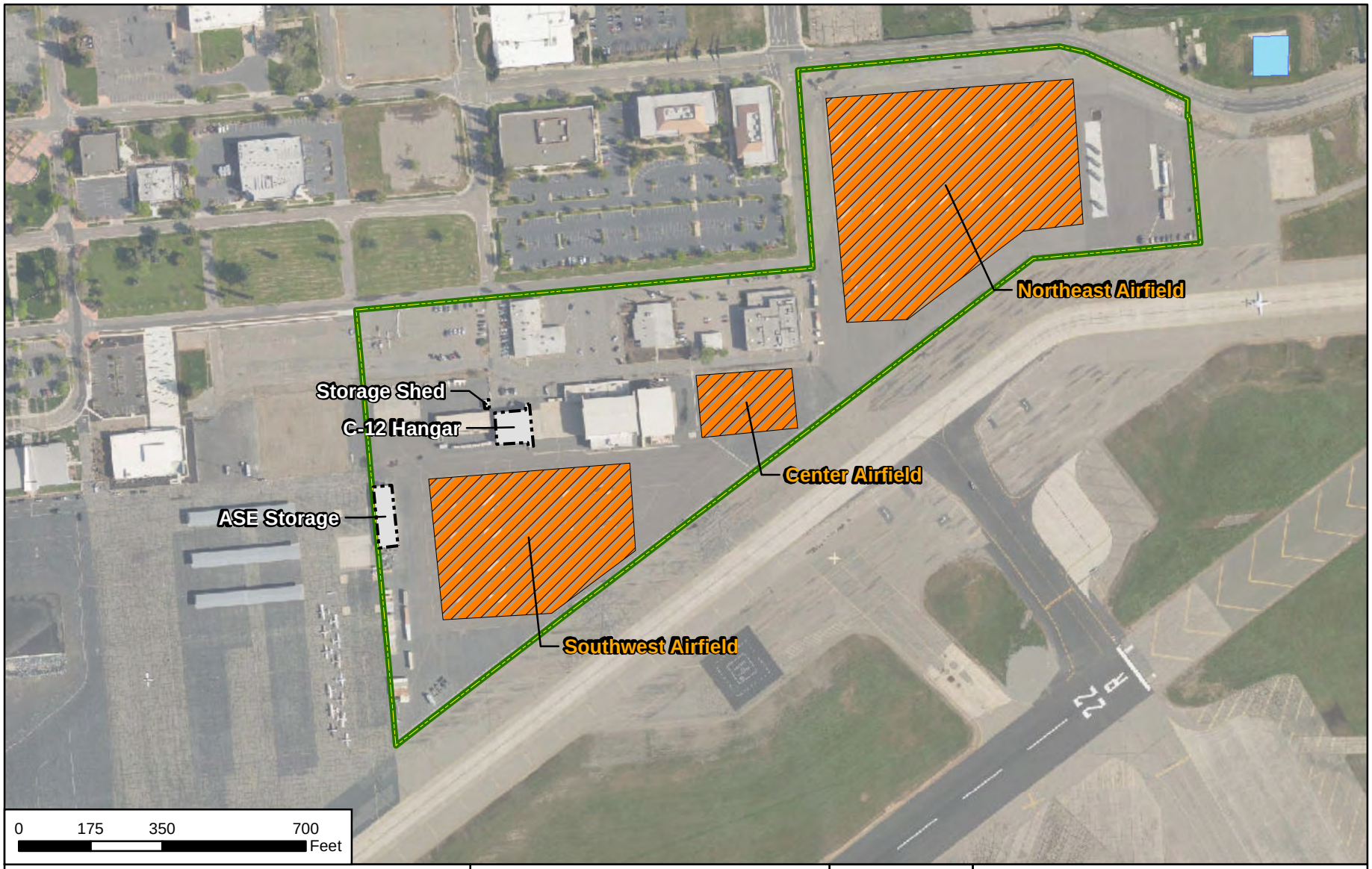
The VSI did not find any evidence of AFFF in the hangar. Only ABC fire extinguishers were present within the hangar, and there was no fire suppression system. CAARNG personnel additionally confirmed that no AFFF fire suppression system has ever been present in the hangar. Two Tri-

Max™ fire extinguishers were observed outside the hangar adjacent to the Southwest Airfield. It is unknown if the fire extinguishers are currently in commission.

3.4 Storage Shed

The Storage Shed is located adjacent to the C-12 Hangar at geographic coordinates 38°33’53.0”N; 121°17’36.4”W. The storage shed is used for the storage of hazardous materials

During the VSI, four FireAde 2000 3% AFFF and five Chemguard 3% AFFF 5-gallon containers were found stored in the shed. The interviewed CAARNG personnel were not aware of this AFFF storage and could not recall how the AFFF was obtained. It was hypothesized that the AFFF may have come from the CAARNG Roseville Armory, since Mather AASF conducts maintenance for the armory. The CAARNG Staff Sergeant initially recalled only using Ansul SILV-EX Class A Foam for fire training but could not state with certainty that AFFF was never used within the AASF after the discovery of the AFFF storage. The CAARNG personnel maintained records of the Chemguard 3% AFFF safety data sheet (SDS) within the facility, which is attached in **Appendix A**.



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SCALE	1:4,200	CHK BY	MS	6/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	6/6/2019

Legend

- Potential PFAS
- No Suspected Release
- Facility Boundary
- Water Body

N

Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\CA\Mather_AASF\Fig_3-1_Mather_AASF_Non-FTAs.mxd

4. Emergency Response Areas

Emergency responses to crashes sometimes require flame suppression, which may result in the release of PFAS to the environment in the form of AFFF. No emergency response areas were identified within the current Mather AASF facility during the PA through interviews with AASF personnel, whose knowledge covers the period of 1988 to present day, or EDR reports. Aircraft emergency services are provided by the Mather ARFF, and all other emergency services are provided by the Sacramento Metro Fire Department.

5. Adjacent Sources

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

5.1 UCMR3 Data

Numerous off-facility drinking water wells have been identified in the vicinity of the AASF. A few of the drinking water wells are operated by the California American Water Company and provide water to the surrounding businesses west and north of the former Mather AFB through a direct water distribution line (Amec Foster Wheeler, 2015). The Nut Plains Drive well from the California American Water Company - Suburban supply system was identified in the third Unregulated Contaminant Monitoring Rule (UCMR3) data to exceed the Health Advisories for PFAS. The UCMR3 data is included in **Appendix A**. The Nut Plains Drive well is located within 5 miles of the AASF in the inferred cross-gradient hydrogeologic pathway and is screened from 240 to 428 ft bgs (CA Water Boards, 2019). Two drinking water wells (Juvenile Hall 1 and 2) are operated by the Sacramento County to supply water to a building complex on Branch Center Drive and are connected to a granular activated carbon treatment system. The remaining water wells are privately-owned and are used either for potable or industrial purposes such as mining. One privately-owned well (OFB-43), located approximately 3 miles southwest of the AASF, was identified as being used for irrigation purposes (Amec Foster Wheeler, 2015). Well locations are shown on **Figure 1-2**.

The Bethany Slavic Missionary Church has a PFAS-impacted drinking water well on its property. The impacted well is located approximately 1-3 miles downgradient (southwest) from the former Mather AFB and Mather AASF. The maximum detected concentration in the well was 59 parts per trillion (ppt), which is below the Health Advisories of 70 ppt for PFOS/PFOA (Cloud et al., 2019).

5.2 Former Mather Air Force Base

Former Mather AFB was located on an approximately 5,845-acre property. Mather AFB began operations in 1918 and was designated for realignment under BRAC in 1988. Closure was received in 1993 and the installation transitioned to civilian use (Amec Foster Wheeler, 2015).

Operations related to the use and/or storage of AFFF have historically occurred at various locations at former Mather AFB. A 2015 PA report on PFAS identified ten potential PFAS release locations (Amec Foster Wheeler, 2015). A 2016 SI report for the former Mather AFB FTA site FT011P confirmed that PFOS concentrations in soil exceeded the Office of Superfund Remediation and Technology Innovation resident and direct contact soil criteria, and PFOS and PFOA concentrations in groundwater exceeded the Health Advisories (Amec Foster Wheeler, 2016). The former Mather AFB PFAS investigation reports are included in **Appendix A**.

During an interview with a CAARNG Instructor Pilot, three additional FTAs were identified within the former Mather AFB installation boundary and near the Mather AASF (**Figure 5-1**). The FTAs were combined ARNG and Air Force extraction type exercises that may have involved extinguishing live fire with either water or foam. The amount and type of foam (Class A or AFFF) discharged is unknown. The interviewed Instructor Pilot could not recall specific dates when fire training exercises took place but could recall the occurrence of fire training exercises as early as 1988 until approximately 2000. The geographic coordinates and designations of the three FTAs are as follows:

- ARNG & Air Force FTA #1 (38°33’51.7”N; 121°17’44.0”W)

- ARNG & Air Force FTA #2 (38°33’43.9”N; 121°17’45.6”W)
- ARNG & Air Force FTA #3 (38°33’46.4”N; 121°17’28.6”W)

5.3 Private Aviation Companies at Sacramento Mather Airport

A number of private aviation companies are present at the Sacramento Mather Airport. With the exception of Elite Air Interiors, at none of the companies could the use or storage of AFFF be determined during the PA. These companies are listed below.

- The EVA Flight Training Academy is located at 3745 Whitehead Street, Mather, CA 95655. The academy provides flight training to future airlines pilots and maintains a hangar.
- Mather Jet Center is a fixed-based operator located at 10510 Superfortress Avenue, Mather, CA 95655. Duncan Aviation, Inc. is an aircraft maintenance, repair, and overhaul company that is also located within the same facility.
- Mather Aviation, LLC is an aircraft maintenance company located at 10360 Macready Avenue, Mather, CA 95655.
- Elite Air Interiors is located at 3868 Bazley Way, Hanger #7040, Mather, CA 95655. The company provides interior refurbishment services for aviation aircrafts. The company’s website advertises using “the highest quality, fire retardant, HR upholstery foams”. PFAS contamination from these industrial applications is unknown but possible (Elite Air Interiors, n.d.). The Elite Air Interiors hangar was previously a Mather AFB maintenance hangar (Building 7015) that stored AFFF and contained an AFFF fire suppression system. The Mather AFB maintenance hangar was identified as a potential PFAS release area in the former Mather AFB PA report (Amec Foster Wheeler, 2016).

5.4 Fire Training Area

During an interview with Mather AASF personnel, the area located northeast of the Sacramento Mather Airport was identified as an FTA. The FTA’s geographic coordinates are 38°34’08.5”N; 121°15’47.6”W. The area is not within the boundary of the former Mather AFB and it is unclear who currently owns the property; however, a FedEx airplane is apparently parked in the area at all times. No further details such as AFFF usage or fire training activities are known about the FTA.

5.5 California Department of Forestry and Fire Protection

The California Department of Forestry and Fire Protection (CAL FIRE) maintains a hangar located along Bazley Way and adjacent to Elite Air Interiors. It is unknown if AFFF is used or stored at the facility. The CAL FIRE hangar was previously a Mather AFB maintenance hangar (Building 7040) that stored AFFF and contained an AFFF fire suppression system. The Mather AFB maintenance hangar was identified as a potential PFAS release area in the former Mather AFB PA report (Amec Foster Wheeler, 2016).

5.6 Mather ARFF

Mather ARFF has a fire station on Sacramento Mather Airport property, located at geographic coordinates 38°33’33.1”N; 121°18’23.3”W. The ARFF provides emergency response to aircraft emergencies. According to an interview with two Mather ARFF firefighters, Mather ARFF has occupied the fire station since 2000, after the Emery Worldwide Flight 17 crash incident prompted the need for a municipal fire and emergency response unit at Sacramento Mather Airport. The

ARFF stores AFFF in their firetrucks, although they do not currently conduct fire training with AFFF at the station and are in the midst of transitioning out of AFFF usage. However, the ARFF firefighters indicated that they participated in a helicopter crash fire training exercise at the airport airfield in approximately 2011. The exact location and what the fire training exercise entailed, such as if AFFF was used, was not specified.

The fire station was previously occupied by the Mather AFB firefighting unit, who stored their crash response trucks in the station. The fire station (Building 7075) was also identified as a potential PFAS release area in the former Mather AFB PA report (Amec Foster Wheeler, 2016).

5.7 Emery Worldwide Flight 17 Crash

On 16 February 2000, Emery Worldwide Airlines, Inc. (Emery Worldwide) Flight 17 crashed into an auto salvage yard, approximately 2.5 miles east of the Sacramento Mather Airport. The airplane was attempting to return to the airport after experiencing a loss of pitch control (National Transportation Safety Board, 2003). The auto salvage yard contained 573 cars, some of which were set ablaze by the crash and contained gasoline in their tanks. According to eyewitness accounts, jet fuel was spilled on the ground and “flames went up about 200 to 300 feet in the air” (Curiel et al., 2000). Due to the presence of a fuel fire, firefighting response with foam is likely, although the type of foam (Class A or AFFF) and quantity used is unknown.

5.8 Air Force B-52 Bomber Crash

On December 1982, an Air Force B-52 bomber plane crashed into a cow pasture while practicing simulated combat takeoff exercises. The crash location was approximately one mile west of the Mather AFB runway and nearby a busy intersection (McKinley, 1982). Due to the historical usage of AFFF by former Mather AFB, it is possible that AFFF may have been used in the emergency response.

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Mather AASF, CA			
REVISED	11/6/2019	GIS BY	GC	11/6/2019
SCALE	1:19,200	CHK BY	ST	11/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	11/6/2019

Legend

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

N

Adjacent Sources

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Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings, there was one area where fire training may have occurred and one area where AFFF may have been incidentally spilled to the ground surface. As such, these areas are determined to be AOIs and may be potential PFAS source areas. The AOIs and CSMs for these AOIs are shown on **Figures 6-1** and **6-2** and summarized below.

Although the use of AFFF could not be confirmed, the following AOI was identified as a potential PFAS source area:

- AOI 1 – Wash Rack
- AOI 2 – Airfields

The following sections describe the CSM components and the specific 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 is sparse and continues to be the subject of PFAS toxicological studies (National Ground Water Association, 2018). Receptors for Mather AASF include site workers, construction workers residents, and recreational users. The preliminary CSMs for each AOI indicate which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1: Wash Rack

AOI 1 is the wash rack, where one instance of a fire training exercise occurred in approximately 2010 and may have resulted in a potential AFFF release.

The drains in the wash rack area lead to an oil water separator and then flow into the sanitary sewer system. Therefore, potential discharges of AFFF in the wash rack would primarily release directly into the sanitary sewer system. The sanitary sewer system is serviced by the Sacramento Regional County Sanitation District and Sacramento Area Sewer District. Wastewater is conveyed to the Sacramento Regional Wastewater Treatment Plant, which provides secondary wastewater treatment, participates in biosolids recycling/ land disposal, and discharges approximately 150 MGD into the Sacramento River, located about 14 miles southwest of the AASF (USACE, 2012). Exposure to receptors via the surface water/sediment pathway is unlikely due to secondary treatment of wastewater and indirect connection to the Sacramento River. However, any runoff not captured by the oil water separator could reach nearby surface drainages that lead into tributaries of the Sacramento River and consequently present a potential exposure pathway to off-facility residents and recreational users. There are unpaved soil areas adjacent to the northeastern and western boundaries of the wash rack, which may receive potential discharges of AFFF or runoff from affected ground surfaces. Therefore, the pathway for potential exposure to PFAS contamination via inhalation of dust particles, or ingestion of surface soil during construction or maintenance, is considered potentially complete at the AOI for site workers and construction workers. Ground-disturbing activities to subsurface soil could present another potentially complete exposure pathway to construction workers via ingestion or inhalation of subsurface soil. The inhalation of dust for off-facility residents and recreational users is possible, but likely insignificant.

Based on a southwestern groundwater flow direction, the AOI may be upgradient of multiple public water supply wells located south and west of the AASF. The Nut Plains Drive well is an off-facility

drinking water supply well that had confirmed PFAS impacts from UCMR3 data. The Nut Plains Drive well may receive groundwater contributions from the AASF and adjacent sources; therefore, the exposure pathway for groundwater to the off-facility resident receptor is potentially complete. The facility drinking water supply wells are located approximately 2 miles south of the AASF and may receive potentially contaminated groundwater from the AASF and adjacent sources. Therefore, the exposure pathway for groundwater to the site worker is potentially complete. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.

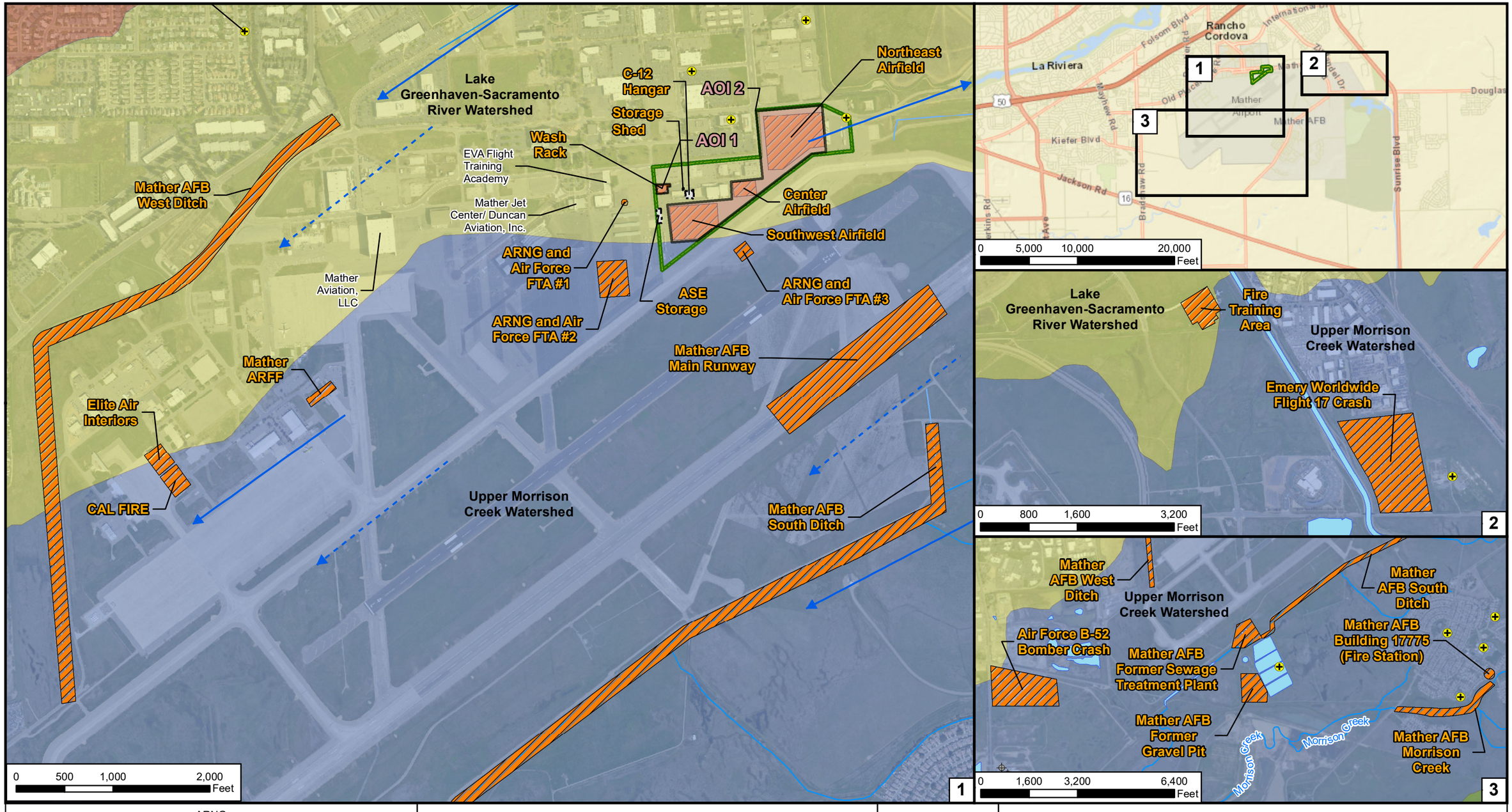
6.2 AOI 2: Airfields

AOI 2 is comprised of the three AASF airfields (Northeast Airfield, Center Airfield, and Southwest Airfield) where familiarization training exercises occurred approximately annually during the confirmed years of 1998 to 2003.

Although the three airfields within AOI 2 are made of impervious surfaces, PFAS in surface water may flow into adjacent unpaved surfaces and into surface soil. PFAS are water soluble and can migrate readily from soil to groundwater or surface water via leaching and run-off. If PFAS releases to surface soil occurred, it is possible that PFAS migrated from surface soil at AOI 2 to groundwater and waters in the Sacramento River. In addition, precipitation infiltrating into the unpaved surrounding areas of the AOI may cause the migration of PFAS from surface soil to groundwater and surface water.

AOI 2 lies within the Lake Greenhaven-Sacramento River and Upper Morrison Creek Watersheds, and surface water from the Center and Southwest Airfields are drained by tributaries to the Sacramento River. Residents and recreational users may be exposed to PFAS in surface water and sediment off-facility via ingestion of surface water and sediment in the Sacramento River and its tributaries. The Northeast Airfield drains via an off-facility drainage ditch and connects to Folsom South Canal, which is used for irrigation in farmlands and may potentially present another exposure pathway to PFAS to off-facility residents via ingestion of agricultural products.

The pathways and receptors for AOI 2 are the same as described in **Section 6.1**. The preliminary CSM for AOI 2 is shown on **Figure 6-2**.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Mather AASF, CA			
REVISED	7/9/2019	GIS BY	GC	7/9/2019
SCALE	1:12,000	CHK BY	MS	7/9/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	7/9/2019

Legend

- Area_of_Interest
- Potential PFAS Area
- No Suspected Release
- Facility Boundary
- River/Stream
- Canal/Ditch
- Surface Water Flow Direction
- Inferred Groundwater Flow Direction
- Municipal Well

N

Areas of Interest

AECOM 12420 Milestone Center Drive Germantown, MD 20876

Figure 6-1

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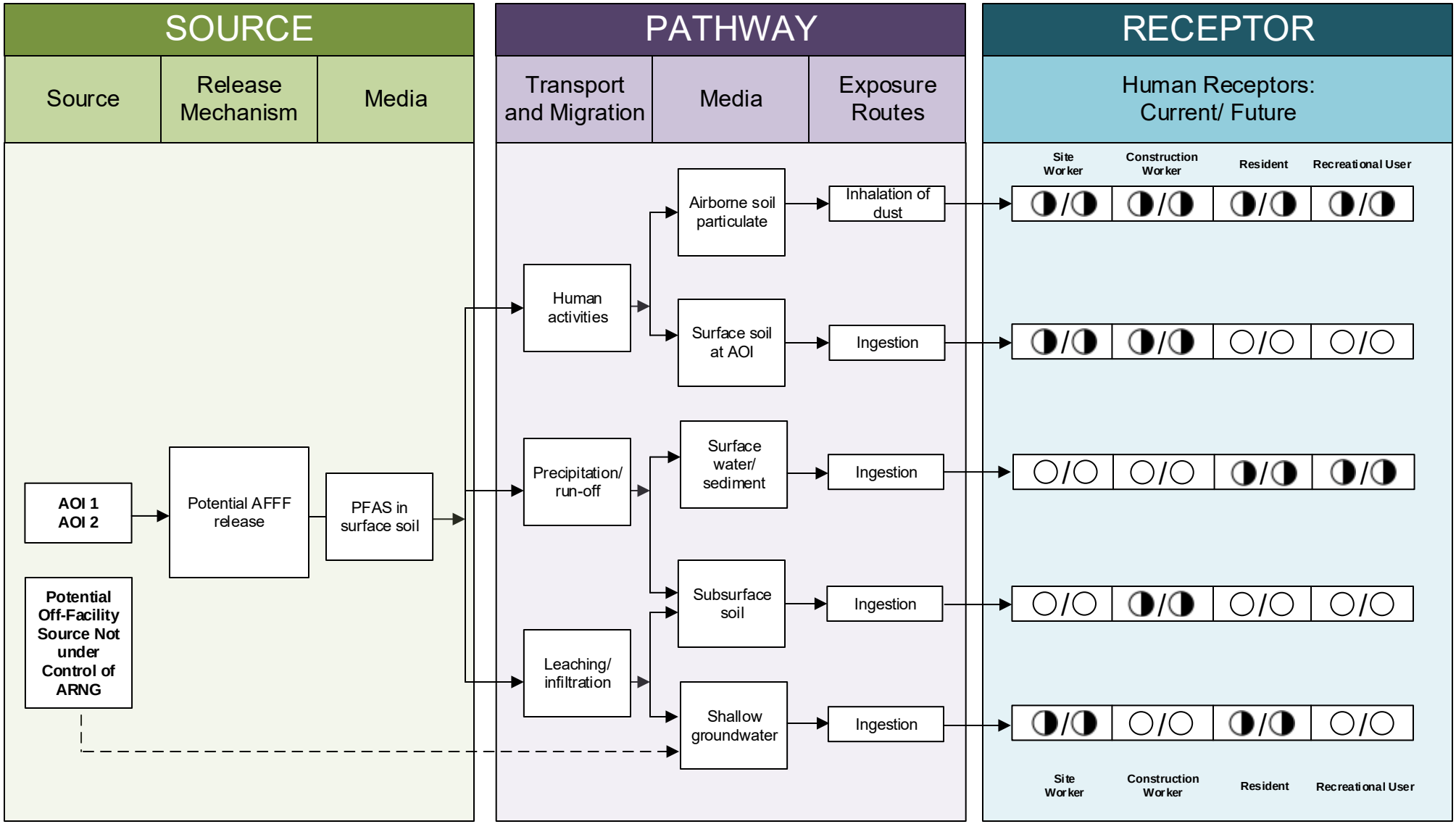


LEGEND

- Flow-chart stops
- Flow-chart continues
- Partial/ possible flow
- Incomplete pathway
- Possible complete pathway
- Complete pathway

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. 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.

Figure 6-2
Preliminary Conceptual Site Model
Mather AASF, CA

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

7.1 Findings

Two AOIs related to potential PFAS release were identified (**Table 7-1**) at CAARNG's Mather AASF during the PA (**Figures 7-1** and **7-2**).

Table 7-1: AOIs at Mather AASF

Area of Interest	Name	Used by	Release Dates
AOI 1	Wash Rack	CAARNG	Approximately 2010
AOI 2	Airfields	CAARNG	Potentially as early as 1998 until approximately 2003

Based on information obtained during the PA at these AOIs, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for the AASF, which presents the potential receptors and media impacted, is shown on **Figures 6-2** and **6-3**. Multiple drinking water wells are located downgradient from the facility and may be impacted by PFAS contamination. One cross-gradient well (Nut Plains Drive) had confirmed PFAS impacts to drinking water from UCMR3 data (see **Appendix A**).

The ASE Storage Building, C-12 Hangar, and Storage Shed at Mather AASF were determined to have no suspected PFAS release to the environment. Tri-Max fire extinguishers potentially containing AFFF were observed stationed either inside or outside of the ASE Storage Building and C-12 Hangar. The Storage Shed also contained AFFF 5-gallon buckets; however, in all instances, AFFF was not indicated to have ever leaked or been used at each location.

Numerous potential off-facility sources of PFAS were considered in the local area surrounding Mather AASF through interviews or review of previous environmental investigations, including the former Mather AFB, where PFAS have already been investigated in a PA and SI. The majority of the adjacent sources are located in the inferred downgradient/ cross-gradient groundwater and surface water flow path. Two exceptions are the FTA and Emery Worldwide Flight 17 Crash site, which are both located east and potentially upgradient from Mather AASF.

7.2 Uncertainties

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

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. Sometimes, the provided information was vague or conflicted with other sources. 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 was first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, volume of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

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

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

Table 7-2: Uncertainties within the PA

Area of Interest	Source of Uncertainty
AOI 1: Wash Rack	The exact contents and amount of discharge from the Tri-Max™ fire extinguishers are unknown.
AOI 2: Airfields	The contents of the Tri-Max™ fire extinguishers (Class A foam or AFFF) used during familiarization training are unknown. The dates of the familiarization training (1998-2003) are also estimated according to the tenure of the CAARNG Instructor Pilot.
General	Despite maintaining SDS records for AFFF, no AASF personnel interviewed were familiar with the presence of the AFFF storage or could state with confidence whether the AFFF had been used within the facility.

7.3 Potential Future Actions

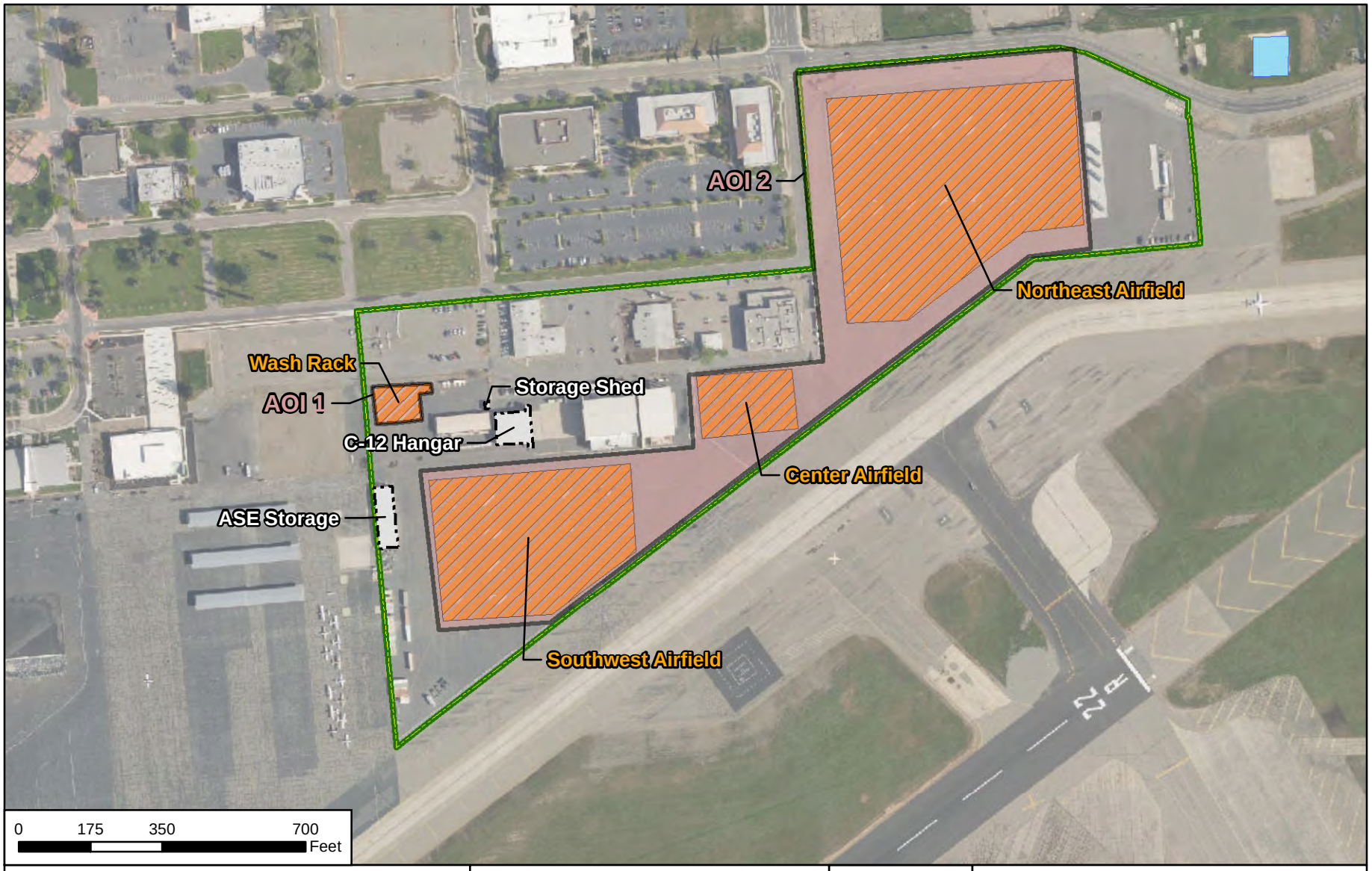
Based on the documented absence (1988 to present) of the use or release of AFFF from the ASE Storage Building, C-12 Hangar, and Storage Shed, evidence does not indicate that current or former ARNG activities having contributed PFAS contamination to soil, groundwater, surface water, or sediment at these locations. The ASE Storage Building, C-12 Hangar, and Storage Shed will not move forward in the CERCLA process.

Interviews and records (covering 1988 to present) indicate that current or former ARNG activities may have resulted in potential PFAS releases at the two AOIs identified during the PA. Based on the preliminary CSMs developed for the AOIs, there is potential for receptors to be exposed to PFAS contamination in soil, groundwater, surface water, and sediment at these 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: Wash Rack	38°33'53.1"N; 121°17'39.1"W	Confirmed location of fire training exercise by interviewee with direct knowledge	Proceed to an SI, focus on soil, groundwater, surface water, sediment
AOI 2: Airfields	38°33'53.0"N; 121°17'28.4"W	Confirmed location of familiarization exercises by interviewee with direct knowledge	Proceed to an SI, focus on soil, groundwater, surface water, sediment

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



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Mather AASF, CA			
REVISED	11/6/2019	GIS BY	GC	11/6/2019
SCALE	1:4,200	CHK BY	MS	11/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	11/6/2019

Area of Interest
Potential PFAS Area
No Suspected Release
Facility Boundary
Water Body

N

Summwary of Findings

AECOM
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Figure 7-1

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CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Mather AASF, CA			
REVISED	11/6/2019	GIS BY	GC	11/6/2019
SCALE	1:19,200	CHK BY	ST	11/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	11/6/2019

Legend

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

N

Summary of Findings - Adjacent Sources

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Figure 7-2

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Appendix A
Data Resources

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

Environmental Data Resources, Inc. Geocheck Report

- 2019 Environmental Data Resources, Inc. Geocheck Report for Mather AASF, CA

CAARNG Leasing Information

- 2019 CA ARNG Leasing Documents E-mail from Tom White (CAARNG Real Estate Manager) to Stephanie Tjan (AECOM)

Mather Air Force Base PFAS Investigations

- 2015 Final Perfluorinated Compounds Preliminary Assessment, Former Mather Air Force Base, California
- 2016 Final Perfluorinated Compounds Determination at Multiple BRAC Bases Site Investigation Report, Mather Air Force Base, Sacramento County, California
- 2016 Final Main Base/Strategic Air Command (SAC) Area (MBSA) Perfluorinated Compounds (PFC) Sampling Results, Former Mather Air Force Base, California

Mather AASF License Documents

- 1986 Department of the Army License for National Guard Purposes, No. DACA05-3-86-505
- 1986 Mather AFB, CA; Department of the Air Force Permit No. DACA05-4-86-507
- 1994 Memorandum for the Secretary of the Army, the Secretary of the Air Force; Subject: Transfer of Parcel S, Consisting of Approximately 31 Acres of Land Improved with Five Buildings at Mather Air Force Base (AFB), CA to Department of the Army for use by the California National Guard
- 1995 Memorandum for Adjutant General, State of Military Department; Subject: Mather Air Force Base, CA; License No. DACA05-3-86-505, Amendment No. 1

Mather AASF UCMR3 Data Set

- Tabulated UCMR3 Data Set

Miscellaneous Resources

- 1999 Mather Air Force Base Five-Year Review of Remedial Actions
- 2012 Draft Environmental Impact Statement, Mather Specific Plan Project, Sacramento County, California

Spill Prevention, Control, and Countermeasure Plan

- 2017 Spill Prevention, Control, and Countermeasure Plan, Sacramento Army Aviation Support Facility, 10616 Superfortress Avenue, Mather, California 95655-1103

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire - Environmental Manager

Facility:_Mather AASF_____
Interviewer:_____ST_____
Date/Time:_____3/4/19_____

Interviewee:_multiple (see below)_____ **Title:_____** **Phone Number:_____** **Email:_____**	Can your name/role be used in the PA Report? **Y** or N Can you recommend anyone we can interview? Y or N _____

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

[redacted] – Facility Commander, 5 years at facility
[redacted] – Facility Instructor Pilot (Safety Officer)
[redacted] – Staff Sergeant since 2001
[redacted] – Sergeant Fire Safety Guy, 6 years at facility

2. Where can I find previous facility ownership information?

CAARNG has been tenant since 70s-80s, Air Force closed down and was BRACed in the 90s, Civilian Airfield took over rest of the BRAC facility

3. What can you tell us about the history of PFAS including aqueous film forming foam (AFFF) at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.

Maintenance [redacted] **said Tri-Maxes have not been hydrostatically tested or replaced, they just do a checklist inspection; never refill or deplete**
Fire Training Areas **one training event conducted by** [redacted] **at wash rack, occurred around 2010, wash rack leads to OWS**
Firefighting (Active Fire)
Crash **yes, responded to by Air Force or municipal FD depending on timeframe of crash**
Fire Suppression Systems (Hangers/Dining Facilities) **never had fire suppression systems**
Fire Protection at Fueling Stations
Non-Technical/Recreational/ Pest Management
Metals Plating Facility
Waterproofing Uniforms (Laundry Facilities)
Other

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

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

No

PA Interview Questionnaire - Environmental Manager

Facility:_Mather AASF_____
Interviewer:_____ST_____
Date/Time:_____3/4/19_____

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

No

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

No inventory/procurement system, [redacted] believes that Tri-Max always contained Class A foam

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)?

Believed that Tri-Maxes contain Class A foam.
However, the VSI found evidence of four 5-gallon containers of FireAde 3% AFFF (manufactured November 2011) and five 5-gallon containers of ChemGuard 3% AFFF. Staff was unaware of the existence of this AFFF or how it got there. It was mentioned that the facility does maintenance for Roseville Armory. [redacted] recalls only putting in Sylvex Class A foam into Tri-Maxes.

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 in storage shed by C-12 hangar. See answer above.

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?

Only known FTA was the wash rack area.

Only one FTA mentioned as being off-facility. Has one FedEx plane parked in the area (need to follow up with this).

PA Interview Questionnaire - Environmental Manager

Facility:_Mather AASF_____
Interviewer:_____ST_____
Date/Time:_____3/4/19_____

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

FTA training on wash rack disposed right into wash rack.

12. Can you recall specific times when city, county, and/or state personnel came on-post for training? If so, please state which state/county agency or military entity? Do you have any records, including photographs to share with us?

No

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

No

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?

No

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?

Not known

PA Interview Questionnaire - Environmental Manager

Facility:_Mather AASF_____
Interviewer:_____ST_____
Date/Time:_____3/4/19_____

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

No

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

No

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?

N/A

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)?

Tri-Maxes are stored on airfield and around flightline

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

No

PA Interview Questionnaire - Environmental Manager

Facility:_Mather AASF_____
Interviewer:_____ST_____
Date/Time:_____3/4/19_____

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

N/A

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

N/A

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.?

No

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?

There is no longer a surplus of Tri-Maxes. All Tri-Maxes that are on-site is everything that's there. Expired Tri-Max goes to Cal Fire of HAZMAT containment (basically they have an environment team that takes care of disposal).

PA Interview Questionnaire - Environmental Manager

Facility:_Mather AASF_____
Interviewer:_____ST_____
Date/Time:_____3/4/19_____

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

[redacted] – retiring state standardization officer/ former pilot

PA Interview Questionnaire – Fire Station

Facility:__Mather AASF_____
Interviewer:____ST_____
Date/Time:_____3/4/2019_____

Interviewee:_[redacted]_____ **Title:__**Instructor Pilot_____ **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 _____

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

Started in 1988-2003, then went over to aviation office. Part-time worker until 1991, and then became full time.

Is currently a state standardization officer but will retire end of March 2019

2. What can you tell us about the history of AFFF at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.

   Maintenance (e.g., ramp washing)
   Fire Training Areas
   Firefighting (Active Fire)
   Crash **There was an incident in ~1991 on Runway 22 where an aircraft landing gear wouldn't go down so they completely foamed the runway, so the aircraft could do a hard landing/crash and slide down runway**
   Fire Suppression Systems (Hangers/Dining Facilities)
   Fire Protection at Fueling Stations
   Non-Technical/Recreational/ Pest Management

3. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing at the AFFF/suppression systems?

No

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

No

PA Interview Questionnaire – Fire Station

Facility:__Mather AASF_____
Interviewer:____ST_____
Date/Time:_____3/4/2019_____

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

Not known

6. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)? Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?

Not known

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

Not known

8. Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material?

Stored on the field in Tri-Maxes

9. How is the AFFF transferred to emergency response vehicles, suppression systems, flightline extinguishers? Is/was there a specified area on the facility where vehicles are filled with AFFF and does this area have secondary containment in case of spills? How and where are vehicles storing AFFF cleaned/decontaminated?

Not known

10. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located?

No fire truck as far back as 1988. The Air Force did have a fire truck that was parked at the former Air Force Fire Dept (now Mather ARFF)

PA Interview Questionnaire – Fire Station

Facility:__Mather AASF_____
Interviewer:____ST_____
Date/Time:_____3/4/2019_____

11. Any vehicles have a history of leaking AFFF? Do you/did you test the vehicles spray patterns to make sure equipment is working properly? How often are/were these spray tests performed and can you provide the locations of these tests, now and in the past?

Not known

12. How many FTAs are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them?

The airfields are all FTAs where they would conduct familiarization training (1998-2003). They would take turns with 10-40 men at spraying the Tri-Maxes until they would use up approximately one Tri-Max, so they could become familiar with how to use it.

There are 3 adjacent FTAs for extraction exercises conducted in conjunction with the AF and ARNG. They would simulate an accident (unclear whether they used real or just pretended vehicle was on fire). Have someone be a live dummy inside the helicopter or vehicle and they would simulate extracting the unconscious person and detaching the battery and also putting out the fire with either water or foam.

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

N/A

14. What was the frequency of AFFF use at each location? When a release of AFFF occurs during a fire training exercise, now and in the past, how is/was the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

Training at FTAs was conducted approximately annually and sometimes more. The 3 adjacent combined army and AF FTAs were truck-mounted exercises.

Any foam that was sprayed would just be left on-site to evaporate, although they might have washed down the helicopter have the exercises.

15. Are there mutual aid/use agreements between county, city, local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement? Can you recall specific times when city, county, state personnel came on-post for training? If so, please state which state/county agency, military entity? Do you have any records, including photographs to share with us?

N/A

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

N/A

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

N/A

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

B52 crash off-base 4-5 miles in the early 90s. This was responded to by the municipal FD.

DHL crash in the auto salvage yard in the early 2000s. This was responded to by the AF FD.

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

N/A

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

No

21. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds)?

Unknown

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

No

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

Unknown

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

[redacted] – safety officer that then worked for Tri-Max, now he's retired but he goes back to the 60s

PA Interview Questionnaire - Other

Facility:_Mather ARFF_____
Interviewer:___ST_____
Date/Time:___3/4/2019_____

Interviewee:__2 firefighters (anonymous)____ **Title:_____** **Phone Number:_____** **Email:_____**	Can your name/role be used in the PA Report? Y or **N** Can you recommend anyone we can interview? Y or N _____

Roles or activities with the Facility/Years working at the Facility:
One of the men has been at the facility when it was still part of the Air Force.

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 builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

The men recalled a few crashes: one was an airborne crash near Sunrise around Feb. 2000. Another was the Emery Worldwide Flight 17 crash that happened in the auto salvage yard. The Emery crash was what brought the municipal FD to move over to Mather ARFF site around 2000. Before, the AF occupied the site but they shut base in 1994.

The AF crash trucks were stationed at the site.

FD is in the midst of transitioning out of the usage of AFFF, but the fire trucks still have AFFF. They also use Halotron and Purple K.

ARFF conducts annual training on their own and at an off-site location such as in Dallas, TX. They used to do a helicopter training crash at the airfield ~8 years ago.

Appendix B.2
Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI: S. Tjan, B. Packer, D. Calderon, B. Dahl

Recorded by: S. Tjan

ARNG Contact:

Date and Time: 3/4/2019

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

Source/Release Information

Site Name / Area Name / Unique ID: Mather AASF Airfield

Site / Area Acreage: 16 acres

Historic Site Use (Brief Description): familiarization training

Current Site Use (Brief Description): Parking of helicopters, cargo loading and unloading

Physical barriers or access restrictions: fenced

1. Was PFAS used (or spilled) at the site/area? **Y**

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

airfields were the site of familiarization training with confirmed usage during 1998-2003

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

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

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

3a. Indicate what businesses are located near the site

Sacramento Metropolitan Fire District Headquarters, Mather ARFF, DHL Express Service Point, UPS Mather Airport

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

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

Mather Airport, FedEx hangar, UPS Mather Airport

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? **N**

1a. If yes, indicate which type of AFFF has been used:

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

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

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

Transport / Pathway Information

Migration Potential:

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

1a. If so, note observation and location:

Yes, connects with drainage system of Mather Field or goes into Folsom South Canal

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

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

Yes, northeast airfield connected to drainage ditch that leads to Folsom South Canal

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

3a. If so, please note the location:

Multiple drinking water well to west and northwest

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

4a. If so, please note the location:

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

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

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

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

Combined Air Force and ARNG training at helicopter pad and two other areas, Runway 22 was site of hard landing, 2 airplane crashes, multiple hangars

6b. Will off-site reconnaissance be conducted? **N**

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? **N**

1a. If so, please describe change (ex. Structures no longer exist):

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

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

very few patches of dirt/gravel and an occasional tree

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

4a. If yes, describe the location and extent of the ponding:

Receptor Information

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

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

fenced

2. Who can access the site? **Site Workers / Construction Workers / Trespassers /** Residential / Recreational Users **/ Ecological**

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

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

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

residential areas ~1 mile to north and Independence at Mather community ~1.5 miles to south

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

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

George Washington Carver School of Arts & Science ~1.3 miles to west

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

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

some vernal wetlands in Mather Field and also Mather Lake

Visual Survey Inspection Log

Additional Notes

The northernmost airfield is not used very often since three years ago.

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

Visual Survey Inspection Log

Names(s) of people performing VSI: S. Tjan, B. Packer, D. Calderon, B. Dahl

Recorded by: S. Tjan

ARNG Contact:

Date and Time: 3/4/2019

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

Source/Release Information

Site Name / Area Name / Unique ID: ASE Storage Building, C-12 Hangar, Storage Shed

Site / Area Acreage:

Historic Site Use (Brief Description): storage and hangar for aviation purposes

Current Site Use (Brief Description): same as above

Physical barriers or access restrictions: fenced

1. Was PFAS used (or spilled) at the site/area? **N**

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

Tri-Max fire extinguishers were stored inside the ASE Storage building and outside the C-12 Hangar, AFFF 5-gallon buckets were found inside the storage shed

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

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

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

3a. Indicate what businesses are located near the site

Sacramento Metropolitan Fire District Headquarters, Mather ARFF, DHL Express Service Point, UPS Mather Airport

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

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

Mather Airport, FedEx hangar, UPS Mather Airport

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? **N**

1a. If yes, indicate which type of AFFF has been used:

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

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

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

Transport / Pathway Information

Migration Potential:

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

1a. If so, note observation and location:

Yes, connects with drainage system of Mather Field or goes into Folsom South Canal

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

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

Yes, northeast airfield connected to drainage ditch that leads to Folsom South Canal

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

3a. If so, please note the location:

Multiple drinking water well to west and northwest

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

4a. If so, please note the location:

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

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

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

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

Combined Air Force and ARNG training at helicopter pad and two other areas, Runway 22 was site of hard landing, 2 airplane crashes, multiple hangars

6b. Will off-site reconnaissance be conducted? **N**

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? **N**

1a. If so, please describe change (ex. Structures no longer exist):

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

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

very few patches of dirt/gravel and an occasional tree

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

4a. If yes, describe the location and extent of the ponding:

Receptor Information

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

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

fenced

2. Who can access the site? **Site Workers / Construction Workers / Trespassers /** Residential / Recreational Users **/ Ecological**

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

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

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

residential areas ~1 mile to north and Independence at Mather community ~1.5 miles to south

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

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

George Washington Carver School of Arts & Science ~1.3 miles to west

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

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

some vernal wetlands in Mather Field and also Mather Lake

Visual Survey Inspection Log

Additional Notes

Tri-Maxes are stored in ASE Storage which is comprised of two parts - one is for the National Guard Unit and the other is for the facility. AFFF was found stored in 5-gallon containers in the storage shed by the C-12 Hangar. The wash rack leads to an oil water separator.

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

Visual Survey Inspection Log

Names(s) of people performing VSI: S. Tjan, B. Packer, D. Calderon, B. Dahl

Recorded by: S. Tjan

ARNG Contact:

Date and Time: 3/4/2019

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

Source/Release Information

Site Name / Area Name / Unique ID: Wash rack

Site / Area Acreage: 0.26 acres

Historic Site Use (Brief Description): Used for the washing of aircraft vehicles

Current Site Use (Brief Description): same as above

Physical barriers or access restrictions: fenced

1. Was PFAS used (or spilled) at the site/area? **N**

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):
one reported instance of fire training activities on wash rack in ~2010

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

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

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

3a. Indicate what businesses are located near the site
Sacramento Metropolitan Fire District Headquarters, Mather ARFF, DHL Express Service Point, UPS Mather Airport

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

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

Mather Airport, FedEx hangar, UPS Mather Airport

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? **N**

1a. If yes, indicate which type of AFFF has been used:

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

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

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

Transport / Pathway Information

Migration Potential:

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

1a. If so, note observation and location:

Yes, connects with drainage system of Mather Field or goes into Folsom South Canal

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

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

Yes, northeast airfield connected to drainage ditch that leads to Folsom South Canal

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

3a. If so, please note the location:

Multiple drinking water well to west and northwest

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

4a. If so, please note the location:

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

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

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

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

Combined Air Force and ARNG training at helicopter pad and two other areas, Runway 22 was site of hard landing, 2 airplane crashes, multiple hangars

6b. Will off-site reconnaissance be conducted? **N**

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? **N**

1a. If so, please describe change (ex. Structures no longer exist):

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

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

very few patches of dirt/gravel and an occasional tree

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

4a. If yes, describe the location and extent of the ponding:

Receptor Information

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

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

fenced

2. Who can access the site? **Site Workers / Construction Workers / Trespassers /** Residential / Recreational Users **/ Ecological**

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

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

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

residential areas ~1 mile to north and Independence at Mather community ~1.5 miles to south

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

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

George Washington Carver School of Arts & Science ~1.3 miles to west

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

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

some vernal wetlands in Mather Field and also Mather Lake

Visual Survey Inspection Log

Additional Notes

The wash rack leads to an oil water separator.

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Mather AASF

Why has this location been identified as a site?

Facility contains an AASF and multiple aviation repair functions on multiple buildings at the facility.

There is a confirmed release area. AFFF is currently stored or used at the facility.

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

Location of former Mather Air Force Base, located near Sacramento Mather Airport

Training Events

Have any training events with AFFF occurred at this site? Potentially with AFFF at wash rack and airfields

If so, how often? One event at wash rack in ~2010, approximately annually at airfields from 1998-2003

How much material was used? Is it documented? Unknown

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 southwest but also northeast towards Folsom South Canal

Average rainfall? 20 inches

Any flooding during rainy season? No

Direct or indirect pathway to ditches? Direct pathway to unnamed drainage ditch connecting to Folsom South Canal

Direct or indirect pathway to larger bodies of water? Indirect to Morrison Creek and tributaries of Sacramento River

Does surface water pond any place on site? No

Any impoundment areas or retention ponds? No

Any NPDES location points near the site? No

How does surface water drain on and around the flight line? Towards storm drains on center and southwest airfields, towards unnamed drainage ditch for northeast airfield

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Generally southwest although variable due to local GW pumping

Depth to groundwater? 40 ft bgs for shallow aquifer and 90 ft bgs for deeper aquifer

Uses (agricultural, drinking water, irrigation)? Drinking water, irrigation, and agriculture

Any groundwater treatment systems? Some off-facility DW wells connected to GAC system

Any groundwater monitoring well locations near the site? Yes, at former Mather AFB

Is groundwater used for drinking water? Yes

Are there drinking water supply wells on installation? No, supply wells are at Independence of Mather community

Do they serve off-post populations? Yes

Are there off-post drinking water wells downgradient? Yes, multiple

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?

Do we understand the fate of sludge waste?

Is surface water from potential contaminated sites treated?

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go?
No

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?
No

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker – Yes

Construction Worker - Yes

Recreational User – Yes (potentially off-facility user of Sacramento River and its tributaries)

Residential - Yes (via off-facility drinking water)

Child - Yes

Ecological – Yes (eco receptors of Sacramento River and its tributaries)

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

Documentation

Ask for Engineering drawings (if applicable).

Has there been a reconstruction or changes to the drainage system? When did that occur?
None known

Appendix C
Photographic Log

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Mather AASF	Mather, California

Photograph No. 1

Date 3/4/2019

Time 10:09

Description:

Tri-Max 30 mobile fire extinguisher shown next to wash rack drain

Orientation:

Northwest

Photograph No. 2

Date 3/4/2019

Time 10:11

Description:

Wash rack drain leads to oil water separator (shown), which is drained by an environmental contractor

Orientation:

North

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Mather AASF	Mather, California

Photograph No. 3

Date

Time

Description:
A dry chemical fire extinguisher (non-AFFF) observed in the C-12 Hangar

Orientation:
North

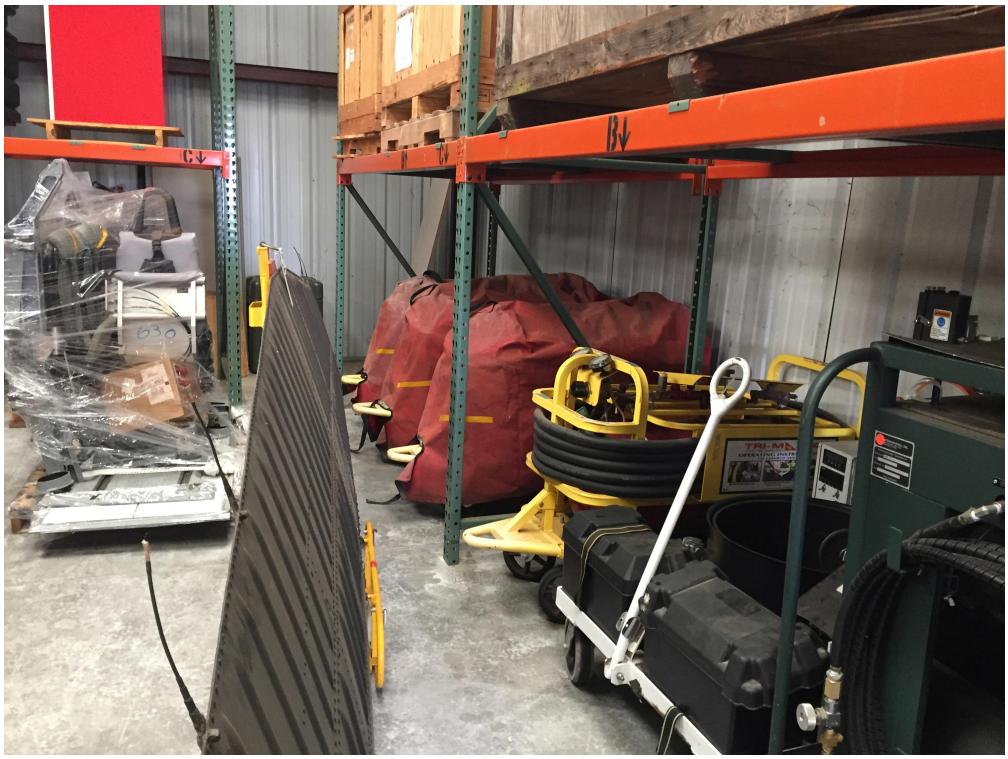
Photograph No. 4

Date 3/4/2019

Time 10:25

Description:
Three Tri-Max 30 mobile fire extinguishers observed in the ASE Storage building

Orientation:
West



Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Mather AASF	Mather, California

Photograph No. 5

Date 3/4/2019

Time 10:38

Description:

Multiple 5-gallon buckets of 3% AFFF (brands FireAde 2000 and Chemguard) found in storage shed adjacent to the C-12 Hangar

Orientation:

Southwest

Photograph No. 6

Date 3/4/2019

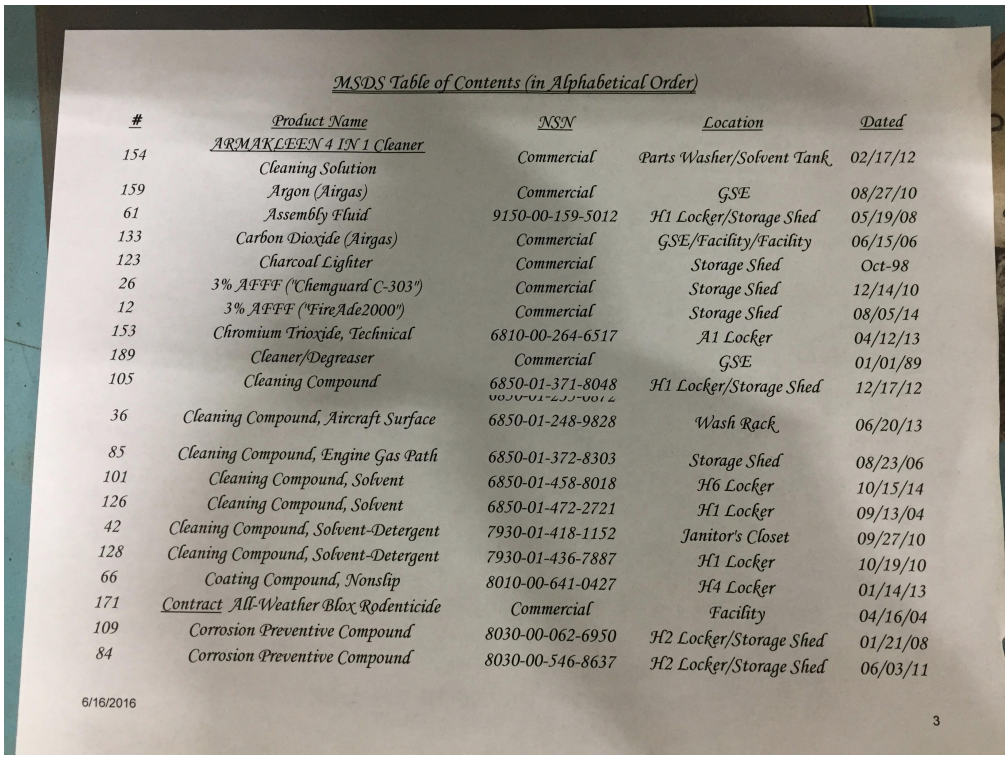
Time 10:32

Description:

Facility safety data sheet records showing 3% AFFF products in the storage shed. However, the safety data sheet was only obtained for the 3% AFFF ("Chemguard C-303").

Orientation:

East



MSDS Table of Contents (in Alphabetical Order)

#	Product Name	NSN	Location	Dated
154	ARMAKLEEN 4 IN 1 Cleaner Cleaning Solution	Commercial	Parts Washer/Solvent Tank	02/17/12
159	Argon (Airgas)	Commercial	GSE	08/27/10
61	Assembly Fluid	9150-00-159-5012	H1 Locker/Storage Shed	05/19/08
133	Carbon Dioxide (Airgas)	Commercial	GSE/Facility/Facility	06/15/06
123	Charcoal Lighter	Commercial	Storage Shed	Oct-98
26	3% AFFF ("Chemguard C-303")	Commercial	Storage Shed	12/14/10
12	3% AFFF ("FireAde2000")	Commercial	Storage Shed	08/05/14
153	Chromium Trioxide, Technical	6810-00-264-6517	A1 Locker	04/12/13
189	Cleaner/Degreaser	Commercial	GSE	01/01/89
105	Cleaning Compound	6850-01-371-8048	H1 Locker/Storage Shed	12/17/12
36	Cleaning Compound, Aircraft Surface	6850-01-248-9828	Wash Rack	06/20/13
85	Cleaning Compound, Engine Gas Path	6850-01-372-8303	Storage Shed	08/23/06
101	Cleaning Compound, Solvent	6850-01-458-8018	H6 Locker	10/15/14
126	Cleaning Compound, Solvent	6850-01-472-2721	H1 Locker	09/13/04
42	Cleaning Compound, Solvent-Detergent	7930-01-418-1152	Janitor's Closet	09/27/10
128	Cleaning Compound, Solvent-Detergent	7930-01-436-7887	H1 Locker	10/19/10
66	Coating Compound, Nonslip	8010-00-641-0427	H4 Locker	01/14/13
171	Contract All-Weather Blox Rodenticide	Commercial	Facility	04/16/04
109	Corrosion Preventive Compound	8030-00-062-6950	H2 Locker/Storage Shed	01/21/08
84	Corrosion Preventive Compound	8030-00-546-8637	H2 Locker/Storage Shed	06/03/11

6/16/2016

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