FINAL
Preliminary Assessment Report
Roseville Armory, California

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

January 2020

Prepared for:

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Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
AEG	Applied Engineering and Geology, Inc.
AFFF	aqueous film forming foam
amsl	above mean sea level
AOI	area of interest
ARNG	Army National Guard
bgs	below ground surface
BPE	Black Point Environmental, Inc.
CAARNG	California Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
EDR	Environmental Data Resources
°F	degrees Fahrenheit
ft	feet
FTA	fire training area
NASCAR	National Association for Stock Car Auto Racing
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
ppt	parts per trillion
SI	Site Inspection
Sellens	Sellens Consulting LLC
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
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 California Army National Guard (CAARNG) Roseville Armory in Roseville, California, to assess potential PFAS release areas and exposure pathways to receptors. The tasks performed in this PA include the following:

- Reviewed available administrative record documents and Environmental Data Resources, Inc. report packages to obtain information relevant to potential PFAS releases
- Conducted a 1-day site visit on 5 March 2019
- Interviewed current Roseville Armory personnel during the site visit including the CAARNG Detachment Commander; and, City of Roseville Fire Department personnel
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs
- Identified areas of interest (AOI) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI

One AOI related to potential PFAS releases was identified at Roseville Armory during the PA. The AOI is shown on **Figure ES-1** and in **Table ES-1** below:

Table ES- 1: AOIs at Roseville Armory

Area of Interest	Name	Used by	Release Dates
AOI 1	Firetruck Parking and Storage Yard	CAARNG	Unknown

Based on information obtained during the PA at this AOI, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for Roseville Armory is shown on **Figure ES-2**, which presents the potential receptors and media impacted. Based on the U.S. Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 data, it was indicated that PFAS were detected in a public water system above the USEPA Health Advisory values between 10 to 20 miles of the facility (**Appendix A**).

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Roseville Armory, CA			
REVISED	5/6/2019	GIS BY	MS	5/6/2019
SCALE	1:12,000	CHK BY	ST	5/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	5/6/2019

TITLE

Summary of Findings

AECOM

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Figure ES-1

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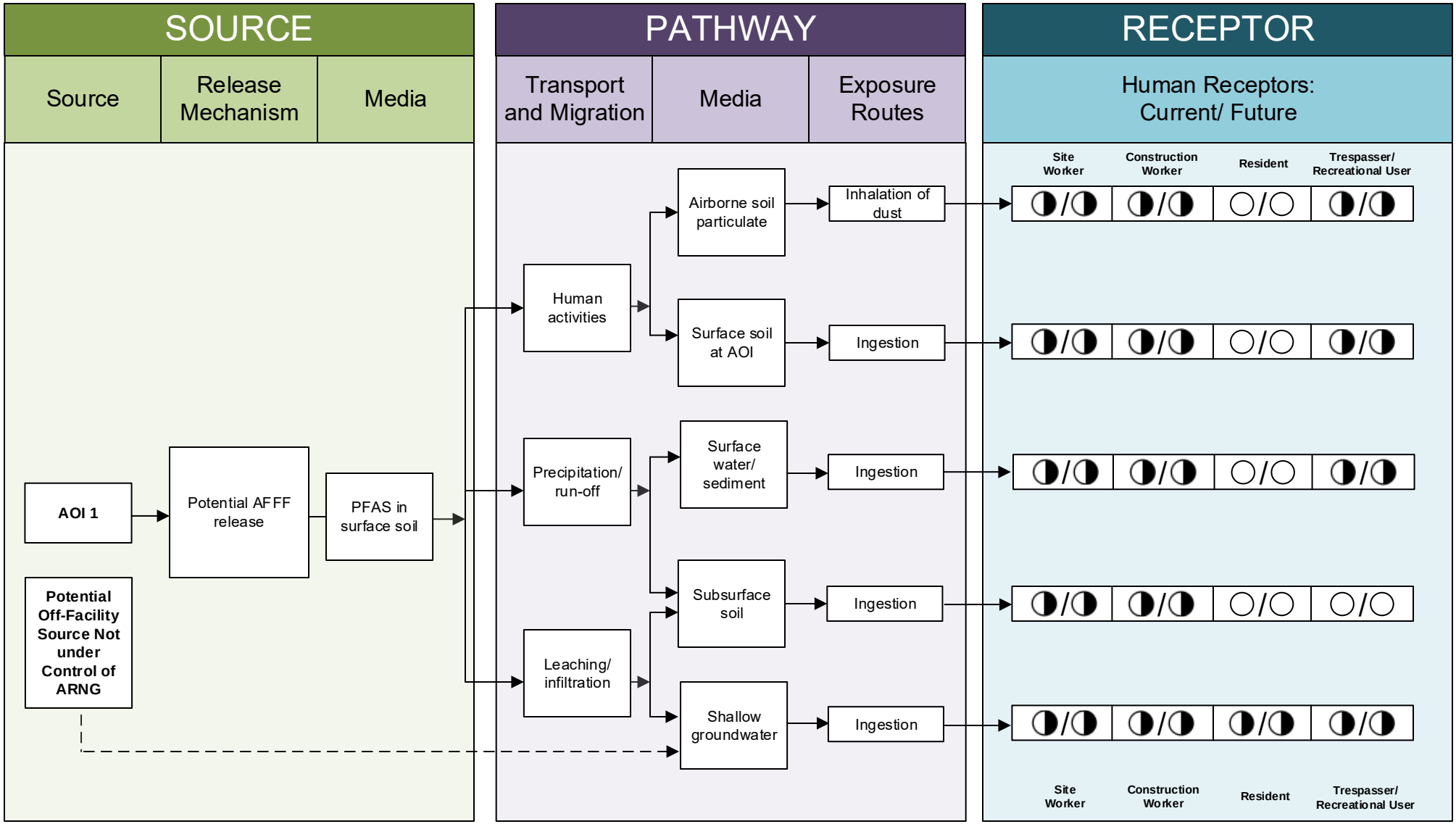


LEGEND

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

Notes:

1. The resident receptor refers to an off-site resident.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure ES-2
Conceptual Site Model
Roseville Armory, 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 U.S. 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 Army National Guard (CAARNG) Roseville Armory in Roseville, California (also referred to as “the facility”), 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 Roseville Armory. 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. report packages to obtain information relevant to potential PFAS releases
- Conducted a 1-day site visit on 5 March 2019
- Interviewed current Roseville Armory personnel during the site visit including the CAARNG Detachment Commander; and, City of Roseville Fire Department personnel
- 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** – Preliminary **Conceptual Site Model:** describes the pathways of PFAS transport and receptors at each AOI.
- **Section 7** – **Conclusions:** summarizes the data findings and presents the conclusions of the PA.
- **Section 8** – **References:** provides the references used to develop this document.
- **Appendix A** – Data Resources
- **Appendix B** – Preliminary Assessment Documentation
- **Appendix C** – Photographic Log

1.4 Facility Location and Description

The Roseville Amory is located at 850 All America City Boulevard, Roseville, CA 95678. The Roseville Armory is situated in the Sacramento metropolitan area and Sacramento Valley (**Figure 1-1**). The facility is about 16 miles northeast of Sacramento and 8 miles west of Folsom Lake. The latitude, longitude, and surface elevation at the main gate of the facility are 38°45’29.8” N, 121°17’43.2” W, and 153 feet (ft) above mean sea level (amsl), respectively. The ground surface is flat to gently sloping to the north

The facility contains an armory and has an associated maintenance site. Three buildings are located within the facility including two readiness centers and one storage building, which is home to the ARNG 233rd Engineer Detachment (Firefighting). Impervious surfaces primarily concrete pavements and parking lots make up most of the 5.6-acre facility. The facility is entirely fenced and accessible by one eastern facility gate. The Roseville Armory has been leased from the Placer County Fairgrounds since 1961 (White, 2019).

1.5 Facility Environmental Setting

The Roseville Armory is located is a highly developed suburb northeast of Sacramento, California. The facility is bounded by residential development to the south by Placer County Fairgrounds and residential development to the west and south, the Roseville Police Department to the north, and the All American Speedway to the east. The topography of the area gently slopes to the north.

1.5.1 Soil

As indicated in the 2019 Environmental Data Resources (EDR) report (**Appendix A**), the primary soil component Cometa was found at the Roseville Armory property, as well as smaller amounts of Fiddyment and Ramona soils (California Soil Resource Lab, n.d.). The properties of these soil components are listed below.

Soil Component Name	Soil Surface Texture	Hydrologic Group	Soil Drainage Class	Hydric Status
Cometa	Sandy Loam	Class D	Well drained	Partially hydric
Fiddyment	Loam	Class D	Well drained	Partially hydric
Ramona	Loam	Class C	Well drained	Partially hydric

1.5.2 Geology

The Roseville Armory is located in a transitional area between the Great Valley and the Sierra Nevada physiographic provinces within the U.S. Geological Survey (USGS) Roseville 7.5-minute Quadrangle (USGS, 2012). . The Great Valley province is an elongated sedimentary trough comprising the Sacramento and San Joaquin River Valleys, filled with a succession of Mesozoic- to Cenozoic-aged continental and marine sediments. The Sierra Nevada province is generalized as a belt of metamorphic and igneous rock that has been sheared, deformed, and intruded upon during tectonic and volcanic activity during the Mesozoic and Cenozoic Eras.

The subsurface consists of Pleistocene-aged alluvial sediments deposited nonconformably over fractured volcanic crystalline bedrock characteristic of the Sierra Nevada Mountain Range (City of Roseville, 2004). The geologic units underlying the site, in stratigraphically ascending order, are the Mehrten Formation, Turlock Lake Formation, undifferentiated Modesto-Riverbank formations, Modesto Formation, and undifferentiated Recent alluvium (**Figure 1-2**).

At the facility, the Mehrten and Turlock Lake formations are observed only in the subsurface. The Mehrten Formation is a Tertiary-aged assemblage of silt, sand, gravel, and cobble of volcanic origin deposited in fluvial deposits and mudflows, over which lie the Quaternary-aged deposits. The Pliocene/Pleistoecene-aged Turlock Lake Formation consists of interbedded silty sands, clayey sands, and igneous and metamorphic gravel beds deposited in an alluvial fan environment (Arkley, 1962; Shlemon et al., 2000). In Roseville, sands and silts overlying the Turlock Formation are recognized as being fluvial deposits of either the Middle Pleistocene-aged Riverbank Formation or Late Pleistocene Modesto Formation, but display little to no distinguishing features for differentiation. Thinly stratified unconsolidated silt and sand beds overlying the Turlock Formation are recognized as the Modesto Formation (Arkley, 1962). Subsequent erosion and

fluvial activity has continued through the present day, depositing clay, silt, sand, gravel, and cobbles within active ephemeral or perennial river channels.

1.5.3 Hydrogeology

As indicated in the 2019 EDR report (**Appendix A**), ten wells are located within a one mile radius of the Roseville Armory. Four of the ten wells were listed as federal USGS wells, one well was listed as an active public water supply well, and the remaining wells are listed from the CA wells database. The public water supply well serves a population of 95 people and is located approximately 0.6 miles to the southeast of the facility. Another active water supply well was indicated to exist at address 402 Atlantic Street, approximately one mile southeast of the facility (Black Point Environmental, Inc. [BPE], 2011). The depths of both water supply wells are unknown.

Numerous monitoring wells are also located on the Placer County Fairgrounds and Placer County Roseville Corporation Yard, bordering the Roseville Armory directly north, where groundwater has been monitored in multiple events and various subsurface investigations have taken place. Two aquifers, one shallow and one deeper, were identified to exist at approximately 18 and 50 ft below ground surface (bgs), respectively. The shallow aquifer is suspected to be perched with depth to water measured at approximately 10 ft bgs, although minimal water is said to be present (Sellens Consulting LLC [Sellens], 2016; Applied Engineering and Geology, Inc. [AEG], 2009). The deeper aquifer appears to be non-continuous due to varying recharge rates with depths to groundwater, ranging from 53 to 62 ft bgs. Based on the USEPA Unregulated Contaminant Monitoring Rule 3 data, it was indicated that PFAS were detected in a public water system above the USEPA Health Advisory values between 10 to 20 miles of the facility (**Appendix A**). The groundwater flow direction is not well defined and may vary over short distances but is inferred to flow generally north (Sellens, 2016; BPE, 2011).

1.5.4 Hydrology

The Roseville Armory is located in Pleasant Grove Creek Watershed and all surface water from the site eventually drains to the South Branch Pleasant Grove Creek. According to the 2019 EDR report (**Appendix A**), there are no wetland areas or 100-year flood zones identified within the Roseville Armory. Storm water is diverted to storm water drains located in and around the facility property. The closest surface water body is a retention pond about 1/2 mile northeast of the facility at the Sierra View Country Club, and an unnamed tributary of the South Branch Pleasant Grove Creek, located approximately 0.3 miles to the north. The Folsom Lake is 8 miles east of the facility and is the primary source of potable water for the City of Roseville, including the Roseville Armory (BPE, 2011).

1.5.5 Climate

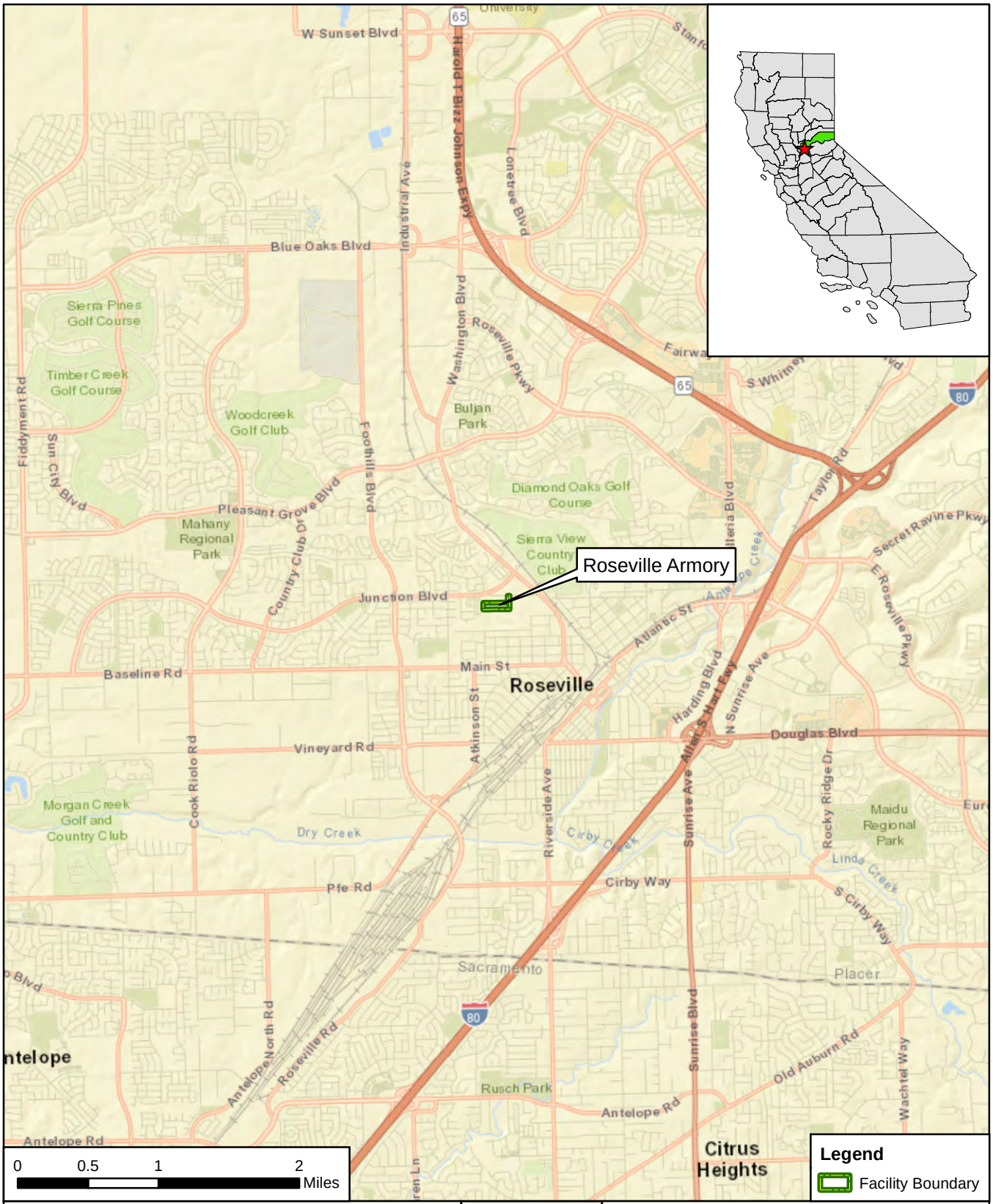
The Roseville Armory is in a semi-arid, Mediterranean climate zone. The winter “rainy season” extends from November to February and the summer season from June to August is characterized by warm, dry days and mild nights. The average annual rainfall is approximately 20 inches. Summer temperatures peak 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 et al., 2010).

1.5.6 Current and Future Land Use

The Roseville Armory has been home to the 233rd Engineer Detachment (Firefighting) since the late 1990s. The mission of the 233rd Engineer Detachment is to “perform fire protection and

prevention activities for structure, wildland and aircraft crash rescue incidents, administer emergency medical care, execute technical rescue operations and mitigate hazardous material incidents for state and federal missions" (FireDepartment.net, n.d.).

The facility contains an armory and has an associated maintenance site. Three buildings are at the facility including two readiness centers and one storage building where the firefighting unit is stationed. The Roseville Armory has been leased from the Placer County Fairgrounds since 1961 (White, 2019). Reasonably anticipated future land use it not expected to change from the current land use described above.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roseville Armory, CA			
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SCALE	1:63,360	CHK BY	ST	5/6/2019
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI,		PM	RG	5/6/2019

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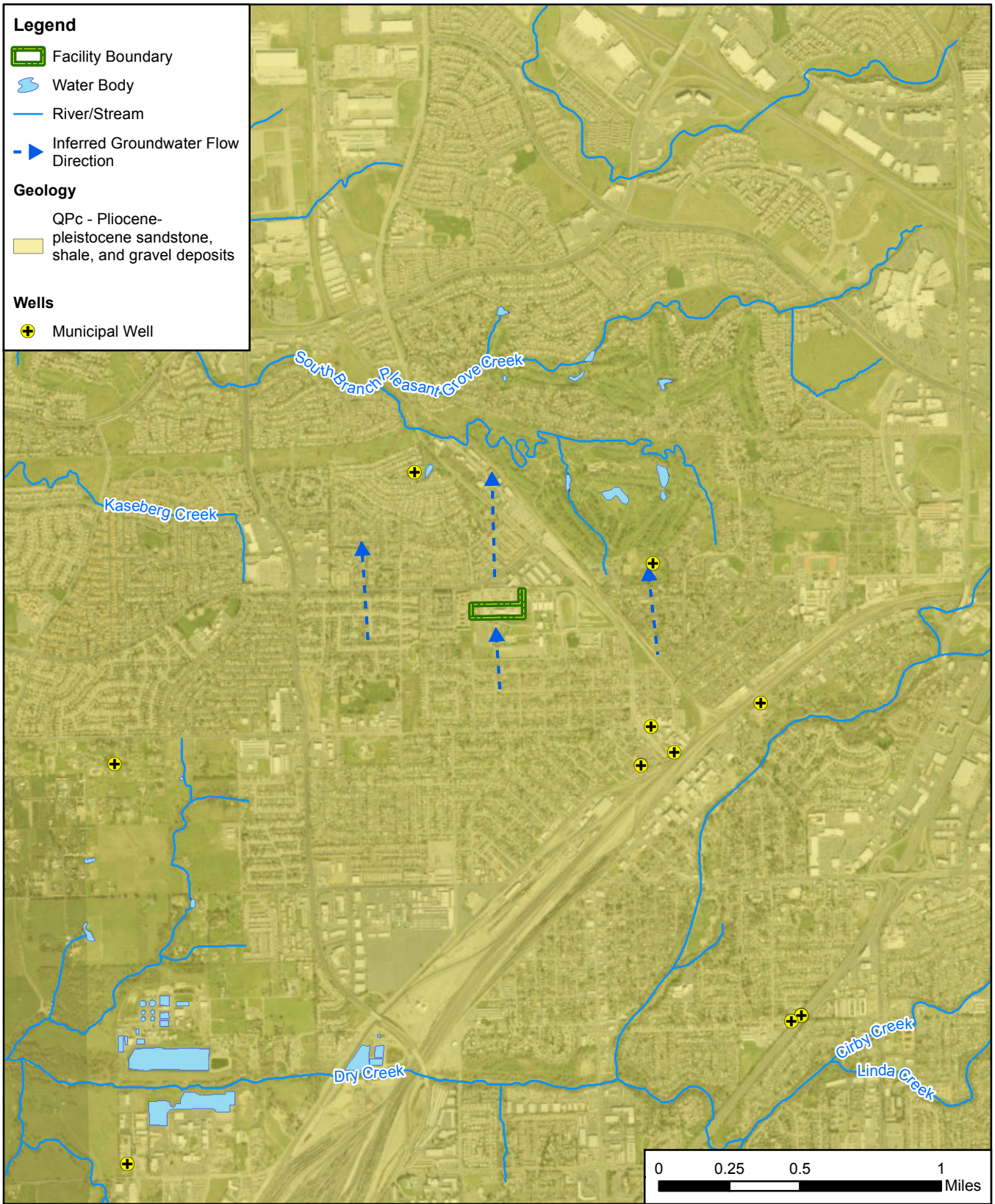

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roseville Armory, CA			
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SCALE	1:31,680	CHK BY	ST	5/16/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/16/2019

Groundwater Features

AECOM
12420 Milestone Center Drive
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Figure 1-2

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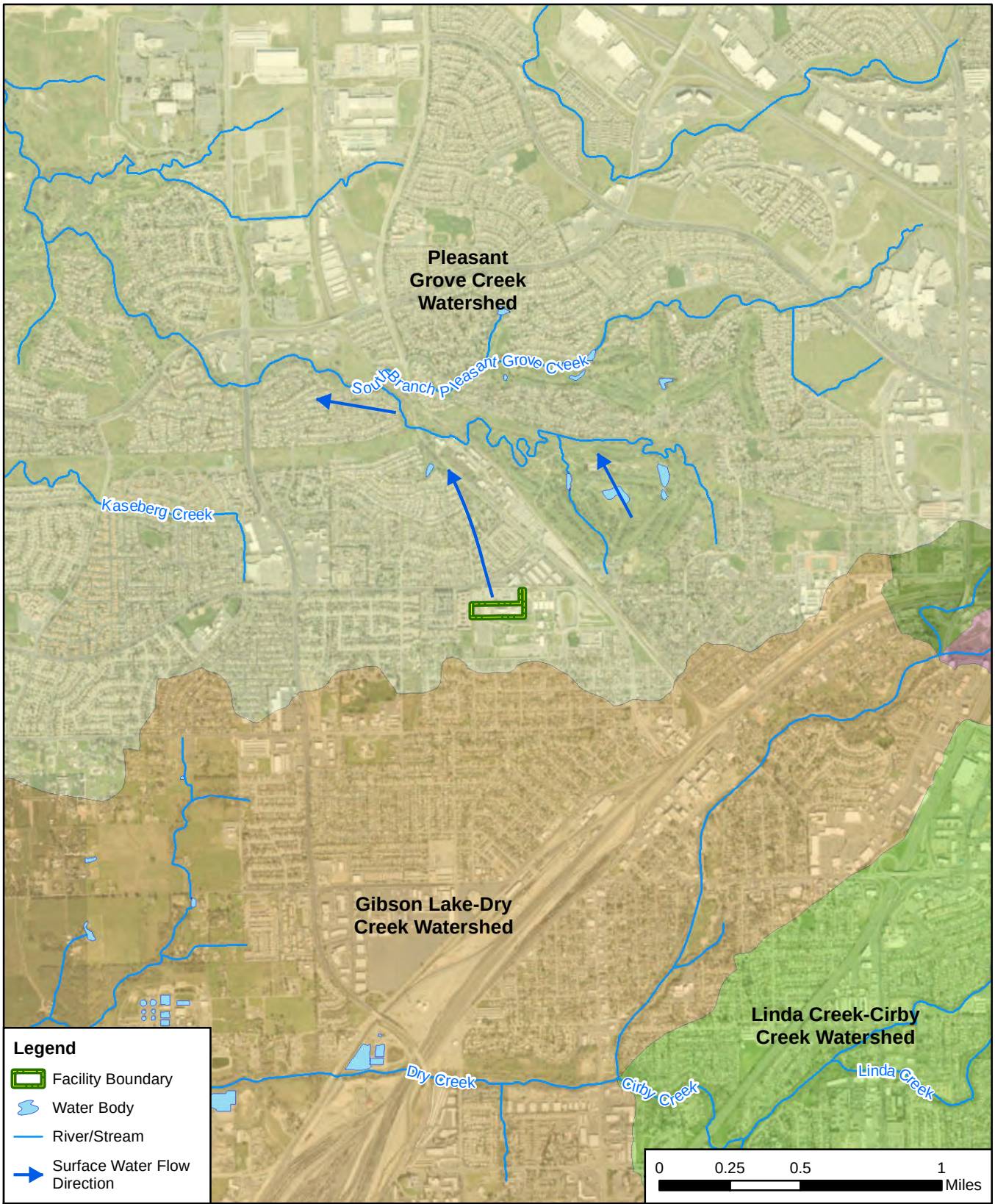

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roseville Armory, CA			
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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/30/2019

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

Potential FTAs were investigated during the PA for potential releases of AFFF during training activities. No FTAs were identified within the Roseville Amory during the PA through interview or EDR Reports. The CAARNG Detachment Commander had institutional knowledge spanning from 2007 to present day, although timeline gaps exist due to occasional deployment.

3. Non-Fire Training Areas

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

3.1 Firetruck Parking and Storage Yard

The firetruck parking and storage yard is an area consisting of a storage building and paved lot for vehicle parking. The building was constructed in approximately 2010, and the southern portion of the building is a storage room for the 233rd Engineer Detachment. The firetruck parking and storage yard is located at geographic coordinates 38°45'28.7"N, 121°17'50.8"W.

According to an interview with the CAARNG Detachment Commander, the 233rd Engineer Detachment has a single firetruck, procured in approximately 2008, that is usually parked outside the storage room in the paved lot. However, the firetruck was stationed at CAARNG Camp Roberts at the time of the PA site visit.

AFFF was historically stored in the 233rd Engineer Detachment storage room and contained in the firetruck that is equipped with an AFFF mixing system. However, no AFFF was observed during the VSI. The type and quantity of the AFFF is unknown. It is also unknown where the AFFF supplies are currently, but according to the Detachment Commander's knowledge, AFFF was never used or disposed of. The firetruck also does not have any known history of leaking AFFF. Nozzle testing is only conducted with water.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roseville Armory, CA			
REVISED	5/16/2019	GIS BY	MS	5/16/2019
SCALE	1:2,400	CHK BY	ST	5/16/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/16/2019

Non-Fire Training Area

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Figure 3-1

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4. Emergency Response Areas

No emergency response areas were identified within the current Roseville Armory facility during the PA through interviews or EDR Reports. The CAARNG Detachment Commander had institutional knowledge spanning from 2007 to present day, although timeline gaps exist due to occasional deployment. Emergency services are provided by the City of Roseville Fire Department. A City of Roseville records search was conducted within a mile radius of the Roseville Armory, and no records of AFFF response incidents were found.

5. Adjacent Sources

Two potential off-facility sources of PFAS adjacent to the Roseville Armory, 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 City of Roseville Fire Department

A PA interview was conducted with two City of Roseville Fire Department Chiefs, who confirmed the usage and storage of AFFF by the City of Roseville Fire Department. However, specific training and incident response areas could not be identified, and the Fire Chiefs were unaware of any fire training agreements with the ARNG. Two City of Roseville Fire Department Stations (#1 and #2) are located within a one mile radius of the Roseville Armory and were identified as potential adjacent sources. Fire Stations #1 and #2 are located at addresses 401 Oak Street and 1398 Junction Boulevard, respectively.

A YouTube video titled, “Izzy working the Roseville Fire Foam Trailer” was identified during pre-investigation activities as a material of interest due to the depiction of fire training exercises with foam. The YouTube video was shown to the two Fire Chiefs, who confirmed that the foam response trailer and personnel shown did not belong to the City of Roseville Fire Department.

5.2 All American Speedway

All American Speedway is located at address 800 All America City Boulevard, bordering the Roseville Armory to the east. All American Speedway is a 1/3-mile car racing track sanctioned by National Association for Stock Car Auto Racing (NASCAR). Vehicle crash accidents have occurred at the racetrack, but it is unknown if incident responses required the use of AFFF.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roseville Armory, CA			
REVISED	5/6/2019	GIS BY	MS	5/6/2019
SCALE	1:16,800	CHK BY	ST	5/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/6/2019

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Adjacent Sources

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Figure 5-1

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6. Conceptual Site Model

Based on the PA findings, there was one area where AFFF may have been incidentally spilled to the ground surface. As such, this AOI may be potential PFAS source area. The AOI and preliminary CSM for this AOI is shown on **Figure 6-1** and **Figure 6-2**, respectively, 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 – Firetruck Parking and Storage Yard

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. Dermal contact is not considered to be a potential exposure pathway, as studies have shown very limited absorption of PFAS through the skin (National Ground Water Association, 2018). Receptors for Roseville Armory include site workers, construction workers residents, recreational users, and trespassers. The CSMs for each AOI indicate which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1: Firetruck Parking and Storage Yard

AOI 1 is the area containing parking for a firetruck, a storage building, and a yard. Potential AFFF releases are possible due to the historical storage of AFFF and parking of an AFFF-containing firetruck within AOI 1.

The area west of the paved lot within AOI 1 is unpaved soil. Ground-disturbing activities to soil at AOI 1 could result in site and construction worker exposure to potential PFAS contamination via inhalation of dust from surface soil or ingestion of surface or subsurface soil. Therefore, the inhalation and ingestion pathways for these receptors are considered potentially complete.

AOI 1 lies within the Pleasant Grove Creek Watershed, and all surface water drains via storm water outlets to the South Branch Pleasant Grove Creek. 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 and subsurface soil occurred, it is possible that PFAS migrated from surface soil at AOI 1 to groundwater and waters in the South Branch Pleasant Grove Creek. All receptors may be exposed to PFAS via ingestion of surface water and sediment in the South Branch Pleasant Grove Creek.

Potable water for Roseville Armory is supplied by the City of Roseville Utilities Department, which derives its primary source from the Folsom Lake, located approximately 8 miles east of the Roseville Armory. A secondary source of water includes five city-maintained groundwater wells and water from surrounding water agencies for use during water shortages (BPE, 2011). Two active public water supply wells were indicated to exist southeast and within a one mile radius of the facility. The inferred groundwater direction is generally north but is variable locally (Sellens, 2016; BPE, 2011). Groundwater may also be perched in the shallow aquifer at depth of approximately 10 ft bgs (Sellens, 2016). Therefore, potential groundwater impacts to the public water supply wells are possible, and the exposure pathway for groundwater to all receptors is potentially complete.

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Roseville Armory, CA			
REVISED	5/6/2019	GIS BY	MS	5/6/2019
SCALE	1:18,000	CHK BY	ST	5/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	5/6/2019

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TITLE

Area of Interest

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

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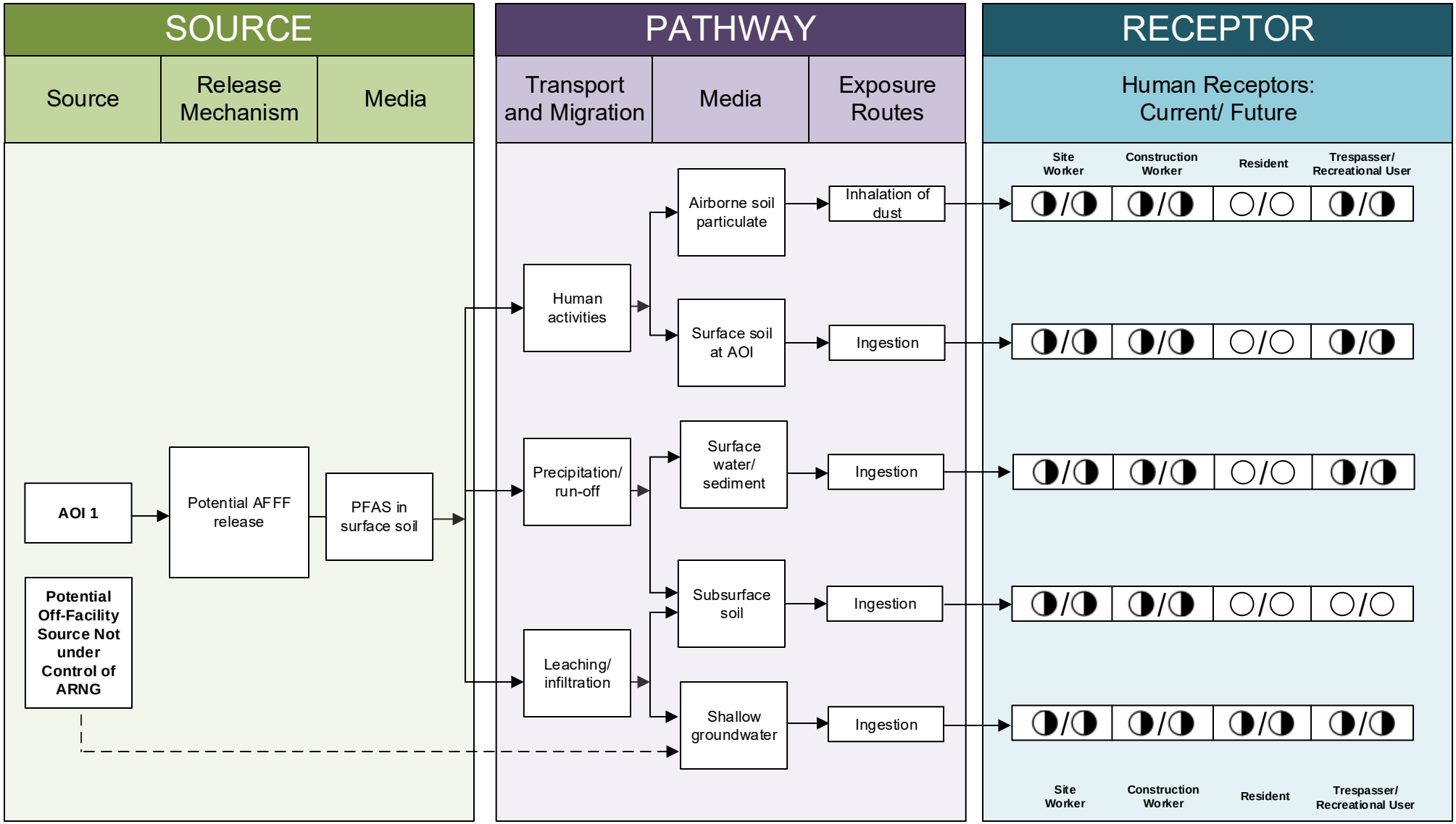

LEGEND

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

Notes:

1. The resident receptor refers to an off-site resident.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-2
Conceptual Site Model
Roseville Armory, 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 Roseville Armory. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

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

Table 7-1: AOIs at Roseville Armory

Area of Interest	Name	Used by	Release Dates
AOI 1	Firetruck Parking and Storage Yard	CAARNG	Unknown

Two potential off-facility sources of PFAS were also considered in the local area surrounding Roseville Armory. These include:

- City of Roseville Fire Department – stores AFFF at two adjacent fire stations and uses AFFF for incident responses
- All American Speedway – may have incident responses to vehicle crashes requiring the usage of AFFF

Based on information obtained during the PA at AOI 1, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for Roseville Armory is shown on **Figure 6-2**, which presents the potential receptors and media impacted.

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. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS were first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, volume of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

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

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

Table 7-2: Uncertainties

Area of Interest	Source of Uncertainty
AOI 1: Firetruck Parking and Storage Yard	The area was confirmed to contain AFFF storage of an unknown type and quantity and parking for a firetruck; however, no firetruck and AFFF storage was observed during the VSI. It is unknown where the AFFF supplies are currently, but according to the CAARNG Detachment Commander's knowledge, AFFF was never used or disposed of. The firetruck was stationed at CAARNG Camp Roberts at the time of the PA site visit and could not be visually inspected. Some facility operations are not well defined given the limitation of interviewee knowledge. The CAARNG Detachment Commander had institutional knowledge spanning from 2007 to present day, although timeline gaps exist due to occasional deployment. Facility operations from the 1990s (when engineer detachment operations began at Roseville Armory) to 2007 are unknown.

7.3 Potential Future Actions

Based on the PA findings and a lack of robust institutional knowledge regarding historical activities concerning AFFF use and storage at the facility, there is a potential for PFAS release at the AOI identified during the PA.

Based on the preliminary CSM developed for the AOI, there is potential for receptors to be exposed to PFAS contamination in soil, groundwater, surface water, and sediment at the AOI. **Table 7-3** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo a Site Inspection (SI).

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1: Firetruck Parking and Storage Yard	38°45'28.7"N; 121°17'50.8"W	Potential historic use of AFFF within the storage yard where AFFF was stored and an AFFF-containing firetruck was parked	Proceed to an SI, focus on soil, groundwater, surface water, sediment

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

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Roseville Armory, CA			
REVISED	5/6/2019	GIS BY	MS	5/6/2019
SCALE	1:12,000	CHK BY	ST	5/6/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	5/6/2019

TITLE

Summary of Findings

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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United States Geological Survey (USGS). 2012. USGS US Topo 7.5-minute map for Roseville, CA. USGS – National Geospatial Technical Operations Center.

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Appendix A
Data Resources

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

Environmental Data Resources, Inc. Geocheck Report

- 2019 Environmental Data Resources, Inc. Geocheck Report for Roseville Armory, CA

CAARNG Leasing Information

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

Miscellaneous Resources

- 2009 Quarterly Monitoring Report, Fourth Quarter 2008, Placer County, Roseville Corporation Yard, 200 Corporation Yard Road, Roseville, Placer County, California 95678.
- 2011 No Further Action Request, 510 Washington Boulevard, Roseville, California.
- 2016 No Further Action Report (Low Threat Underground Storage Tank Case Closure Policy), Placer County Fairgrounds, 800 All American City Boulevard, Roseville, California 95678, Case #310258.

Roseville Armory UCMR3 Data Set

- Tabulated UCMR3 Data Set

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire – Fire Station

Facility:_Roseville Armory___
Interviewer:__ST_____
Date/Time:__3/5/19_____

Interviewee:___ Dimas Velasquez**_____** **Title:__**Detachment Commander**_____** **Phone Number:__**530-844-0444**_____** **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.

Detachment commander for approximately 1 year; Been at facility since 2007 but deployed occasionally.

233rd firefighting unit didn't start until late 90s. The back portion of the facility with the fire department was not built until ~2010.

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
   Fire Suppression Systems (Hangers/Dining Facilities)
   Fire Protection at Fueling Stations
   Non-Technical/Recreational/ Pest Management

   Cannot recall ever using AFFF for training or in emergency response incident, AFFF was stored here and also in the fire engine parked at facility

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

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

They get AFFF from the guard supplies

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?

Not known

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?

There is an external mixing system that is part of the fire engine.

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

Only one fire truck that was procured in 2008/2009; right now it is stationed at Camp Roberts

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?

No; only do nozzle testing with water

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?

None

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

None

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?

None

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?

None

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.

No

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?

None known of. ARNG does not respond to emergencies. They must be called to duty by the state governor.

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)?

No

PA Interview Questionnaire – Fire Station

Facility:_Roseville Armory___
Interviewer:__ST_____
Date/Time:__3/5/19_____

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? Never disposed of
24. Do you recommend anyone else we can interview? If so, do you have contact information for them? No

PA Interview Questionnaire - Other

Facility:__Roseville Fire Department
Interviewer:__ST_____
Date/Time:__3/5/19_____

Interviewee:__ Jason Rizzi/Brian Demer**__** **Title:___**Division Chief-Fire Marshal/Assistant Fire Chief **Phone Number:_**916-774-5802**_____** **Email:__**jrizzi@roseville.ca.us**_____**	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:
Jason Rizzi – 8 yrs
Brian Demer – 25 years since July 15, 1994
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?
Fire Department still uses Class B foam
J. Rizzi stated that he could conduct a records search for incidents but we need to send a formal records request to him. Should start with request for fire incident reports at property that were responded to by foam.
J. Rizzi said to follow up with question about training with guard.
J. Rizzi confirmed that the Youtube video of Roseville foaming was not their Fire Department unit. He said it might be in Roseville, MD or at the refinery in the Bay area.

Appendix B.2
Visual Site Inspection Checklists

Visual Site Inspection Checklist

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

Recorded by: S. Tjan

ARNG Contact:

Date and Time: 3/5/2019

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

Source/Release Information

Site Name / Area Name / Unique ID: Roseville Armory - Storage

Site / Area Acreage:

Historic Site Use (Brief Description): They park their one fire truck on the south end of the storage building. The fire department keeps their supplies in the storage room. Fire truck is rarely there. AFFF was stored in storage room.

Current Site Use (Brief Description): Same as described above but no AFFF currently found in storage room.

Physical barriers or access restrictions: Fenced

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

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

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

Fairground Placer County, All American Speedway, Direworld Scare Park

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

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

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:

Everything drains via storm drains to South Branch Pleasant Grove Creek

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

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

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

3a. If so, please note the location:

Two potable wells located >1 mile southeast

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.

Roseville Fire Department Stations, All American Speedway

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

Visual Survey Inspection Log

Significant Topographical Features:

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

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

Storage building was built in 2010

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

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

only western grassy lot

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:

ARNG staff

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

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

Townhouse to west

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

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

Roseville Community Preschool

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

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

Unnamed tributary of South Branch Pleasant Grove Creek, approximately 0.3 miles to the north

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Roseville Armory

Why has this location been identified as a site?

Location of the 233rd Engineer Detachment (Firefighting) and contains AFFF storage

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

Municipal fire stations and All American Speedway

Training Events

Have any training events with AFFF occurred at this site? Not known

If so, how often?

How much material was used? Is it documented?

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? North towards South Branch Pleasant Grove Creek

Average rainfall? 19.9 inches

Any flooding during rainy season? No

Direct or indirect pathway to ditches? Indirect to ditches via storm drains

Direct or indirect pathway to larger bodies of water? Indirect to South Branch Pleasant Grove Creek

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? No flight line

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Generally north

Depth to groundwater? 10 ft bgs for shallow aquifer and 53-62 ft bgs for deeper aquifer

Uses (agricultural, drinking water, irrigation)? Drinking water as secondary source

Any groundwater treatment systems? No

Any groundwater monitoring well locations near the site? Yes, near Placer Fairgrounds

Is groundwater used for drinking water? Yes, as secondary source

Are there drinking water supply wells on installation? No

Do they serve off-post populations? No

Are there off-post drinking water wells downgradient? Two potable wells <1 miles southeast

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?

Tested only with water

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 South Branch Pleasant Grove Creek)

Residential - Yes (potentially off-facility user of South Branch Pleasant Grove Creek for recreation)

Child - Yes (potentially off-facility user of South Branch Pleasant Grove Creek for recreation)

Ecological – Yes (eco receptors of South Branch Pleasant Grove Creek)

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)?
Daycare, residential areas, Placer County Fairgrounds, All American Speedway

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	Roseville Armory	Roseville, California

Photograph No. 1

Date 3/5/2019

Time 9:59

Description:

Area shown where Roseville Armory fire truck is typically parked; the door to the fire unit storage shed is shown beyond the vehicle

Orientation:

Northeast