FINAL
Site Inspection Report Roseville Armory, California

Site Inspection for Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS), Perfluorohexanesulfonic acid (PFHxS), Perfluorononanoic acid (PFNA), Hexafluoropropylene oxide dimer acid (HFPO-DA), and Perfluorobutanesulfonic acid (PFBS) at ARNG Installations, Nationwide

November 2023

Prepared for:

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

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The seal appearing on this document was authorized by Katharine Carr, P.G. 9315 on November 3, 2023, for the information contained herein for Roseville Armory.

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Acronyms and Abbreviations

%	percent
°C	degrees Celsius
°F	degrees Fahrenheit
µg/kg	micrograms per kilogram
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film-forming foam
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
CoC	chain of custody
CSM	conceptual site model
DA	Department of the Army
DoD	Department of Defense
DO	dissolved oxygen
DPT	direct push technology
DQO	data quality objective
DUA	data usability assessment
EA	Engineering, Science, and Technology, Inc.
EDR™	Environmental Data Resources, Inc.™
ELAP	Environmental Laboratory Accreditation Program
EM	Engineer Manual
FedEx	Federal Express
FTA	Fire Training Area
GPRS	Ground Penetrating Radar Systems
HDPE	high-density polyethylene
HFPO-DA	hexafluoropropylene oxide dimer acid
IDW	investigation-derived waste
ITRC	Interstate Technology Regulatory Council
LC/MS/MS	liquid chromatography with tandem mass spectrometry
MIL-SPEC	military specification
MS	matrix spike
MSD	matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
ng/L	nanograms per liter
ORP	oxidation-reduction potential
OSD	Office of the Secretary of Defense
PA	Preliminary Assessment
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexanesulfonic acid

PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PID	photoionization detector
PQAPP	Programmatic UFP-QAPP
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
QSM	Quality Systems Manual
RWQCB	Regional Water Quality Control Board
Sellens	Sellens Consulting LLC
SI	Site Inspection
SL	screening level
SOP	standard operating procedure
TOC	total organic carbon
TPP	Technical Project Planning
UCMR3	Unregulated Contaminant Monitoring Rule 3
UFP	Uniform Federal Policy
US	United States
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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Executive Summary

The Army National Guard (ARNG) G-9 is performing Preliminary Assessments (PAs) and Site Inspections (SIs) on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on the six compounds presented in the memorandum from the Office of the Secretary of Defense (OSD) dated 6 July 2022 (Assistant Secretary of Defense, 2022). The six compounds listed in the OSD memorandum include perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), hexafluoropropylene oxide dimer acid (HFPO-DA)[1], and perfluorobutanesulfonic acid (PFBS). These compounds are collectively referred to as "relevant compounds" throughout the document and the applicable screening levels (SLs) are provided in **Table ES-1**.

The PA identified one Area of Interest (AOI) where PFAS-containing materials may have been used, stored, disposed, or released historically (see **Table ES-2** for AOI location). The objective of the SI is to identify whether there has been a release to the environment from the AOI identified in the PA and determine whether further investigation is warranted, a removal action is required to address immediate threats, or no further action is required based on SLs for relevant compounds. This SI was completed at the Roseville Armory in Roseville, California and determined further evaluation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is warranted for AOI 1: Firetruck Parking and Storage Yard. The Roseville Armory will also be referred to as the "facility" throughout this document.

Roseville Armory is situated in the Sacramento metropolitan area and Sacramento Valley, about 16 miles northeast of Sacramento and 8 miles west of Folsom Lake. 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 California ARNG 233rd Engineer Detachment (Firefighting). Impervious surfaces, primarily concrete pavements and parking lots, make up most of the 5.6-acre facility.

The PA identified one AOI for investigation during the SI phase. SI sampling results from the AOI were compared to OSD SLs. **Table ES-2** summarizes the SI results for the AOI. Based on the results of this SI, further evaluation under CERCLA is warranted in a Remedial Investigation (RI) for AOI 1: Firetruck Parking and Storage Yard.

[1] Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the conceptual site model (CSM) developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of military specification (MIL-SPEC) aqueous film forming foam (AFFF) and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

Table ES-1: Screening Levels (Soil and Groundwater)

Analyte[b]	Residential (Soil) (µg/kg)[a] 0-2 feet bgs	Industrial/ Commercial Composite Worker (Soil) (µg/kg)[a] 2-15 feet bgs	Tap Water (Groundwater) (ng/L)[a]
PFOA	19	250	6
PFOS	13	160	4
PFBS	1,900	25,000	601
PFHxS	130	1,600	39
PFNA	19	250	6

Notes:
bgs = below ground surface; µg/kg = micrograms per kilogram; ng/L = nanograms per liter

a.) Assistant Secretary of Defense, 2022. Risk Based Screening Levels in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. Hazard Quotient (HQ) = 0.1. 6 July 2022.

b.) Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

Table ES-2: Summary of Site Inspection Findings and Recommendations

AOI	Potential Release Area	Soil – Source Area	Groundwater – Source Area	Groundwater – Facility Boundary	Future Action
1	Firetruck Parking and Storage Yard	◐	●	●	Proceed to RI

Legend:
N/A = not applicable
● = detected; exceedance of the screening levels
◐ = detected; no exceedance of the screening levels
○ = not detected

1. Introduction

1.1 Project Authorization

The Army National Guard (ARNG) G-9 is the lead agency in performing Preliminary Assessments (PAs) and Site Inspections (SIs) on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on the six compounds presented in the memorandum from the Office of the Secretary of Defense (OSD) dated 6 July 2022 (Assistant Secretary of Defense, 2022). The six compounds listed in the OSD memorandum will be referred to as "relevant compounds" throughout this document and include perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), hexafluoropropylene oxide dimer acid (HFPO-DA)[1], and perfluorobutanesulfonic acid (PFBS) at ARNG facilities nationwide. The ARNG performed this SI at the Roseville Armory in Roseville, California. The Roseville Armory is also referred to as the "facility" throughout this document.

The SI project elements were performed in compliance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; United States [US] Environmental Protection Agency [USEPA], 1980), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300; USEPA, 1994), and in compliance with US Department of the Army (DA) requirements and guidance for field investigations.

1.2 SI Purpose

A PA was performed at Roseville Armory (AECOM Technical Services, Inc. [AECOM], 2020) that identified one Area of Interest (AOI) where PFAS-containing materials may have been used, stored, disposed, or released historically. The objective of the SI is to identify whether there has been a release to the environment from the AOI identified in the PA and determine whether further investigation is warranted, a removal action is required to address immediate threats, or no further action is required based on screening levels (SLs) for the relevant compounds.

[1] Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the conceptual site model (CSM) developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of military specification (MIL-SPEC) aqueous film forming foam (AFFF) and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

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2. Facility Background

2.1 Facility Location and Description

The Roseville Amory is located at 850 All America City Boulevard, Roseville, California 95678. It is situated in the Sacramento metropolitan area and Sacramento Valley (**Figure 2-1**). The facility is about 16 miles northeast of Sacramento and 8 miles west of Folsom Lake. 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 California ARNG (CAARNG) 233rd Engineer Detachment (Firefighting). Building construction dates are unknown. 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 (AECOM, 2020).

2.2 Facility Environmental Setting

The Roseville Armory is located in 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 (**Figure 2-2**).

2.2.1 Geology

The Roseville Armory is located in a transitional area between the Great Valley and the Sierra Nevada physiographic provinces within the US 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, and it is 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 facility, from oldest to youngest, are the Mehrten Formation, Turlock Lake Formation, undifferentiated Modesto-Riverbank formations, Modesto Formation, and undifferentiated recent alluvium (**Figure 2-3**).

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/Pleistocene-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 identified as fluvial deposits of either the Middle Pleistocene-aged Riverbank Formation or the Late Pleistocene Modesto Formation, but display little to no differentiable features. (Arkley, 1962). Subsequent erosion and fluvial activity have continued through the present day, depositing clay, silt, sand, gravel, and cobbles within active ephemeral or perennial river channels.

Soil borings completed during the SI found silty sand and sandy silt as the dominant lithology of the unconsolidated sediments below Roseville Armory. The borings were completed at depths between 16 and 34 feet bgs. Isolated layers of clay were also observed in the boring logs at

thicknesses ranging from 2 to 6 feet. These facility observations are consistent with the alluvial and fluvial depositional environment. Boring logs are presented in **Appendix E**.

2.2.2 Hydrogeology

Ten wells are located within a one-mile radius of the Roseville Armory (Environmental Data Resources, Inc.™ [EDR™], 2019). Four of the ten (10) wells were listed as federal USGS wells, one well was listed as an active public water supply well, and the remaining wells are listed in the California wells database (California Department of Water Resources, 2019). Of the five remaining wells, two are inactive with unknown former uses, one is active with an unknown use, and the final well is an active irrigation well (EDR™). 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 is located approximately 1 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 to the north, where groundwater has been monitored in multiple events, and various subsurface investigations have taken place. These investigations were conducted on behalf of the Placer County Fair Association and associated with leaking gasoline and diesel fuel underground storage tanks reportedly removed from the County Fairgrounds maintenance yard in 1993 (Sellens Consulting LLC [Sellens], 2016). Two aquifers, one shallow and one deeper, were identified to exist at approximately 18 and 50 feet below ground surface (bgs), respectively. The shallow aquifer is suspected to be perched with depth to water measured at approximately 10 feet bgs, although minimal water is said to be present (Sellens, 2016; Applied Engineering and Geology, Inc., 2009). The deeper aquifer appears to be non-continuous due to varying recharge rates, with depths to groundwater ranging from 53 to 62 feet bgs. Based on the USEPA Unregulated Contaminant Monitoring Rule 3 (UCMR 3) data, it was indicated that PFOA and PFOS were detected in a public water system between 10 to 20 miles of the facility at maximum concentrations of 31 nanograms per liter (ng/L) and 156 ng/L, respectively (USEPA, 2017a). The groundwater flow direction is not well defined and may vary over short distances, but it is inferred to flow generally north (Sellens, 2016; BPE, 2011). Groundwater features at the facility are shown on **Figure 2-3**.

Depths to water measured in July 2021 during the SI ranged from 8.06 to 31.64 feet bgs. Groundwater elevation contours from the SI are presented on **Figure 2-4** and indicate the groundwater flow direction is generally to the northeast.

2.2.3 Hydrology

The Roseville Armory is located in the Pleasant Grove Creek Watershed, and as shown on **Figure 2-5**, all surface water from the facility eventually drains north and west to the South Branch Pleasant Grove Creek. There are no wetland areas or 100-year flood zones identified within the Roseville Armory (EDR™, 2019). Storm water is diverted to storm water drains located in and around the facility property. The closest surface water bodies are a retention pond about 0.5 miles 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. 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).

2.2.4 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 extends from June to August and 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).

2.2.5 Current and Future Land Use

The Roseville Armory has been home to the 233rd Engineer Detachment (Firefighting) since their operations began in 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. There are three buildings 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 is not expected to change from the current land use described above.

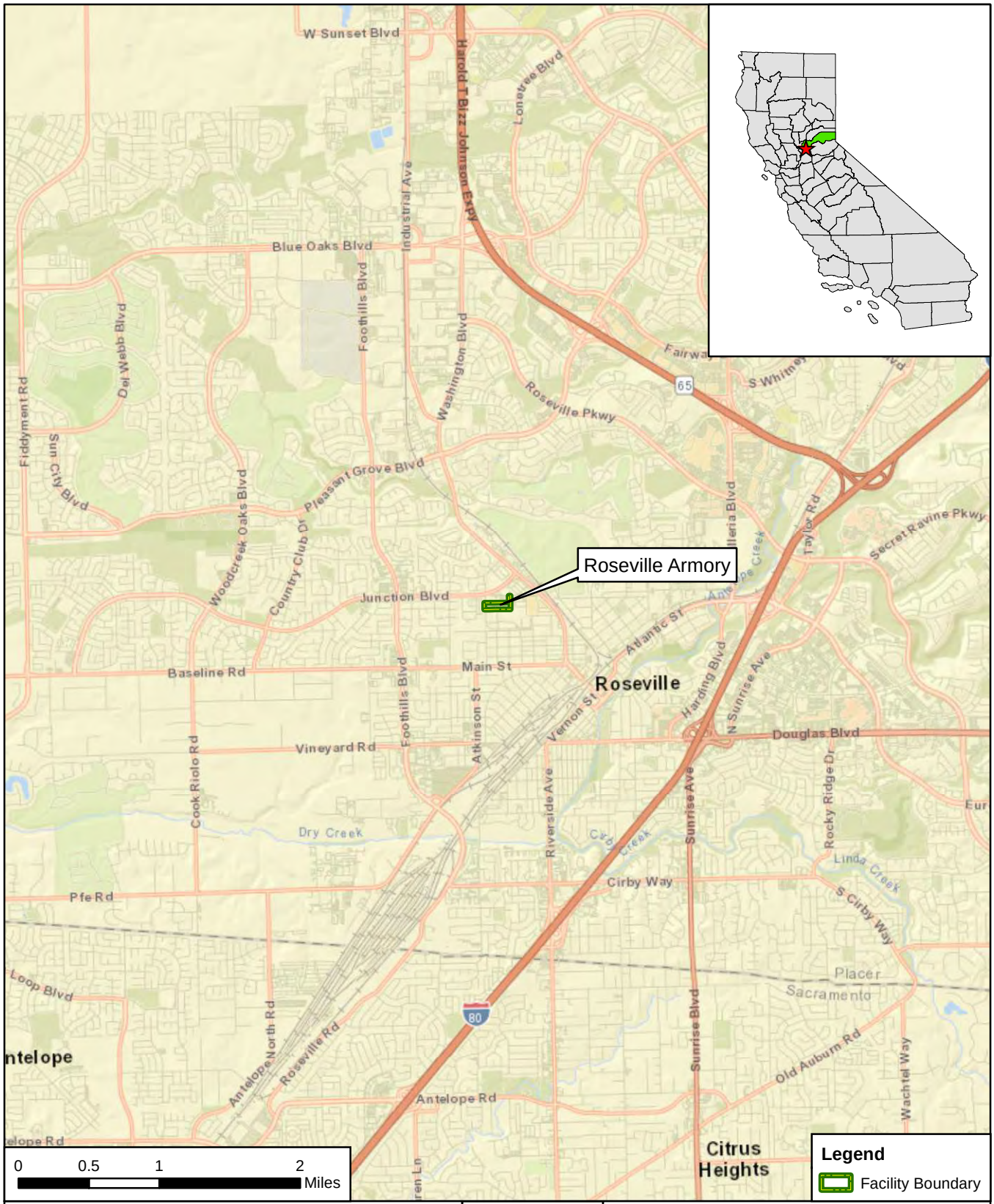
2.2.6 Sensitive Habitat and Threatened/ Endangered Species

The following amphibians, crustaceans, fishes, insects, mammals, plants, and reptiles are federally endangered, threatened, proposed, and/ or are listed as candidate species in Placer County, California (US Fish and Wildlife Service [USFWS], 2021).

- **Amphibians:** California tiger Salamander, *Ambystoma californiense* (endangered); Sierra Nevada Yellow-legged Frog, *Rana sierrae* (endangered); California red-legged frog, *Rana draytonii* (threatened)
- **Conifers and Cyads:** Whitebark pine, *Pinus albicaulis* (proposed threatened)
- **Crustaceans:** Vernal pool tadpole shrimp, *Lepidurus packardi* (endangered); Conservancy fairy shrimp, *Branchinecta conservation* (endangered); Vernal pool fairy shrimp, *Branchinecta lynchi* (endangered)
- **Fishes:** Lahontan cutthroat trout, *Oncorhynchus clarkii henshawi* (threatened); longfin smelt, *Spirinchus thaleichthys* (candidate); Cui-ui, *Chasmistes cujus* (endangered)
- **Flowering Plants:** Sacramento Orcutt grass, *Orcuttia viscida* (endangered); Pine Hill flannelbush, *Fremontodendron californicum ssp. decumbens* (endangered); Stebbins' morning-glory, *Calystegia stebbinsii* (endangered); Layne's butterweed, *Senecio layneae* (threatened); Pine Hill ceanothus, *Ceanothus roderickii* (endangered); Tahoe yellow cress, *Rorippa subumbellata* (resolved taxon); El Dorado bedstraw, *Galium californicum ssp. sierrae* (endangered)
- **Insects:** Monarch butterfly, *Danaus plexippus* (candidate); Valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (threatened)
- **Mammals**: North American wolverine, *Gulo gulo luscus* (resolved taxon)
- **Reptiles**: Giant garter snake, *Thamnophis gigas* (threatened)

2.3 History of PFAS Use

One potential release area where AFFF may have been used or released historically at Roseville Armory was identified during the PA (AECOM, 2020). Roseville Armory includes an area containing firetruck parking, a storage building, and a yard. AFFF may have been released due to the historical storage of AFFF and parking of an AFFF-containing firetruck. The potential release area is referred to as AOI 1, and it is discussed further in **Section 3**.



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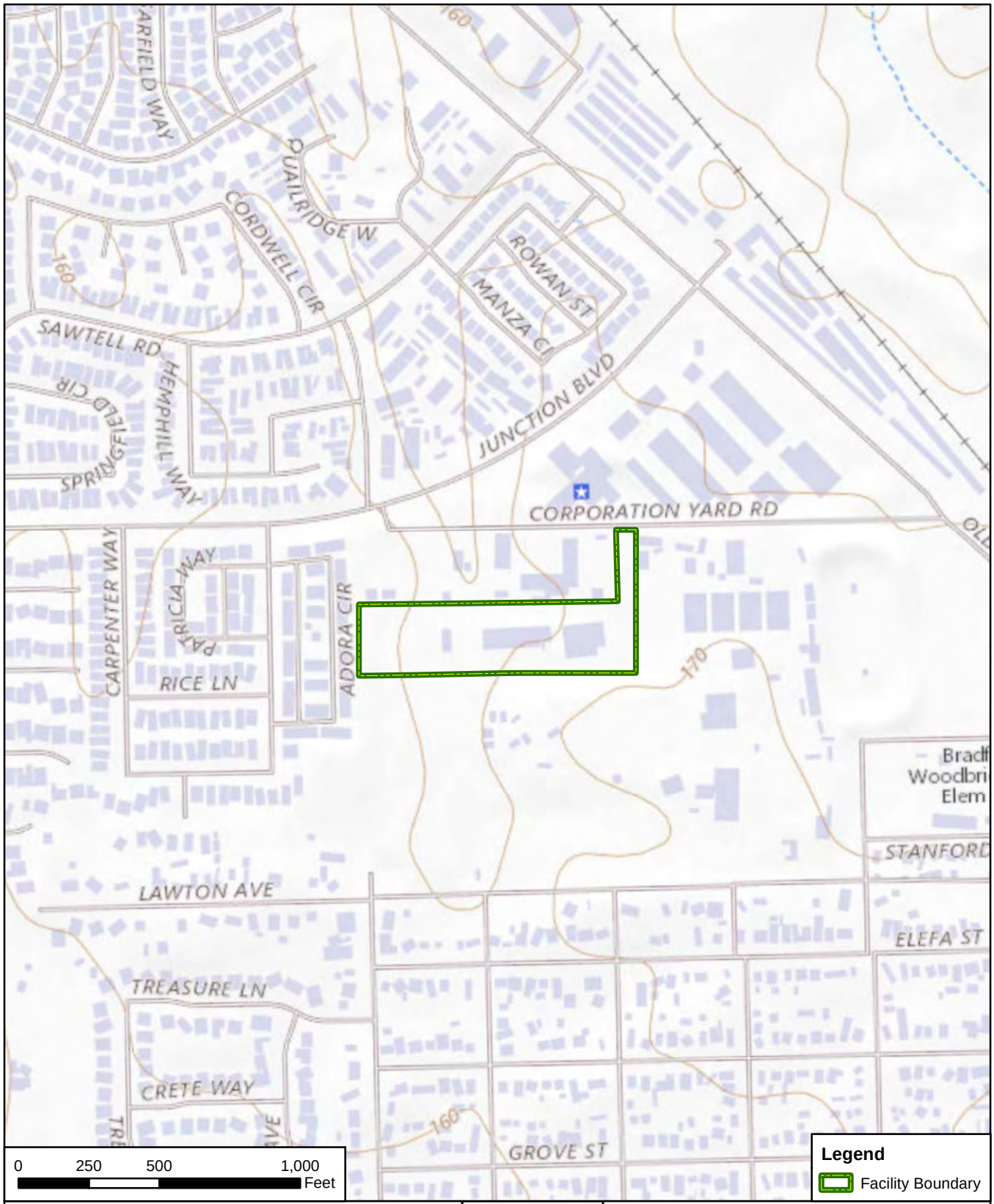
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	CM	8/26/2022

Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-1



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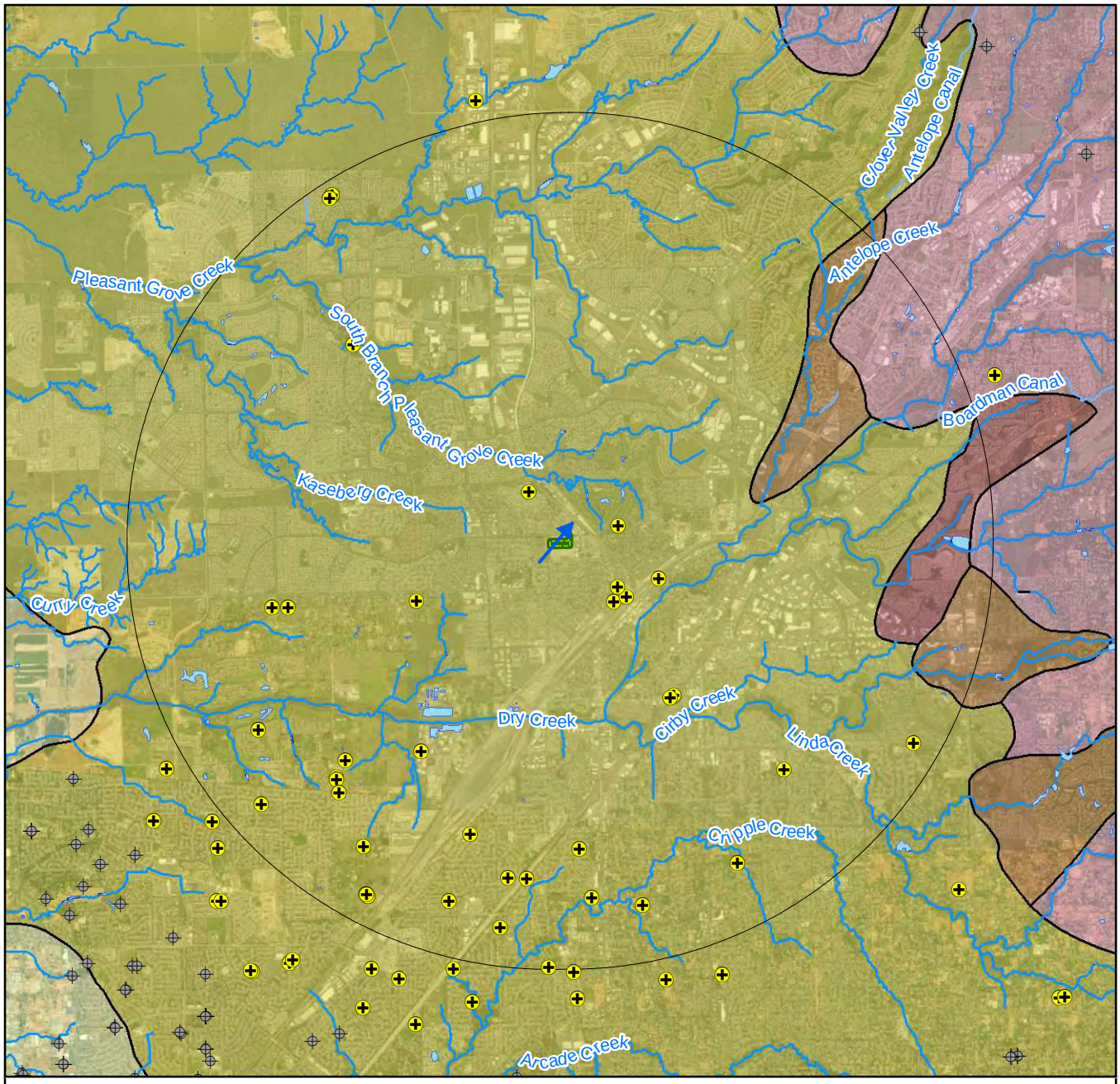
Facility Topography

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-2



Facility Boundary
Water Body
River/Stream
Canal/Ditch
Pipeline
Groundwater Flow Direction
Fault

0 0.75 1.5 3 Miles

Geology

Marine and nonmarine (continental) sedimentary rocks

Pliocene-pleistocene sandstone, shale, and gravel deposits

Eocene Sandstone, shale, conglomerate; moderately to well consolidated

Tertiary pyroclastic and volicanic mudflow deposits

Mesozoic granite, quartz, monzonite, granodiorite, and quartz diorite

Wells

Other/Unknown Well

Municipal Well

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Groundwater Features

AECOM
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Figure 2-3

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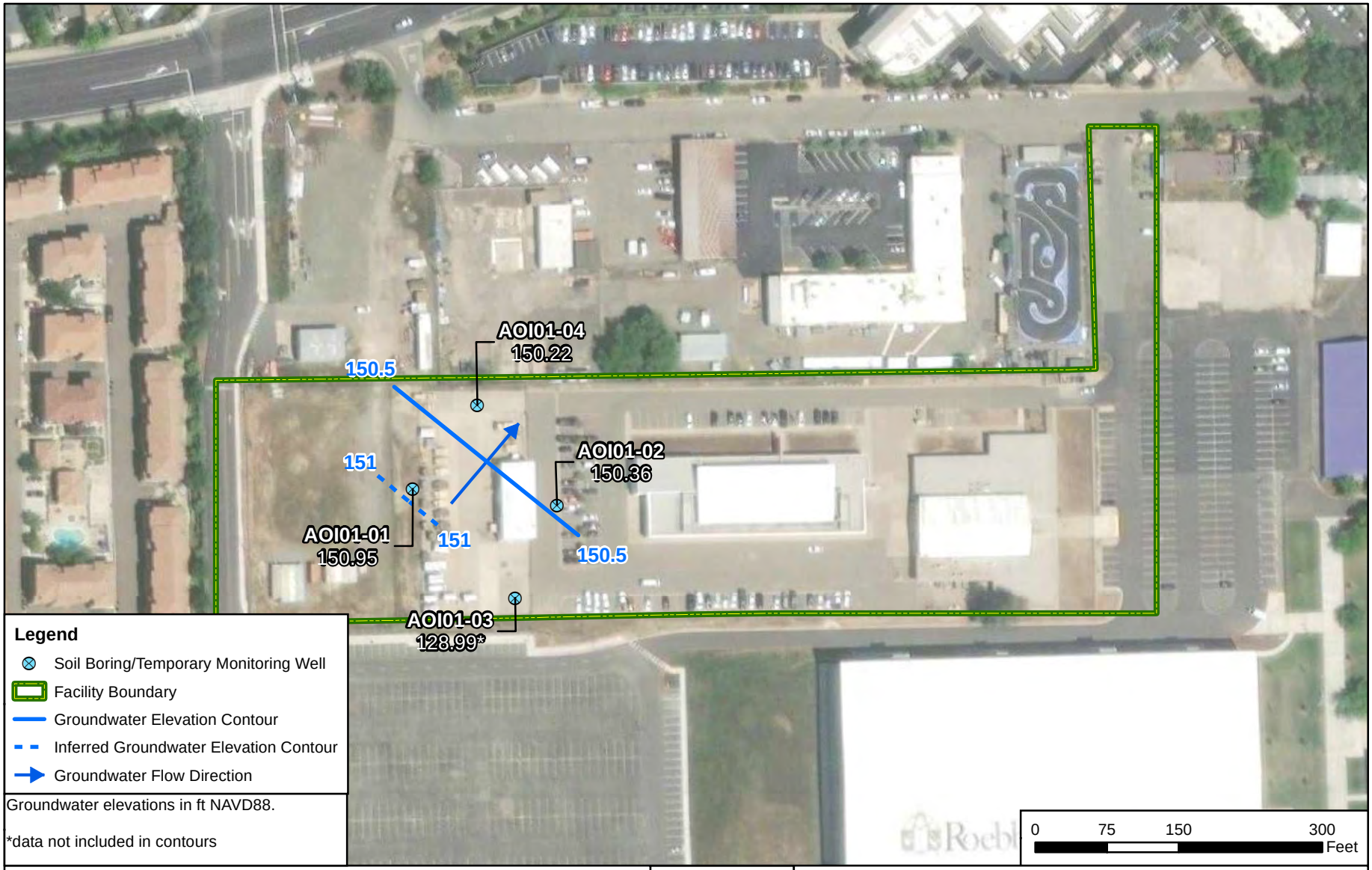

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Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	10/20/2022

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Groundwater Elevations - July 2021

AECOM

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Germantown, MD 20876

Figure 2-4

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CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
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Surface Water Features

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-5

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3. Summary of Areas of Interest

The PA evaluated areas where PFAS-containing materials may have been used, stored, disposed, or released historically. This may include fire training areas (FTAs), buildings with fire suppression systems, paint booths, AFFF storage areas, and areas of compliance demonstrations. Based on the PA findings, one potential release area was identified at Roseville Armory and is referred to as AOI 1 (AECOM, 2020). The potential release area is shown on **Figure 3-1**.

3.1 AOI 1 Firetruck Parking and Storage Yard

AOI 1 consists of one potential release area that contains firetruck parking, 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. Potential AFFF releases could have migrated to the unpaved area and infiltrated soil. Additionally, 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 AFFF releases to surface and subsurface soil occurred, migration from surface soil at AOI 1 to groundwater and surface waters of the South Branch Pleasant Grove Creek is possible.

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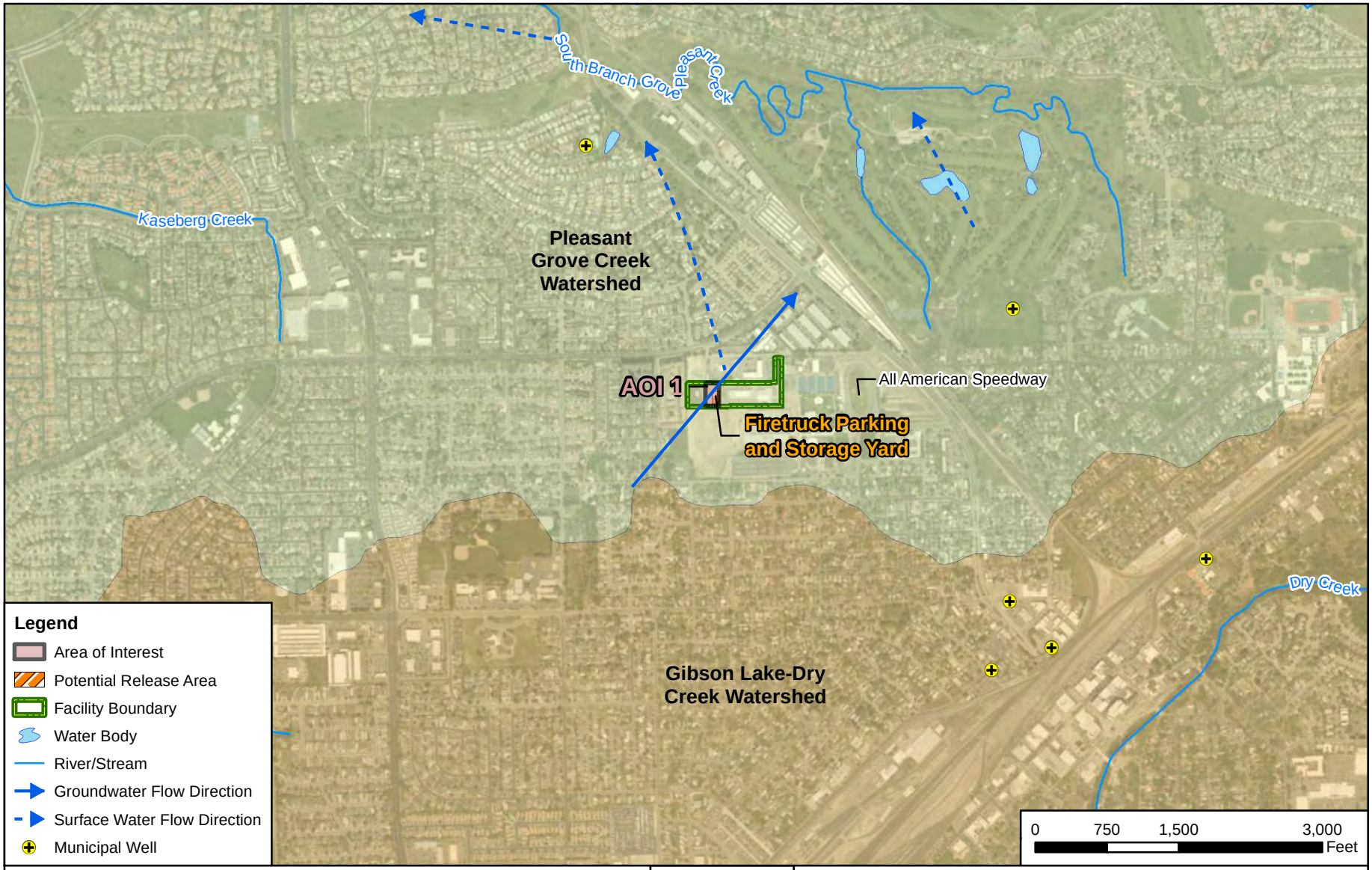

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Area of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

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4. Project Data Quality Objectives

As identified during the Data Quality Objective (DQO) process and outlined in the SI Quality Assurance Project Plan (QAPP) Addendum (AECOM, 2021a), the objective of the SI is to identify whether there has been a release to the environment at the AOIs identified in the PA. For each AOI, ARNG determines if further investigation is warranted, a removal action is required to address immediate threats, or whether no further action is warranted. This SI evaluated groundwater and soil for presence or absence of relevant compounds at the sampled AOI.

4.1 Problem Statement

ARNG will recommend an AOI for Remedial Investigation (RI) if related soil and groundwater samples have concentrations of the relevant compounds above the OSD risk-based SLs. The SLs are presented in **Section 6.1** of this report.

4.2 Information Inputs

Primary information inputs included:

- The PA for Roseville Armory (AECOM, 2020);
- Analytical data from groundwater and soil samples collected as part of this SI in accordance with the site-specific Uniform Federal Policy (UFP)-QAPP Addendum (AECOM, 2021a); and
- Field data collected during the SI, including groundwater elevation and water quality parameters measured at the time of sampling.

4.3 Study Boundaries

The scope of the SI was bounded by the property limits of the facility (**Figure 2-2**). Off-facility sampling was not included in the scope of this SI. If future off-facility sampling is required, the proper stakeholders will be notified, and necessary rights of entry will be obtained by ARNG with property owner(s). Temporal boundaries were limited to the summer season, which was the earliest available time field resources were available to complete the study.

4.4 Analytical Approach

Samples were analyzed by Pace Analytical Gulf Coast, accredited under the Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP; Accreditation Number 74960) and the National Environmental Laboratory Accreditation Program (NELAP; Certificate Number 01955). Data were compared to applicable SLs within this document and decision rules as defined in the SI QAPP Addendum (AECOM, 2021a).

4.5 Data Usability Assessment

The Data Usability Assessment (DUA), which is provided in **Appendix A**, is an evaluation at the conclusion of data collection activities that uses the results of both data verification and validation in the context of the overall project decisions or objectives. Using both quantitative and qualitative methods, the assessment determines whether project execution and the resulting data have met installation-specific DQOs. Both sampling and analytical activities are considered to assess whether the collected data are of the right type, quality, and quantity to support the decision-making (DoD, 2019a; DoD, 2019b; USEPA, 2017b).

Based on the DUA, the environmental data collected during the SI were found to be acceptable and usable for this SI evaluation with the qualifications documented in the DUA and its associated data validation reports. These data are of sufficient quality to meet the objectives and requirements of the SI QAPP Addendum (AECOM, 2021a).

5. Site Inspection Activities

This section describes the environmental investigation and sampling activities that occurred as part of the SI. The SI sampling approach was based on the findings of the PA and implemented in accordance with the following approved documents:

- *Final Site Inspection Programmatic Uniform Federal Policy-Quality Assurance Project Plan (PQAPP)* dated March 2018 (AECOM, 2018a);
- *Final Programmatic Accident Prevention Plan* dated July 2018 (AECOM, 2018b);
- *Final Preliminary Assessment Report, Roseville Armory, California,* dated January 2020 (AECOM, 2020);
- *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Roseville Armory, California* dated June 2021 (AECOM, 2021a); and
- *Final Site Safety and Health Plan Roseville Armory, California* dated June 2021 (AECOM, 2021b).

The SI field activities were conducted from 12 to 15 July 2021 and consisted of utility clearance, direct push boring, soil sample collection, temporary monitoring well installation, grab groundwater sample collection, and land surveying. Field activities were conducted in accordance with the SI QAPP Addendum (AECOM, 2021a), except as noted in **Section 5.8**.

The following samples were collected during the SI and analyzed for a subset of 18 compounds by liquid chromatography with tandem mass spectrometry (LC/MS/MS) compliant with Quality Systems Manual (QSM) 5.3 Table B-15 to fulfill the project DQOs:

- Twelve (12) soil samples from four soil borings;
- Four grab groundwater samples from four temporary wells;
- Fourteen (14) quality assurance (QA)/quality control (QC) samples.

Figure 5-1 provides the sample locations for all media across the facility. **Table 5-1** presents the list of samples collected for each media. Field documentation is provided in **Appendix B**. A Log of Daily Notice of Field Activity was completed throughout the SI field activities, which is provided in **Appendix B1**. Sampling forms are provided in **Appendix B2**, and land survey data are provided in **Appendix B3**. Additionally, a photographic log of field activities is provided in **Appendix C**.

5.1 Pre-Investigation Activities

In preparation for the SI field activities, project team members participated in Technical Project Planning (TPP) meetings, performed utility clearance, and sampled decontamination source water. Details for each of these activities are presented below.

5.1.1 Technical Project Planning

The US Army Corps of Engineers (USACE) TPP Process, Engineer Manual (EM) 200-1-2 (USACE, 2016) defines four phases to project planning: 1.) defining the project phase; 2.) determining data needs; 3.) developing data collection strategies; and 4.) finalizing the data collection plan. The process encourages stakeholder involvement in the SI, beginning with defining overall project objectives, including DQOs, and formulating a sampling approach to address the AOIs identified in the PA.

A combined TPP Meeting 1 and 2 was held on 24 February 2021, prior to SI field activities. The combined TPP Meeting 1 and 2 was conducted in general accordance with EM 200-1-2. The stakeholders for this SI include the ARNG, CAARNG, USACE, and California Regional Water Quality Control Board (RWQCB). Stakeholders were provided the opportunity to make comments on the technical sampling approach and methods at the combined TPP Meeting 1 and 2. The outcome of the combined TPP Meeting 1 and 2 was memorialized in the SI QAPP Addendum (AECOM, 2021a).

A TPP Meeting 3 was held on 27 June 2023 to discuss the results of the SI. Meeting minutes for TPP 3 will be included in **Appendix D** of this report. Future TPP meetings will provide an opportunity to discuss the results and findings, and future actions, where warranted.

5.1.2 Utility Clearance

AECOM's drilling subcontractor, Cascade Technical Services, LLC. placed a ticket with the California 811 utility clearance provider to notify them of intrusive work on 6 July 2021. Additionally, AECOM contracted Ground Penetrating Radar Systems (GPRS), a private utility location service, to perform utility clearance. GPRS performed utility clearance of the proposed boring locations on 12 July 2021 with input from the AECOM field team and Roseville Armory facility staff. General locating services and ground-penetrating radar were used to complete the clearance. Additionally, the first 5 feet of each boring were pre-cleared using a hand auger to verify utility clearance in shallow subsurface where utilities would typically be encountered.

5.1.3 Source Water and Sampling Equipment Acceptability

A potable water source at Roseville Armory was sampled on 25 May 2021 to assess usability for decontamination of drilling equipment. Results of the sample collected confirmed the source to be acceptable for use in this investigation; therefore, it was used throughout the field activities. Specifically, the samples were analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15. The results of the decontamination water sample are provided in **Appendix F**. A discussion of the results is presented in the DUA (**Appendix A**).

Materials that were used within the sampling zone were confirmed as acceptable for use in the sampling environment. The checklist of acceptable materials for use in the sampling environment was provided in the Standard Operating Procedures (SOPs) appendix to the SI QAPP Addendum (AECOM, 2021a). Prior to the start of field work each day, a Sampling Checklist was completed as an additional layer of control. The checklist served as a daily reminder to each field team member regarding the allowable materials within the sampling environment.

5.2 Soil Borings and Soil Sampling

Soil samples were collected via direct push technology (DPT), in accordance with the SI QAPP Addendum (AECOM, 2021a). A GeoProbe® 7822DT dual-tube sampling system was used to collect continuous soil cores to the target depth. A hand auger was used to collect soil from the top 5 feet of the boring, in accordance with AECOM utility clearance procedures. The soil boring locations are shown on **Figure 5-1,** and depths are provided **Table 5-1**.

Three discrete soil samples were collected from the vadose zone for chemical analysis from each soil boring: one surface soil sample (0 to 2 feet bgs), one subsurface soil sample approximately 1 foot above the groundwater table, and one subsurface soil sample at the mid-point between the surface and the groundwater table.

The soil cores were continuously logged for lithological descriptions by an AECOM field geologist using the Unified Soil Classification System (USCS). A photoionization detector (PID) was used

to screen the breathing zone during boring activities as part of personal safety requirements. Observations and measurements were recorded on boring logs (**Appendix E**) and in a non-treated field logbook (i.e., composition notebook). Depth interval, recovery thickness, PID concentrations, moisture, relative density, color (using a Munsell soil color chart), and texture (using the USCS) were recorded. The boring logs are provided in **Appendix E**.

Soil borings completed during the SI found silty sand and sandy silt as the dominant lithology of the unconsolidated sediments below Roseville Armory. The borings were completed at depths between 16 and 34 feet bgs. Isolated layers of clay were also observed in the boring logs, at thicknesses ranging from 2 to 6 feet. These facility observations are consistent with the alluvial and fluvial depositional environment. Each soil sample was collected into a laboratory-supplied PFAS-free high-density polyethylene (HDPE) bottle and labeled using a PFAS-free marker or pen. Samples were packaged on ice and transported via Federal Express (FedEx) under standard chain of custody (CoC) procedures to the laboratory and analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15, total organic carbon (TOC) (USEPA Method 9060A), and pH (USEPA Method 9045D) in accordance with the SI QAPP Addendum (AECOM, 2021a).

Field duplicate samples were collected at a rate of 10 percent (%) and analyzed for the same parameters as the accompanying samples. Matrix spike (MS) and MS duplicates (MSDs) were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. In instances when non-dedicated sampling equipment was used, such as a hand auger for the shallow soil samples, equipment rinsate blanks were collected at a rate of 5% and analyzed for the same parameters as the soil samples. A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6 degrees Celsius (°C) during shipment.

DPT borings were converted to temporary wells, which were subsequently abandoned in accordance with the SI QAPP Addendum (AECOM, 2021a) and with concurrence from the Placer County inspector by removing the well casing and backfilling the hole with cement grout. Upon completion of well abandonment, the ground surface at each location was patched with material similar to the surrounding pavement.

5.3 Temporary Well Installation and Groundwater Grab Sampling

Temporary wells were installed using a GeoProbe® 7822DT dual-tube sampling system. Once the borehole was advanced to the desired depth, a temporary well was constructed of a 5-foot section of 1-inch Schedule 40 poly-vinyl chloride (PVC) screen with sufficient casing to reach ground surface. New PVC pipe and screen were used to avoid cross contamination between locations. The screen intervals for the temporary wells are provided in **Table 5-2**.

Groundwater samples were collected after a period of time following well installation to allow groundwater to infiltrate and recharge the temporary well screen intervals. After the recharge period, groundwater samples were collected using a peristaltic pump with PFAS-free HDPE tubing. With the exception of AOI01-03, the temporary wells were purged at a rate determined in the field to reduce turbidity and draw down prior to sampling. AOI01-03 had limited groundwater in the well to allow sufficient purging to reduce turbidity before sampling. Water quality parameters (e.g., temperature, specific conductance, pH, dissolved oxygen, and oxidation-reduction potential) were measured using a water quality meter and recorded on the field sampling form (**Appendix B2**) before each grab sample was collected. Additionally, a subsample of each groundwater sample was collected in a separate container, and a shaker test was completed to identify if there were any foaming. No foaming was noted in any of the groundwater samples.

Each sample was collected into laboratory-supplied PFAS-free HDPE bottles and labeled using a PFAS-free marker or pen. Samples were packaged on ice and transported via FedEx under standard CoC procedures to the laboratory and analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15 in accordance with the SI QAPP Addendum (AECOM, 2021a).

Field duplicate samples were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. MS/MSDs were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. One field reagent blank was collected in accordance with the PQAPP (AECOM, 2018a). A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6 °C during shipment.

Temporary wells were abandoned in accordance with the SI QAPP Addendum (AECOM, 2021a) and with concurrence from the Placer County inspector by removing the PVC and backfilling the hole with cement grout. Upon completion of well abandonment, the ground surface at each location was patched with material similar to the surrounding pavement.

5.4 Synoptic Water Level Measurements

A synoptic groundwater gauging event was performed on 13 July to 15 July 2021. Groundwater level measurements were collected from the four new temporary monitoring wells. Water level measurements were taken from the northern side of the well casing. A groundwater flow contour map is provided in **Figure 2-4**. Groundwater elevation data are provided in **Table 5-2**. The groundwater level measured in AOI01-03 was anomalously lower (20 feet lower) than the levels measured in all three other temporary wells. Therefore, AOI01-03 gauging data were not used to estimate the northeast groundwater flow direction as presented herein.

5.5 Surveying

The northern side of each well casing was surveyed by California-licensed land surveyors following guidelines provided in the SOPs provided in the SI QAPP Addendum (AECOM, 2021a). Survey data from the newly installed wells on the facility were collected on 15 July 2021 in the applicable Universal Transverse Mercator zone projection with World Geodetic System 84 datum (horizontal) and North American Vertical Datum 1988 (vertical). The surveyed well data are provided in **Appendix B3**.

5.6 Investigation-Derived Waste

As of the date of this report, the disposal of investigation-derived waste (IDW) is not regulated federally. IDW generated during the SI is considered non-hazardous waste and was managed in accordance with the SI QAPP Addendum (AECOM, 2021a) and with the DA Guidance for Addressing Releases of PFAS, Q18 (DA, 2018).

Soil IDW (i.e., soil cuttings) generated during the SI activities were contained in labeled, 55-gallon Department of Transportation (DOT)-approved steel drums and left onsite at a location designated by the CAARNG. The soil IDW was not sampled and assumes the characteristics of the associated soil samples collected from that source location.

Liquid IDW generated during SI activities (i.e., purge water, development water, and decontamination fluids) were contained in labeled, 55-gallon DOT-approved steel drums, and left onsite at a location designated by CAARNG. The liquid IDW was not sampled and assumes the characteristics of the associated groundwater samples collected from that source location

Management and disposal of containerized IDW is being handled by Engineering, Science, and Technology, Inc. (EA) under a separate contract with USACE in accordance with SOP No. 042A (EA, 2021).

Other solids such as spent personal protective equipment, plastic sheeting, tubing, rope, unused monitoring well construction materials, and other environmental media generated during the field activities were disposed of at a licensed solid waste landfill.

5.7 Laboratory Analytical Methods

Samples were analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15 at Pace Analytical Gulf Coast in Baton Rouge, Louisiana, a DoD ELAP and NELAP certified laboratory. Soil samples were also analyzed for TOC using USEPA Method 9060A and pH by USEPA Method 9045D.

5.8 Deviations from SI QAPP Addendum

One deviation from the SI QAPP Addendum was identified during review of the field documentation. The deviation is noted below:

- The approved SI QAPP Addendum states that mid-point subsurface soil samples would be collected from 13 to 15 feet bgs if total boring depth exceeded 30 feet bgs. During DPT drilling activities, a subsurface soil sample was collected from the mid-point of boring AOI01-03 below 15 feet bgs based on the total boring depth. However, the mid-point soil samples for AOI01-01, AOI01-02, and AOI01-04 were collected from 5 to 12 feet bgs. As a result, the comparison of PFAS concentrations in the midpoint subsurface soil samples collected from AOI01-01, AOI01-02, and AOI01-04 were used to evaluate the industrial/commercial worker scenario. This action was documented in a nonconformance report dated October 2022 and is provided in **Appendix B4**.
- The Approved SI QAPP Addendum states that soil cores will be continuously logged for lithological descriptions by a field geologist using the Unified Soil Classification System (USCS) per SOP 3-16. The shallow soil (0-5 feet bgs) was inadvertently not logged during the hand clearing of locations AOI01-02 and AOI01-03.

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Table 5-1
Site Inspection Samples by Medium
Site Inspection Report, Roseville Armory, California

Sample Identification	Sample Collection Date/Time	Sample Depth (feet bgs)	LC/MS/MS compliant with QSM 5.3 Table B-15	TOC (USEPA Method 9060A)	pH (USEPA Method 9045D)	Grain Size (ASTM D-422)	Comments
Soil Samples							
AOI01-01-SB-0-2	7/13/2021 11:50	0 - 2	x				
AOI01-01-SB-11-12	7/13/2021 14:25	11-12	x				
AOI01-01-SB-21-22	7/13/2021 14:15	21-22	x				
AOI01-02-SB-0-2	7/14/2021 10:15	0-2	x				
AOI01-02-SB-0-2-D	7/14/2021 10:15	0-2	x				FD
AOI01-02-SB-0-2-MS	7/14/2021 10:15	0-2	x				MS/MSD
AOI01-02-SB-0-2-MSD	7/14/2021 10:15	0-2	x				MS/MSD
AOI01-02-SB-5-6	7/14/2021 11:20	5-6	x				
AOI01-02-SB-8-9	7/14/2021 11:25	8-9	x				
AOI01-03-SB-0-2	7/14/2021 13:55	0-2	x				
AOI01-03-SB-16-17	7/14/2021 15:55	16-17	x				
AOI01-03-SB-33-34	7/14/2021 16:05	33-34	x				
AOI01-04-SB-0-2	7/14/2021 7:45	0-2	x	x	x		
AOI01-04-SB-0-2-D	7/14/2021 7:45	0-2	x	x	x		FD
AOI01-04-SB-0-2-MS	7/14/2021 7:45	0-2		x	x		MS/MSD
AOI01-04-SB-0-2-MSD	7/14/2021 7:45	0-2	x	x	x		MS/MSD
AOI01-04-SB-8-10	7/14/2021 9:20	8-10	x				
AOI01-04-SB-31-32	7/14/2021 9:30	31-32	x				
Groundwater Samples							
AOI01-01-GW	7/13/2021 15:40	NA	x				
AOI01-02-GW	7/14/2021 13:10	NA	x				
AOI01-02-GW-D	7/14/2021 13:10	NA	x				FD
AOI01-02-GW-MS	7/14/2021 13:10	NA	x				MS/MSD
AOI01-02-GW-MSD	7/14/2021 13:10	NA	x				MS/MSD
AOI01-03-GW	7/15/2021 10:45	NA	x				
AOI01-04-GW	7/15/2021 9:05	NA	x				

Table 5-1
Site Inspection Samples by Medium
Site Inspection Report, Roseville Armory, California

Sample Identification	Sample Collection Date/Time	Sample Depth (feet bgs)	LC/MS/MS compliant with QSM 5.3 Table B-15	TOC (USEPA Method 9060A)	pH (USEPA Method 9045D)	Grain Size (ASTM D-422)	Comments
Quality Control Samples							
R-DECON	5/25/2021 10:15	NA	x				Decontamination Source Water
ROSEV-FRB-01	7/15/2021 10:25	NA	x				
ROSEV-ERB-01	7/13/2021 12:55	NA	x				Drillers' Poly Tank and Hose
ROSEV-ERB-02	7/15/2021 10:35	NA	x				DPT Cutting Shoe
ROSEV-ERB-03	7/15/2021 10:40	NA	x				Water Level Sounder

Notes:
ASTM = American Society for Testing and Materials
bgs = below ground surface
ERB = equipment rinsate blank
FD = field duplicate
FRB = field reagent blank
GW = ground water
LC/MS/MS = Liquid Chromatography Mass Spectrometry
MS/MSD = matrix spike/ matrix spike duplicate
QSM = Quality Systems Manual
SB = soil boring
TOC = total organic carbon
USEPA = United States Environmental Protection Agency

Table 5-2
Soil Boring Depths, Temporary Well Screen Intervals, and Groundwater Elevations
Site Inspection Report, Roseville Armory, California

Area of Interest	Boring Location	Soil Boring Depth (feet bgs)	Temporary Well Screen Interval (feet bgs)	Top of Casing Elevation (feet NAVD88)	Ground Surface Elevation (feet NAVD88)	Depth to Water (feet btoc)	Depth to Water (feet bgs)	Groundwater Elevation (feet NAVD88)
1	AOI01-01	25	19 - 24 [1]	161.10	160.20	10.15	9.25	150.95
	AOI01-02	16	5 - 15 [1]	159.61	159.84	9.25	9.48	150.36
	AOI01-03	34	24 - 34	161.72	160.63	32.73	31.64	128.99
	AOI01-04	32	5 - 30 [1]	158.07	158.28	7.85	8.06	150.22

Notes:

[1] Temporary well screen set above total depth to capture groundwater interface

bgs = below ground surface
btoc = below top of casing
NA = not applicable
NAVD88 = North American Vertical Datum 1988

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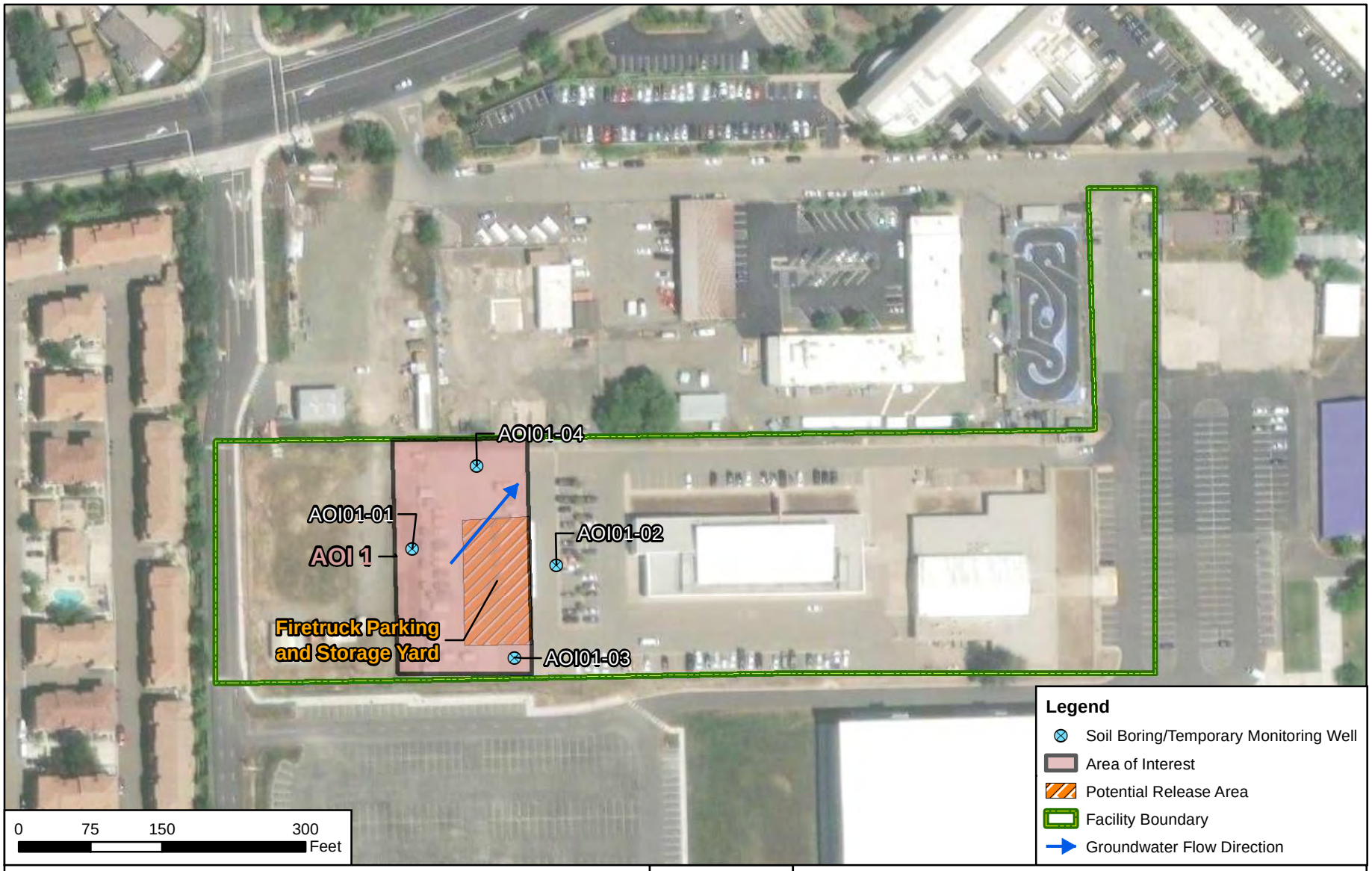

CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
REVISED	8/29/2022	GIS BY	MS	8/29/2022
SCALE	1:1,800	CHK BY	MB	8/29/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/29/2022

Site Inspection Sample Locations

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

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6. Site Inspection Results

This section presents the analytical results of the SI. The SLs used in this evaluation are presented in **Section 6.1**. A discussion of the results for the one AOI is provided in **Section 6.3**. **Table 6-2** through **Table 6-5** present results in soil or groundwater for the relevant compounds. Tables that contain all results are provided in **Appendix F**, and the laboratory reports are provided in **Appendix G**.

6.1 Screening Levels

The DoD has adopted a policy to retain facilities in the CERCLA process based on risk-based SLs for soil and groundwater, as described in a memorandum from the OSD dated 6 July 2022 (Assistant Secretary of Defense, 2022). The ARNG program under which this SI was performed follows this DoD policy. Should the maximum site concentration for sampled media exceed the SLs established in the OSD memorandum, the AOI will proceed to the next phase under CERCLA. The SLs established in the OSD memorandum apply to the five compounds presented on **Table 6-1** below.

Table 6-1: Screening Levels (Soil and Groundwater)

Analyte[b]	Residential (Soil) (µg/kg)[a] 0-2 feet bgs	Industrial/ Commercial Composite Worker (Soil) (µg/kg)[a] 2-15 feet bgs	Tap Water (Groundwater) (ng/L)[a]
PFOA	19	250	6
PFOS	13	160	4
PFBS	1,900	25,000	601
PFHxS	130	1,600	39
PFNA	19	250	6

Notes:
bgs = below ground surface; µg/kg = micrograms per kilogram; ng/L = nanograms per liter

a.) Assistant Secretary of Defense, 2022. Risk Based Screening Levels in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. Hazard Quotient (HQ) = 0.1. 6 July 2022.

b.) Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

The data in the subsequent sections are compared to the SLs presented in **Table 6-1**. The SLs for groundwater are based on direct ingestion. The SLs for soil are based on incidental ingestion and are applied to the depth intervals reasonably anticipated to be encountered by the receptors identified at the facility: the residential scenario is applied to surface soil results (0 to 2 feet bgs), and the industrial/commercial worker scenario is applied to shallow subsurface soil results (2 to 15 feet bgs). The SLs are not applied to deep subsurface soil results (>15 feet bgs) because 15 feet is the anticipated limit of construction activities.

6.2 Soil Physicochemical Analyses

To provide basic soil parameter information, soil samples were analyzed for TOC and pH, which are important for evaluating transport through the soil medium. **Appendix F** contains the results of the TOC and pH sampling.

The data collected in this investigation will be used in subsequent investigations, where appropriate, to assess fate and transport. According to the Interstate Technology Regulatory Council (ITRC), several important partitioning mechanisms include hydrophobic and lipophobic effects, electrostatic interactions, and interfacial behaviors. At relevant environmental pH values, certain PFAS are present as organic anions and are therefore relatively mobile in groundwater (Xiao et al., 2015), but tend to associate with the organic carbon fraction that may be present in soil or sediment (Higgins and Luthy, 2006; Guelfo and Higgins, 2013). When sufficient organic carbon is present, organic carbon normalized distribution coefficients (K_{oc} values) can help in evaluating transport potential, though other geochemical factors (for example, pH and presence of polyvalent cations) may also affect PFAS sorption to solid phases (ITRC, 2018).

6.3 AOI 1

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 1: Firetruck Parking and Storage Yard. The soil and groundwater results are summarized on **Table 6-2** through **Table 6-5**. Soil and groundwater results are presented on **Figure 6-1** through **Figure 6-7**.

6.3.1 AOI 1 Soil Analytical Results

Soil was sampled from surface soil (0 to 2 feet bgs), shallow subsurface soil (5 to 12 feet bgs), and deep subsurface soil (16 to 34 feet bgs) from boring locations AOI01-01 through AOI01-04. **Figure 6-1** through **Figure 6-5** present the ranges of detections in soil. **Table 6-2** through **Table 6-4** summarize the soil results.

PFOA, PFOS, PFBS, PFHxS, and PFNA were detected in soil at concentrations below their SLs. PFOA, PFOS, PFBS, PFHxS, and PFNA were detected in soil at concentrations less than 1.91 µg/kg; all detected concentrations were below the SLs in surface soil.

PFOA, PFOS, and PFHxS were detected in shallow subsurface soil at concentrations below their SLs. PFOA was detected at AOI01-02, with a maximum concentration of 0.225 J µg/kg. PFOS was detected at AOI01-02, with a maximum concentration of 0.199 J µg/kg. PFHxS was detected at AOI01-02, with a concentration of 0.068 J µg/kg. PFBS and PFNA were not detected in shallow subsurface soil.

PFOS was detected in deep surface soil at AOI01-03 only, at a concentration of 0.074 J ug/kg, below the SL. PFOA, PFBS, PFHxS, and PFNA were not detected in deep subsurface soil.

6.3.2 AOI 1 Groundwater Analytical Results

Figure 6-6 and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-5** summarizes the groundwater results.

Groundwater was sampled from temporary monitoring wells AOI01-01 through AOI01-04. The following exceedances of the SLs were measured:

- PFOA was detected above the SL of 6 ng/L in all four wells, with concentrations ranging from 25.9 ng/L to 538 ng/L.

- PFOS was detected above the SL of 4 ng/L at two of the four wells, with concentrations ranging from of 13.1 ng/L to 22.4 ng/L.
- PFNA was detected above the SL of 6 ng/L at two of the four wells, with concentrations ranging from 6.12 ng/L to 21.9 ng/L.

PFHxS and PFBS were detected below their respective SLs.

6.3.3 AOI 1 Conclusions

Based on the results of the SI, PFOA, PFOS, PFBS, PFHxS, and PFNA were detected in soil below their SLs. PFOA, PFOS, and PFNA were detected in groundwater at concentrations above their SLs. Based on the exceedances of the SLs in groundwater, further evaluation at AOI 1 is warranted.

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Table 6-2
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil
Site Inspection Report, Roseville Armory

Area of Interest		AOI01											
Sample ID		AOI01-01-SB-0-2		AOI01-02-SB-0-2		AOI01-02-SB-0-2-D		AOI01-03-SB-0-2		AOI01-04-SB-0-2		AOI01-04-SB-0-2-D	
Sample Date		07/13/2021		07/14/2021		07/14/2021		07/14/2021		07/14/2021		07/14/2021	
Depth		0-2 ft		0-2 ft		0-2 ft		0-2 ft		0-2 ft		0-2 ft	
Analyte	**OSD Screening Level [a]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)													
PFBS	1900	ND	U	ND	U	ND	U	0.042	J	ND	U	ND	U
PFHxS	130	ND	U	ND	U	ND	U	0.245	J	ND	U	ND	U
PFNA	19	0.412	J	0.032	J	0.036	J	0.045	J	0.025	J	0.032	J
PFOA	19	1.74	J	ND	U	ND	U	0.137	J	ND	U	ND	U
PFOS	13	0.676	J	0.125	J	0.144	J	1.91		0.352	J	0.463	J

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022. Soil screening levels based on residential scenario for incidental ingestion of contaminated soil.

Interpreted Qualifiers

J = Estimated concentration
U = The analyte was not detected at a level greater than or equal to the adjusted DL

Chemical Abbreviations

PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid

Acronyms and Abbreviations

AOI	Area of Interest
D	duplicate
DL	detection limit
ft	feet
HQ	hazard quotient
ID	identification
LCMSMS	liquid chromatography with tandem mass spectrometry
LOD	limit of detection
ND	analyte not detected above the LOD
OSD	Office of the Secretary of Defense
QSM	Quality Systems Manual
Qual	interpreted qualifier
SB	soil boring
USEPA	United States Environmental Protection Agency
µg/kg	micrograms per kilogram

Table 6-3
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil
Site Inspection Report, Roseville Armory

Area of Interest		AOI01							
Sample ID		AOI01-01-SB-11-12		AOI01-02-SB-5-6		AOI01-02-SB-8-9		AOI01-04-SB-8-10	
Sample Date		07/13/2021		07/14/2021		07/14/2021		07/14/2021	
Depth		11-12 ft		5-6 ft		8-9 ft		8-10 ft	
Analyte	**OSD Screening Level [a]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)									
PFBS	25000	ND	U	ND	U	ND	U	ND	U
PFHxS	1600	ND	U	ND	U	0.068	J	ND	U
PFNA	250	ND	U	ND	U	ND	U	ND	U
PFOA	250	ND	U	0.156	J	0.225	J	ND	U
PFOS	160	ND	U	0.199	J	0.171	J	ND	U

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022. Soil screening levels based on industrial/commercial composite worker scenario for incidental ingestion of contaminated soil.

Interpreted Qualifiers

J = Estimated concentration
U = The analyte was not detected at a level greater than or equal to the adjusted DL

Chemical Abbreviations

PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid

Acronyms and Abbreviations

AOI	Area of Interest
DL	detection limit
ft	feet
HQ	hazard quotient
ID	identification
LCMSMS	liquid chromatography with tandem mass spectrometry
LOD	limit of detection
ND	analyte not detected above the LOD
OSD	Office of the Secretary of Defense
QSM	Quality Systems Manual
Qual	interpreted qualifier
SB	soil boring
USEPA	United States Environmental Protection Agency
µg/kg	micrograms per kilogram

Table 6-4
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Deep Subsurface Soil
Site Inspection Report, Roseville Armory

Area of Interest	AOI01							
Sample ID	AOI01-01-SB-21-22		AOI01-03-SB-16-17		AOI01-03-SB-33-34		AOI01-04-SB-31-32	
Sample Date	07/13/2021		07/14/2021		07/14/2021		07/14/2021	
Depth	21-22 ft		16-17 ft		33-34 ft		31-32 ft	
Analyte	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)								
PFBS	ND	U	ND	U	ND	U	ND	U
PFHxS	ND	U	ND	U	ND	U	ND	U
PFNA	ND	U	ND	U	ND	U	ND	U
PFOA	ND	U	ND	U	ND	U	ND	U
PFOS	ND	U	0.074	J	ND	U	ND	U

Interpreted Qualifiers
J = Estimated concentration
U = The analyte was not detected at a level greater than or equal to the adjusted DL

Chemical Abbreviations

PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid

Acronyms and Abbreviations

AOI	Area of Interest
DL	detection limit
ft	feet
ID	identification
LCMSMS	liquid chromatography with tandem mass spectrometry
LOD	limit of detection
ND	analyte not detected above the LOD
QSM	Quality Systems Manual
Qual	interpreted qualifier
SB	soil boring
µg/kg	micrograms per kilogram

Table 6-5
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater
Site Inspection Report, Roseville Armory

	Area of Interest	AOI01		AOI01		AOI01		AOI01		AOI01	
	Sample ID	AOI01-01-GW		AOI01-02-GW		AOI01-02-GW-D		AOI01-03-GW		AOI01-04-GW	
	Sample Date	07/13/2021		07/14/2021		07/14/2021		07/15/2021		07/15/2021	
Analyte	**OSD Screening**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Water, LCMSMS compliant with QSM 5.3 Table B-15 (ng/l)											
PFBS	601	9.66		34.3	J-	25.1	J-	13.7		10.8	
PFHxS	39	9.72		22.2		22.9		3.65	J	19.1	
PFNA	6	ND	U	20.4		21.9		1.16	J	6.12	
PFOA	6	47.5		528		538		25.9		319	
PFOS	4	1.46	J	19.0		22.4		ND	U	13.1	

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022 Groundwater screening levels based on residential scenario for direct ingestion of groundwater.

Interpreted Qualifiers

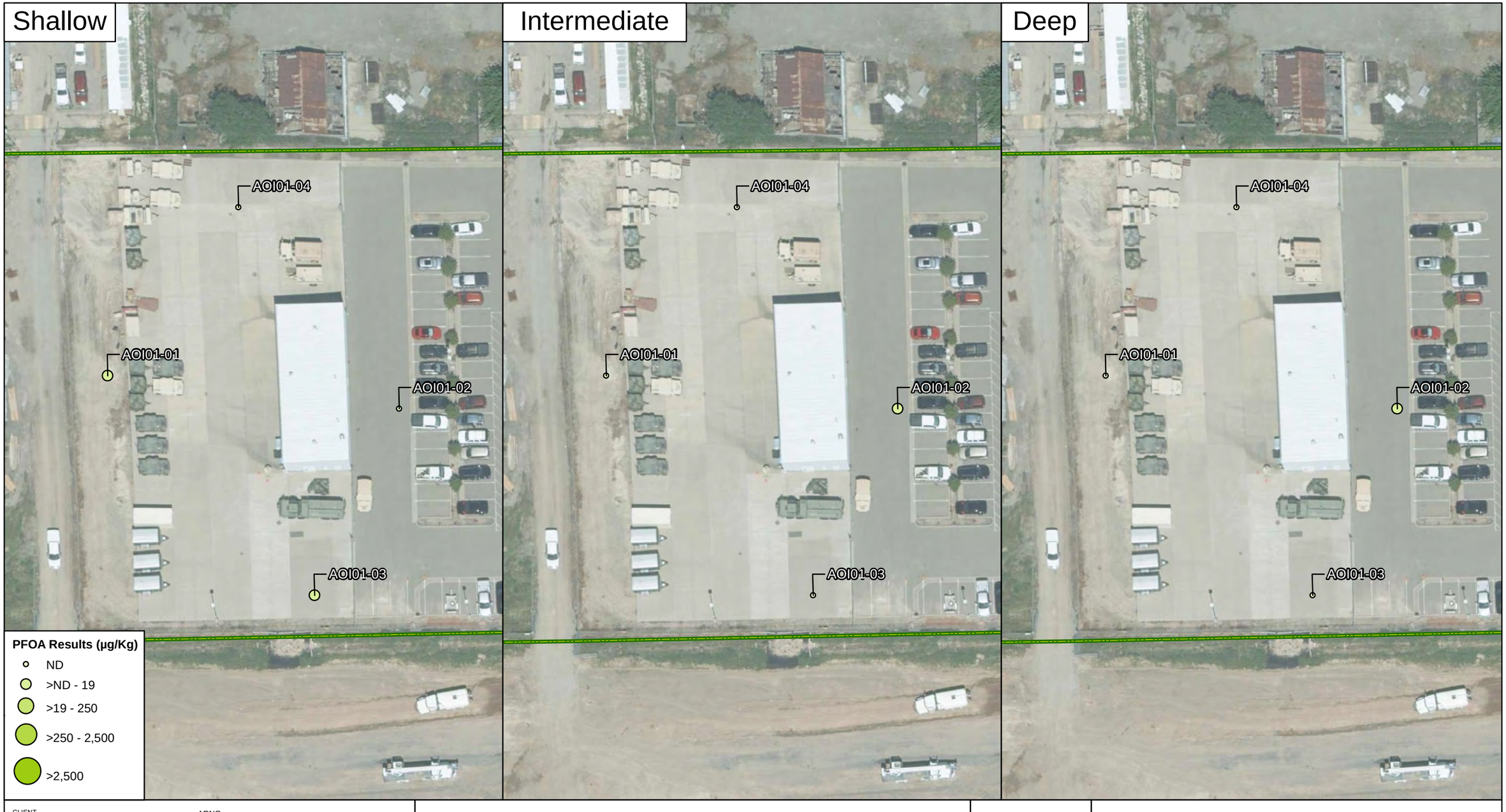
J = Estimated concentration
J- = Estimated concentration, biased low
U = The analyte was not detected at a level greater than or equal to the adjusted DL

Chemical Abbreviations

PFBS	perfluorobutanesulfonic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid

Acronyms and Abbreviations

AASF	Army Aviation Support Facility
AOI	Area of Interest
D	duplicate
DL	detection limit
GW	groundwater
HQ	hazard quotient
ID	identification
LCMSMS	liquid chromatography with tandem mass spectrometry
LOD	limit of detection
ND	analyte not detected above the LOD
OSD	Office of the Secretary of Defense
QSM	Quality Systems Manual
Qual	interpreted qualifier
USEPA	United States Environmental Protection Agency
ng/l	nanogram per liter



CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
REVISED	8/17/2022	GIS BY	MS	8/17/2022
SCALE	1:600	CHK BY	MB	8/17/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/17/2022

Legend

Facility Boundary

Depth Intervals*

Shallow = 0-2 ft bgs

Intermediate = 5-12 ft bgs

Deep = 16-34 ft bgs

0 25 50 100 Feet

N

Exceedances of the OSD SL are depicted with a yellow halo.

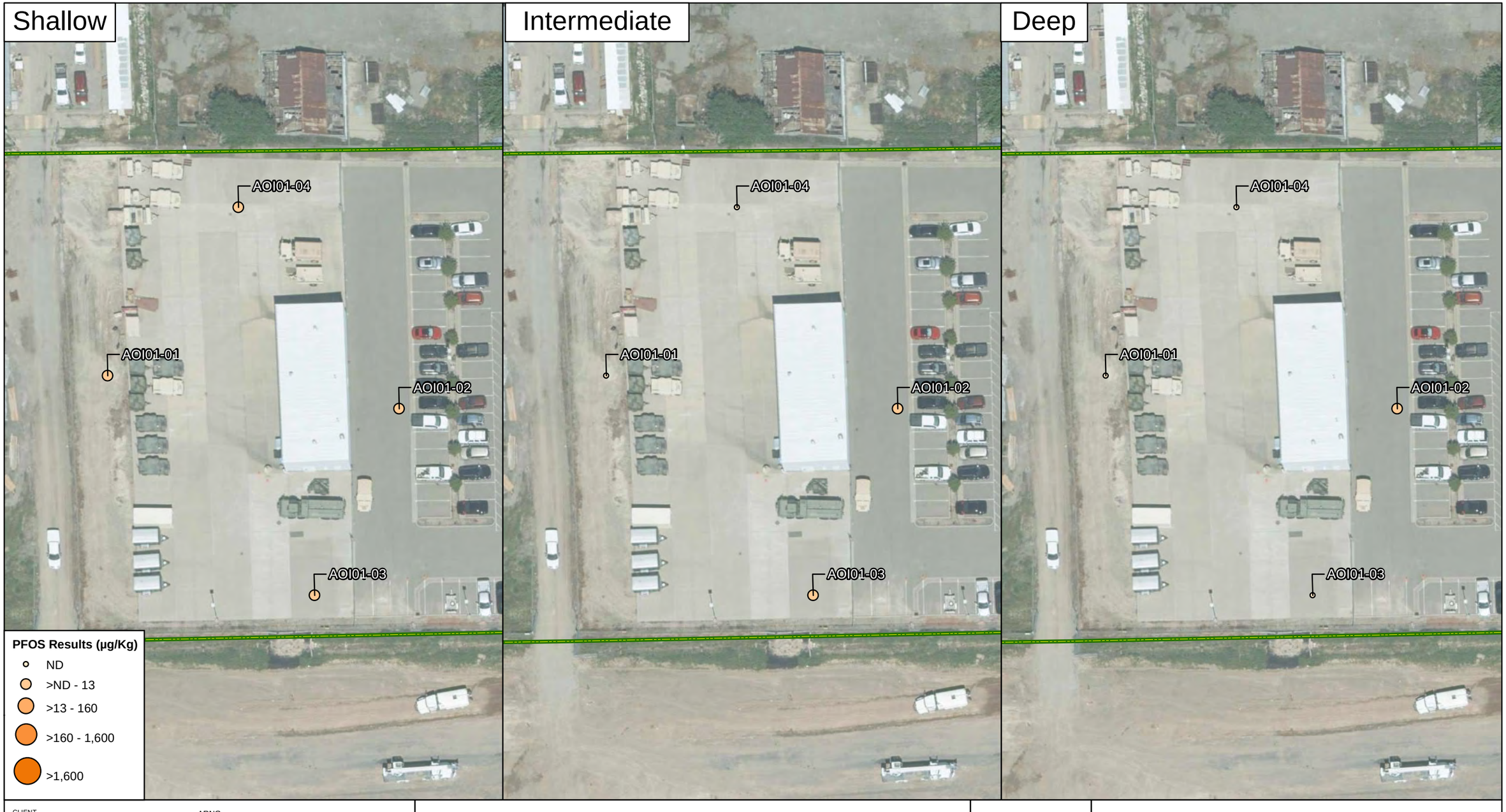
*Depth intervals shown represent respective sampling position within a given soil boring location.

PFOA Detections in Soil

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1



CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
REVISED	8/15/2022	GIS BY	MS	8/15/2022
SCALE	1:600	CHK BY	MB	8/15/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/15/2022

Legend

Facility Boundary

Depth Intervals*

Shallow = 0-2 ft bgs

Intermediate = 5-12 ft bgs

Deep = 16-34 ft bgs

0 25 50 100 Feet

N

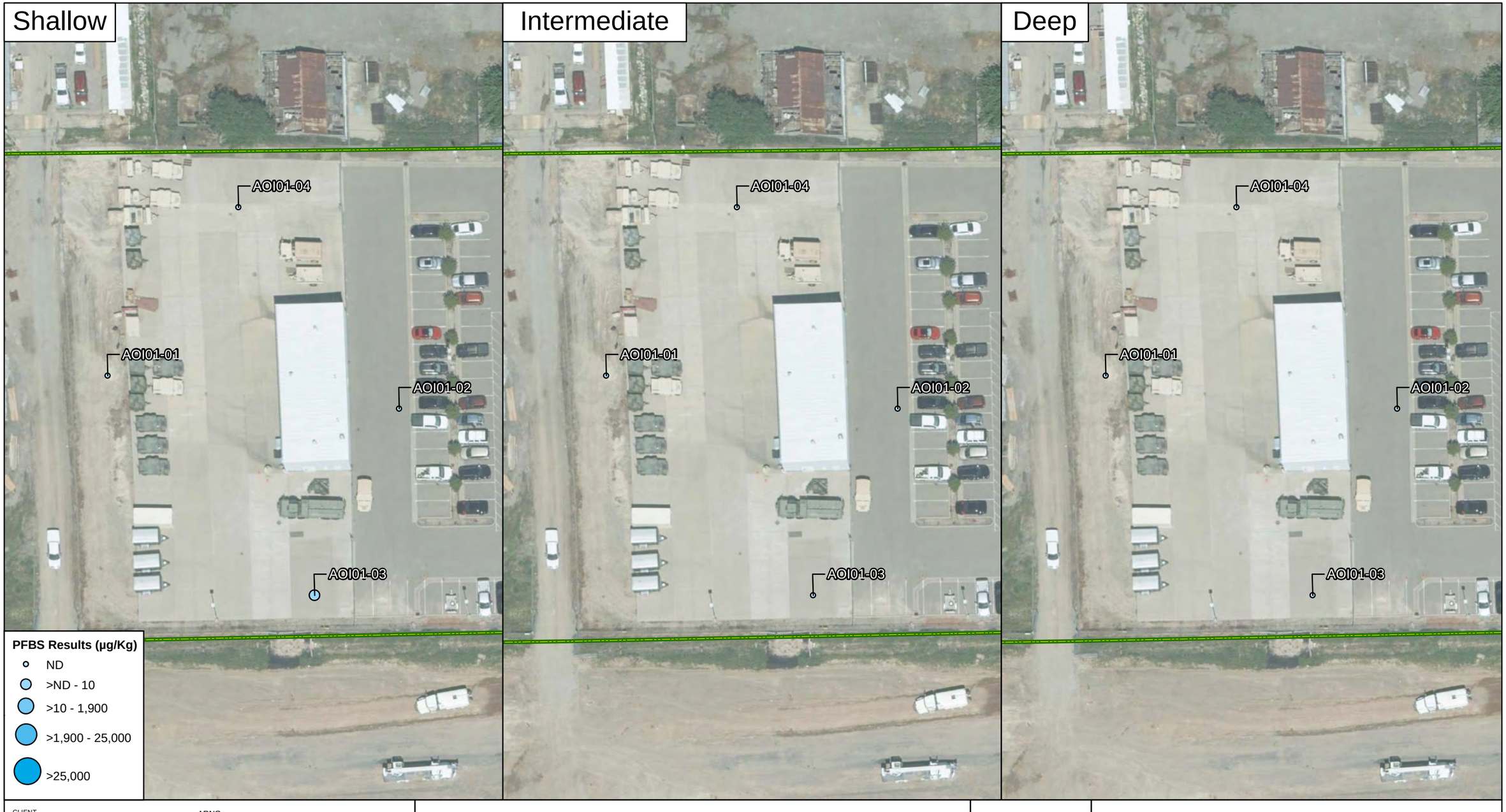
Exceedances of the OSD SL are depicted with a yellow halo.

*Depth intervals shown represent respective sampling position within a given soil boring location.

PFOS Detections in Soil

AECOM 12420 Milestone Center Drive Germantown, MD 20876

Figure 6-2



CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
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SCALE	1:600	CHK BY	MB	8/15/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/15/2022

Legend

Facility Boundary

Depth Intervals*

Shallow = 0-2 ft bgs

Intermediate = 5-12 ft bgs

Deep = 16-34 ft bgs

0 25 50 100 Feet

N

Exceedances of the OSD SL are depicted with a yellow halo.

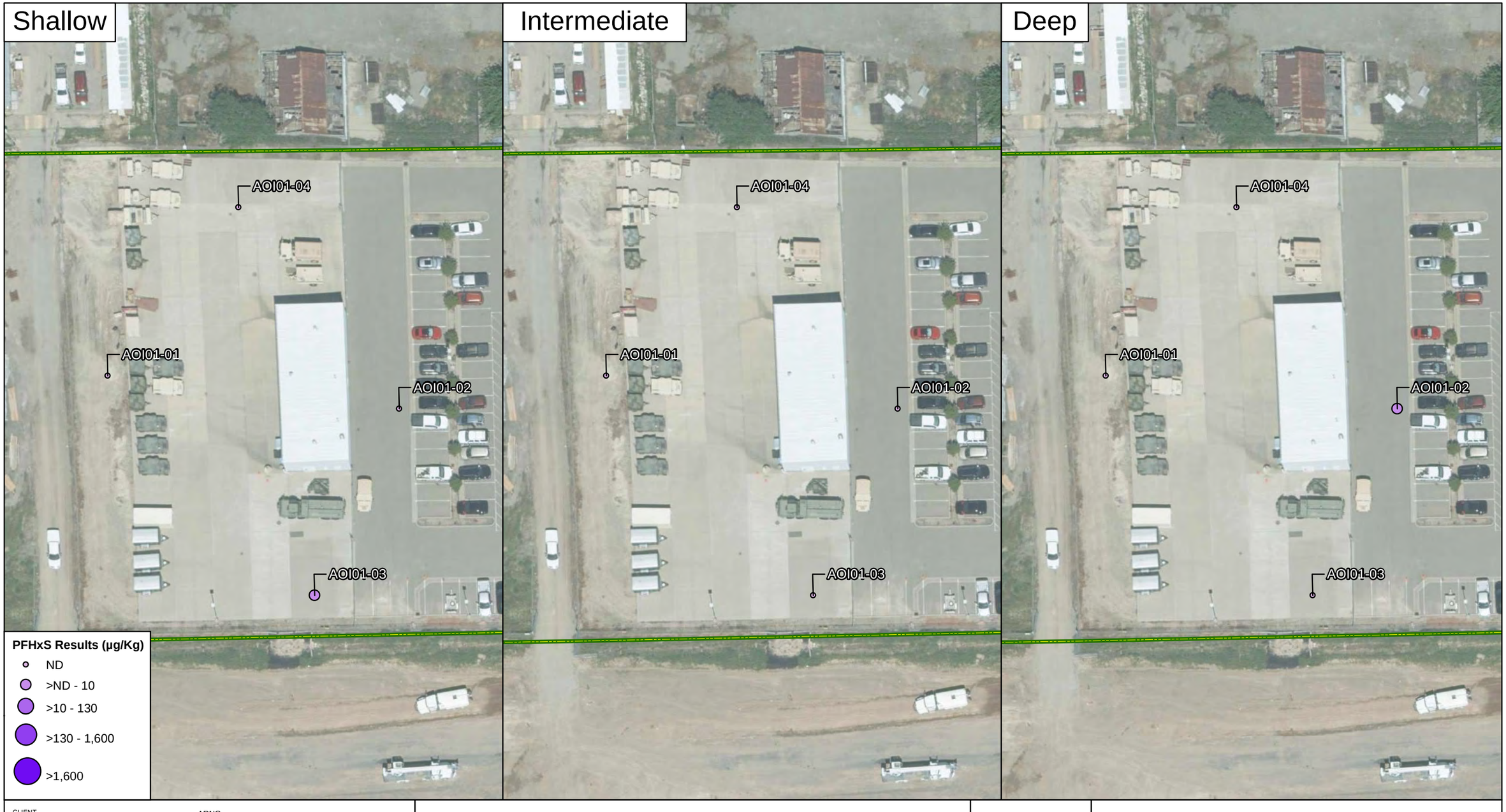
*Depth intervals shown represent respective sampling position within a given soil boring location.

PFBS Detections in Soil

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-3



CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
REVISED	8/15/2022	GIS BY	MS	8/15/2022
SCALE	1:600	CHK BY	MB	8/15/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/15/2022

Legend

Facility Boundary

Depth Intervals*

Shallow = 0-2 ft bgs

Intermediate = 5-12 ft bgs

Deep = 16-34 ft bgs

0 25 50 100 Feet

N

Exceedances of the OSD SL are depicted with a yellow halo.

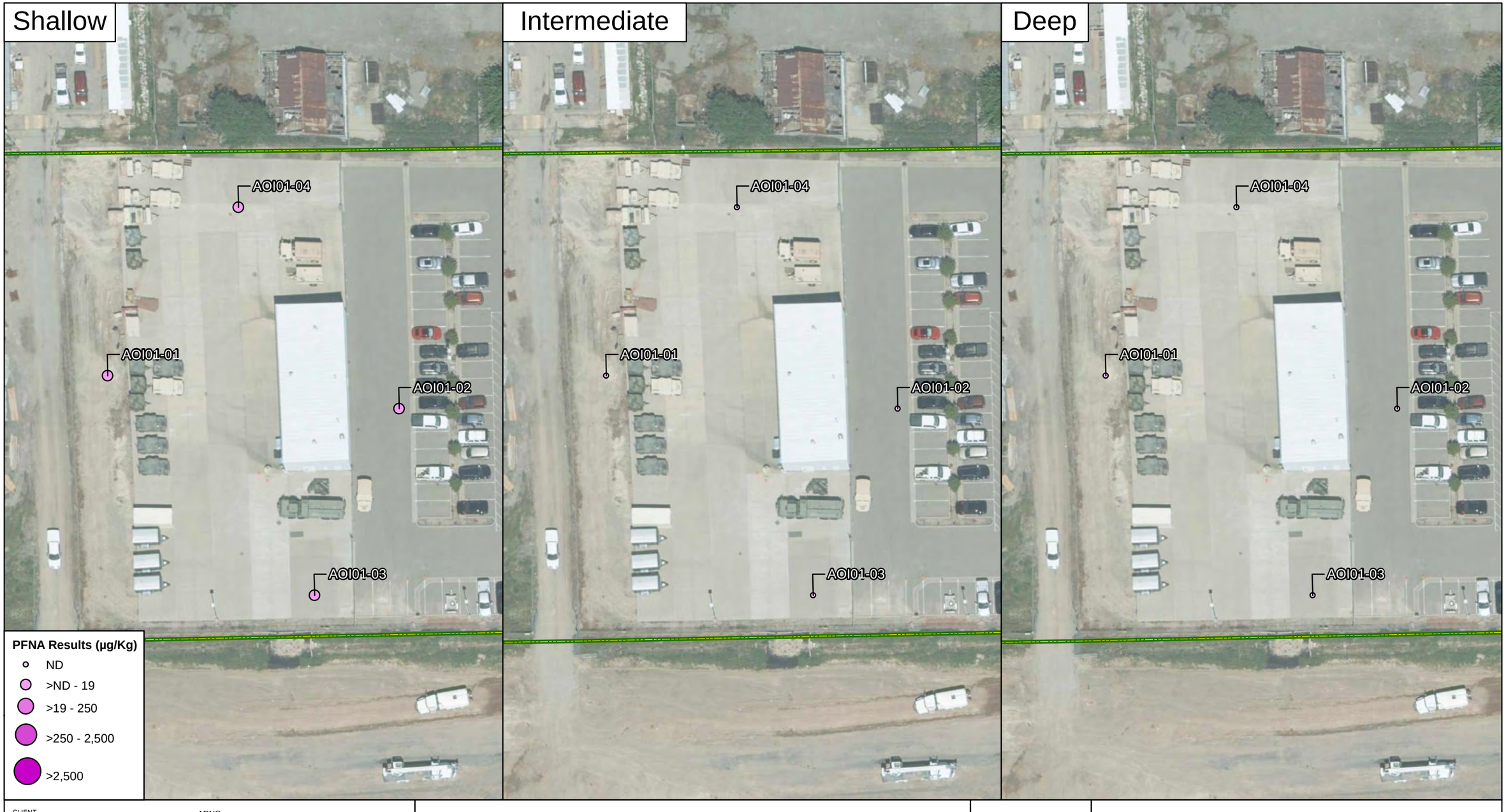
*Depth intervals shown represent respective sampling position within a given soil boring location.

PFHxS Detections in Soil

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-4



CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
REVISED	8/15/2022	GIS BY	MS	8/15/2022
SCALE	1:600	CHK BY	MB	8/15/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/15/2022

Legend

Facility Boundary

Depth Intervals*

Shallow = 0-2 ft bgs

Intermediate = 5-12 ft bgs

Deep = 16-34 ft bgs

0 25 50 100 Feet

N

Exceedances of the OSD SL are depicted with a yellow halo.

*Depth intervals shown represent respective sampling position within a given soil boring location.

PFNA Detections in Soil

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-5

PFOA

PFOS

PFBS

AOI01-04

AOI01-01

AOI01-02

AOI01-03

PFOA Results (ng/L)

- ND
- >ND - 6
- >6 - 40
- >40 - 70
- >70

PFOS Results (ng/L)

- ND
- >ND - 4
- >4 - 40
- >40 - 70
- >70

PFBS Results (ng/L)

- ND
- >ND - 100
- >100 - 601
- >601 - 2,000
- >2,000

CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
REVISED	10/5/2022	GIS BY	MS	10/5/2022
SCALE	1:600	CHK BY	MB	10/5/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	10/5/2022

Legend

- Facility Boundary
- Groundwater Flow Direction

0 25 50 100 Feet

N

Exceedances of the OSD SL are depicted with a yellow halo.

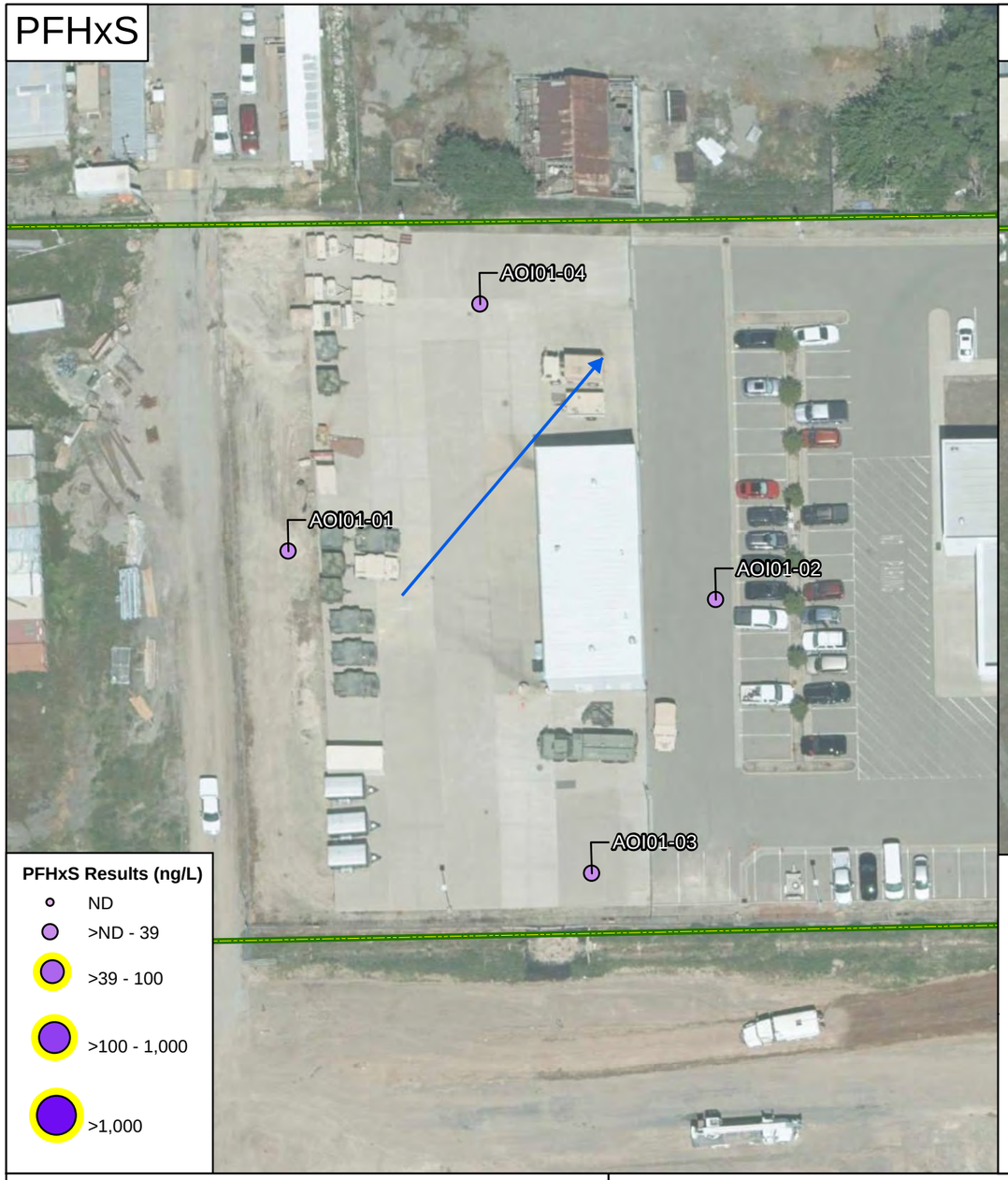
PFOA, PFOS, PFBS Detections in Groundwater

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-6

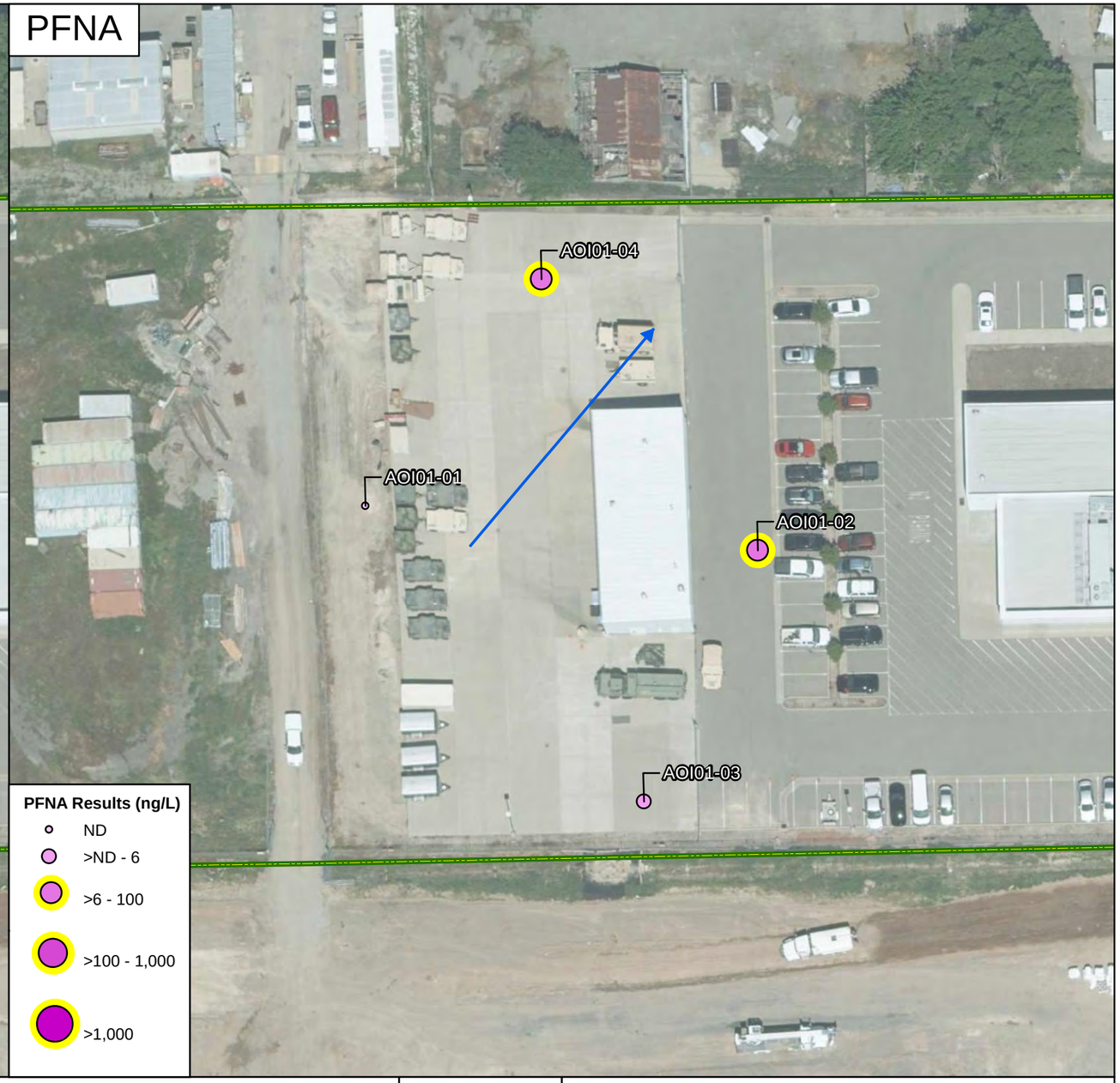
PFHxS



PFHxS Results (ng/L)

- ND
- >ND - 39
- >39 - 100
- >100 - 1,000
- >1,000

PFNA



PFNA Results (ng/L)

- ND
- >ND - 6
- >6 - 100
- >100 - 1,000
- >1,000

CLIENT	ARNG			
PROJECT	Site Inspection at Roseville Armory, CA			
REVISED	8/15/2022	GIS BY	MS	8/15/2022
SCALE	1:600	CHK BY	MB	8/15/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/15/2022

Legend

- Facility Boundary
- Groundwater Flow Direction

0 25 50 100 Feet

N

Exceedances of the OSD SL are depicted with a yellow halo.

PFHxS and PFNA Detections in Groundwater

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-7

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7. Exposure Pathways

The CSM for AOI 1: Firetruck Parking and Storage Yard, revised based on the SI findings, is presented on **Figure 7-1**. Please note that while the CSM discussion assists in determining if a receptor may be impacted, the decision to move from SI to RI or interim action is determined based upon exceedances of the SLs for the relevant compounds and whether the release is more than likely attributable to the DoD. A CSM presents the current understanding of the site conditions with respect to known and suspected sources, potential transport mechanisms and migration pathways, and potentially exposed human receptors. A human exposure pathway is considered potentially complete when the following conditions are present:

1. Contaminant source;
2. Environmental fate and transport;
3. Exposure point;
4. Exposure route; and
5. Potentially exposed populations.

If any of these elements are missing, the pathway is incomplete. The CSM figures use an empty circle symbol to represent an incomplete exposure pathway. Areas with an incomplete pathway generally warrant no further action. However, the pathway is considered potentially complete if the relevant compounds are detected, in which case the CSM figure uses a half-filled circle symbol to represent a potentially complete exposure pathway. Additionally, a completely filled circle symbol is used to indicate when a potentially complete exposure pathway has detections of relevant compounds above the SLs. Areas with an identified potentially complete pathway that have detections of the relevant compounds above the SLs may warrant further investigation. Although the CSMs indicate whether potentially complete exposure pathways may exist, the recommendation for future study in an RI or no action at this time is based on the comparison of the SI analytical results for the relevant compounds to the SLs.

In general, the potential routes of exposure to the relevant compounds are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of toxicological study. The receptors evaluated are consistent with those listed in USEPA guidance for risk screening (USEPA, 2001). Receptors at the facility include site workers (e.g., facility staff and visiting soldiers), construction workers, trespassers, residents outside the facility boundary, and recreational users outside of the facility boundary.

7.1 Soil Exposure Pathway

The SI results in soil were used to determine whether a potentially complete pathway exists between the source and potential receptors at AOI 1 based on the aforementioned criteria.

7.1.1 AOI 1

AFFF may have been released at AOI 1 due to storage of AFFF and a parked firetruck that contained AFFF. PFOA, PFOS, PFBS, PFHxS, and PFNA were detected in surface soil at AOI 1. Site workers, future construction workers, and trespassers could contact constituents in surface soil via incidental ingestion and inhalation of dust. Therefore, the surface soil exposure pathway for site workers future construction workers, and trespassers are potentially complete. Additionally, off-facility residential and recreational users may potentially be exposed to

constituents in surface soil via inhalation of dust caused by on-facility ground disturbing activities. PFOA, PFOS, and PFHxS were detected in subsurface soil at AOI 1. Potential future construction workers could contact constituents in subsurface soil via incidental ingestion; therefore, the subsurface soil exposure pathway for construction workers is potentially complete. The CSM for AOI 1 is presented on **Figure 7-1**.

7.2 Groundwater Exposure Pathway

The SI results in groundwater were used to determine whether a potentially complete pathway exists between the source and potential receptors based on the aforementioned criteria.

7.2.1 AOI 1

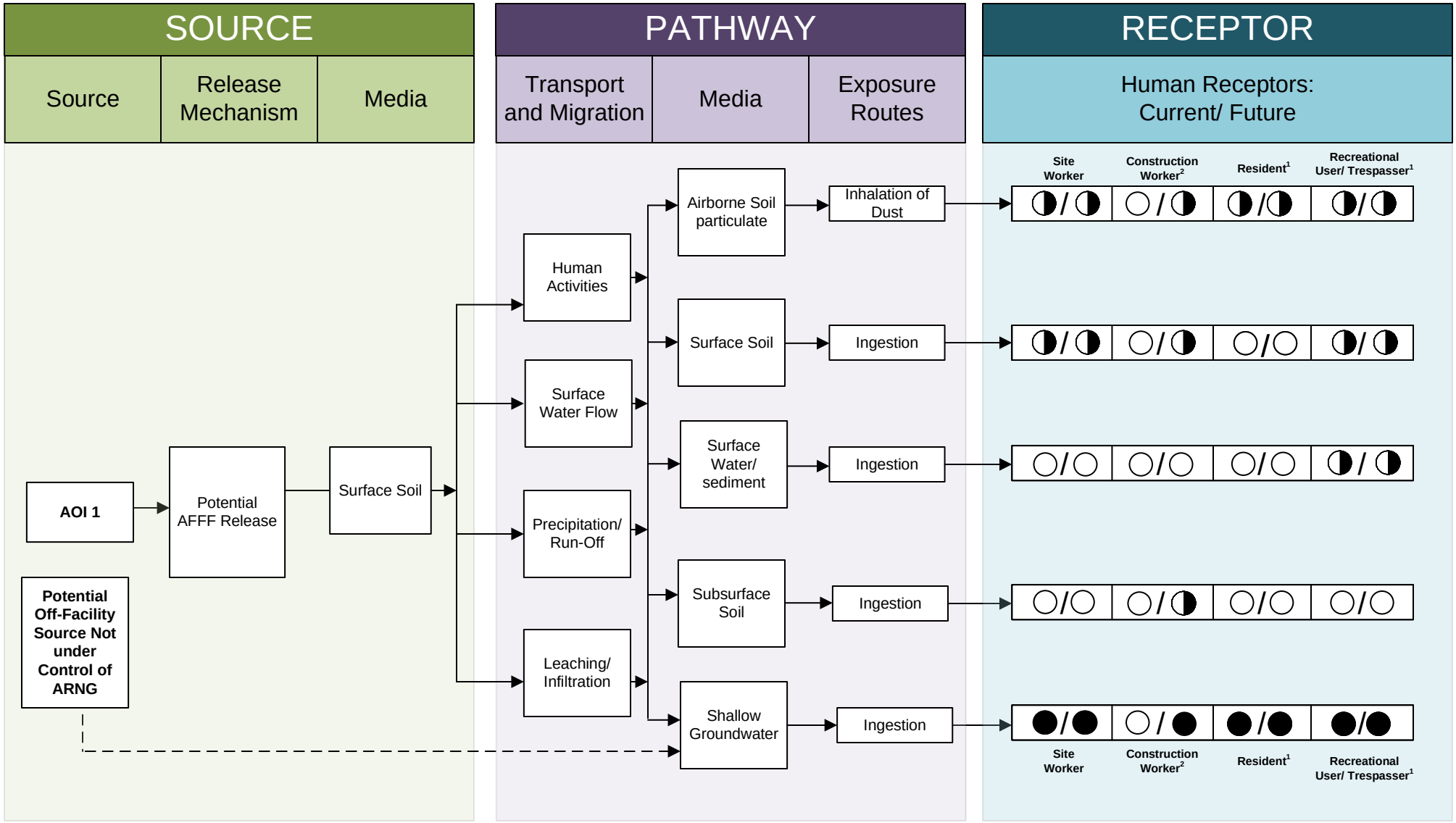
PFOA, PFOS, and PFNA were detected above their respective SLs in groundwater samples collected at AOI 1; PFBS and PFHxS were detected below their SLs. Due to the unknown depths of water supply wells reported within 1 mile of the facility, and the unknown interaction between impacted shallow groundwater and the water supply aquifer(s), to be conservative, the groundwater exposure pathway for site workers, off-facility residents, and recreational users is considered potentially complete. Depths to water measured in July 2021 during the SI ranged from 8.06 to 31.64 feet bgs. Therefore, groundwater may be encountered during potential future construction activities, and the ingestion exposure pathway for construction workers is considered potentially complete. The CSM for AOI 1 is presented on **Figure 7-1**.

7.3 Surface Water and Sediment Exposure Pathway

The SI results in soil and groundwater, in combination with knowledge of the fate and transport properties of PFAS, were used to determine whether a potentially complete pathway exists between the source and potential receptors.

7.3.1 AOI 1

PFAS are water soluble and can migrate readily from soil to surface water via leaching and run-off. Because PFOA, PFBS, PFOS, PFHxS, and PFNA were detected in soil and groundwater at AOI 1 (with PFOA, PFOS, and PFNA exceeding SLs in groundwater), it is possible for those compounds to migrate from soil and groundwater to nearby wetlands via groundwater discharge or stormwater conveyance. All surface water from the facility eventually drains north and west to the South Branch Pleasant Grove Creek. The closest surface water bodies are a retention pond about 0.5 miles 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. Therefore, the surface water and sediment ingestion exposure pathway for recreational users of the nearby water bodies is considered potentially complete. There are no wetland areas located on the facility. The CSM for AOI 1 is presented on **Figure 7-1**.



LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Potentially Complete Pathway with Exceedance of SL

NOTES

1. The resident and recreational users refer to off-site receptors.
2. No current active construction at the facility.

AECOM

Figure 7-1
Conceptual Site Model, AOI 1
Roseville Armory

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8. Summary and Outcome

This section summarizes SI activities and findings. The most significant findings are summarized in this section and are reproduced directly or abstracted from information contained in this report. The outcome provides general and comparative interpretations of the findings relative to the SLs.

8.1 SI Activities

The SI field activities were conducted from 12 to 15 July 2021 and consisted of utility clearance, direct push boring, soil sample collection, temporary monitoring well installation, grab groundwater sample collection, and land surveying. Field activities were conducted in accordance with the SI QAPP Addendum (AECOM, 2021a), except as previously noted in **Section 5.8**.

To fulfill the project DQOs set forth in the approved SI QAPP Addendum (AECOM, 2021a), samples were collected and analyzed for a subset of 18 compounds by LC/MS/MS compliant with QSM 5.3 Table B-15 as follows.

- Twelve (12) soil samples from four soil borings;
- Four grab groundwater samples from four temporary wells;
- Fourteen (14) QA/QC samples.

An SI is conducted when the PA determines an AOI exists based on probable use, storage, and/or disposal of PFAS-containing materials. The SI includes multi-media sampling at the AOI to determine whether or not a release has occurred. The SI may conclude further investigation is warranted, a removal action is required to address immediate threats, or no further action is required. Additionally, the CSM was refined to assess whether a potentially complete pathway exists between the source and potential receptors for potential exposure at the AOI, which are described in **Section 7**.

8.2 Outcome

Based on the results of this SI, further evaluation under CERCLA is warranted in an RI for AOI 1: Firetruck Parking and Storage Yard (see **Table 8-1**). Based on the CSM developed and revised in light of the SI findings, there is potential for exposure to drinking water receptors from AOI 1 from sources on the facility resulting from historical DoD activities. Sample analytical concentrations collected during the SI were compared to the project SLs in soil and groundwater, as described in **Table 6-1**. A summary of the results of the SI data relative to the SLs is as follows:

- At AOI 1:
    - The detected concentrations of PFOA, PFOS, PFBS, PFHxS, and PFNA in soil at AOI 1 were below their respective SLs.
    - PFOA, PFOS, and PFNA in groundwater exceeded their respective SLs. PFOA exceed the SL of 6 ng/L, with a maximum concentration of 538 ng/L at location AOI01-02 (Duplicate). PFOS exceed the SL of 4 ng/L, with a maximum concentration of 22.4 ng/L at location AOI01-02. PFNA exceed the SL of 6 ng/L, with a maximum concentration of 21.9 ng/L at location AOI01-02. Based on the results of the SI, further evaluation of AOI 1 is warranted in an RI.

Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on

the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

Table 8-1 summarizes the SI results for soil and groundwater used to determine if an AOI should be considered for further investigation under CERCLA and undergo an RI.

Table 8-1: Summary of Site Inspection Findings and Recommendations

AOI	Potential Release Area	Soil – Source Area	Groundwater – Source Area	Groundwater – Facility Boundary	Future Action
1	Firetruck Parking and Storage Yard	◐	●	●	Proceed to RI

Legend:

● = detected; exceedance of the screening levels

◐ = detected; no exceedance of the screening levels

○ = not detected

9. References

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