FINAL
Site Inspection Report
Decatur Army Aviation Support Facility #1, Illinois

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

July 2023

Prepared for:

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

UNCLASSIFIED

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Table of Contents

Appendices

Figures

Tables

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Acronyms and Abbreviations

%	percent
°C	degrees Celsius
°F	degrees Fahrenheit
µg/kg	micrograms per kilogram
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film-forming foam
AOI	Area of Interest
ARNG	Army National Guard
bgs	below ground surface
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
DQO	data quality objective
DUA	data usability assessment
ELAP	Environmental Laboratory Accreditation Program
EM	Engineer Manual
FBO	Fixed Base Operator
FedEx	Federal Express
FTA	Fire Training Area
GPRS	Ground Penetrating Radar Systems, LLC.
HDPE	high-density polyethylene
HFPO-DA	hexafluoropropylene oxide dimer acid
IDW	investigation-derived waste
ILARNG	Illinois Army National Guard
ISGS	Illinois State Geological Survey
ISWS	Illinois State Water Survey
ITRC	Interstate Technology Regulatory Council
IWRA	International Water Resources Association
LC/MS/MS	liquid chromatography with tandem mass spectrometry
MIL-SPEC	military specification
MS	matrix spike
MSD	matrix spike duplicates
NELAP	National Environmental Laboratory Accreditation Program
ng/L	nanograms per liter
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
SI	Site Inspection
SL	screening level
SOP	standard operating procedure
TOC	total organic carbon
TPP	Technical Project Planning
UFP	Uniform Federal Policy
UPS	United Parcel Service
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

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 **Tables ES-2**). 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 Army Aviation Support Facility (AASF) #1 in Decatur, Illinois and determined further evaluation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is warranted for AOI 1. AASF #1 will also be referred to as the "facility" throughout this document.

AASF #1 is constructed on approximately 39 acres of land in Macon County, about 5 miles east of Decatur, Illinois and adjacent to Decatur Regional Airport. AASF #1 supports the Illinois ARNG and consists of a storage hangar, repair hangar, shops, and an office area. Exterior features include vehicle parking areas, roads, aircraft parking and taxiways, and a 90-foot clear-span bridge. AASF #1 provides aviation intermediate-level and aviation unit-level aircraft maintenance support.

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 each AOI. Based on the results of this SI, further evaluation under CERCLA is warranted in a Remedial Investigation for AOI 1.

[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	Future Action
1	Hangar Ramp			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 Army Aviation Support Facility (AASF) #1 in Decatur, Illinois. AASF #1 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 AASF #1 (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

AASF #1 is constructed on approximately 39 acres of land in Macon County, about 5 miles east of Decatur, Illinois (**Figure 2-1**). The land is leased to the State of Illinois by the Decatur Park District for ARNG use. The lease was renewed in July 2021 and currently lasts for 60 months until June 30, 2026. AASF #1 is adjacent to Decatur Regional Airport. The facility is accessible from South Airport Road from the west.

AASF #1 supports the Illinois ARNG (ILARNG) and consists of a storage hangar, repair hangar, shops, and an office area. Exterior features include vehicle parking areas, roads, aircraft parking and taxiways, and a 90-foot clear-span bridge. AASF #1 provides aviation intermediate-level and aviation unit-level aircraft maintenance support.

2.2 Facility Environmental Setting

AASF #1 is in central Illinois, in the Till Plains Section of the Central Lowlands Province, which is characterized as a flat area with tabular uplands (**Figure 2-2**). The Till Plains region is split into seven sections: Rock River Hill Country, Green River Lowland, Galesburg Plain, Springfield Plain, Mt. Vernon Hill Country, Bloomington Ridged Plain, and Kankakee Plain. The finest sediments from the outwash, such as silts and clays, form bedded deposits in lakes and streams from dammed stream valleys created by glaciers. In low-lying areas on these till plains, water is stored in areas where meltwaters were diked behind end moraines. The Sangamon River is the primary stream channel near the facility. The Sangamon River and its tributaries drain the excess water from the facility into Lake Decatur (Illinois State Geological Survey [ISGS], 2000).

2.2.1 Geology

AASF #1 is within the Springfield Plain, which is mostly composed of Illinoian glacial drift. This drift makes the surface geology of the area gently undulating, with modern shallowly entrenched drainage.

The surficial geology at AASF #1 consists of the Quaternary-aged Richland Loess and the Wedron Formation. The Richland Loess is composed primarily of silt, with sand and clay and ranges from about 4 to 7 feet thick. The Wedron Formation, which underlays the Richland Loess, is a glacial till that consists of silt, sand, clay, and gravel, and it ranges from 10 to 100 feet thick (Bergstrom et al., 1976). Cambrian- to Pennsylvanian-aged units form the bedrock sequence beneath the facility. The uppermost unit is the Bond Formation, which has an average thickness of 200 feet and is made up of the Millersville Limestone and Shoal Creek Limestone members (Bergstrom et al., 1976; Reinertsen, 1991; Kolata, 2005). The Pennsylvanian bedrock layer is primarily made up of sandstone, siltstone, shale, limestone, coal, and underclay. This layer is found at AASF #1 at roughly 900 feet below ground surface (bgs). Paleozoic sedimentary strata in Macon County reportedly have a total thickness exceeding 7,100 feet (Reinertsen, 1991; Illinois State University, 2016). The geology of the facility is shown on **Figure 2-3**.

Based on observations made during the SI, surface and shallow subsurface soil at AASF #1 are dominated by silt and lean clay, with minor amounts of sand and gravel observed with depth. These lithologic observations at AASF #1 are consistent with the understood geologic history of the region, which includes fine-grained, wind-blown, glacial loess underlain by unsorted glacial till deposits. SI soil borings were completed at depths between 10 and 20 feet bgs. One boring, AOI01-06, was drilled to 20 feet bgs but later backfilled to approximately 10 feet bgs. Minor amounts of sand were observed in some of the logs in percentages that ranged from <5 percent

(%) to 30%, with an approximately 4-foot layer of sand-dominated soil at the base of boring AOI01-06. Many of the logs also reported varying percentages (<5% to 20%) of gravel included in the fine-grained packages. The highest percentages of sand and gravel were observed at location AOI01-06; however, this boring was initially drilled to 20 feet bgs in an attempt to find water deeper than the very shallow perched zone, but it was later backfilled to approximately 10 feet bgs after perched groundwater was similarly observed at other locations. Different from all other locations, borehole AOI01-03 was observed to be essentially dry during drilling. Soil at this location was composed of fines (clay and silt) for the entire 15-foot length, with trace amounts of gravel but no sand observed. This fines-dominated lithology may explain the lack of available groundwater, which was readily available after drilling at all five other locations. The lithology observed in the upper 10 feet of each boring appears to be relatively consistent across the facility. Boring logs are presented in **Appendix E**.

2.2.2 Hydrogeology

Groundwater at AASF #1 is encountered in continuous and discontinuous sand and gravel deposits less than 15 feet thick (Bergstrom et al., 1976). The general shallow groundwater flow direction at AASF #1 is west, toward Lake Decatur. Additionally, the Pennsylvanian-aged units near the facility contain groundwater resources in small quantities. In the Bond Formation, groundwater flows via the crevices and dissolution channels in the limestone (Bergstrom et al., 1976). The deeper, regional aquifer is known as the Mahomet aquifer; however, it is located approximately 8 miles north of AASF #1 and does not underlie the facility (International Water Resources Association [IWRA], 2003). This aquifer occupies 15 counties and is the most important aquifer in central and east Illinois. Within 4 miles of AASF #1, four public supply wells are set within the sand and gravel system aquifer and have total depths ranging from 39 to 107 feet bgs (Illinois State Water Survey [ISWS], 2020).

No public water supply wells are located downgradient between the facility and Lake Decatur (ISWS, 2020); however, multiple wells of unknown use are located downgradient of the facility. According to the ISGS well database, the nearest wells are located within a 0.5-miles from the facility boundary, and they are reportedly over 140 feet deep (ISGS, 2022). Well locations and groundwater flow are shown in **Figure 2-3**. The State of Illinois does not provide specific well type information (e.g., monitoring well, domestic well, industrial well, etc.). Drinking water for AASF #1 is supplied by the City of Decatur, which sources most of the drinking water from Lake Decatur (City of Decatur, 2018). Lake Decatur is approximately 1 mile downgradient and to the west of the facility (**Figure 2-3**). When Lake Decatur's water level is low, a well field in DeWitt County provides supplemental water (City of Decatur, 2018; ISWS, 2020).

Depths to water measured in October 2021 during the SI ranged from 1.98 to 5.93 feet bgs. The groundwater elevation measured at AOI01-03 was not used for contouring. Unlike all other locations, the borehole was initially dry during drilling, and the groundwater observed after recharge was significantly lower than at other wells (11.45 feet bgs). Groundwater at AOI01-03 collected in the well after approximately 40 hours of recharge time, but it is uncertain where the water originated from in the subsurface. Along with supporting geologic evidence, AOI01-03 is not believed to be representative of hydrogeologic conditions at the facility. Groundwater elevation contours from the SI are presented on **Figure 2-4** and indicate groundwater flow direction is generally to the west. In the southern-most portion of the facility, flow may be more northwesterly but well control in that area is limited.

2.2.3 Hydrology

Drainage from the helicopter parking apron and hangar ramp at AASF #1 flows to the west and collects in a drainage ditch via overland flow and two outfalls. The drainage ditch is located outside of the western facility fence line, along South Airport Road. Storm sewers on the facility property

flow to Lake Decatur (Anderson Environmental, 2019). The hangar floor drains to an oil/water separator prior to discharging to the sanitary sewer that drains to the City of Decatur WWTP (AECOM, 2020; Anderson Environmental, 2019). **Figure 2-5** shows small ponds and a stream that appear to drain southwest to Lake Decatur and are located on the golf course to the west of the facility.

Lake Decatur is the largest impoundment of the Sangamon River, with a storage capacity of 9 billion gallons (City of Decatur, 2019). Drinking water for the City of Decatur is supplied by withdrawal from the lake from unknown locations (Keefer et al., 2010). The Sangamon River and tributaries in Macon County provide all the surface water in the county and supply about 11 billion gallons for industrial and municipal use annually (Reinertsen, 1991). The Sangamon River drains approximately 925 square miles of the watershed into Lake Decatur, with excess water overpassing the dam and moving farther downstream. Surface water features are presented on **Figure 2-5**.

2.2.4 Climate

The climate at AASF #1 is characterized by long, warm, and humid summers and freezing, windy winters. Cloud cover can be found all times of the year. Temperatures vary from average highs of 64.2 degrees Fahrenheit (°F) to average lows of 43.3 °F. The average annual temperature is 53.75 °F. Average precipitation is 40.37 inches of rain (World Climate, 2022).

2.2.5 Current and Future Land Use

AASF #1 is a controlled access facility and is adjacent to Decatur Regional Airport. The facility was constructed for use by the ILARNG and presently consists of a storage hangar, repair hangar, shops, and an office area. Exterior features include vehicle parking areas, roads, aircraft parking and taxiways, and a 90-foot clear-span bridge. Reasonably anticipated future land use is not expected to change from the current land use.

2.2.6 Sensitive Habitat and Threatened/ Endangered Species

The following insects, mammals, and plants are federally endangered, threatened, proposed, and/ or are listed as candidate species in Macon County, Illinois (US Fish and Wildlife Service [USFWS], 2022).

- **Insects:** Monarch butterfly, *Danaus plexippus* (candidate); Rusty patched bumble bee, *Bombus affinis* (endangered)
- **Mammals**: Northern long-eared bat, *Myotis septentrionalis* (threatened); Indiana bat *Myotis sodalis* (endangered)
- **Flowering plants:** Eastern prairie fringed orchid, *Platanthera leucophaea* (threatened)

2.3 History of PFAS Use

One AOI where AFFF may have been used or released historically was identified in the PA (AECOM, 2020). Tri-Max30™ extinguishers equipped with AFFF were staged at the AOI from the late 1990s to 2005. A description of the AOI is presented in **Section 3**.

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CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
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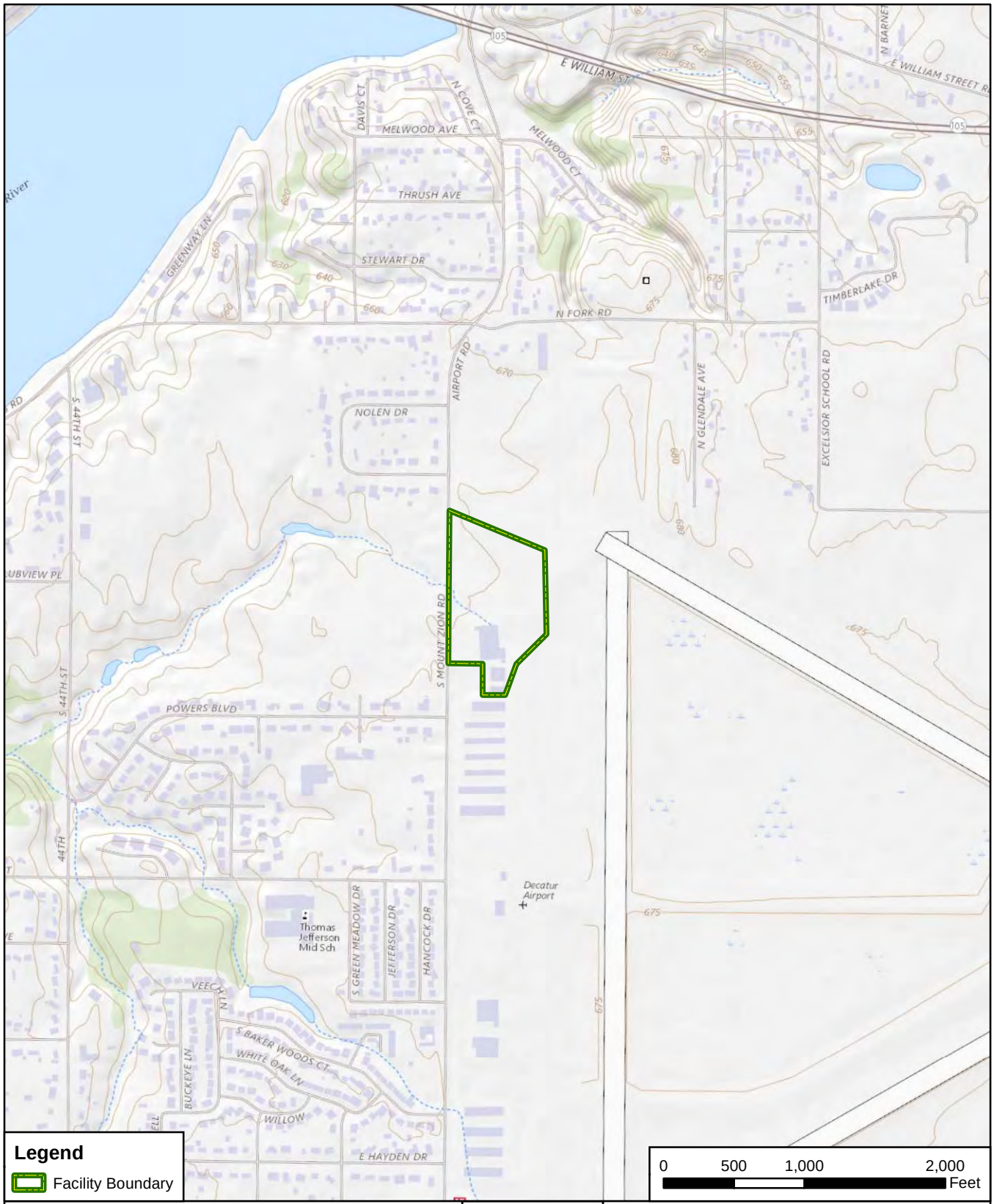
SCALE	1:63,360	CHK BY	JW	8/22/2022
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	CM	8/22/2022

Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-1



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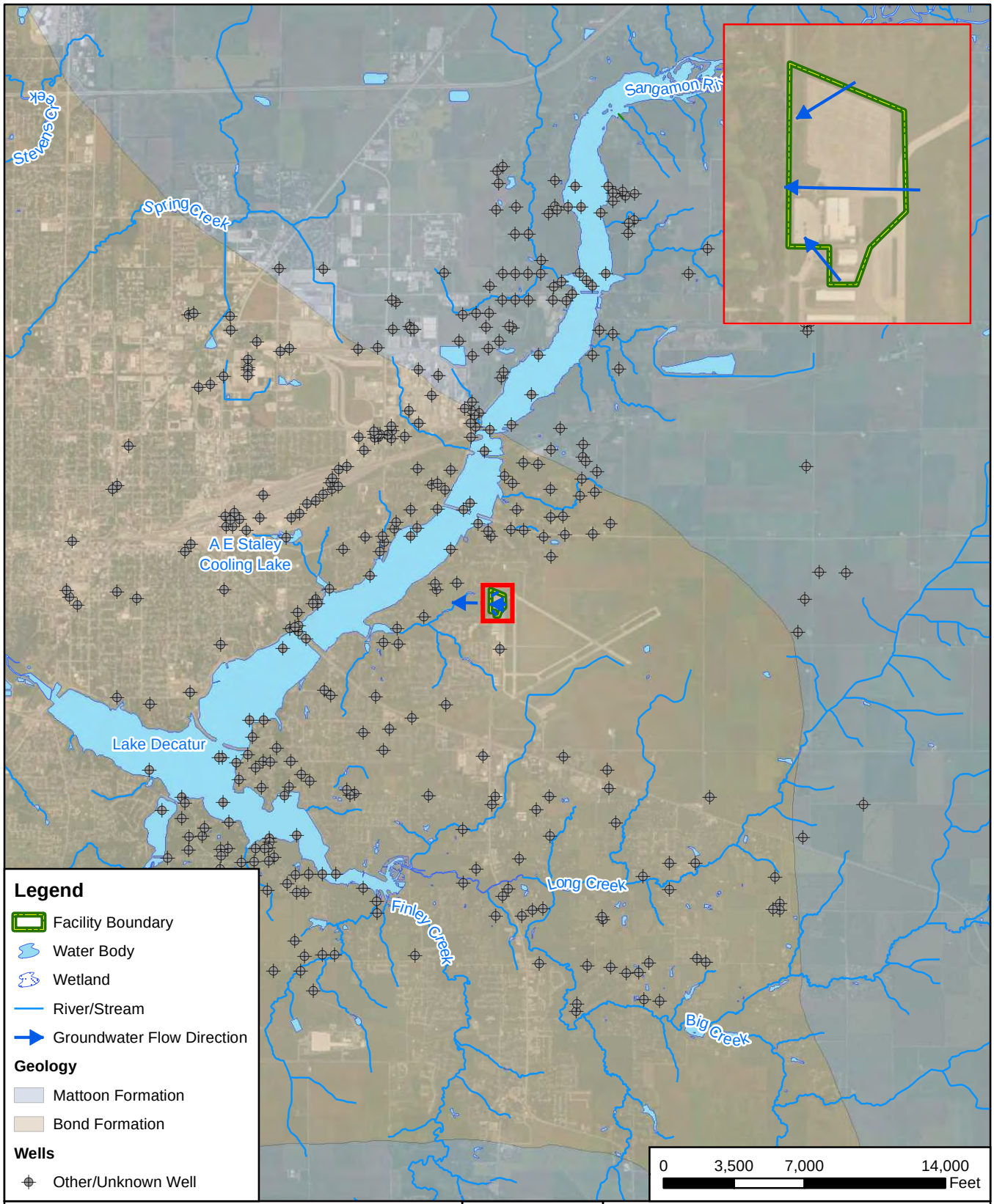
Base Map: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program,		PM	CM	9/14/2022

Facility Topography

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-2



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Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	9/14/2022

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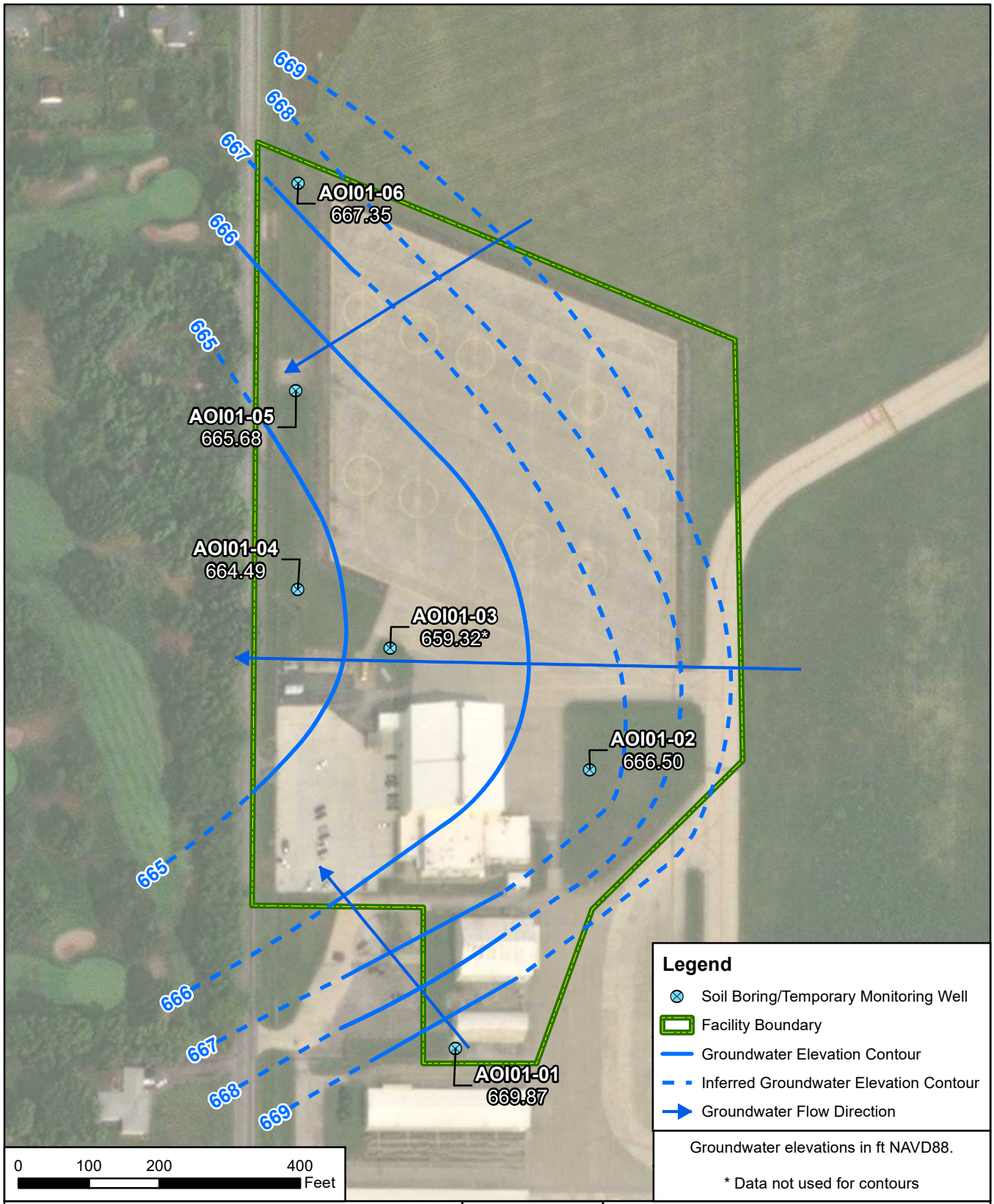
Groundwater Features

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-3



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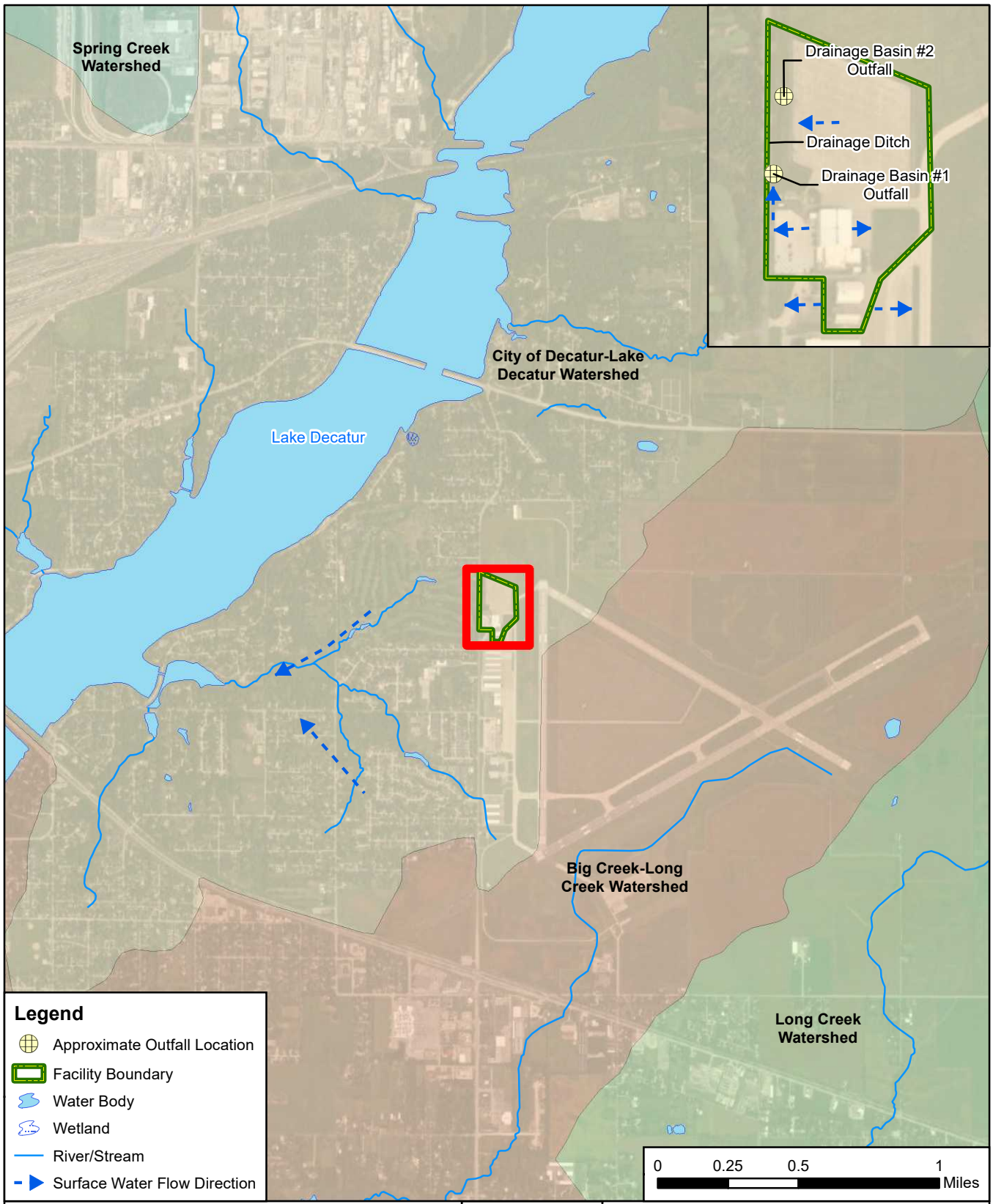
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	10/25/2022

Groundwater Elevations

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-4



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Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	12/21/2022

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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. Based on the PA findings, one potential release area was identified at AASF #1 and is considered an AOI (AECOM, 2020). The potential release area is shown on **Figure 3-1**.

3.1 AOI 1 Hangar Ramp

AOI 1 is the Hangar Ramp, where four Tri-Max30™ extinguishers were staged from the late 1990s to 2005. The Tri-Max30™ units were stored on the hangar ramp in the paved area that surrounded the main hangar and led to the helicopter parking apron. The units were serviced and visually inspected annually by GETZ Fire Equipment Company. No AFFF was expended during inspections, and AFFF was never stored in bulk at the facility. In 2005, the extinguishers were removed and sent to Camp Lincoln, in Springfield, Illinois. Personnel interviewed during the PA did not recall any leaks or spills from these units (AECOM, 2020).

3.2 Adjacent Sources

Six off-facility, potential sources, which are not associated with ARNG activities, were identified adjacent to AASF #1 during the PA. The adjacent potential sources are shown on **Figure 3-1** and described in the following sections for informational purposes only.

3.2.1 Decatur Fire Department Station 7

The Decatur Fire Department Station 7 is the primary contact for emergency response at the AASF. This is an active fire station containing emergency response vehicles and equipment. The Decatur Fire Department is located south of AASF and due to the location of the building, it was identified as a potential adjacent source of PFAS contamination. It is suspected that the emergency response vehicles and equipment may possibly store AFFF, but it is unknown if they do or if there have been any releases. Additionally, it is unknown if nozzle testing occurred at Decatur Fire Department Station 7.

3.2.2 Decatur Airport Hangars

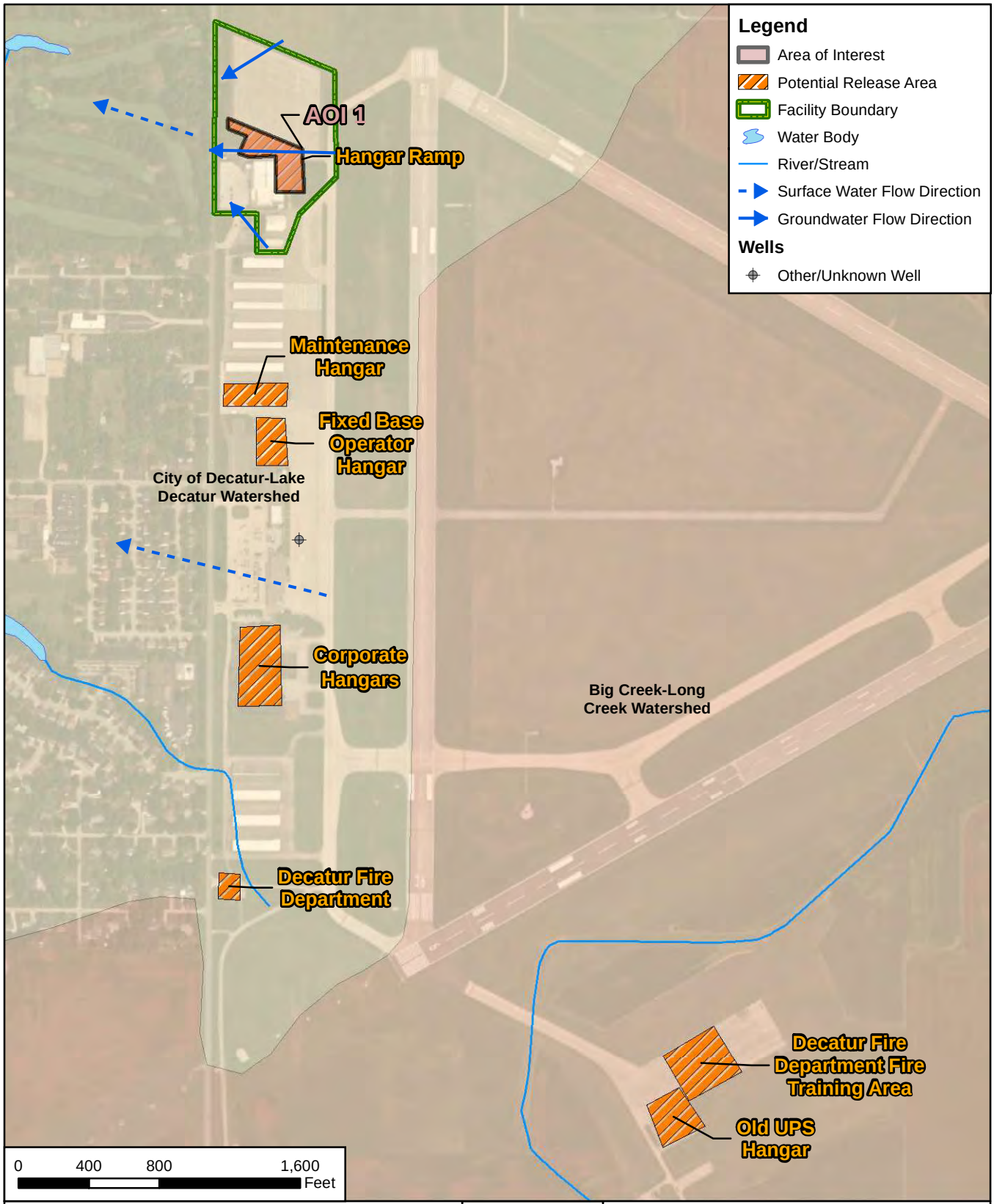
Located to the south of the facility, there are three hangars operated by the Decatur Airport: a Maintenance Hangar, a Fixed Based Operator (FBO) Hangar and Corporate Hangars. There are also several storage hangars located at the Decatur Airport, one directly north of the maintenance hangar, and another directly north of the Decatur Fire Department Station 7. As it is unknown whether there are fire suppression systems in any of the hangars, or if AFFF has been used for training or as a fire suppressant at any time, the hangars have been classified as potential adjacent sources.

3.2.3 Old United Parcel Service Hangar

Approximately 1 mile southwest of the facility, adjacent to the Decatur Fire Department training area, there is an old United Parcel Service (UPS) Hangar. The hangar currently has four Purple K extinguishers stored in its vicinity. It is unknown if AFFF has been stored or released at this location; therefore, it is considered a potential adjacent source.

3.2.4 Decatur Fire Department Training Area

The Decatur Fire Department Station 7 has a FTA at the airport located south of the runways in the ramp area adjacent to the Old UPS Hangar. It is unknown if AFFF was used during training events, the time period of events, how often the training events occurred, or the type and volume of fire suppression materials used during training events. Due to the uncertainty of activities at the FTA, it is considered a potential adjacent source. Additionally, it is unknown if nozzle testing occurs at Decatur Fire Department Station 7.



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SCALE	1:9,600	CHK BY	JW	9/16/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	9/16/2022

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 AOI 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 each of 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 Decatur AASF #1 (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). The SI was bounded vertically by the first encountered groundwater at a given borehole. The SI was conducted in the fall and was temporally bounded (i.e., seasonally restricted) to avoid field work during the winter months.

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, 2017).

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, Decatur Army Aviation Support Facility #1, Illinois* dated August 2020 (AECOM, 2020);
- *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Decatur Army Aviation Support Facility #1, Illinois* dated October 2021 (AECOM, 2021a); and
- *Final Site Safety and Health Plan, Decatur Army Aviation Support Facility #1, Illinois* dated October 2021 (AECOM, 2021b).

The SI field activities consisted of utility clearance, rotosonic (sonic) soil boring, soil sample collection, temporary monitoring well installation and subsequent abandonment, grab groundwater sample collection, and land surveying. Utility clearance was performed on 21 October 2021 and all other field activities were conducted from 25 to 28 October 2021, 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:

- Eleven (11) soil samples from six boring locations;
- Six grab groundwater samples from six temporary wells;
- Thirteen (13) 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**, Nonconformance and Corrective Action Reports are provided in **Appendix B3**, and land survey data are provided in **Appendix B4**. 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 AOI identified in the PA.

A combined TPP Meeting 1 and 2 was held on 15 September 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, ILARNG, USACE, and Illinois Environmental Protection Agency. 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 will be held [date to be determined] after the field event to discuss the results of the SI. Meeting minutes for TPP 3 are 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 "J.U.L.I.E." Illinois utility clearance provider to notify them of intrusive work on 12 October 2021. However, because the AASF is a private facility, the participating "J.U.L.I.E." locators did not clear utilities at the entire facility. Therefore, AECOM contracted Ground Penetrating Radar Systems, LLC. (GPRS), a private utility location service, to perform utility clearance. GPRS, LLC. performed utility clearance of the proposed boring locations on 21 October 2021 with input from the AECOM field team and Decatur AASF #1 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 the shallow subsurface where utilities would typically be encountered.

5.1.3 Source Water and Sampling Equipment Acceptability

The potable water source used for decontamination of drilling equipment was confirmed to be acceptable for use in a PFAS investigation prior to the start of field activities. A sample from a potable water source (DECA-DECON-01) at Decatur AASF #1 was collected on 12 August 2021, prior to mobilization, and 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 in **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 sonic drilling methods in accordance with the SI QAPP Addendum (AECOM, 2021a). A hand auger was used to collect soil from the top 5 feet of the boring, in accordance with AECOM utility clearance procedures. A GeoProbe® 8140DT sonic drilling sampling system with a 4-inch diameter core barrel, and a 6-inch diameter override casing was used to collect continuous soil cores to the target depth. The soil boring locations are shown on **Figure 5-1**, and depths are provided **Table 5-1**.

In general, two 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) and one subsurface soil sample approximately 2 feet above the groundwater table. Due to shallow groundwater encountered less than 6 feet bgs at five of the six locations, only two soil samples were collected per boring, in accordance with the QAPP Addendum (AECOM, 2021a). One location, AOI01-03, was drilled to 15 feet bgs but was dry during drilling; due to the shallow groundwater observed at other locations, the 13- to 15-foot interval was sampled, and no third sample was taken. At location AOI01-06, the shallow subsurface and grain size soil samples were lost during or after shipment to the laboratory (as discussed in **Section 5.8**), so only surface soil was analyzed at this location.

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 sampling forms 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**.

Based on observations made during the SI, surface and shallow subsurface soil at AASF #1 are dominated by silt and lean clay, with lesser amounts of sand and gravel observed with depth. These lithologic observations at AASF #1 are consistent with the understood geologic history of the region, which includes fine-grained, wind-blown, glacial loess underlain by unsorted glacial till deposits. SI soil borings were completed at depths between 10 and 20 feet bgs.

Lesser amounts of sand were observed in some of the logs in percentages that ranged from <5% to 30%, with an approximately 4-foot layer of sand-dominated soil at the base of boring AOI01-06. Many of the logs also reported varying percentages (<5% to 20%) of gravel included in the fine-grained packages. The highest percentages of sand and gravel were observed at location AOI01-06; however, this boring was initially drilled to 20 feet bgs in an attempt to find water deeper than the very shallow perched zone, but it was later backfilled to approximately 10 feet bgs after perched groundwater was similarly observed at other locations. Different from all other locations, borehole AOI01-03 was observed to be essentially dry during drilling. Soil at this location was composed of fines (clay and silt) for the entire 15-foot length, with trace amounts of gravel, but no sand observed. This fines-dominated lithology may explain the lack of available groundwater, which was readily available after drilling at all five other locations. The lithology observed in the upper 10 feet of each boring appears to be relatively consistent across the facility.

Each soil sample was collected into laboratory-supplied PFAS-free high-density polyethylene (HDPE) bottles 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% and analyzed for the same parameters as the accompanying samples. Matrix spike (MS)/ matrix spike 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.

Sonic borings were converted to temporary wells, which were subsequently abandoned in accordance with the SI QAPP Addendum (AECOM, 2021a) using bentonite chips at completion

of sampling activities. Borings were installed in grass areas to avoid disturbing concrete or asphalt surfaces.

5.3 Temporary Well Installation and Groundwater Grab Sampling

Temporary wells were installed using a GeoProbe® 8140DT dual-tube sampling system. Once the borehole was advanced to the desired depth, wherever conditions allowed, a temporary well was constructed of a 5-foot section of 2-inch Schedule 40 poly-vinyl chloride (PVC) 0.01-slot sized 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**.

The temporary wells were allowed to recharge after installation before collection of groundwater samples. Unlike all other locations, AOI01-03 was initially dry during drilling, and the groundwater observed after recharge was significantly lower than at other wells (11.45 feet bgs). Groundwater at AOI01-03 collected in the well after approximately 40 hours of recharge time, but it is uncertain what depth interval the groundwater originated from in the subsurface. After the recharge period, all groundwater samples were collected using a peristaltic pump with PFAS-free HDPE tubing. Each sample was collected into laboratory-supplied PFAS-free HDPE bottles and labeled using a PFAS-free marker or pen. The temporary wells were purged at a rate determined in the field to reduce turbidity and draw down prior to 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. 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) by removing the PVC and backfilling the hole with bentonite chips. Temporary wells were installed in grass areas to avoid disturbing concrete or asphalt.

5.4 Synoptic Water Level Measurements

A synoptic groundwater gauging event was performed on 27 October 2021. Groundwater elevation measurements were collected from temporary monitoring wells, except as discussed in **Section 5.8**. 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**. As discussed in **Sections 2.2.2** and **5.3**, the groundwater elevation measured at AOI01-03 was excluded from contouring, as it was much lower than at other wells and may not be representative of shallow groundwater at the facility.

5.5 Surveying

The northern side of each well casing was surveyed by Illinois-licensed land surveyors following guidelines provided in the SOPs in the SI QAPP Addendum (AECOM, 2021a). Survey data from

the newly installed wells on the facility were collected on 27 October 2021 in the applicable Universal Transverse Mercator zone projection with North American Datum 83 datum (horizontal) and North American Vertical Datum 1988 (vertical). The surveyed well data are provided in **Appendix B4**.

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 left in place at the point of the source. The soil cuttings were distributed on the ground surface on the downgradient side of the boring. 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 and decontamination fluids) were containerized in a properly labelled 55-gallon drum and stored in a secure location onsite identified by the AASF #1 Environmental Manager and ILARNG. The liquid IDW was not sampled and assumes the characteristics of the associated groundwater samples collected from the source locations. Based on laboratory results, containerized liquid IDW will be managed and disposed by ARNG under a separate contract for Treating Liquid Investigation-Derived Material (purge water, drilling water, and decontamination fluids) (EA Engineering, Science, and Technology, Inc., 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

Three deviations from the SI QAPP Addendum were identified during review of the field documentation. The deviations are noted below and are documented in Nonconformance and Corrective Action Reports (**Appendix B3**):

- Upon review of field documentation, it was discovered that the midpoint shallow subsurface soil sample collected at AOI01-06, AOI01-06-SB-03-05, was missing from the cooler sent to the laboratory, although it was collected and documented in the CoC. Therefore, data are available only for the surface soil sample collected at AOI01-06. However, DQOs for soil sampling at this location were still met, as discussed in the DUA (**Appendix A**).
- A grain size sample taken in the deep subsurface soil, AOI01-06-SB-18-19, was mistakenly discarded by the laboratory and not analyzed. This sample was intended to characterize fine-grained content of soil below the perched water-bearing zone. This well was later backfilled to approximately 10 feet bgs prior to temporary well construction.

- During the last day of SI field activities, after the well survey was completed, well abandonment began prior to synoptic gauging completion. Temporary well AOI01-06 was not gauged synoptically (i.e., within 24 hours) with the other five wells, as the casing had already been pulled. The groundwater elevation and depth to water for AOI01-06 used in this report reflect the depth to water immediately prior to purging and sampling groundwater. However, all six wells were gauged within a 27-hour window. The groundwater elevation of AOI01-06 at the time of sampling is consistent with groundwater levels observed at the other locations and show a general flow direction to the west.

Table 5-1
Site Inspection Samples by Medium
Site Inspection Report, Decatur AASF #1, Illinois

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-00-02	10/25/2021 12:18	0-2	x				
AOI01-01-SB-2.75-4.75	10/27/2021 12:20	2.75-4.75	x				
AOI01-01-SB-2.75-4.75-D	10/27/2021 12:20	2.75-4.75	x				Duplicate
AOI01-02-SB-00-02	10/27/2021 9:25	0-2	x				
AOI01-02-SB-00-02-D	10/27/2021 9:25	0-2	x				Duplicate
AOI01-02-SB-03-05	10/27/2021 9:35	3-5	x				
AOI01-03-SB-00-02	10/26/2021 15:50	0-2	x	x	x		
AOI01-03-SB-00-02-D	10/26/2021 15:50	0-2	x	x	x		Duplicate
AOI01-03-SB-00-02-MS	10/26/2021 15:50	0-2	x	x	x		MS
AOI01-03-SB-00-02-MSD	10/26/2021 15:50	0-3	x	x	x		MSD
AOI01-03-SB-13-15	10/27/2021 16:00	13-15	x				
AOI01-04-SB-00-02	10/26/2021 14:03	0-2	x				
AOI01-04-SB-02-04	10/26/2021 14:45	2-4	x				
AOI01-05-SB-00-02	10/26/2021 9:52	0-2	x				
AOI01-05-SB-02-04	10/26/2021 10:04	2-4	x				
AOI01-06-SB-00-02	10/25/2021 14:45	0-2	x				
AOI01-06-SB-03-05*	10/25/2021 16:10	3-5	x				not analyzed
AOI01-06-SB-18-19**	10/25/2021 16:20	18-19				x	not analyzed
Groundwater Samples							
AOI01-01-GW	10/27/2021 17:21	NA	x				
AOI01-02-GW	10/27/2021 15:20	NA	x				
AOI01-03-GW	10/28/2021 8:30	NA	x				
AOI01-04-GW	10/27/2021 10:07	NA	x				
AOI01-04-GW-D	10/27/2021 10:07	NA	x				Duplicate
AOI01-04-GW-MS	10/27/2021 10:07	NA	x				MS
AOI01-04-GW-MSD	10/27/2021 10:07	NA	x				MSD
AOI01-05-GW	10/26/2021 15:30	NA	x				
AOI01-06-GW	10/26/2021 13:29	NA	x				
Quality Control Samples							
DECA-ERB-01	10/27/2021 14:45	NA	x				from hand auger
DECA-ERB-02	10/27/2021 14:55	NA	x				from sonic rig shoe
DECA-FRB-01	10/27/2021 14:25	NA	x				FRB
DECA-DECON-01	8/12/2021 13:00	NA	x				from spigot
DECA-DECON-02	10/27/2021 15:05	NA	x				from decon setup

Notes:

* Sample AOI01-06-SB-03-05 was not analyzed as sample was lost during transit to laboratory.

** Grain Size sample AOI01-06-SB-18-19 was not analyzed as it was mistakenly discarded by laboratory prior to analysis.

AASF = Army Aviation Support Facility
ASTM = American Society for Testing and Materials
bgs = below ground surface
ERB = equipment rinsate blank
FD = field duplicate
FRB = field reagent blank
LC/MS/MS = Liquid Chromatography Mass Spectrometry
MS/MSD = matrix spike/ matrix spike duplicate
QSM = Quality Systems Manual
TOC = total organic carbon
USEPA = United States Environmental Protection Agency

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Table 5-2
Soil Boring Depths, Temporary Well Screen Intervals, and Groundwater Elevations
Site Inspection Report, Decatur AASF #1, Illinois

Area of Interest	Boring Location	Soil Boring Depth (feet bgs)	Temporary Well Screen Interval[1] (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	10	4.92 - 9.92	674.31	673.73	4.44	3.86	669.87
	AOI01-02	10	4.5 - 9.5	673.08	672.44	6.58	5.93	666.50
	AOI01-03	15	10 - 15	671.38	670.77	12.06	11.45	659.32
	AOI01-04	10	4.5 - 9.5	668.93	668.04	4.44	3.55	664.49
	AOI01-05	10	4 - 9	668.47	667.66	2.79	1.98	665.68
	AOI01-06	20	5.3 - 10.3	669.94	669.38	2.59	2.02	667.35

Notes:

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

AASF = Army Aviation Support Facility
bgs = below ground surface
btoc = below top of casing
NA = not applicable
NAVD88 = North American Vertical Datum 1988

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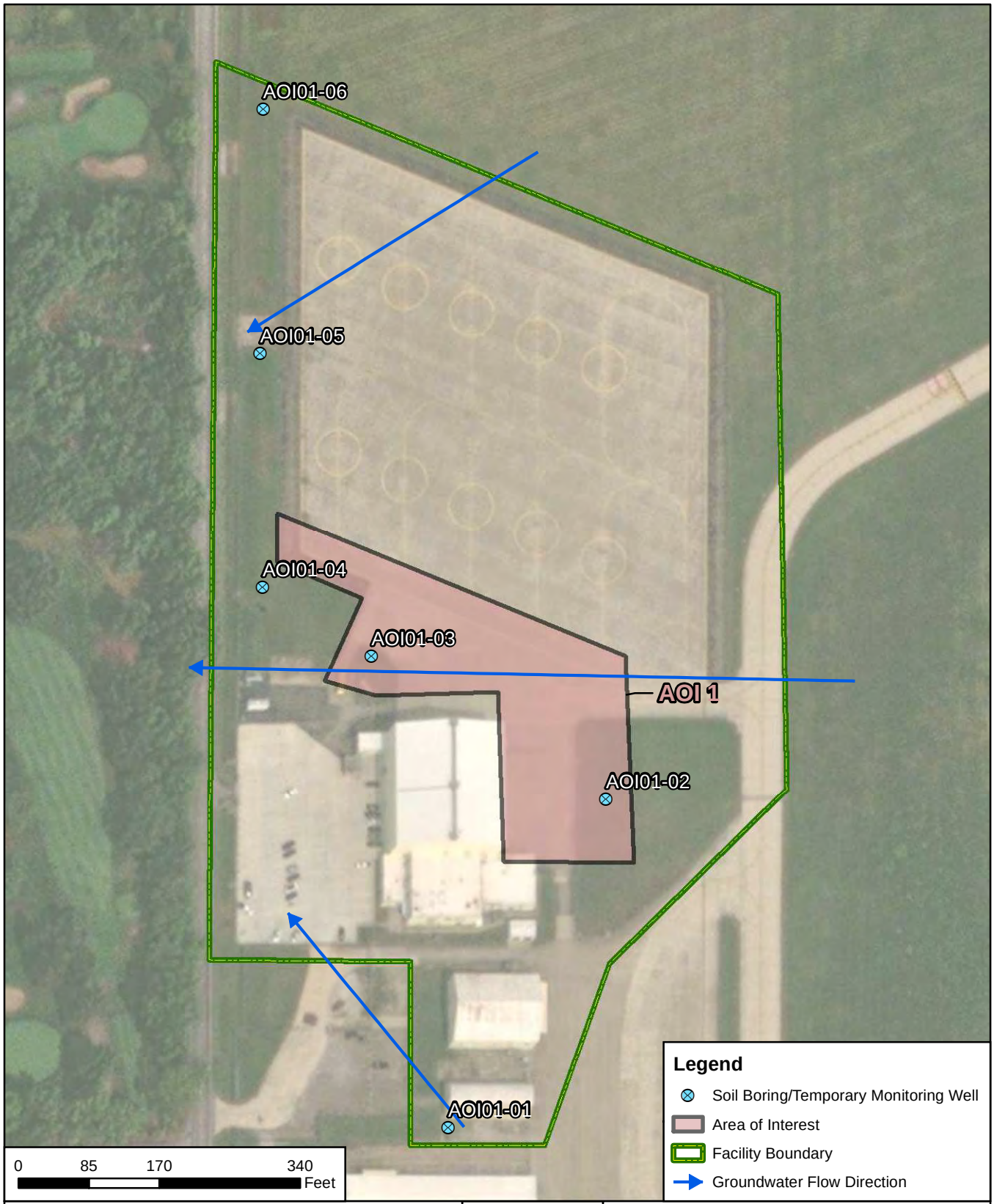

CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
REVISED	9/14/2022	GIS BY	MS	9/14/2022
SCALE	1:2,040	CHK BY	JW	9/14/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	9/14/2022

N

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 is provided in **Section 6.3**. **Table 6-2** through **Table 6-4** 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: Hangar Ramp. The soil and groundwater results are summarized on **Table 6-2** through **Table 6-4**. Soil and groundwater results are presented on **Figure 6-1** through **Figure 6-7**.

6.3.1 AOI 1 Soil Analytical Results

Figure 6-1 through **Figure 6-5** present the ranges of detections in soil. **Table 6-2** and **Table 6-3** summarize the soil results.

Soil was sampled from the surface interval (0 to 2 feet bgs) from boring locations AOI01-01 through AOI01-06. Shallow subsurface soil (between 2 and 15 feet bgs) was sampled from boring locations AOI01-01 through AOI01-05. In surface soil, PFOA, PFOS, PFHxS, PFNA, and PFBS were detected at concentrations below their SLs as listed below. The maximum detected concentrations for all five compounds were observed at the southernmost location, AOI01-01. At the two northernmost sampling locations, AOI01-05 and AOI01-06, PFOS (at AOI01-05) was the only analyte detected.

- PFOA was detected in three borings at concentrations up to 0.774 J micrograms per kilogram (µg/kg).
- PFOS was detected in five borings at concentrations up to 2.22 µg/kg.
- PFHxS and PFNA were detected in four borings at concentrations up to 0.419 J µg/kg.
- PFBS was detected at two locations, with a maximum concentration of 0.029 J µg/kg.

In shallow subsurface soil, PFOA, PFOS, PFHxS, PFNA, and PFBS were detected below their SLs; concentrations ranged from 0.058 J µg/kg to 0.837 J µg/kg. All detections were observed at AOI01-01 and AOI01-04.

6.3.2 AOI 1 Groundwater Analytical Results

Figure 6-6 and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-4** summarizes the groundwater results.

Groundwater was sampled from temporary monitoring wells AOI01-01 through AOI01-06 with detections as follows:

- PFOA was detected above the SL of 6 nanograms per liter (ng/L) at 19.2 ng/L in AOI01-01 and 18.2 ng/L in AOI01-04.
- PFOS was detected above the SL of 4 ng/L in three wells (AOI01-01, AOI01-03, and AOI01-04) at concentrations ranging from 7.03 ng/L to 86.6 ng/L.
- PFHxS at 69.6 ng/L and PFNA at 6.33 ng/L were detected above their respective SLs of 39 ng/L and 6 ng/L at AOI01-04.
- PFBS was detected below the SL of 601 ng/L, with concentrations ranging from 0.933 J ng/L to 6.00 ng/L.

All exceedances of the SLs were observed at locations AOI01-03 and AOI01-04, which are situated to the west of AOI 1, and at AOI01-01, which is upgradient of AOI 1. AOI01-01 is along the southern boundary at the closest location to potential off-facility AFFF sources that were identified in the PA south of the AASF.

6.3.3 AOI 1 Conclusions

Based on the results of the SI, PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in soil below respective SLs. PFOA, PFOS, PFHxS, 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, Decatur AASF #1

Area of Interest		AOI01															
Sample ID		AOI01-01-SB-00-02		AOI01-02-SB-00-02		AOI01-02-SB-00-02-D		AOI01-03-SB-00-02		AOI01-03-SB-00-02-D		AOI01-04-SB-00-02		AOI01-05-SB-00-02		AOI01-06-SB-00-02	
Sample Date		10/25/2021		10/27/2021		10/27/2021		10/26/2021		10/26/2021		10/26/2021		10/26/2021		10/25/2021	
Depth		0-2 ft		0-2 ft		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**	**Result**	**Qual**	**Result**	**Qual**
Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)																	
PFBS	1900	0.029	J	ND	U	ND	U	ND	U	ND	U	0.022	J	ND	U	ND	U
PFHxS	130	0.419	J	ND	UJ	0.060	J	ND	UJ	0.035	J	0.041	J	ND	U	ND	U
PFNA	19	0.287	J	ND	UJ	0.065	J	ND	UJ	0.050	J	0.027	J	ND	U	ND	U
PFOA	19	0.774	J	ND	UJ	0.098	J	ND	UJ	0.081	J	ND	U	ND	U	ND	U
PFOS	13	2.22		0.062	J	0.200	J	0.253	J	0.597	J	0.305	J	0.066	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 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

UJ = The analyte was not detected at a level greater than or equal to the adjusted DL. However, the reported adjusted DL is approximate and may be inaccurate or imprecise.

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
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, Decatur AASF#1

Area of Interest		AOI01											
Sample ID		AOI01-01-SB-02.75-04.75		AOI01-01-SB-02.75-04.75-D		AOI01-02-SB-03-05		AOI01-03-SB-13-15		AOI01-04-SB-02-04		AOI01-05-SB-02-04	
Sample Date		10/27/2021		10/27/2021		10/27/2021		10/27/2021		10/26/2021		10/26/2021	
Depth		2.75-4.75 ft		2.75-4.75 ft		3-5 ft		13-15 ft		2-4 ft		2-4 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	25000	ND	U	ND	U	ND	U	ND	U	0.093	J	ND	U
PFHxS	1600	0.058	J	0.106	J	ND	U	ND	U	0.338	J	ND	U
PFNA	250	0.059	J	0.088	J	ND	U	ND	U	ND	U	ND	U
PFOA	250	0.101	J	0.288	J	ND	U	ND	U	ND	U	ND	U
PFOS	160	0.713	J	0.837	J	ND	U	ND	U	0.215	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

AASF	Army Aviation Support Facility
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 6-4
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater
Site Inspection Report, Dectaur AASF #1

Area of Interest		AOI01													
Sample ID		AOI01-01-GW		AOI01-02-GW		AOI01-03-GW		AOI01-04-GW		AOI01-04-GW-D		AOI01-05-GW		AOI01-06-GW	
Sample Date		10/27/2021		10/27/2021		10/28/2021		10/27/2021		10/27/2021		10/26/2021		10/26/2021	
Analyte	OSD Screening Level [a]	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Water, LCMSMS compliant with QSM 5.3 Table B-15 (ng/l)															
PFBS	601	4.72		3.01	J	4.10		6.00		5.96		0.933	J	ND	U
PFHxS	39	31.3		14.9		26.3		69.5		69.6		1.59	J	1.38	J
PFNA	6	5.41		ND	U	ND	U	6.15		6.33		ND	U	ND	U
PFOA	6	19.2		ND	U	3.23	J	18.2		17.9		2.33	J	ND	U
PFOS	4	51.6		1.08	J	7.03		85.0		86.6		2.19	J	2.06	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 Groundwater screening levels based on residential scenario for direct ingestion of groundwater.

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

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

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Shallow

Intermediate

AOI01-06
AOI01-05
AOI01-04
AOI01-03
AOI01-02
AOI01-01

PFOA Results (µg/Kg)

- ND
- >ND - 19
- >19 - 250
- >250 - 2,500
- >2,500

CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
REVISED	8/22/2022	GIS BY	MS	8/22/2022
SCALE	1:3,064	CHK BY	EB	8/22/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/22/2022

Legend

Facility Boundary

0 85 170 340 Feet

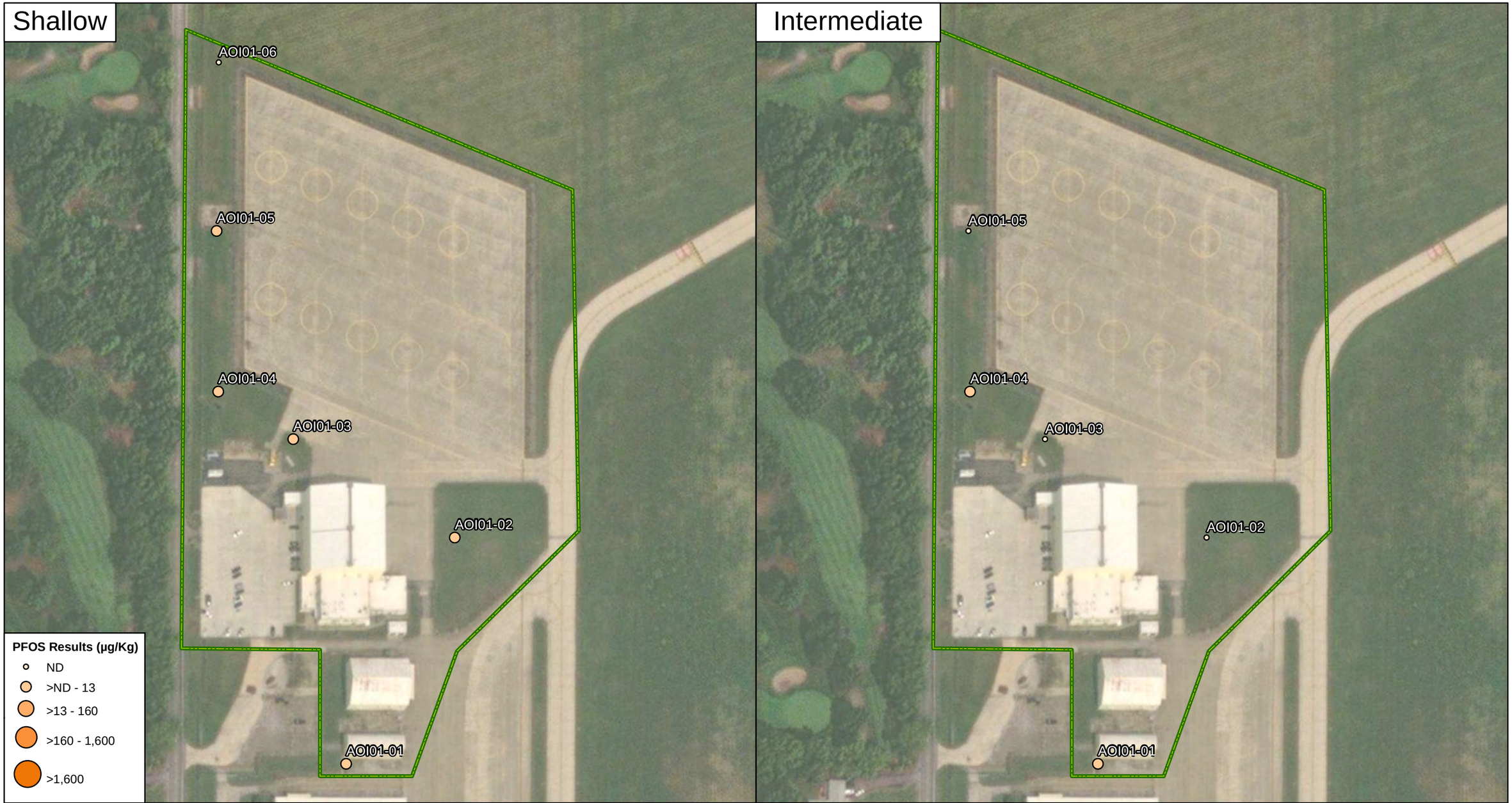
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

PFOA Detections in Soil

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1



CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
REVISED	8/22/2022	GIS BY	MS	8/22/2022
SCALE	1:3,064	CHK BY	EB	8/22/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/22/2022

Legend

Facility Boundary

0 85 170 340 Feet

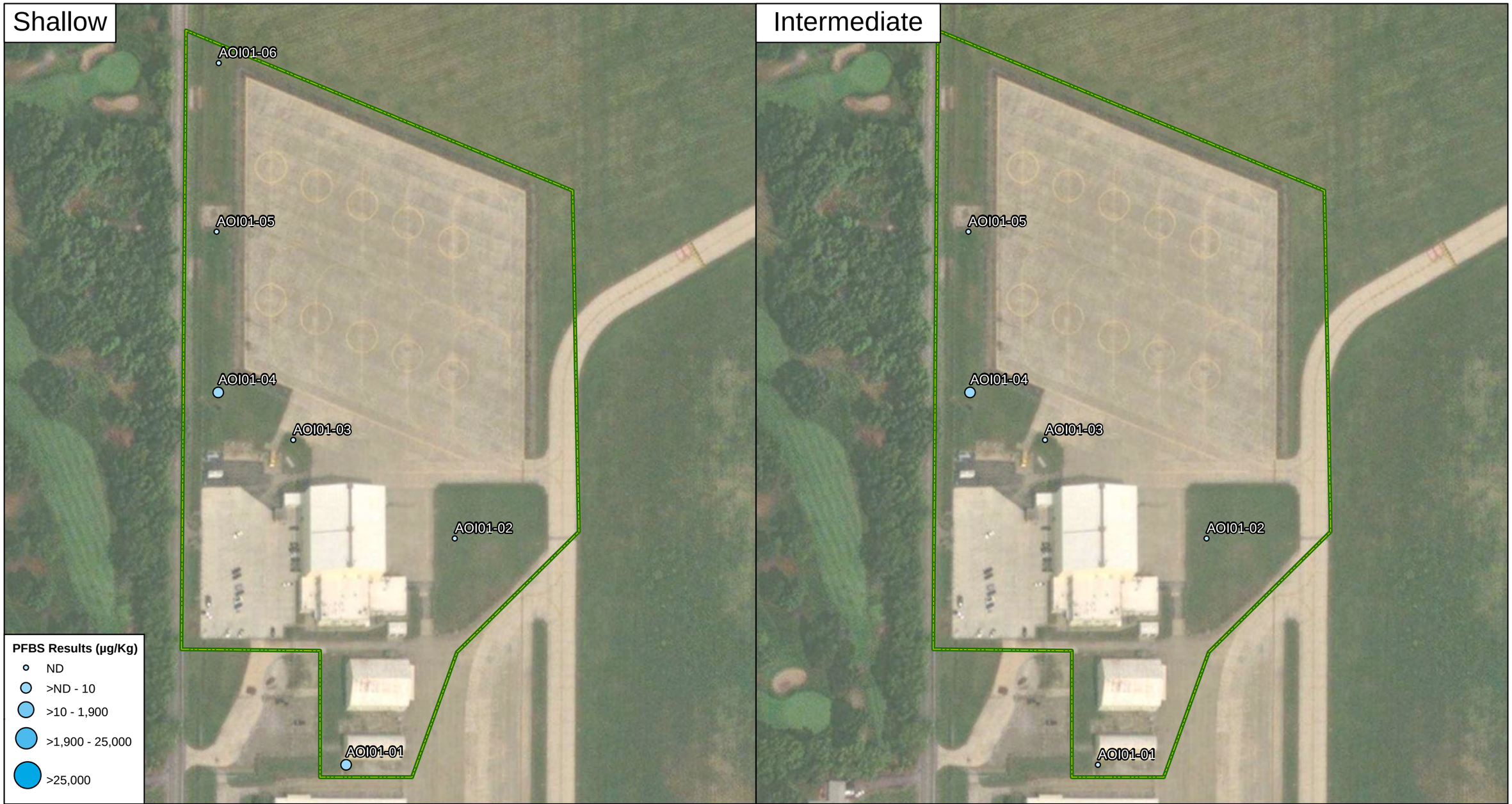
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

PFOS Detections in Soil

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-2



CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
REVISED	8/22/2022	GIS BY	MS	8/22/2022
SCALE	1:3,064	CHK BY	EB	8/22/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/22/2022

Legend

Facility Boundary

0 85 170 340 Feet

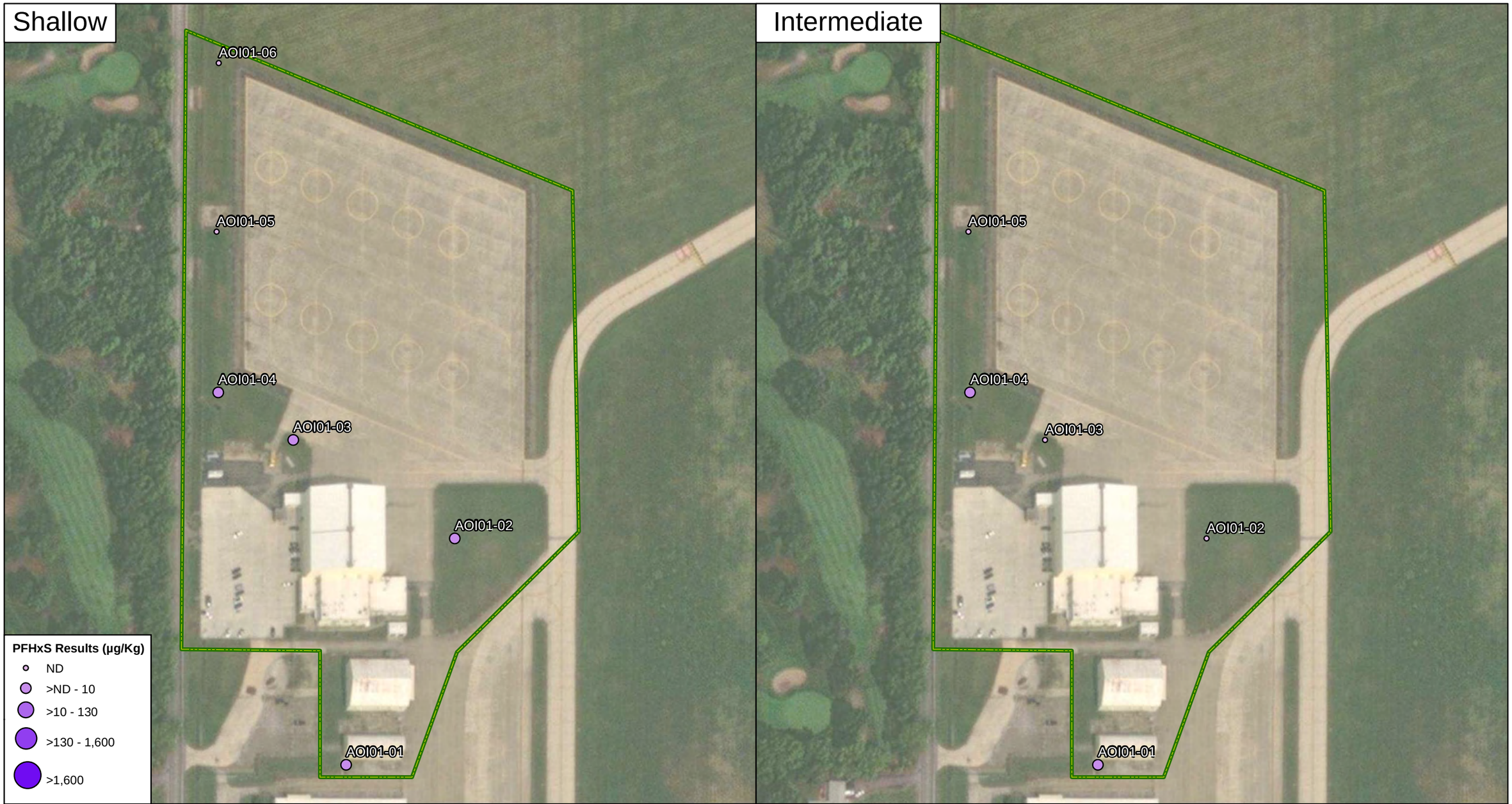
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

PFBS Detections in Soil

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-3



CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
REVISED	8/22/2022	GIS BY	MS	8/22/2022
SCALE	1:3,064	CHK BY	EB	8/22/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/22/2022

Legend

Facility Boundary

0 85 170 340 Feet

Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

PFHxS Detections in Soil

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-4

Shallow

Intermediate

AOI01-06
AOI01-05
AOI01-04
AOI01-03
AOI01-02
AOI01-01

PFNA Results (µg/Kg)

- ND
- >ND - 19
- >19 - 250
- >250 - 2,500
- >2,500

CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
REVISED	8/22/2022	GIS BY	MS	8/22/2022
SCALE	1:3,064	CHK BY	EB	8/22/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	8/22/2022

Legend

Facility Boundary

0 85 170 340 Feet

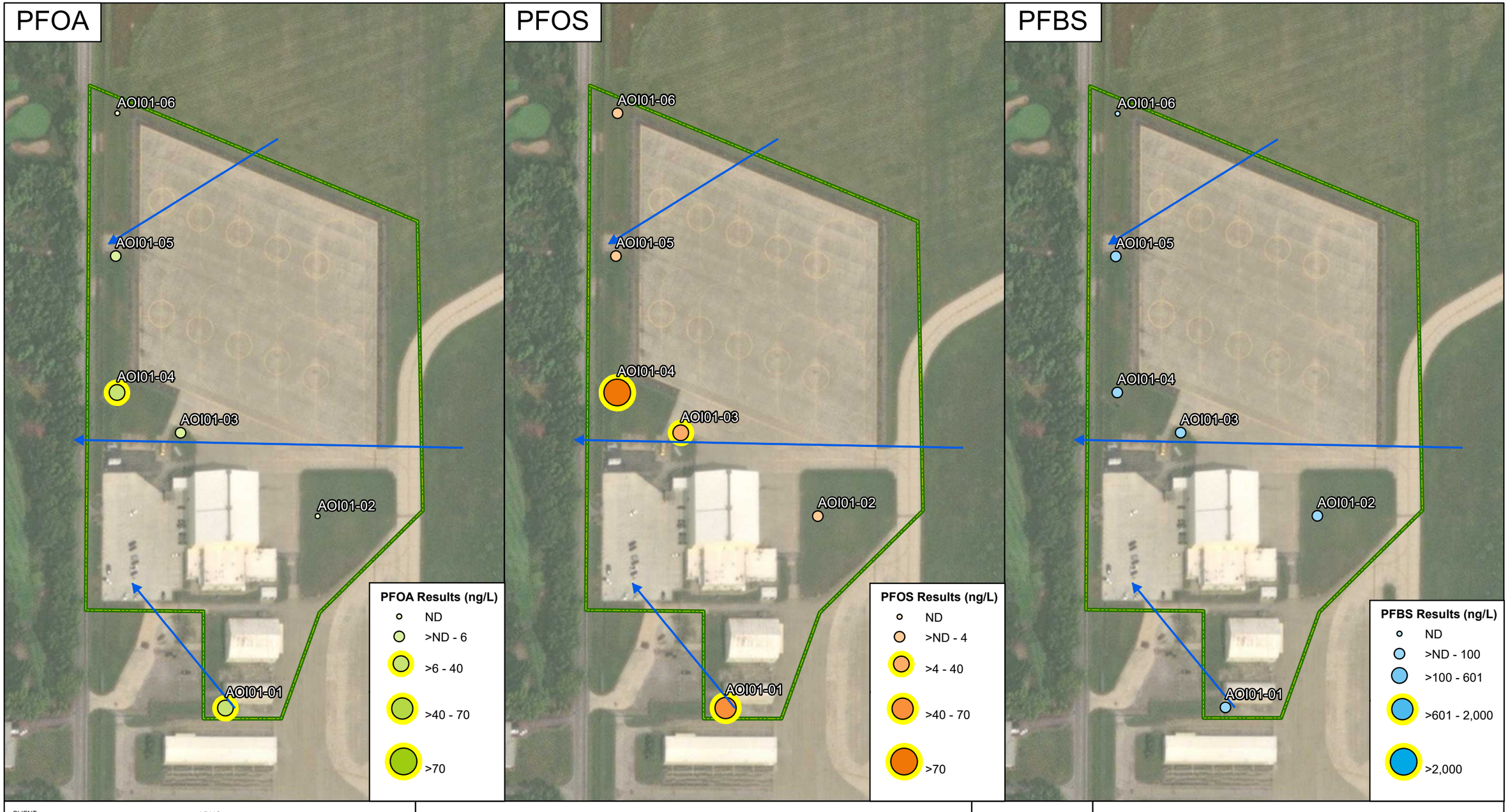
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

PFNA Detections in Soil

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-5



CLIENT	ARNG			
PROJECT	Site Inspection at Decatur AASF #1, IL			
REVISED	10/5/2022	GIS BY	MS	10/5/2022
SCALE	1:2,405	CHK BY	EB	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

0 100 200 400 Feet

N

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

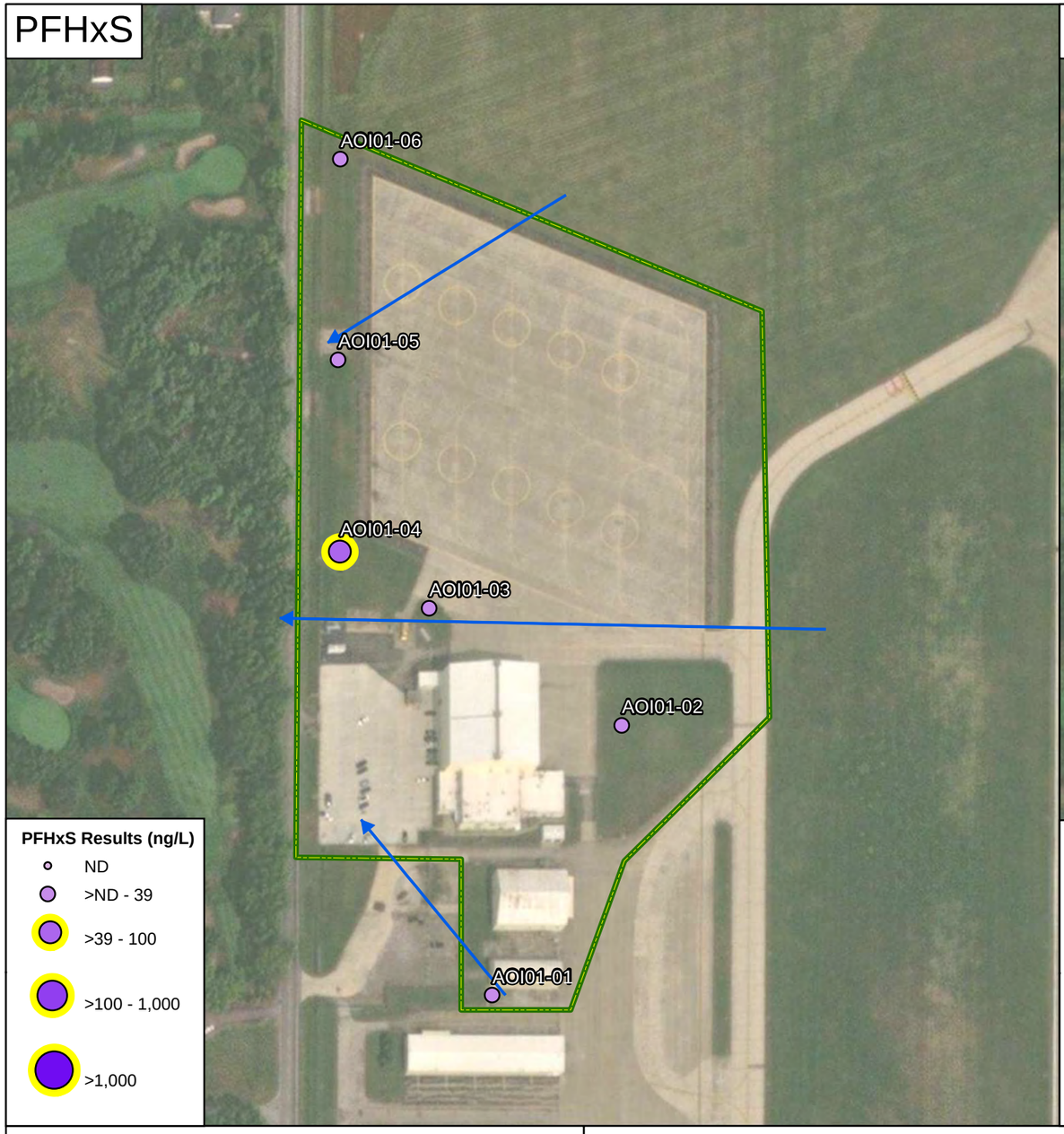
PFOA, PFOS, and PFBS Detections in Groundwater

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-6

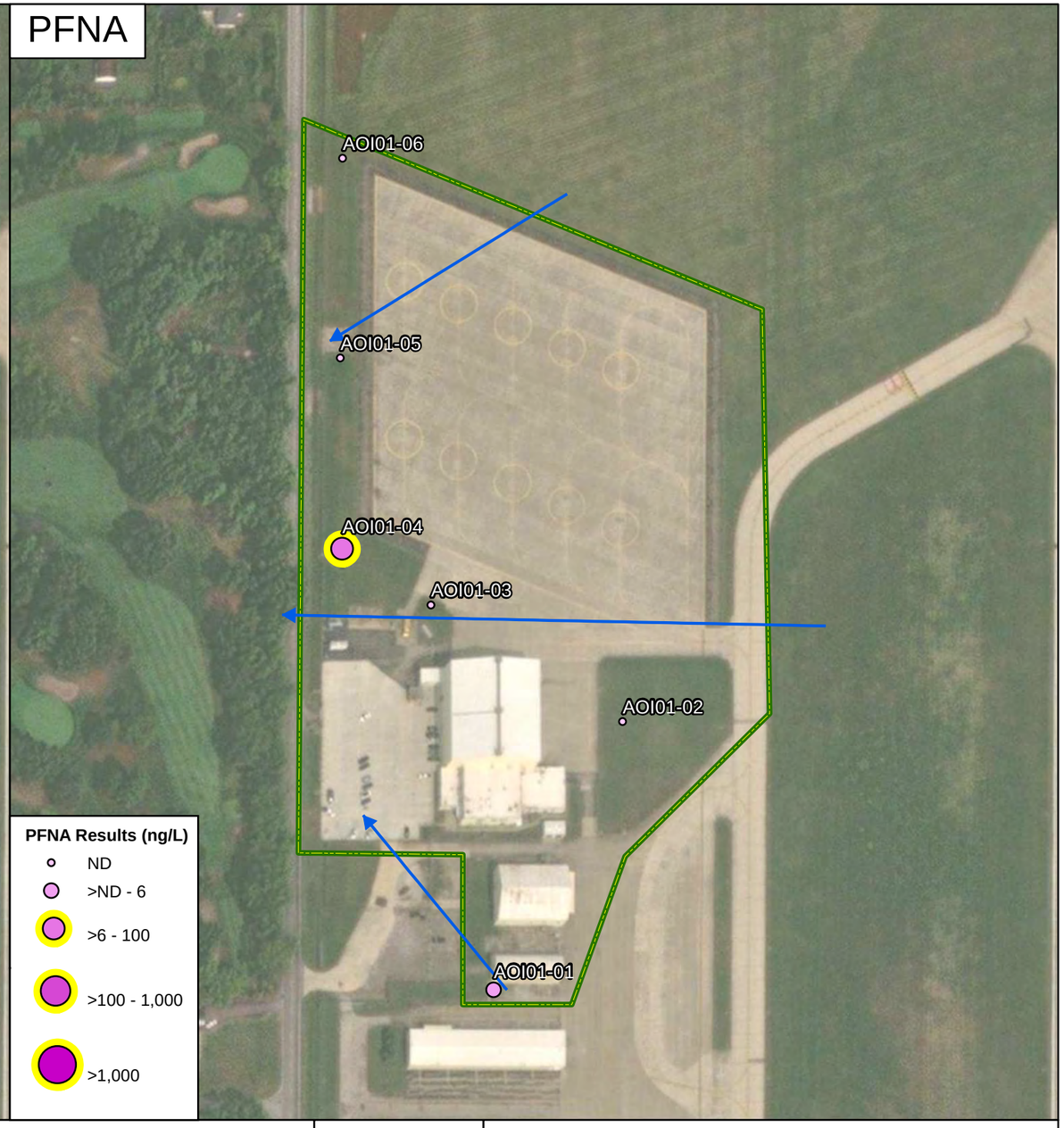
PFHxS



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 Decatur AASF #1, IL			
REVISED	9/14/2022	GIS BY	MS	9/14/2022
SCALE	1:2,400	CHK BY	EB	9/14/2022
Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		PM	CM	9/14/2022

Legend

- Facility Boundary
- Groundwater Flow Direction

0 100 200 400 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, revised based on the SI findings, are 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 Remedial Investigation (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 figure uses 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 CSM indicates 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 (though unlikely due to restricted access), residents outside the facility boundary, and recreational users outside of the facility boundary. No construction activities were observed to be occurring at the time of the SI field work; therefore, all pathways to present construction workers are considered incomplete.

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

From the late 1990s to 2005, four Tri-Max30^{TM} extinguishers were staged on the facility. Tri-Max30^{TM} units were stored on the hangar ramp in the paved area surrounding the main hangar and leading to the helicopter parking apron. No AFFF was expended during inspections, and AFFF was never stored in bulk at the facility.

PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in surface soil at AOI 1. Site workers, future construction workers, and trespassers could contact constituents in surface soil via ingestion and inhalation of dust. Therefore, the exposure pathways for site workers, future construction workers, and trespassers are potentially complete. Additionally, PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in the shallow subsurface soil. Future construction workers could contact constituents in the shallow subsurface soil via incidental ingestion; therefore, the exposure pathway 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

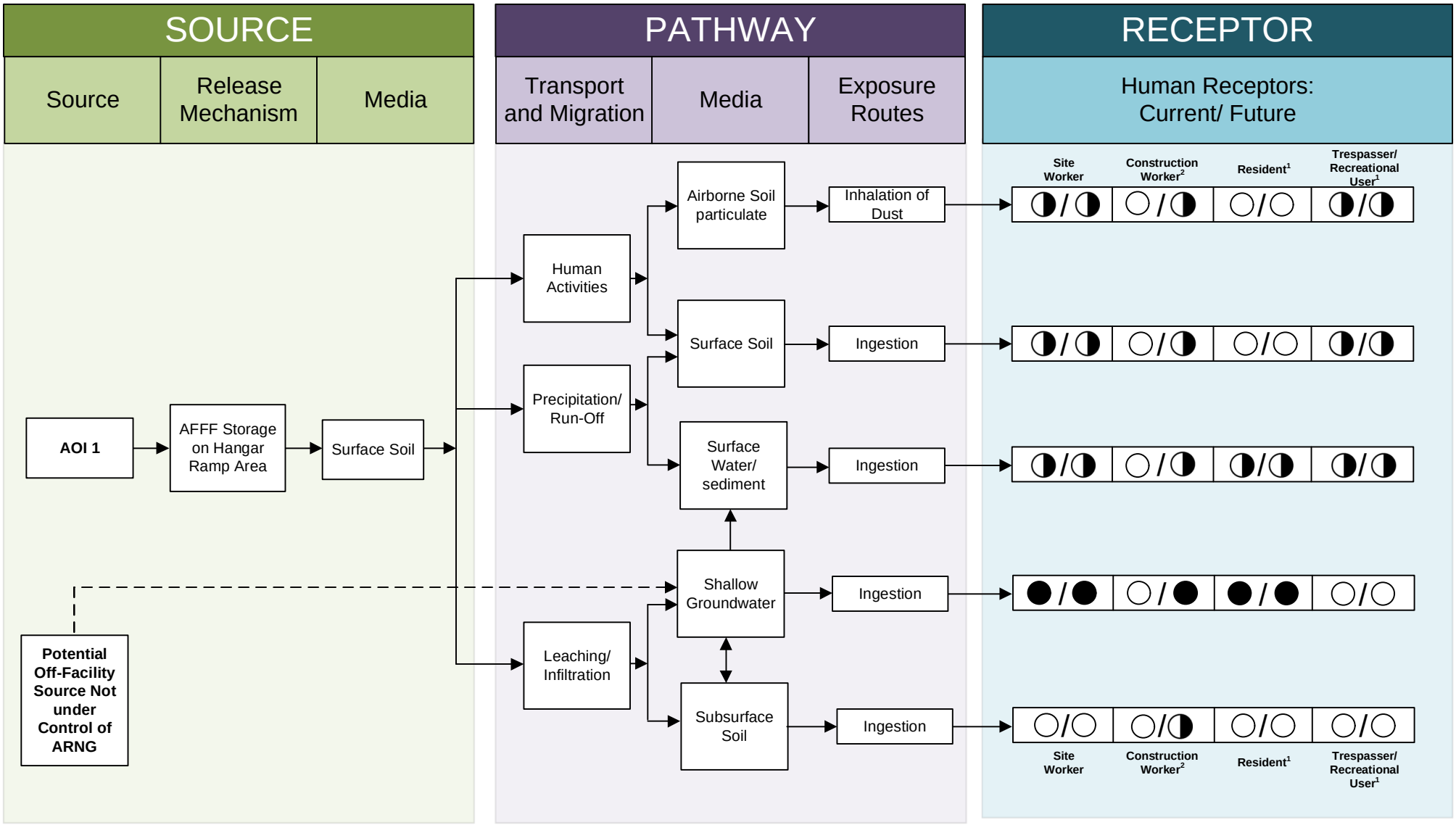
PFOA, PFOS, PFHxS, and/ or PFNA exceeded the SLs in three temporary monitoring wells. While there are no known public water supply wells downgradient of the facility, multiple wells of unknown use exist within 0.5 mile of the facility and are over 100 feet deep. Therefore, the ingestion exposure pathway to offsite residents is considered potentially complete. AASF #1 and the City of Decatur source most of their potable water from Lake Decatur. Therefore, the ingestion exposure pathway for site workers is considered incomplete. Depths to water measured in October 2021 during the SI ranged from 1.98 to 5.93 feet bgs. Therefore, shallow groundwater may be encountered during future construction activities, and the ingestion exposure pathway for future construction workers is considered potentially complete. Where groundwater is within 2 feet of the surface, the incidental ingestion exposure pathway for the site worker is also potentially complete. Additionally, shallow groundwater may discharge to downgradient surface water bodies, which is further discussed in **Section 7.3**. 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

Surface water runoff from the AOI flows west and collects in a north-south drainage ditch along the facility's western boundary. This drainage ditch and other surface drainages eventually flow toward Lake Decatur. Because PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in surface soil, the surface water and sediment ingestion exposure pathways are potentially complete for site workers and future construction workers working in the ditch. Shallow groundwater may discharge to surface water bodies west of AASF #1, including small ponds and a stream located on the golf course and Lake Decatur (**Figure 2-5**). Because PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in shallow groundwater at AOI 1, it is possible that those compounds may have migrated from groundwater to Lake Decatur and other nearby surface water bodies. Therefore, surface water and sediment ingestion pathway for offsite recreational users of these surface water bodies may be potentially complete. Drinking water at the facility and for the City of Decatur is sourced from Lake Decatur; therefore, the surface water ingestion exposure pathway for site workers and offsite residents is considered potentially complete. 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-facility receptors.
2. No active construction was occurring within AOI 1 as of the date of SI field work.

Figure 7-1
Conceptual Site Model, AOI 1
Army Aviation Support Facility #1, Decatur, Illinois

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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 consisted of utility clearance, sonic soil boring, soil sample collection, temporary monitoring well installation and subsequent abandonment, grab groundwater sample collection, and land surveying. Utility clearance was performed on 21 October 2022 and all other field activities were conducted from 25 to 28 October 2021, 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.

- Eleven (11) soil samples from six boring locations;
- Six grab groundwater samples from six temporary wells;
- Thirteen (13) 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. 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, PFHxS, PFNA and PFBS in soil were below their SLs.
    - PFOA, PFOS, PFHxS, and PFNA in groundwater exceeded their SLs. PFOA exceeded the SL of 6 ng/L, with a maximum concentration of 19.2 ng/L at location AOI01-01. PFOS exceeded the SL of 4 ng/L, with a maximum concentration of 86.6 ng/L at location AOI01-04. PFHxS exceeded the SL of 39 ng/L, with a maximum concentration of 69.6 ng/L at location AOI01-04. Lastly, PFNA exceeded the SL of 6 ng/L, with a maximum concentration of 6.33 ng/L at AOI01-04 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	Future Action
1	Hangar Ramp	◐	●	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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