FINAL
Site Inspection Report
Army Aviation Support Facility #1
Ronkonkoma, New York

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

December 2023

Prepared for:

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

UNCLASSIFIED

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
%	Percent
µg/kg	Microgram(s) per kilogram
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	Aqueous film-forming foam
amsl	Above mean sea level
AOI	Area of Interest
AOPC	Area of Potential Concern
ARNG	Army National Guard
bgs	Below ground surface
btoc	Below top of casing
CAMP	Community Air Monitoring Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	Conceptual site model
DoD	Department of Defense
DPT	Direct-push technology
DQO	Data Quality Objectives
DUA	Data Usability Assessment
EA	EA Engineering, Science, and Technology, Inc., PBC
EDR	Environmental Data Resources
ELAP	Environmental Laboratory Accreditation Program
EM	Engineer Manual
EB	Equipment blank
FB	Field blank
ft	Foot (feet)
HAZMAT	Hazardous Materials
HDPE	High-density polyethylene
HEF	High expansion foam
HFPO-DA	Hexafluoropropylene oxide-dimer acid
HQ	Hazard Quotient
IDW	Investigation-derived waste
ITRC	Interstate Technology Regulatory Council
LC/MS/MS	Liquid chromatography with tandem mass spectrometry

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

MS	Matrix spike
MSD	Matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
ng/L	Nanogram(s) per liter
No.	Number
NYARNG	New York Army National Guard
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
ppt	Part(s) per trillion
PVC	Polyvinyl chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
QSM	Quality Systems Manual
RI	Remedial Investigation
SCR	Site Characterization Report
SCWA	Suffolk County Water Authority
SI	Site Inspection
SL	Screening level
TOC	Total organic carbon
TPP	Technical Project Planning
UFP	Uniform Federal Policy
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

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EXECUTIVE SUMMARY

The Army National Guard (ARNG) G9 is performing Preliminary Assessments (PAs) and Site Inspections (SIs) at ARNG facilities nationwide based 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) (Assistant Secretary of Defense) dated 6 July 2022. The six compounds listed in the OSD memorandum include perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)[1]. These compounds are collectively referred to as "relevant compounds" throughout the document and the applicable Screening Levels (SLs) are provided below in Table ES-1.

The PA identified one Area of Interest (AOI), Ronkonkoma AASF #1 Hangar Release and Aqueous Film-Forming Foam (AFFF) Storage, 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 AOIs 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 a comparison of SI results to screening levels (SLs) for the relevant compounds. This SI was completed at the Army Aviation Support Facility (AASF) #1 in Ronkonkoma, New York and determined no further investigation is warranted. Ronkonkoma AASF #1 will be referred to as the "Facility" throughout this document.

The Facility, which is operated by New York ARNG (NYARNG), encompasses approximately 1.5 acres. The Facility is located adjacent to the Long Island MacArthur Airport and is owned by the Town of Islip in Ronkonkoma, New York, on Long Island. The Ronkonkoma AASF #1 has one hangar that the NYARNG began operating in 1977, located in the southwest portion of the Long Island MacArthur Airport. The Facility lies within Suffolk County, between Montauk Point (72 miles east) and Manhattan (60 miles west). Suffolk County is a predominantly suburban area in the Atlantic Coastal Plain. The terrain is generally hilly and is composed of thick glacial till-plain and end moraine deposits. Lake Ronkonkoma is 2.69 miles to the north, and the Great South Bay is located approximately 5 miles to the south (AECOM Technical Services, Inc. [AECOM] 2020).

The PA identified one AOI for investigation during the SI phase. SI sampling results from the AOI and facility boundary were compared to OSD SLs. Exceedances of the SLs in groundwater onsite appear to be migrating from upgradient, offsite sources not under the control of ARNG. These off-site, up/cross-gradient concentrations demonstrate a plume with substantial

[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.

concentrations of relevant compounds is present within the Airport complex in the vicinity of the Facility and is entering the Ronkonkoma AASF #1 on its northeastern side. Table ES-2 summarizes the SI results for the AOI 1. Based on the results of this SI, no further evaluation by the ARNG under CERCLA is warranted for the AOI identified.

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

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

Notes:

1. Assistant Secretary of Defense, 2022. Risk-Based Screening Levels in Groundwater and Soil using U.S. Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. 6 July 2022.
2. 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.

µg/kg = Microgram(s) per kilogram
ng/L = Nanogram(s) per liter

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

AOI	Potential Release Area	Soil AOI	Groundwater AOI	Groundwater Facility Boundary	Future Action
1	Ronkonkoma AASF #1 Hangar Release and AFFF Storage	◐	●	●	No further action by ARNG

Legend:

● = Detected; exceedance of screening levels
◐ = Detected; no exceedance of screening levels
○ = Not detected

1. INTRODUCTION

1.1 PROJECT AUTHORIZATION

The Army National Guard (ARNG) G9 is the lead agency in performing Preliminary Assessments (PAs) and Site Inspections (SIs) at ARNG facilities nationwide based on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on 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 perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), and hexafluoropropylene oxide-dimer acid (HFPO-DA)[2] at ARNG facilities nationwide. The ARNG performed this SI at the Army Aviation Support Facility (AASF) #1 in Ronkonkoma, New York. The AASF #1 will be referred to as the "Facility" throughout this report.

The SI project elements were performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (U.S. 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 Army requirements and guidance for field investigations.

1.2 SITE INSPECTION PURPOSE

A PA was performed at Ronkonkoma AASF #1 (AECOM Technical Services, Inc. [AECOM] 2020) that identified a single potential 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.

[2] 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 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

Ronkonkoma AASF #1 is located adjacent to the Long Island MacArthur Airport (**Figure 2-1**) and is owned by the Town of Islip in Ronkonkoma, New York, on Long Island. The Facility lies between Montauk Point (72 miles east) and Manhattan (60 miles west) and is a part of Suffolk County. Interstate 495 is 1.85 miles to the north of the Facility, Lake Ronkonkoma is 2.69 miles to the north, and the Great South Bay is located approximately 5 miles to the south.

The Long Island MacArthur Airport (formerly known as Islip Airport) was built in 1944 by Lockheed Aircraft Corporation and consisted of three paved runways. Through the 1950s, Long Island MacArthur Airport served as an aerospace research facility; it first began operating as a commercial airport in 1960 and now covers approximately 1,311 acres with four runways and two helipads (AECOM 2020).

Ronkonkoma AASF #1 has one hangar that the New York ARNG (NYARNG) began operating in 1977. The hangar is located in the southwest portion of the Long Island MacArthur Airport and covers approximately 62,162 square feet (ft). Aerial photographs obtained for the Preliminary Assessment (AECOM 2020) show that the hangar was built sometime between 1966 and 1980. The NYARNG began operations at this location in 1977. Ronkonkoma AASF #1 is owned by the Town of Islip, which also owns the adjacent Long Island MacArthur Airport complex (Arcadis 2022).

2.2 FACILITY ENVIRONMENTAL SETTING

The Facility is located within Suffolk County which encompasses the eastern portion of Long Island and adjacent islands in New York. Suffolk County is a predominantly suburban area and is comprised of a total of 2,373 square miles, 62 percent (%) of which is water (U.S. Census 2010). More specifically, the Facility is located within the Town of Islip, hamlet of Ronkonkoma. The Facility and the larger MacArthur Airport complex are located in a mixed-use area with a mix of commercial, industrial, and residential abutters. The nearest residence to the Facility is less than 0.5 miles southwest. There are several State and County parks within the vicinity of the Airport, as well as the Atlantic coastline approximately 5 miles to the south. The terrain is generally low rolling hills (**Figure 2-2**).

2.2.1 Geology

Ronkonkoma and the Town of Islip lie within the Atlantic Coastal Plain physiographic province and may be further subdivided into a small northern region of asymmetrical hills and a large southern region composed of a broad, gently sloping plain. During the Pleistocene period, glacial meltwater deposited outwash material forming what is presently known as the Upper Glacial aquifer comprised of unstratified clay, coarse sand, gravel, and boulders (United States Geological Survey [USGS] 1974).

The region of irregular hills coincides with the distribution of geologic units mapped as the Ronkonkoma and Harbor Hill terminal-moraines. The terminal moraines are two ridges marking

the maximum advance of continental glaciers that formed the backbone of Long Island and are a direct continuation of Wisconsin age moraines stretching almost continuously from the Rocky Mountains to New Jersey and through Long Island (USGS 1974).

The outwash plain caused by the intermorainal belt between the ridges produced surficial deposits of sand and gravel laid down by melt-water streams. The Ronkonkoma AASF #1 area lies in the western portion within this outwash plain and is predominantly underlain by unconsolidated Pleistocene glacial sediments and gravel known as the Upper Glacial deposits. Below this plain is the Magothy formation, consisting of Cretaceous age deltaic and marine deposits. The Magothy formation overlies the Raritan confining clay unit, which separates the Magothy from the Lloyd Sand Member, also of Cretaceous age (USGS 1974, 1998a).

The soils at Ronkonkoma AASF #1 are identified as cut and fill and Riverhead sandy loam (Natural Resources Conservation Service 2022). These soils have generally high permeability, and they are moderately to well drained. Soils surrounding the Facility include Riverhead sandy loam and Plymouth loamy sand with high infiltration rates. Soils are deep, well drained to excessively drained sands and gravels. The soils encourage infiltration and feed development of a surface aquifer (USGS 2009).

During the SI, the soil underlying the Facility was found to be comprised of well graded sand and gravel between the ground surface and the maximum exploration depth of 52 ft below grade. The orangey-tan sands observed ranged from fine to coarse with varying amounts of gravel and little to no fines. Lithology was consistent across the nine borings advanced during the SI.

2.2.2 Hydrogeology

Regional and local groundwater flow follow a surface drainage pattern that is dominated by the Harbor Hill and Ronkonkoma terminal-moraines, where elevation is the highest on Long Island (around 400 ft above mean sea level). These moraines serve as regional groundwater divides. Water moves freely in a shallow groundwater subsystem due to unconsolidated soils having little to no clay coupled with underlying beds of coarse sand and gravel. This subsystem provides a system of high infiltration for recharge of groundwater and discharge to the surrounding lakes and streams of the Ronkonkoma AASF #1 through precipitation. Precipitation is the sole source of recharge to the aquifers on Long Island (USGS 1998b).

Although soils are readily permeable, infiltration (and therefore aquifer recharge) is limited during parts of the year due to weather conditions and urbanization of Long Island. Urbanization, coupled with the area's characteristic short but intense rainstorms, results in high surface runoff. Additionally, during the summer months, annual evapotranspiration rates of 20-22 inches are nearly equal to the annual precipitation rate of 22-24 inches. Little to no evapotranspiration occurs in winter months, and winter storms are characterized by long, steady precipitation of rain, snow, and ice that tend to produce less surface runoff and more recharge than summer storms (USGS 1998a).

The groundwater system of Long Island is comprised of three aquifers which are generally stacked vertically. The shallowest of the three is the unconfined Upper Glacial aquifer, which is approximately 700 ft thick and contains the water table throughout most of the island. The

underlying aquifer, the Magothy aquifer, is the largest hydrogeological unit in the groundwater reservoir at 1,000 ft thick and is recharged by downward movement of water from the overlying Upper Glacial aquifer. Clay in the upper half of the Magothy causes the water to become increasingly confined with depth. The Lloyd aquifer is the basal unit of the groundwater reservoir and ranges from 0 ft thick to more than 500 ft thick. The Magothy aquifer is the principal source of water supply on Long Island for the past 50 years due to contamination concerns in the Upper Glacial aquifer (USGS 1998a, 1998b).

The Ronkonkoma AASF #1 is situated above all three aquifers, though the investigations described herein were limited to the Upper Glacial aquifer. Information gathered from the SI indicates local groundwater flow direction is to the southwest over the Facility, generally in the direction of the Great South Bay (**Figures 2-3**). Depth to groundwater measured during the SI field activities in November 2021 ranged from approximately 42 to 45 ft below ground surface (bgs) (**Figure 2-5**).

The PA included an Environmental Database Report (EDR)™ search for wells within a 1-mile radius surrounding the Facility. Using additional online resources, such as state and local Geographic Information Systems databases, wells were researched to a 4-mile radius of the Facility. Although no wells exist at Ronkonkoma AASF #1, data from the USGS National Water Information System Mapper indicate there are six active monitoring wells within a 4-mile radius of the Facility. Numerous additional inactive USGS monitoring wells were also identified within 4 miles, as shown on **Figure 2-3**. Numerous potential private wells are located within a 4-mile radius of the Facility per the results of the Suffolk County Department of Health Services 2017 survey (AECOM 2020). A subset of these are shown on **Figure 2-3**.

Long Island MacArthur Airport and the Ronkonkoma AASF #1 obtain drinking water through the Suffolk County Water Authority (SCWA). The SCWA water supply wells are set within the Magothy aquifer formation. As with all public water supplies, this water is tested and treated prior to distribution. On 27 July 2016 the SCWA found PFOS at a level of 95 parts per trillion (ppt) in a water sample from their Church Street Well #2 in Bohemia (located approximately 1.5 miles south of MacArthur Airport and Ronkonkoma AASF #1). SCWA began treating raw water with granulated activated carbon in 2005 and subsequently began blending that treated water with water from Church Street Well #3. As a result of this impact to the SCWA wellfield, the Suffolk County Department of Health Services undertook a private well survey of the area south of MacArthur Airport and Ronkonkoma AASF #1 in 2017. They identified 57 properties potentially utilizing private wells but were only able to arrange to sample seven of these private wells. Three of the wells had PFOS/PFOA at levels above the New York State maximum contaminant level. An additional two wells exceeded the USEPA Health Advisory at the time of the study[3], with the highest concentration being 673 ppt combined (AECOM 2020).

2.2.3 Hydrology

The Ronkonkoma AASF #1 is situated on the western side of the Brown Creek-Great South Bay Watershed (**Figure 2-4**). This watershed is also part of the much larger Southern Long Island

[3] At the time of the study, the Health Advisory level was 70 ppt for PFOS and PFOA, individually or combined.

Watershed, which covers 1,310,204 acres, all of which lie in the Atlantic Coastal Plain (U.S. Department of Agriculture 2011).

There are no surface water bodies within or in the immediate vicinity of the Ronkonkoma AASF #1. A majority of the surfaces within the AASF are impervious. Stormwater is conveyed to onsite stormwater infiltration features (dry wells and infiltration galleries) to the west and south of the hangar, surrounding the apron. Stormwater subsequently infiltrates to groundwater from these features in the subsurface. During a SI reconnaissance, two dry wells, which receive surface drainage, were confirmed to be present within the northwest and southwest portions of AASF. Furthermore, a review of utility plans from 2011 indicated the old storm line that courses under the hanger is capped to the west, there is an underground stormwater retention system approximately 50 feet south of the hanger, and several sumps concentrated in the impervious areas in the southeast portion of the facility.

The neighboring watershed, the Connetquot River Watershed, is the location of Connetquot Brook, which begins 5 miles northwest of the Ronkonkoma AASF #1, just south of Interstate 495, and travels south before it connects with four other tributaries to create the Connetquot River. Ludlows Creek is just 0.75 miles east from the Connetquot River, where they converge at an inlet before immediately emptying into the Great South Bay. Lake Ronkonkoma, 2.95 miles northwest of the Ronkonkoma AASF #1, is part of the Connetquot River watershed. However, it does not drain into any surrounding stream, tributary or other body of water and is completely recharged through groundwater (USGS 1998a).

2.2.4 Climate

Suffolk County is located within the major climate zone called Moist Subtropical Mid-Latitude Climate. This climate zone covers the majority of the southern and eastern United States and is characterized by warm and humid summers with mild winters. Convective thunderstorms dominate the summer months (National Weather Service 2022). The nearby Long Island MacArthur Airport weather station has recorded local weather since 1963. According to this weather station, the area has an average annual temperature of 53.1 degrees Fahrenheit (°F) with average high of 61.1°F to average lows of 45.2°F (National Oceanic and Atmospheric Administration 2018). The annual average wind speed is 9 miles per hour. The total mean annual precipitation is 45.99 inches (National Weather Service 2021).

2.2.5 Current and Future Land Use

The Ronkonkoma AASF #1 hangar has been the primary aviation training center for the NYARNG since the 1970s, and it is home to several aviation battalion and aviation support units from different parts of New York state, including Rochester. The training mostly consists of flying joint missions with National Guard units from other states, exercises in rescue operations for natural disasters, and pilot “extraction” training. The entire Facility is bounded by a fence and the Facility is accessed via a secured gate. There are no current expansion plans for the Facility and, in general, the future use of the Facility is not expected to change (AECOM 2020).

2.2.6 Sensitive Habitat and Threatened/Endangered Species

A wildlife survey has not occurred at the Facility, and the Facility does not have any significant areas of habitat. The following species have not been identified at the Facility but may be present in the surrounding area. The following species are listed as federally endangered, threatened, proposed, and/or candidate species in Suffolk County, New York (U.S. Fish and Wildlife Service 2021):

- Birds: Piping Plover – *Charadrius melodus* (Threatened), Red Knot – *Calidris canutus rufa* (Threatened), Roseate Tern – *Sterna dougallii* (Endangered)
- Flowering Plants: Sandplain Gerardia – *Agalinis acuta* (Endangered), Seabeach Amaranth – *Amaranthus pumilus* (Threatened)
- Insects: Monarch Butterfly – *Danaus plexippus* (Candidate)
- Mammal: Northern Long-eared Bat – *Myotis septentrionalis* (Threatened).

2.3 HISTORY OF PFAS USE

Aqueous film-forming foam (AFFF), a firefighting agent, was commonly used by the U.S. military to extinguish petroleum fires, for firefighting training, and for the suppression of fires in uncontained areas. Military use of AFFF began in the 1970s and was most widely used at Department of Defense (DoD) installations with airfields. One potential PFAS release area was identified at the Facility during the PA (AECOM 2020). Interviews and records obtained during the PA indicate that a release of AFFF occurred during an initial test of the hangar fire suppression system in 2007. This material was reportedly collected and disposed of off-site. It should be noted that during the SI field activities, ARNG personnel verified the system that was installed and tested in 2007 contained Jet-X™ high expansion foam (HEF), not AFFF. A set of 2004 constructions plans obtained as part of a recent records review further supported the installation of a new Jet-X™ system (not a retrofit) and the removal of an old Halon fire suppression system. Construction and repair plans associated with the system have been added as **Appendix H**. The formulation of Jet-X™ is proprietary; therefore, the presence of fluorinated compounds is not known. However, HEF releases are not known to result in concentrations of the relevant compounds that exceed their respective criteria based on the information available at the time of reporting. It was reported that AFFF was not used in fire training activities conducted at the Facility. Additionally, AFFF is present withing the main hangar (northern bay) stored in two 36-gallon manual floor units which have never been tested or used (per multiple facility interviews). No information is available in regard to how long the manual floor units have been present, but it is suspected that they have been in place since 2007. Furthermore, a review of the construction plans for the Jet-X fire suppression system does not show the units being present between 1970 and 2007.

It should be noted that annual NYARNG fire extinguisher training is performed jointly with the fire department at the AASF in a designated area just south of the AOI. However, according to interviews conducted with fire department personnel during the development of the PA, those activities do not use AFFF. Furthermore, only handheld ABC dry chemical extinguishers (not

AFFF extinguishers), are known to be equipped on site. Because AFFF is not used in the training, this FTA is not considered a potential release area. A description of the AOI is presented in Section 3.

Army National Guard Site Inspections
Site Inspection Report
Ronkonkoma AASF #1, New York

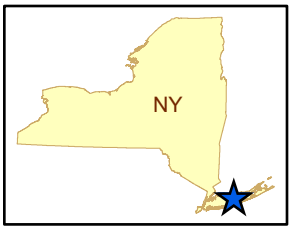
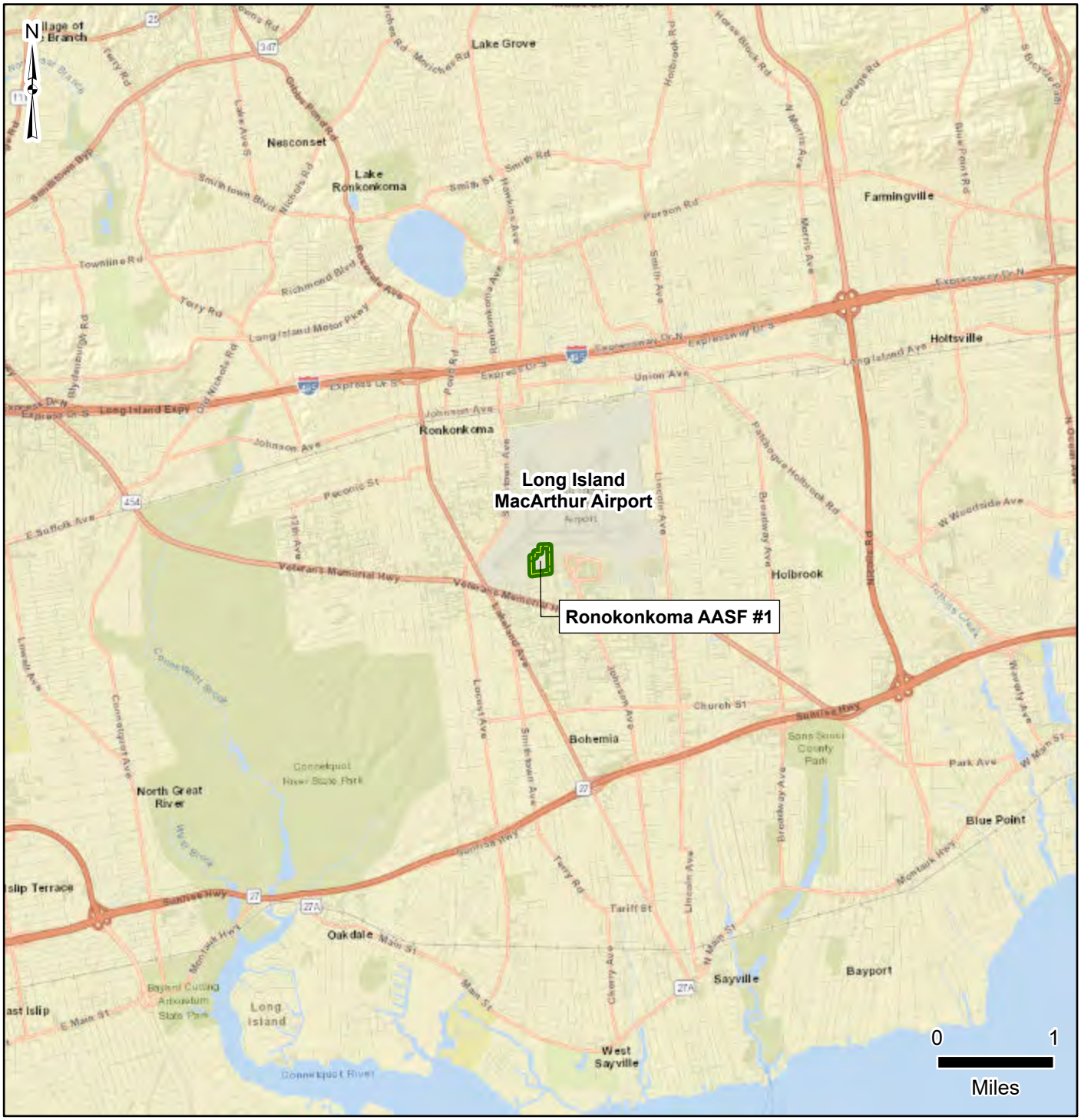


Figure 2-1
Facility Location



Facility Data

Facility Boundary

Data Sources:
ESRI 2022
AECOM 2020

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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Army National Guard Site Inspections
Site Inspection Report
Ronkonkoma AASF #1, New York

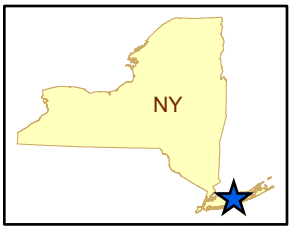
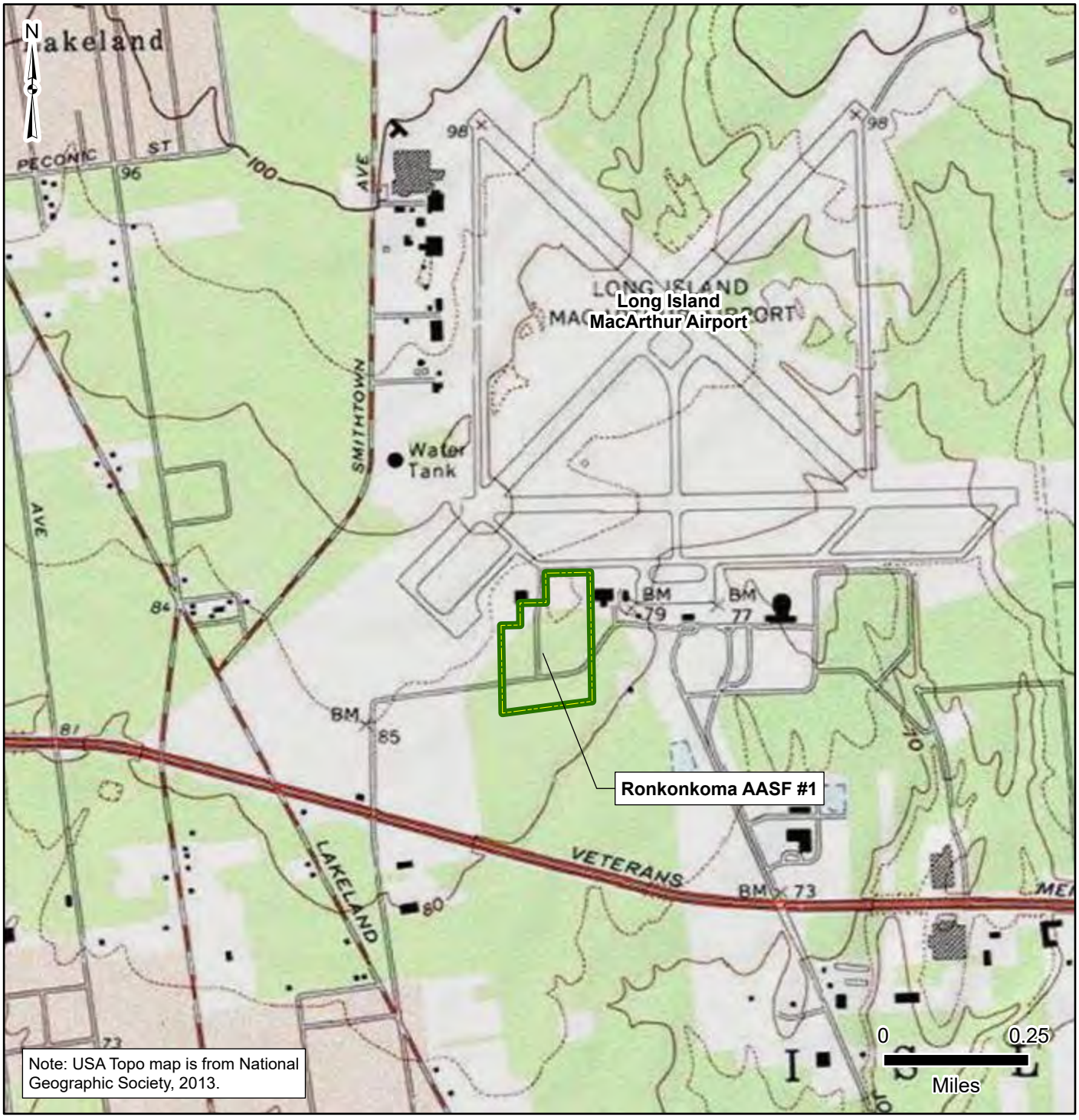


Figure 2-2
Topography



Note: USA Topo map is from National Geographic Society, 2013.

Facility Data

Facility Boundary

Data Sources:
ESRI 2022
AECOM 2020

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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Army National Guard Site Inspections
Site Inspection Report
Ronkonkoma AASF #1, New York

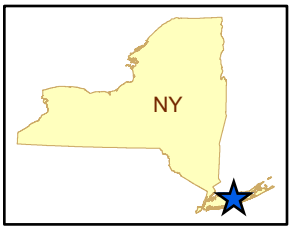
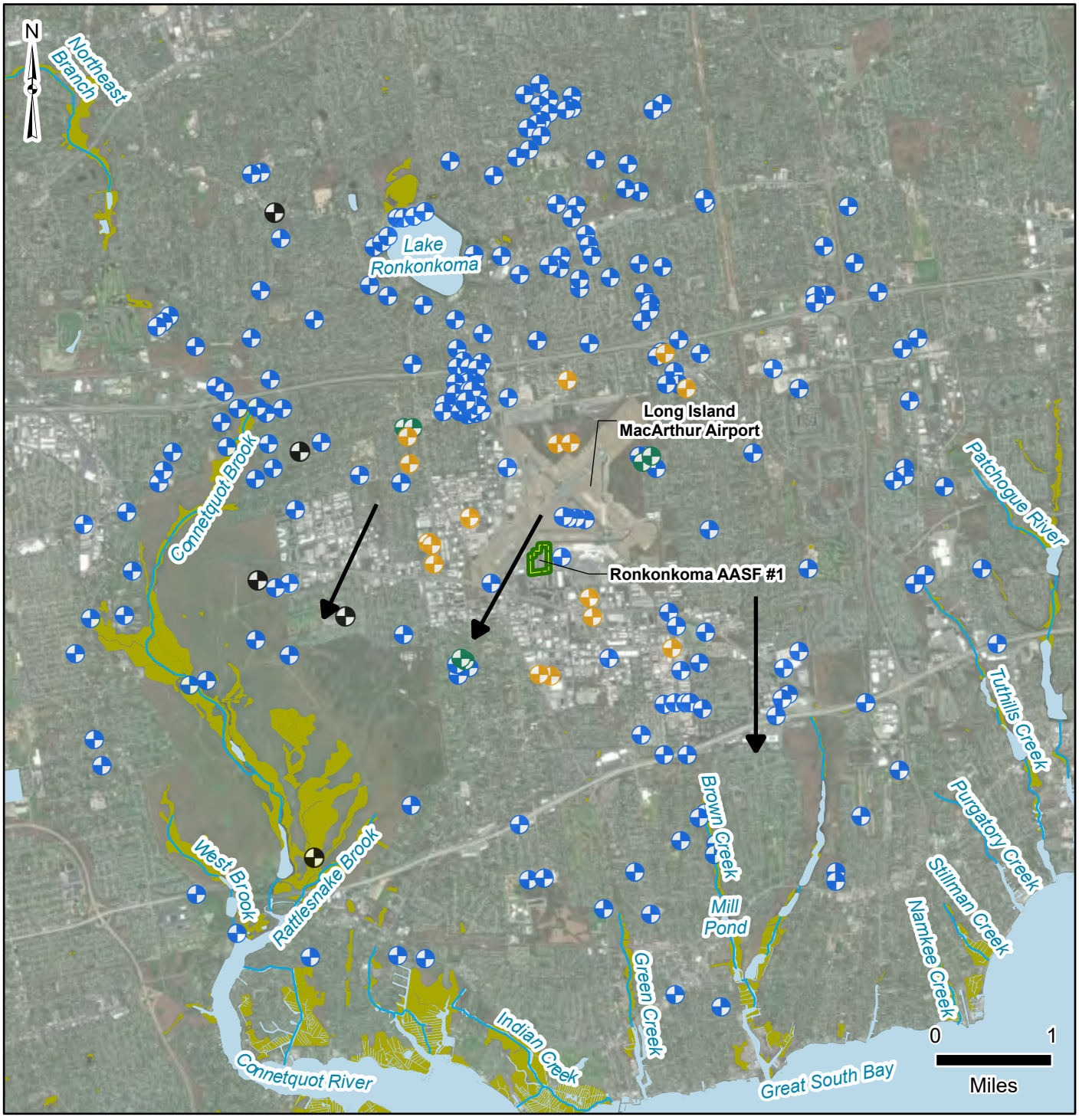


Figure 2-3
Groundwater Features



Facility Data
- Facility Boundary

Well Type
- Active USGS Monitoring Well
- Inactive USGS Monitoring Well
- Public Well
- Potential Private Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Perennial Creek/Stream
- Wetlands
- Waterbody

Data Sources:
ESRI 2022
AECOM 2020

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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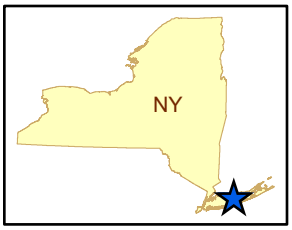
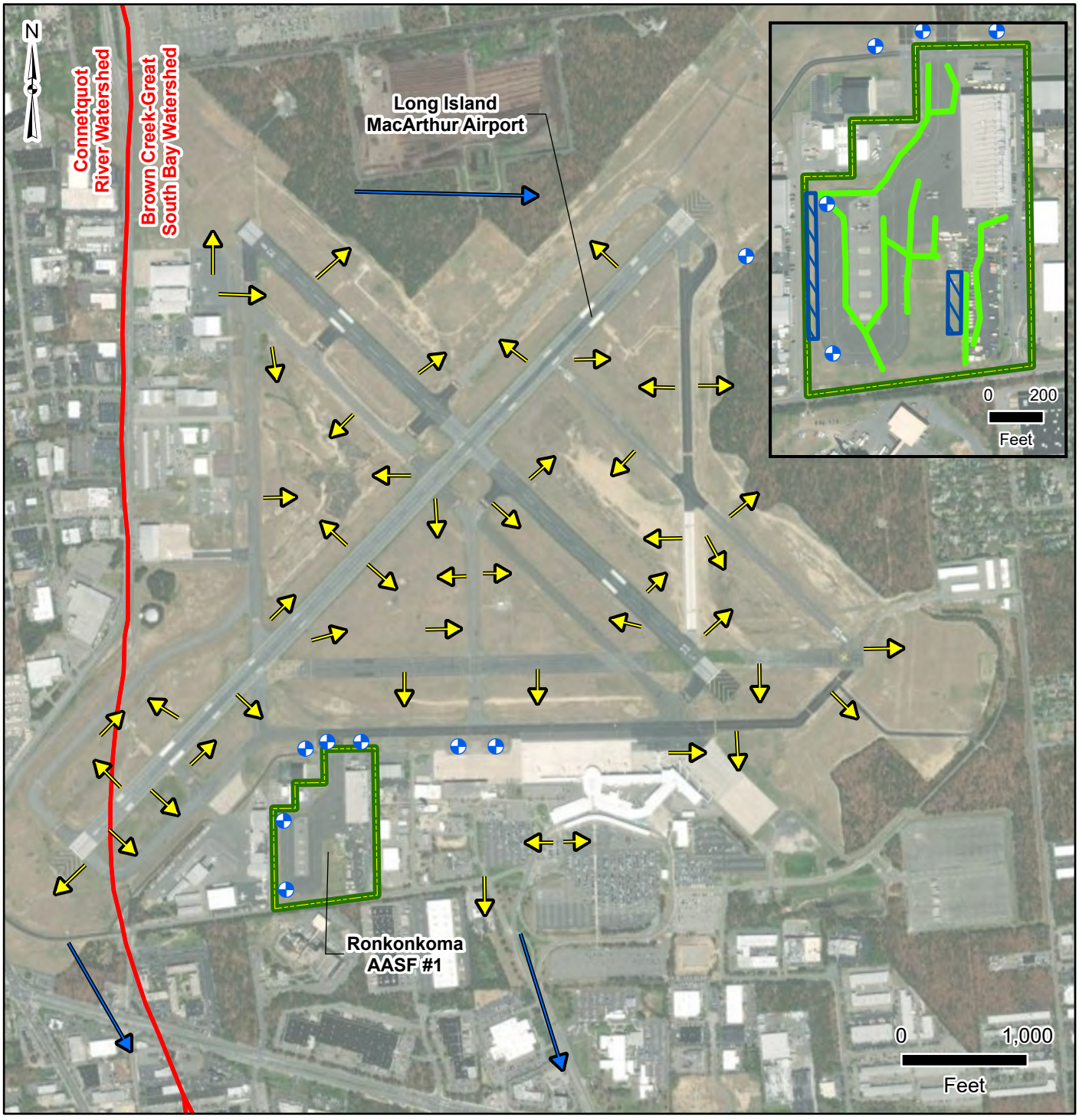
Army National Guard Site Inspections
Site Inspection Report
Ronkonkoma AASF #1, New York

Figure 2-4
Surface Water Features





Facility Data
- Facility Boundary

Hydrology/Hydrogeology
- Dry Well Location
- Stormwater Flow Direction
- Inferred Sheet Flow
- Stormwater Conveyance
- Infiltration Gallery
- Watershed Boundary

Note:
Stormwater flow direction obtained from the Final Long Island MacArthur Airport Records Search Report - Arcadis. 2019. Records Search Report, Long Island MacArthur Airport 100 Arrival Ave, Ronkonkoma NY. Final. August.

Data Sources:
ESRI 2022
AECOM 2020

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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Army National Guard Site Inspections
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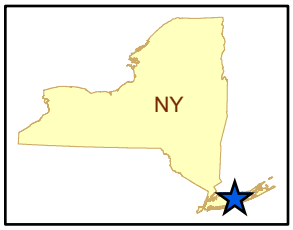
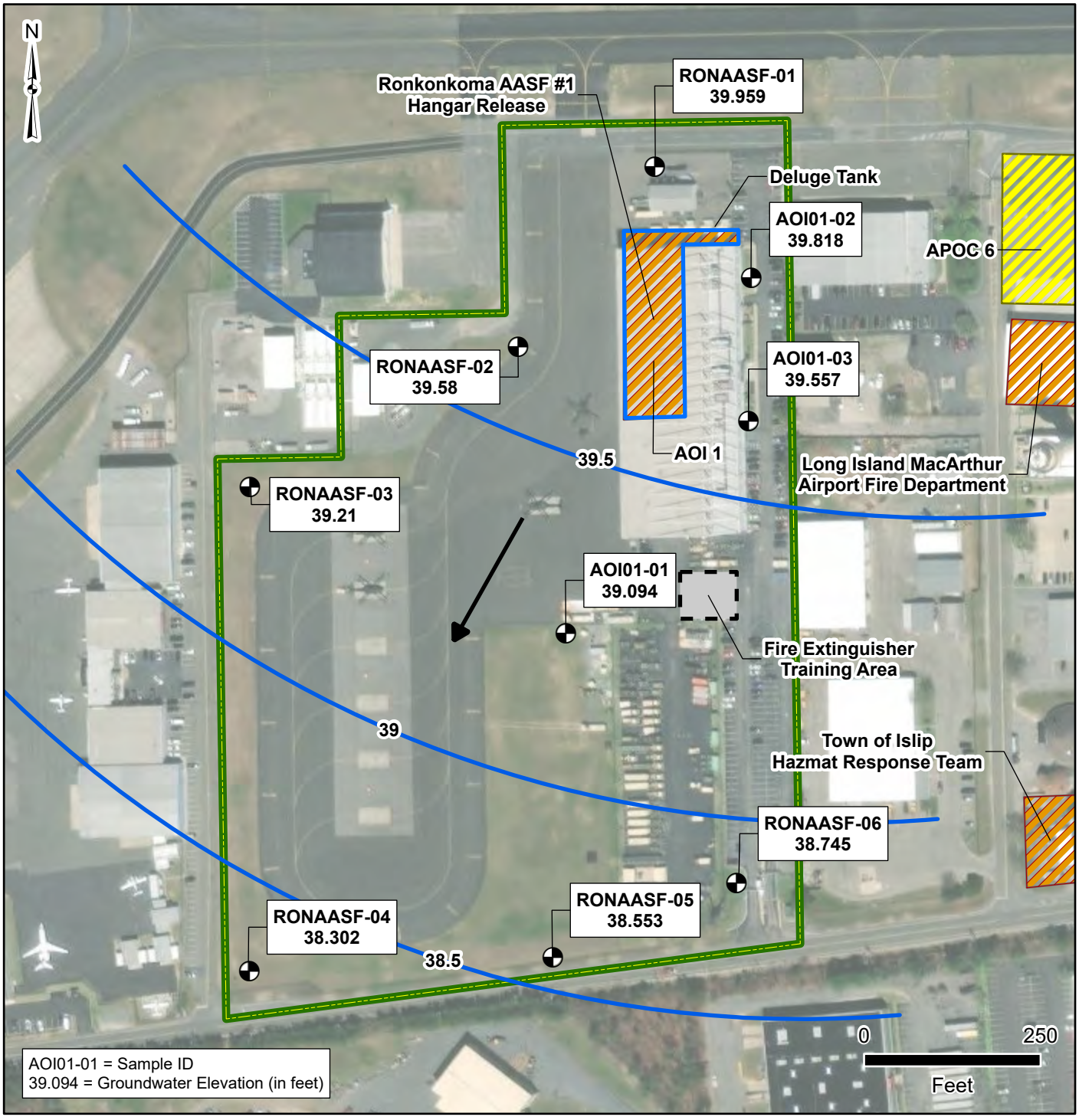
Ronkonkoma AASF #1, New York

Figure 2-5
Groundwater Elevations





Facility Data
- Facility Boundary
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Hydrogeology
- Well Location
- Groundwater Flow Direction
- Groundwater Elevation Contour Interval (0.5 foot)

Data Sources:
ESRI 2022
AECOM 2020

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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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, 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 AOI 1 – Ronkonkoma AASF #1 Hangar Release and AFFF Storage. The location of AOI 1 is shown on **Figure 3-1**. Additionally, there are off-Facility potential source areas as detailed in **Section 3.2**.

3.1 AOI 1 – RONKONKOMA AASF #1 HANGAR RELEASE AND AFFF STORAGE

AOI 1 consists of the Ronkonkoma AASF #1 Hangar Release and AFFF Storage. The Ronkonkoma AASF #1 hangar was built between 1966 and 1980. The NYARNG moved to the location in the 1970s. According to the PA, in 2007, the hangar was equipped with a fire suppression deluge system containing 3% Ansul AFFF high expansion foam. There was no hangar-wide fire suppression system prior to this 2007 installation (AECOM 2020). Based on the identification of this AFFF system and potential release during testing, this SI was initiated. However, during the SI field activities, ARNG personnel verified the deluge system contains Jet-X ™ HEF, and never contained AFFF. No conclusive information regarding the presence of fluorinated compounds in HEF is known; it is unlikely to result in concentrations of the relevant compounds that exceed their respective criteria based on the information available at the time of reporting including ARNG sampling at facilities where solely Jet-X HEF has been released. AFFF is present at the hangar stored in two 36-gallon manual floor units which have never been tested or used (per multiple facility interviews).

The potential release scenario described in the PA was a test of the deluge system in 2007 shortly after its installation in 2007. Both of the 500-gallon deluge system tanks were used in the test, though the actual quantity of foam released was unknown. The hangar is divided into different sections and only a small area of the hangar was involved and affected by the deluge system test. The foam was flushed with water into the steel-lined draining trench and drained out to the underground deluge storage tanks and was then pumped into a truck and transported off-site for disposal. NYARNG staff stated, with no evidence to the contrary, that all foam was properly contained, and the deluge system test was successfully drained and pumped out of the Facility with no spillage or leakage (AECOM 2020).

As indicated, new information indicates that the test of the deluge system is unlikely to have resulted in a release of PFAS based on the type of HEF within the tanks. However, due to the uncertainty in the Jet-X ™ formulation, the presence of AFFF on-site in the floor units, the potential for undocumented spills or leaks, and the fact that the SI was underway prior to this revelation, the SI was completed even without a known/suspected release mechanism.

3.2 ADJACENT SOURCES

Four potential off-Facility sources of PFAS are adjacent to the Facility and are not under the control of the NYARNG. A description of each off-facility source is presented below and shown

on **Figure 3-1**[4]. Potential off-Facility sources identified in the ARNG PA are depicted as orange hatching on **Figure 3-1**, while off-Facility sources identified by the Long Island MacArthur Airport's own consultant (Section 3.2.4) are depicted as yellow hatching on **Figure 3-1**.

3.2.1 Long Island MacArthur Airport Fire Department

The Long Island MacArthur Airport Fire Department lies approximately 300 ft northeast of the Ronkonkoma AASF #1 and at the northern end of Clark Drive. At the time of the visual site inspection, the fire department was under construction as a part of ongoing renovations. Firetrucks that may contain AFFF are parked on the tarmac outside the fire station building. Long Island MacArthur Airport Fire Department staff stated that to their knowledge, an AFFF release has not occurred at the fire department or at the Long Island MacArthur Airport. Although there is no evidence to suggest a PFAS release has occurred at this location, the history of storage and use of AFFF at this location is unknown. Therefore, the Long Island MacArthur Airport Fire Department is considered a potential adjacent off-facility source of PFAS (AECOM 2020). The Long Island MacArthur Airport Fire Department is located up/cross-gradient of the Facility/AOI. It should be noted that the Long Island MacArthur Airport's 2022 Final Site Characterization Report (SCR) does not identify the Fire Department building as an Area of Potential Concern (AOPC) (Arcadis 2022).

3.2.2 Town of Islip Hazardous Materials Response Team

The Town of Islip Hazardous Materials (HAZMAT) Response Team works in tandem with the Long Island MacArthur Airport Fire Department. During the visual site inspection, a pallet of 5-gallon buckets that were labeled as Ansul® products was observed approximately 600 ft south of the fire department in the Town of Islip HAZMAT Response Team parking lot, on the northeast corner of Clark and Schaefer drives. Access to the Town of Islip HAZMAT Response Team parking area was not permitted during the site visit. Although there is no evidence to suggest a PFAS release has occurred at this location, the history of storage and use of AFFF at this location is unknown. Therefore, the Town of Islip HAZMAT Response Team is considered a potential adjacent off-facility source of PFAS (AECOM 2020). The Town of Islip HAZMAT Response Team is located cross-gradient of the Facility. It should be noted that the Long Island MacArthur Airport's 2022 Final SCR does not identify the HAZMAT Response Team building as an AOPC (Arcadis 2022).

3.2.3 Long Island MacArthur Airport Helicopter Crash

The New York Times reported an incident in 1999 of a NYARNG helicopter crashing on the runway at Long Island MacArthur Airport, killing two and severely injuring two others. The crash occurred at the southwest corner of the airport near Runway 6, southwest of the Ronkonkoma AASF #1. Though emergency units responded to the scene, it is unknown if this incident required fire suppression actions involving AFFF. Therefore, the crash area is a

[4] It should be noted that annual NYARNG fire extinguisher training is performed jointly with the fire department at the AASF in a designated area just south of the AOI. However, according to interviews conducted with fire department personnel during the development of the PA, those activities do not use AFFF. Furthermore, only handheld ABC dry chemical extinguishers (not AFFF extinguishers), are known to be equipped on site. Because AFFF is not used in the training, this FTA is not considered a potential release area.

potential adjacent off-facility source of PFAS (AECOM 2020). The helicopter crash area is located cross-gradient of the Facility.

3.2.4 Long Island MacArthur Airport

Since 2019, Arcadis on behalf of the Town of Islip has been conducting records reviews and site characterization to determine if a release of PFAS-containing material occurred at the Long Island MacArthur Airport. A list of 15 AOPCs was developed during their site characterization including locations at the airport which historically used or stored PFAS-containing materials. The Final SCR (Arcadis 2022) documents results of soil, sediment, surface water, stormwater, and groundwater samples collected from 12 of the 15 identified AOPCs. The 3 AOPCs not investigated included the Ronkonkoma AASF #1 (the subject of this SI) and two other facilities (AOPCs 13 [CAMCO] and 14 [Composting Facility]), which had recent investigations under separate programs (Arcadis 2022). Additionally, APOCs 7 [Taxiway Runoff Area #1)] and 12 [Whitney Hangar] are not considered release locations based on the investigation. The remaining AOPCs are identified on **Figure 3-1** with yellow hatching. As reported in the Final SCR, a summary of the AOPCs follows:

- AOPC 01: Recharge Basin #1 – No current or historical use or storage of AFFF was identified in this basin on the southeastern side of the airport complex. The SCR reported that trace detections of PFAS in sediment and stormwater are not indicative of local release: rather, they appear to be related to transport from other areas.

- AOPC 02: Recharge Basin #2 – No current or historical use or storage of AFFF was identified in this basin on the southern side of the airport complex. The SCR reported that trace detections of PFAS in sediment and stormwater were not indicative of local release: rather, they appear to be related to transport from other areas.

- AOPC 03: Fire Training Area #1 – Northeast Wooded Area – Records and field observations indicate historical AFFF use in this fire training area located on the northeastern edge of runway Echo. Highest total PFAS concentration in groundwater at AOPC 03 was 44,638 nanograms per liter (ng/L). Total PFAS concentration along with individual constituents detected were indicative of a local release dominated by PFOS (22,600 ng/L at groundwater sample location GWG 3-1); legacy AFFF usage is suspected based on the compound distribution. PFOA, PFHxS, and PFNA were also detected at GWG 3-1 at concentrations of 1,320, 4,000, and 1,200 ng/L, respectively. The SCR indicated that further investigation was recommended for this area.

- AOPC 04: Fire Training Area #2 – Northwest, Behind Compost Facility – Records and field observations indicate historical and current AFFF use at this fire training area located in the northwestern corner of the airport complex. The highest total PFAS concentration in groundwater at AOPC 04 was 19,754 ng/L. Total PFAS concentration along with individual constituents detected were indicative of a local release. The compound fingerprint indicates use of modern AFFF usage based on the concentrations of 6:2 fluorotelomer sulfonic acid and shorter chained carboxylates but low to not detected concentrations of PFOS, PFOA, PFBS, PFHxS, and PFNA (groundwater at

GWG 4-1 and MW 4-1). The SCR indicated that further investigation was recommended for this area.

- AOPC 05: Equipment Cleanout Area by Suffolk County Water Authority Tower – Records indicate current and ongoing AFFF use at this area located on the western edge of the airport complex. The highest total PFAS concentration in groundwater at AOPC 05 was 1,907 ng/L. Total PFAS concentration along with individual constituents detected were indicative of a local release, likely of a modern AFFF consistent with current fire equipment cleaning activities. PFOS, PFOA, PFBS, PFHxS, and PFNA were detected in groundwater at this AOPC, but at low concentrations compared to other AOPCs. The SCR indicated that further investigation was recommended for this area.

- AOPC 06: Old Fire House – Records and field observations indicate historical AFFF use at the old fire house, located nearby to the east and upgradient of the Ronkonkoma AASF #1. The highest total PFAS concentration in groundwater at AOPC 06 was 67,355 ng/L. Total PFAS concentration along with individual constituents detected were indicative of a local release. Total PFAS concentrations at this AOPC represent the highest detected during the investigation. The compound fingerprint indicates use of legacy AFFF products for training and testing. In groundwater at GWG 6-1 PFOS and PFOA were detected at concentrations of 4,290 and 1,000 ng/L, respectively. PFHxS and PFNA were detected at concentrations of 444 and 143 ng/L, respectively. PFBS was not detected. The SCR indicated that further investigation was recommended for this area.

- AOPC 08: Glycol Treatment Plant – Total PFAS concentration in groundwater at AOPC 08 was 6,139 ng/L. Total PFAS concentrations along with individual constituents detected were indicative of a local release. The PFAS mixtures observed exhibit different geochemical fingerprints than those observed at AOPC 03, 04, 05, 06, and 11. Records review did not identify AFFF related activities in this area. Based on the soil and groundwater data, a source location cannot be determined. The absence of detectable PFOS concentrations in AOPC 08 groundwater is inconsistent with the PFAS mixture observed at AOPC 03 and it is therefore unlikely that AOPC 08 PFAS concentrations reflects transport from AOPC 03. The SCR indicated that further investigation was recommended for this area.

- AOPC 09/AOPC 10: Excelaire/Modern Aviation (formerly known as Sheltair) – Groundwater PFAS constituents were consistent with background, and the SCR reported that concentrations were not indicative of local release.

- AOPC 11: Hertz/Avis/Budget – Records and field observations indicate historical and current use of surfactants and other automotive related substances. Highest total PFAS concentration in groundwater at AOPC 11 was 1,213 ng/L. Total PFAS concentrations along with individual constituents detected were indicative of a local release. The PFAS mixtures observed exhibit different geochemical fingerprints than those observed at AOPC 03, 04, 05, 06, and 08. Records review did not identify AFFF related activities in this area. Based on the soil and groundwater data, a source location could not be determined. In groundwater at GWG 11-2, PFOS and PFOA were detected at

concentrations of 590 and 37.2 ng/L, respectively. PFHxS and PFNA were detected at concentrations of 9.27 and 7.18 ng/L, respectively. PFBS was not detected. The SCR indicated that further investigation was recommended for this area (Arcadis 2022).

The SCR also documented conditions in groundwater upgradient of the airport at well MW-01, thought to be regional background; PFOS, PFOA, PFHxS, PFNA, and PFBS were detected at concentrations of 5.71, 5.91, 4.46, 0.25, and 1.51 ng/L, respectively (Arcadis 2022). These data indicate that the Long Island MacArthur Airport has had multiple releases of PFAS to environmental media over the years of its operation. AOPCs 03, 06, 07, and 12 are situated such that a release in those areas could, under normal groundwater flow conditions, migrate towards the Ronkonkoma AASF #1. Of those, AOPC 03 and 06 had the highest concentrations of PFAS. Groundwater grab sample locations GWG 12-1 and GWG 6-1 are within close proximity to the Ronkonkoma AASF #1 and concentrations will be compared to site conditions in subsequent sections of this report.

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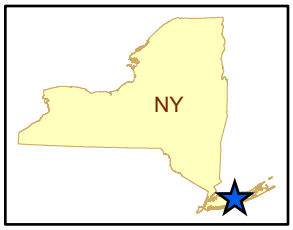
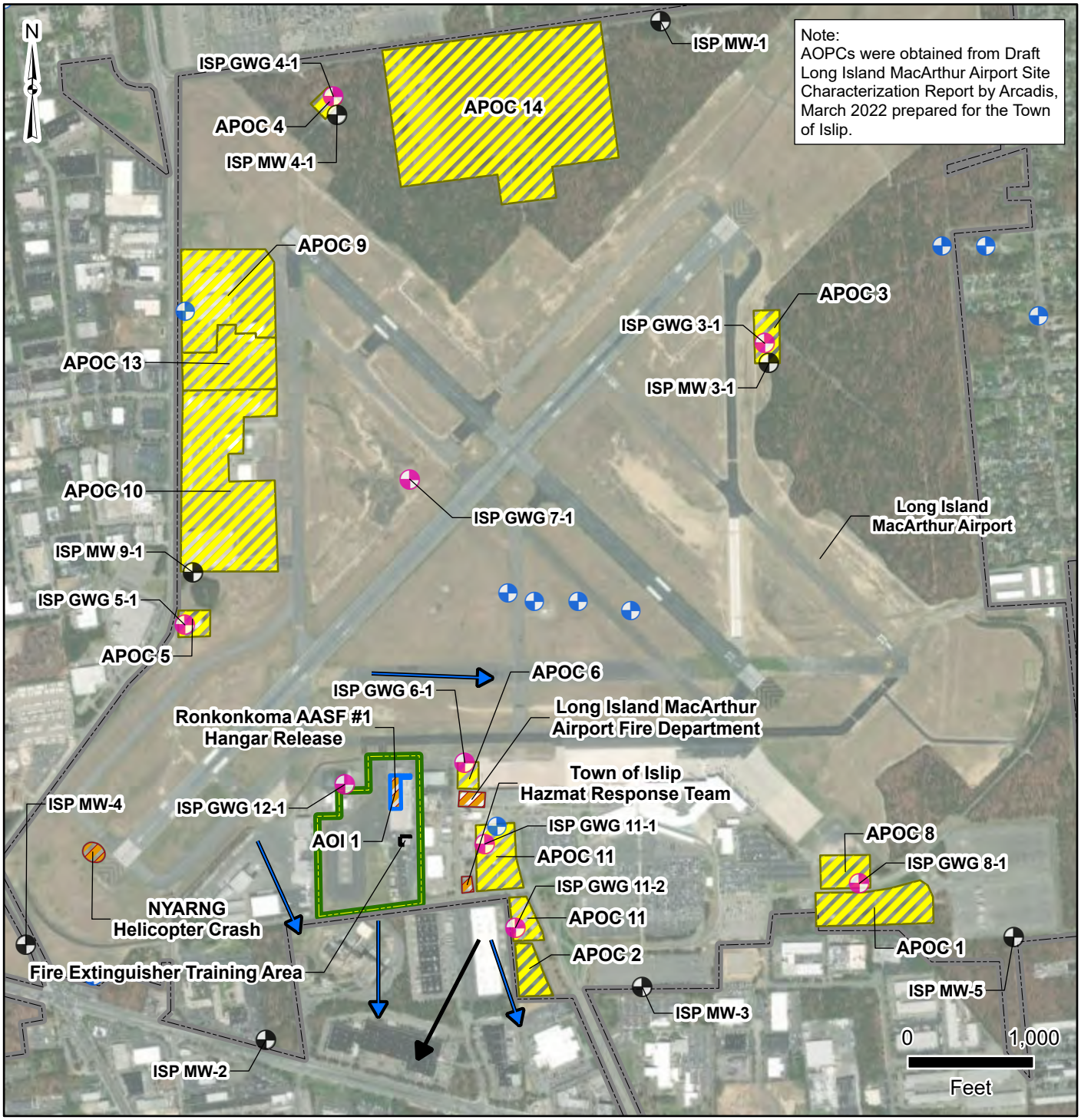
Army National Guard Site Inspections
Site Inspection Report
Ronkonkoma AASF #1, New York

Figure 3-1
Areas of Interest





Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Inactive USGS Monitoring Well
- Airport Groundwater Grab Sample
- Aiport Monitoring Well

Hydrology/Hydrogeology
- Inferred Sheet Flow Direction
- Groundwater Flow Direction

Data Sources:
ESRI 2022
AECOM 2020

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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4. PROJECT DATA QUALITY OBJECTIVES

As identified during the data quality objective (DQO) process and outlined in the SI Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) Addendum (EA Engineering, Science, and Technology, Inc., PBC [EA] 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. ARNG determines if further investigation is warranted at the AOI, if 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 AOIs.

4.1 PROBLEM STATEMENT

ARNG will recommend AOIs for remedial investigation (RI) if site-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 for the SI include the following:

- The PA Report for the Ronkonkoma AASF #1 (AECOM 2020)
- Long Island MacArthur Airport 2022 Final SCR (Arcadis 2022)
- Groundwater and soil sample data collected as part of this SI in accordance with the site specific UFP–QAPP Addendum (EA 2021a)
- Field data collected including groundwater elevation and water quality parameters measured at the time of sampling.

4.3 STUDY BOUNDARIES

The scope of the SI was bounded horizontally by the property limits of the Facility (**Figure 2-2**). Off-site sampling was not included in the scope of this SI. If future off-site sampling is required, the proper stakeholders will be notified, and necessary rights of entry will be obtained by ARNG with property owner(s). The scope of the SI was vertically bounded as follows: groundwater (maximum 47-52 ft bgs) and soil from direct-push technology (DPT) borings (maximum 47-48 ft bgs).

4.4 ANALYTICAL APPROACH

Samples were analyzed by Eurofins Lancaster Laboratories Environmental, Inc., accredited under the DoD Environmental Laboratory Accreditation Program (ELAP); Accreditation Number (No.) 1.01, and the National Environmental Laboratory Accreditation Program (NELAP); Certificate No. 64082. PFAS data underwent 100% Stage 2B validation in accordance with the DoD General Data Validation Guidelines (2019a) and DoD Data Validation Guidelines Module 3: Data Validation Procedure of Per- and Polyfluoroalkyl Substances Analysis by

Quality Systems Manual (QSM) Table B-15 (2020). PFAS data were compared to applicable SLs within this document and decision rules as defined in the UFP-QAPP Addendum (EA 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, 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 UFP-QAPP Addendum (EA 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 was implemented in accordance with the following approved documents:

- *Final Preliminary Assessment Report, Ronkonkoma Army Aviation Support Facility #1*, dated August 2020 (AECOM 2020)

- *Final Programmatic Uniform Federal Policy-Quality Assurance Project Plan, Site Inspections for Per- and Polyfluoroalkyl Substances Impacted Sites, ARNG Installations, Nationwide*, dated December 2020 (EA 2020a)

- *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Ronkonkoma Army Aviation Support Facility #1, New York,* dated October 2021 (EA 2021a)

- *Programmatic Accident Prevention Plan, Revision 1, Site Inspections for Per- and Polyfluoroalkyl Substances Impacted Sites, ARNG Installations, Nationwide*, dated November 2020 (EA 2020b)

- *Final Accident Prevention Plan / Site Safety and Health Plan Addendum, Army Aviation Support Facility #1, Ronkonkoma, New York, Revision 1*, dated October 2021 (EA 2021b).

The SI field activities were conducted from 15 to 19 November 2021 and consisted of DPT boring and soil sample collection, temporary monitoring well installation, and grab groundwater sample collection. Field activities were conducted in accordance with the UFP-QAPP Addendum (EA 2021a), except as noted in **Section 5.9**.

The following samples were collected during the SI and analyzed for a subset of 24 compounds via liquid chromatography/tandem mass spectrometry (LC/MS/MS) compliant with QSM Version 5.3 Table B-15 to fulfill the project DQOs:

- Twenty-seven (27) soil samples from nine locations (soil borings locations)
- Nine (9) grab groundwater samples from nine temporary well locations
- Sixteen (16) various 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 medium. 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**. 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 of these activities are presented below.

5.1.1 Technical Project Planning

The U.S. Army of Corps of Engineers (USACE) TPP Process, Engineer Manual (EM) 200-1-2 (Department of the Army 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 13 August 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, NYARNG, USACE, NYSDEC, and New York State Department of Health (NYSDOH) representatives familiar with the facility, the regulations, and the community. 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 UFP-QAPP Addendum (EA 2021a).

A TPP Meeting 3 was held 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

EA contacted the New York Onecall 811 to notify them of intrusive work at the Facility. EA contracted Xray Locating Service, Inc. of Lindenhurst, New York, a private utility location service, to perform utility clearance at the Facility. Utility clearance was performed at each of the proposed boring locations on 15 November 2021 with input from the EA field team. General locating services, ground-penetrating radar, radio-frequency line locating, and magnetometers were used to complete the clearance. Additionally, the first 5 ft of each boring were pre-cleared by EA's drilling subcontractor, Aquifer Drilling and Testing, A Cascade Company of Mineola, New York, using a hand auger to verify utility clearance in shallow subsurface where utilities would typically be encountered.

5.1.3 Source Water and PFAS Sampling Equipment Acceptability

A sample from a deionization water source at the EA Ecotoxicological Laboratory was collected on 31 March 2021, prior to mobilization, and analyzed for PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15. There were no detections of target compounds.

Materials that were used within the sampling zone were confirmed as acceptable for use in the PFAS sampling environment. The checklist of acceptable materials for use in the PFAS sampling

environment was provided in the Standard Operating Procedures appendix to the Programmatic UFP-QAPP (EA 2020a).

5.2 SOIL BORINGS AND SOIL SAMPLING

Soil boring locations were selected using a variety of factors given known potential migration pathways and to conservatively account for potential unknown pathways or releases. Six boundary locations were selected to assess potential migration entering and leaving the facility. The remaining three locations were placed to the east and south of the AOI to characterize the potential source area. Boring locations to the west and south of the hangar and apron were specifically selected to account for surface drainage directed towards observed stormwater drainage features along the downgradient portions of the facility boundary

Soil samples were collected via DPT drilling methods in accordance with Standard Operating Procedure 047 *Direct-Push Technology Sampling* (EA 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 ft of the boring in compliance with utility clearance procedures. No borings were advanced exclusively by hand auger based on terminal depth.

Three discrete soil samples were collected for chemical analysis from each soil boring: one sample at the surface (0 to 2 ft bgs) and two subsurface soil samples. One subsurface soil sample was collected approximately 1 ft above the groundwater table, and one was collected at the mid-point between the surface and the groundwater table, not to exceed 15 ft bgs. The midpoint soil sample was collected from the 14 to 15 ft bgs interval at each boring. Groundwater was encountered at depths ranging from 44 to 48 ft bgs during drilling. Total boring completion depths, to accommodate temporary well installation, ranged from 48 to 52 ft bgs.

All soil sample locations are shown on **Figure 5-1**, and boring sample depths are provided in **Table 5-1**. The soil boring locations were selected based on the AOI information provided in the PA (AECOM 2020) and as agreed upon by stakeholders during the TPP and review of the UFP-QAPP Addendum (EA 2021a).

During the drilling, the soil cores were continuously logged for lithological descriptions by a field geologist using the Unified Soil Classification System. A photoionization detector was used to screen the breathing zone during boring activities as a part of personal safety requirements. Observations and measurements were recorded on sampling forms (**Appendix B2**) and in a non-treated field logbook. Depth interval, recovery thickness, photoionization detector concentrations, moisture, relative density, Munsell color, and Unified Soil Classification System texture were recorded. The boring logs are provided in **Appendix E**.

Each 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 FedEx under standard chain-of-custody procedures to the laboratory and analyzed for PFAS (LC/MS/MS compliant with QSM Version 5.3 Table B-15), total organic carbon (TOC) (USEPA Method 9060A) and pH (USEPA Method 9045D) in accordance with the UFP-QAPP Addendum (EA 2021a).

Field duplicate samples were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. Matrix spikes (MS)/matrix spike duplicates (MSDs) were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. As non-dedicated sampling equipment was used, including a hand auger for the shallow soil samples, equipment blanks (EBs) were collected at a rate of one per day per media 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 after sampling and surveying in accordance with the UFP-QAPP Addendum (EA 2021a). After removal of the casings, boreholes were filled using native soils and bentonite chips. Abandoned locations were capped with sand on the top foot to allow for vegetation regrowth and bentonite expansion. The single boring location installed in asphalt was topped with compacted cold patch.

5.3 TEMPORARY WELL INSTALLATION AND GROUNDWATER GRAB SAMPLING

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

Groundwater samples were collected using a Geotech Environmental Equipment, Inc. PFAS-Free Portable Bladder Pump CE (0.85-inch diameter) with a combined battery-powered compressor/controller using PFAS-free HDPE tubing. Samples were collected after a period of time following well installation to allow groundwater to infiltrate and recharge the temporary well intervals. The pump was dismantled, decontaminated, and the bladder replaced between each sampling location. Each sample was collected in 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 in a separate container. Samples were packaged on ice and transported via FedEx under standard chain of custody procedures to the laboratory and analyzed for PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 in accordance with the UFP-QAPP Addendum (EA 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 blank (FB) was collected in accordance with the UFP-QAPP Addendum (EA 2021a). In instances when non-dedicated sampling equipment was used, such as a bladder pump, an EB was collected per day and analyzed for the same parameters as the groundwater samples. A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6°C during shipment.

5.4 SYNOPTIC WATER LEVEL MEASUREMENTS

Groundwater levels were used to monitor site-wide groundwater elevations and assess groundwater flow. Synoptic water level elevation measurements were collected from the newly installed temporary monitoring wells during the survey, prior to well abandonment on 19 November 2021. The measurement reference point was the survey mark on the northern side of the well casing. Groundwater elevation data are provided in **Table 5-3**.

5.5 SURVEYING

The northern side of each new temporary well casing was surveyed using a Trimble R10 real-time kinematic differential global positioning system by EA's subcontractor Scalice Land Surveying P.C. of Islip, New York under supervision of a New York Professional Land Surveyor. Positions were collected in the applicable Universal Transverse Mercator zone projection with World Geodetic System 1984 datum (horizontal) and North American Vertical Datum 1988 (vertical). Surveying data were collected on 19 November 2021 and are provided in **Appendix B3**.

5.6 DUST MONITORING

In accordance with the UFP-QAPP Addendum (EA 2021a), a Community Air Monitoring Plan (CAMP) was instituted during ground disturbing activities at the Facility. The CAMP was performed in general accordance with the New York State Department of Health Generic CAMP, Attachment 1A of the New York State Department of Environmental Conservation Division of Environmental Remediation-10 Technical Guidance for Site Investigation and Remediation. A TSI 8530 Dust Trak II was used to monitor particulate levels continuously downwind of the drill rig when operating. Readings were recorded for reference every 30 minutes during drill rig operation and are included in **Appendix B2**. A background (upwind) ambient reading was also collected at least daily. The highest dust concentration observed was 0.037 milligrams per cubic meter, well below the 100 milligrams per cubic meter threshold in the CAMP for instituting dust suppression techniques. No visible dust was observed during the DPT drilling.

5.7 INVESTIGATION-DERIVED WASTE

As of the date of this report, the disposal of PFAS investigation-derived waste (IDW) is not regulated federally. PFAS IDW generated during the SI is considered non-hazardous waste and was managed in accordance with the UFP-QAPP Addendum (EA 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 was held in buckets or on polyethylene sheeting at each location until monitoring well abandonment, after which it was placed down the borehole. Liquid IDW (i.e., purge water and decontamination fluids) generated during the SI activities was drummed for later disposal. The liquid IDW drum was labeled and staged inside the southern hangar of the Facility at the direction of NYARNG.

Other solids such as spent personal protective equipment, plastic sheeting, tubing, rope, and unused monitoring well construction materials, and other general waste/trash generated during the field activities were placed in the Facility dumpster with approval of NYARNG to be disposed of at a licensed solid waste landfill.

5.8 LABORATORY ANALYTICAL METHODS

Samples were analyzed for PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 at Eurofins Lancaster Laboratories Environmental, LLC, in Lancaster, Pennsylvania, a DoD ELAP- and NELAP-certified laboratory.

Soil samples were also analyzed for TOC using USEPA Method 9060A and pH by USEPA Method 9045D. No samples were analyzed for grain size as detailed in the UFP-QAPP Addendum as the field criteria to collect that sample were not met (clay or other confining layers).

5.9 DEVIATIONS FROM UFP-QAPP ADDENDUM

Deviations from the UFP-QAPP Addendum occurred based on conditions encountered during the field investigation activities. The deviations were discussed between EA, ARNG, USACE, and NYARNG and documented in Field Change Request Form (**Appendix B4**). The one deviation from the UFP-QAPP Addendum is noted below:

- The location of soil boring/temporary monitoring well RONAASF-06 was moved approximately 50 ft north. The original location of RONAASF-06 was on the southern border of the Facility, in a landscaped island near the entrance driveway. The Facility fencing proceeds inwards near the driveway to accommodate the guard shack and, therefore, the drilling location was outside the fence line, but inside the 'Facility boundary.' To facilitate access with the drill rig and security of the monitoring well after installation, the location was moved north, inside the fence line and adjacent to the guard shack. Utility clearance was obtained at the new location. The revised location remains appropriate for downgradient/Facility boundary monitoring.

Table 5-1. Site Inspection Samples by Medium
Ronkonkoma Army Aviation Support Facility #1, New York
Site Inspection Report

Sample Identification	Sample Collection Date	Sample Depth (ft bgs)	PFAS	TOC	pH	Comments
Soil Samples						
AOI01-01-[0-2]	11/16/21	0-2	x			
AOI01-01-[14-15]	11/16/21	14-15	x			
AOI01-01-[47-48]	11/16/21	47-48	x			
RONAASF-FD-SB-01	11/16/21	-	x			Duplicate of AOI01-01-[47-48]
RONAASF-05-[0-2]	11/16/21	0-2	x			
RONAASF-05-[14-15]	11/16/21	14-15	x			
RONAASF-05-[43-44]	11/16/21	43-44	x			MS/MSD
RONAASF-04-[0-2]	11/16/21	0-2	x			
RONAASF-04-[14-15]	11/17/21	14-15	x			
RONAASF-04-[43-44]	11/17/21	43-44	x			
RONAASF-03-[0-2]	11/17/21	0-2	x			
RONAASF-03-[14-15]	11/17/21	14-15	x			
RONAASF-03-[43-44]	11/17/21	43-44	x			
RONAASF-FD-SB-02	11/17/21	–	x			Duplicate of RONAASF-03-[0-2]
RONAASF-06-[0-2]	11/17/21	0-2	x			
RONAASF-06-[14-15]	11/17/21	14-15	x			
RONAASF-06-[43-44]	11/17/21	43-44	x			
RONAASF-01-SB-[0-2]	11/18/21	0-2	x			
RONAASF-01-SB- [14-15]	11/18/21	14-15	x			
RONAASF-01-SB- [43-44]	11/18/21	43-44	x			
RONAASF-02-SB-[0-2]	11/18/21	0-2	x			
RONAASF-02-SB- [14-15]	11/18/21	14-15	x			MS/MSD
RONAASF-02-SB- [39-40]	11/18/21	39-40	x			
RONAASF-FD-SB-03	11/18/21	–	x			Duplicate of RONAASF-02-SB-[0-2]
AOI01-02-SB-[0-2]	11/18/21	0-2	x	x	x	
AOI01-02-SB-[10-15]	11/18/21	10-15	x			
AOI01-02-SB-[43-44]	11/18/21	43-44	x			
AOI01-03-SB-[0-2]	11/19/21	0-2	x			
AOI01-03-SB-[14-15]	11/19/21	14-15	x			
AOI01-03-SB-[43-44]	11/19/21	43-44	x			
Groundwater Samples						
AOI01-01-GW	11/16/21	–	x			
RONAASF-FD-GW-01	11/16/21	–	x			Duplicate of AOI01-01-GW
RONAASF-05-GW	11/17/21	–	x			MS/MSD
RONAASF-04-GW	11/17/21	–	x			
RONAASF-03-GW	11/17/21	–	x			
RONAASF-06-GW	11/18/21	–	x			
RONAASF-01-GW	11/18/21	–	x			
RONAASF-02-GW	11/18/21	–	x			
AOI01-02-GW	11/18/21	–	x			
AOI01-03-GW	11/19/21	–	x			

Sample Identification	Sample Collection Date	Sample Depth (ft bgs)	PFAS	TOC	pH	Comments
Blank Samples						
RONAASF-EB-01	11/16/21	–	x			Equipment blank
RONAASF-FRB-01	11/16/21	–	x			Field blank
RONAASF-EB-02	11/16/21	–	x			Equipment blank
RONAASF-FRB-02	11/17/21	–	x			Field blank
RONAASF-EB-03	11/17/21	–	x			Equipment blank
RONAASF-EB-04	11/17/21	–	x			Equipment blank
RONAASF-EB-05	11/18/21	–	x			Equipment blank
RONAASF-FRB-03	11/18/21	–	x			Field blank
RONAASF-EB-06	11/16/21	–	x			Equipment blank
RONAASF-FRB-04	11/19/21	–	x			Field blank
RONAASF-EB-07	11/19/21	–	x			Equipment blank
RONAASF-EB-08	11/19/21	–	x			Equipment blank

Notes:
No grain size samples were collected as clay or other confining layers were not encountered at the Facility.

Table 5-2. Soil Boring Depths and Temporary Well Screen Intervals
Ronkonkoma Army Aviation Support Facility #1, New York
Site Inspection Report

Area of Interest	Boring ID	Soil Boring Depth (ft bgs)	Temporary Well Screen Interval (ft bgs)
01	AOI01-01	52	47-52
	AOI01-02	48	43-48
	AOI01-03	48	43-48
AASF Boundary	RONAASF-01*	48	43-48
	RONAASF-02	48	43-48
	RONAASF-03	48	43-48
	RONAASF-04	48	43-48
	RONAASF-05	48	43-48
	RONAASF-06	48	43-48

*Located in an area covered by impervious material. It should be noted that concentrations of PFAS in associated soil samples may be less indicative of potential historical releases.

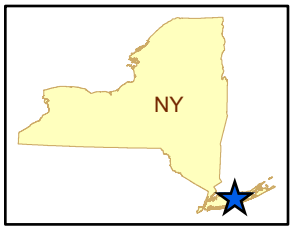
Table 5-3. Groundwater Elevation
Ronkonkoma Army Aviation Support Facility #1, New York
Site Inspection Report

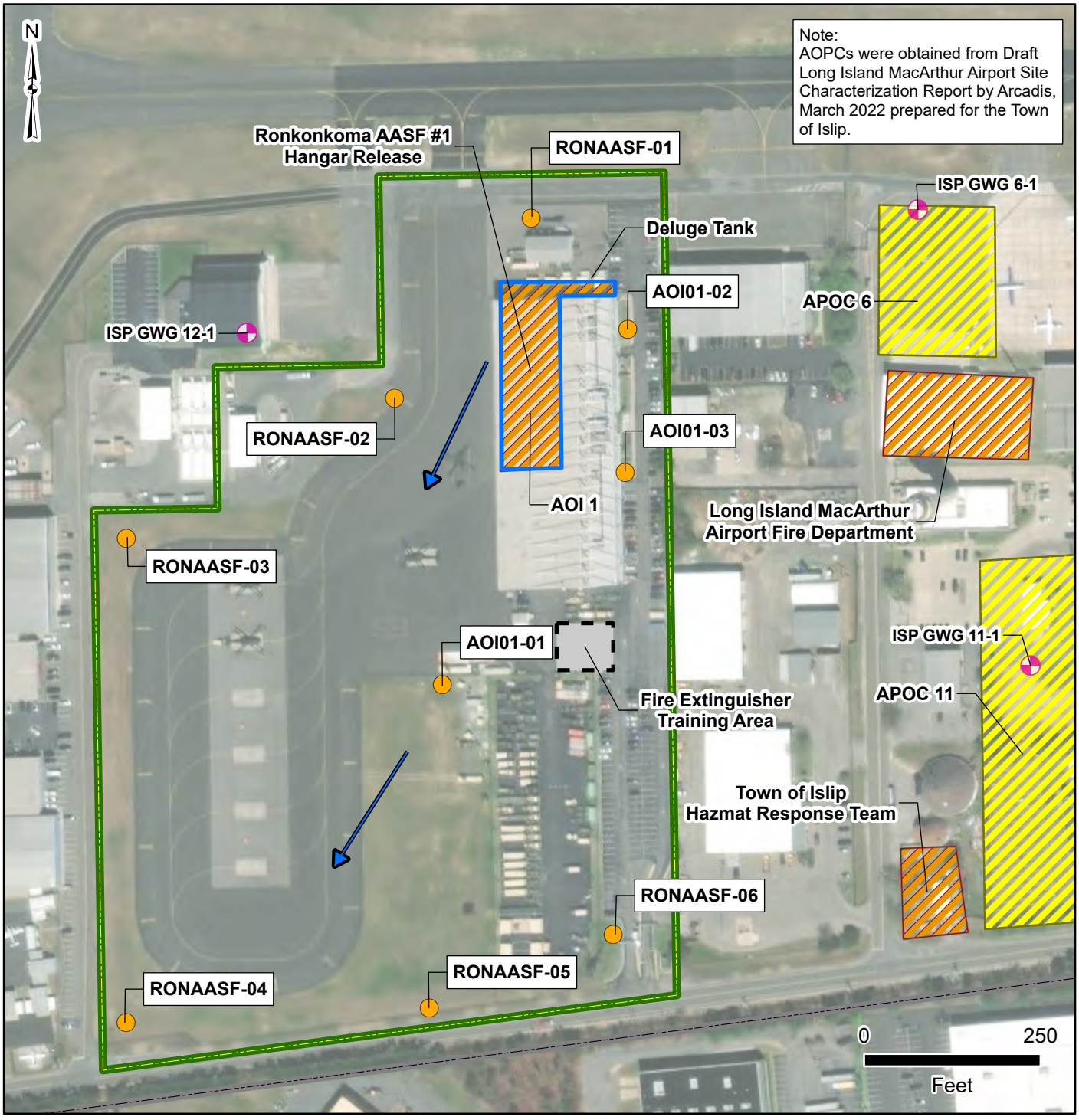
Monitoring Well Identification	Top of Casing Elevation (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)
AOI01-01	85.654	46.56	39.094
AOI01-02	83.408	43.59	39.818
AOI01-03	85.067	45.51	39.557
RONAASF-01	85.229	45.27	39.959
RONAASF-02	84.59	45.01	39.58
RONAASF-03	83.61	44.40	39.21
RONAASF-04	82.772	44.47	38.302
RONAASF-05	82.323	43.77	38.553
RONAASF-06	83.955	45.21	38.745

Notes:
amsl = Above mean sea level.
btoc = Below top of casing.

Army National Guard Site Inspections
Site Inspection Report
Ronkonkoma AASF #1, New York

Figure 5-1
Site Inspection Sample Locations





Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Sample Locations
- DPT

Well Type
- Airport Groundwater Grab Sample

Hydrology
- Inferred Sheet Flow Direction

Data Sources:
ESRI 2022
AECOM 2020

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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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 AOI and boundary areas is provided in **Sections 6.3** and **6.4**. **Table 6-2** through **Table 6-5** present results for 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 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	Residential 0 to 2 ft bgs (Soil) (µg/kg)[1]	Industrial/Commercial Composite Worker 2 to 15 ft bgs (Soil) (µg/kg)[1]	Tap Water (Groundwater) (ng/L)
PFOA	19	250	6
PFOS	13	160	4
PFBS	1,900	25,000	601
PFHxS	130	1,600	39
PFNA	19	250	6

Notes:
1. Assistant Secretary of Defense, 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. 6 July 2022.
2. Screening values for HFPO-DA were established after SI planning and execution and thus not included as an analyte. Future CERCLA phases will include HFPO-DA if warranted.

µg/kg = Microgram(s) per kilogram
ng/L = Nanogram(s) per liter

The data in the subsequent sections are compared against 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 ft bgs) and the industrial/commercial worker scenario is applied to shallow subsurface soil results (2 to 15 ft bgs). The SLs are not applied to deep subsurface soil results (greater than 15 ft bgs) because 15 ft 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. No grain size analyses were collected due to no evidence of any confining layers present. **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 of PFAS contaminants. According to the Interstate Technology Regulatory Council (ITRC), several important PFAS 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).

In the general chemistry analyses, soil pH was noted to be 6.4 and TOC was 23,600 milligrams per kilogram, indicating moderate organic-matter content in the surficial soil sample from AOI 1.

6.3 AOI 1 – RONKONKOMA AASF #1 HANGAR RELEASE AND AFFF STORAGE

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 1, which includes the Ronkonkoma AASF #1 Hangar Release and AFFF Storage. The detected compounds are summarized in **Tables 6-2** through **6-5**. Soil and groundwater results are presented on **Figures 6-1** through **6-7**.

6.3.1 AOI 1 – Soil Analytical Results

Tables 6-2 through **6-4** summarize the detected compounds in soil. **Figures 6-1** through **6-5** present the ranges of detections in soil.

Soil was sampled in three boring locations associated with potential release areas at AOI 1: AOI01-01 through AOI01-03. Soil was sampled from three intervals at each boring location: surface (0-2 ft bgs), intermediate (between 10 and 15 ft bgs), and deep/water table (between 43-48 ft bgs).

Of the five relevant compounds, three (PFOA, PFOS, and PFNA) were detected at various depths within AOI 1 at concentrations below the SLs. PFOA was detected in three borings at the shallow interval with concentrations ranging from 0.26 J to 0.85 µg/kg, one boring at the intermediate interval with a concentration of 1.30 µg/kg, and one boring at the deep interval at a concentration of 0.66 µg/kg. PFOS was detected in three borings at the shallow interval with concentrations ranging from 0.35 J to 1.60 µg/kg, two borings at the intermediate interval with concentrations ranging from 0.23 J to 0.67 µg/kg, and one boring at the deep interval with a concentration of 0.43 J µg/kg. PFNA was detected in two soil boring at the shallow interval at concentrations of 0.22 J µg/kg and 1.6 µg/kg; one boring at the intermediate interval at 0.31 J µg/kg and one boring at the deep interval at 0.31 J µg/kg. PFBS and PFHxS were not detected in any of the soil borings at any depth interval.

The highest detected concentrations of the three detected compounds all occurred at AOI01-01, though at different depth intervals. The highest concentrations of PFOA occurred at AOI01-01 between 14 and 15 ft bgs. The highest concentration of PFOS and PFNA occurred at AOI01-01 between 0 and 2 ft bgs.

6.3.2 AOI 1 – Groundwater Analytical Results

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

Groundwater samples were collected from three temporary wells at AOI 1 during the SI, AOI01-01, AOI01-02, and AOI01-03. Groundwater at each of the three locations had exceedances of the SLs for PFOA, PFOS, and PFNA. PFOA was detected in groundwater at concentrations exceeding the SL of 6 ng/L at each of the three locations; concentrations ranged from 43 to 89 ng/L. PFOS was detected in groundwater at concentrations exceeding the SL of 4 ng/L at each of the three locations; concentrations ranged from 6.8 to 85 ng/L. PFNA was detected in groundwater at concentrations exceeding the SL of 6 ng/L at each of the three locations; concentrations ranged from 10 to 11 ng/L. PFBS and PFHxS were detected at each location, but did not exceed their respective SLs.

6.3.3 AOI 1 – Conclusions

Based on the results of the SI, three relevant compounds (PFOS, PFOA, and PFNA) were detected in one or more soil samples below the applicable SLs. All five relevant compounds (PFOA, PFOS, PFHxS, PFNA, and PFBS) were detected in groundwater at AOI 1. PFOS, PFOA, and PFNA were detected in groundwater at concentrations exceeding the individual SLs in all three temporary well locations associated with AOI 1. The highest concentrations of PFOA, PFOS, and PFNA in groundwater occurred at the same location – AOI01-02 which is situated close to the upgradient property boundary.

6.4 FACILITY BOUNDARY SAMPLE LOCATIONS

This section presents the analytical results for soil and groundwater in comparison to SLs at the six sampling locations along the Facility boundary. The detected compounds are summarized in **Tables 6-2** through **6-5**. Soil and groundwater results are presented on **Figures 6-1** through **6-7.**

6.4.1 Facility Boundary Sample Locations – Soil Analytical Results

Tables 6-2 through **6-4** summarize the detected compounds in soil. **Figures 6-1** through **6-5** present the ranges of detections in soil.

Soil was sampled in the six boring locations at the Facility boundary (RONAASF-01 through RONAASF-06) from three intervals at each boring location: surface (0-2 ft bgs), intermediate (between 10 and 15 bgs), and deep/water table (between 39 and 44 ft bgs).

Of the five relevant compounds, three (PFOA, PFOS, and PFNA) were detected at various depths in the boundary borings at concentrations below the SLs. PFOA was detected in four soil borings at the shallow depth interval with concentrations ranging from 0.22 J to 0.51 J µg/kg, two borings at the intermediate interval with concentrations of 0.20 J to 0.24 J µg/kg, and one boring at the deep interval at a concentration of 0.26 J µg/kg. All PFOA detections were J-flagged estimated concentrations. PFOS was detected in five soil borings at the shallow interval with concentrations ranging from 0.39 J to 1.20 µg/kg, three borings at the intermediate

interval with concentrations ranging from 0.39 J to 3.70 µg/kg, and one boring at the deep interval at a concentration of 0.32 J µg/kg. PFNA was detected in four borings at the shallow interval with concentrations ranging from 0.22 J to 0.84 ng/L. PFNA was not detected in the intermediate and deep intervals. PFBS and PFHxS were not detected in any of the soil borings at any depth interval.

The highest detection of PFOA and PFNA occurred at RONAASF-05 between 0 and 2 ft bgs. The highest detection of PFOS occurred at RONAASF-06 between 14 and 15 ft bgs.

6.4.2 Facility Boundary Sample Locations – 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 samples were collected from six temporary well locations along the Facility's boundary (RONAASF-01 through RONAASF-06). Groundwater at each of the six locations had exceedances of the SLs for at least two of the following compounds: PFOA, PFOA, PFNA, and PFHxS. PFOA was detected in groundwater at concentrations exceeding the SL of 6 ng/L at all six locations with concentrations ranging from 7.6 J- to 130 ng/L. PFOS was also detected in groundwater at a concentration exceeding the SL of 4 ng/L at all six locations with concentrations ranging from 7.8 to 55 ng/L. PFNA was detected in groundwater at a concentration exceeding the SL of 6 ng/L at four locations (RONAASF-01, RONAASF-02, RONAASF-04 and RONAASF-05) at concentrations ranging from 7.8 to 150 ng/L. PFHxS was detected in groundwater at a concentration exceeding the SL of 39 ng/L at only one location (RONAASF-03) at a concentration of 120 ng/L. PFBS was detected in groundwater, but at concentrations below the SL of 601 ng/L.

6.4.3 Facility Boundary Sample Locations – Conclusions

Based on the results of the SI, three relevant compounds (PFOS, PFOA, and PFNA) were detected in one or more soil samples below the applicable SLs. All five relevant compounds (PFOA, PFOS, PFHxS, PFNA, and PFBS) were detected in groundwater at the Facility boundary. PFOS, PFOA, PFNA, and PFHxS were detected in groundwater at one or more Facility boundary locations at concentrations exceeding the individual SLs. The highest concentrations in groundwater were observed at RONAASF-01 and RONAASF-03, both located on the northern/upgradient Facility boundary.

Table 6-2. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil, Site Inspection Report, Ronkonkoma AASF #1

Location ID		AOI01-01		AOI01-02		AOI01-03		RONAASF-01		RONAASF-02		RONAASF-02	
Sample Name		AOI01-01-[0-2]		AOI01-02-SB-[0-2]		AOI01-03-SB-[0-2]		RONAASF-01-SB-[0-2]		RONAASF-02-SB-[0-2]		RONAASF-FD-SB-03	
Parent Sample ID												RONAASF-02-SB-[0-2]	
Sample Date		11/16/2021		11/18/2021		11/19/2021		11/18/2021		11/18/2021		11/18/2021	
Depth (ft bgs)		0-2		0-2		0-2		0-2		0-2		0-2	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)													
Perfluorobutanesulfonic acid (PFBS)	1900	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	130	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	19	1.6		0.22	J	ND	U	ND	U	0.22	J	ND	U
Perfluorooctanesulfonic acid (PFOS)	13	1.6		0.35	J	0.63	J	0.63	J	1.2		1.2	
Perfluorooctanoic acid (PFOA)	19	0.85		0.26	J	0.38	J	0.22	J	0.24	J	0.23	J

Notes:

1.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.

2. The Screening Levels for soil are based on a residential scenario for incidental ingestion of contaminated soil.

Values exceeding the Screening Level are shaded gray.

µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.

Table 6-2. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	RONAASF-03		RONAASF-03		RONAASF-04		RONAASF-05		RONAASF-06	
	Sample Name	RONAASF-03-[0-2]		RONAASF-FD-SB-02		RONAASF-04-[0-2]		RONAASF-05-[0-2]		RONAASF-06-[0-2]	
	Parent Sample ID			RONAASF-03-[0-2]							
	Sample Date	11/17/2021		11/17/2021		11/16/2021		11/16/2021		11/17/2021	
	Depth (ft bgs)	0-2		0-2		0-2		0-2		0-2	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg											
Perfluorobutanesulfonic acid (PFBS)	1900	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	130	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	19	ND	U	0.31	J	0.31	J	0.84		ND	U
Perfluorooctanesulfonic acid (PFOS)	13	0.41	J	0.36	J	0.39	J	0.53	J	0.54	J
Perfluorooctanoic acid (PFOA)	19	ND	U	ND	U	0.3	J	0.51	J	ND	U

Notes:

1.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.

2. The Screening Levels for soil are based on a residential scenario for incidental ingestion of contaminated soil.

Values exceeding the Screening Level are shaded gray.

µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.

Table 6-3. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	AOI01-01		AOI01-02		AOI01-03		RONAASF-01		RONAASF-02	
	Sample Name	AOI01-01-[14-15]		AOI01-02-SB-[10-15]		AOI01-03-SB-[14-15]		RONAASF-01-SB-[14-15]		RONAASF-02-SB-[14-15]	
	Parent Sample ID										
	Sample Date	11/16/2021		11/18/2021		11/19/2021		11/18/2021		11/18/2021	
	Depth (ft bgs)	14-15		10-15		14-15		14-15		14-15	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)											
Perfluorobutanesulfonic acid (PFBS)	25000	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	1600	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	250	0.31	J	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	160	0.67		0.23	J	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	250	1.3		ND	U	ND	U	0.24	J	ND	U

Notes:

1.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.

2. The Screening Levels for soil are based on incidental ingestion of soil in a industrial/commercial worker scenario.

Values exceeding the Screening Level are shaded gray.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.

Table 6-3. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	RONAASF-03		RONAASF-04		RONAASF-05		RONAASF-06	
	Sample Name	RONAASF-03-[14-15]		RONAASF-04-[14-15]		RONAASF-05-[14-15]		RONAASF-06-[14-15]	
	Parent Sample ID								
	Sample Date	11/17/2021		11/17/2021		11/16/2021		11/17/2021	
	Depth (ft bgs)	14-15		14-15		14-15		14-15	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)									
Perfluorobutanesulfonic acid (PFBS)	25000	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	1600	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	250	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	160	0.39	J	ND	U	0.43	J	3.7	
Perfluorooctanoic acid (PFOA)	250	ND	U	ND	U	ND	U	0.2	J

Notes:

1.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.

2. The Screening Levels for soil are based on incidental ingestion of soil in a industrial/commercial worker scenario.

Values exceeding the Screening Level are shaded gray.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.

Table 6-4. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Deep Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

Location ID	AOI01-01		AOI01-01		AOI01-02		AOI01-03		RONAASF-01	
Sample Name	AOI01-01-[47-48]		RonAASF-FD-SB-01		AOI01-02-SB-[43-44]		AOI01-03-SB-[43-44]		RONAASF-01-SB-[43-44]	
Parent Sample ID			AOI01-01-[47-48]							
Sample Date	11/16/2021		11/16/2021		11/18/2021		11/19/2021		11/18/2021	
Depth (ft bgs)	47-48		47-48		43-44		43-44		43-44	
Analyte	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)										
Perfluorobutanesulfonic acid (PFBS)	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	0.31	J	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	0.43	J	ND	U	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	0.66		0.3	J	ND	U	ND	U	0.26	J

Notes:
1. No Screening Levels were applied due to sample depths.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.

Table 6-4. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Deep Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

Location ID	RONAASF-02		RONAASF-03		RONAASF-04		RONAASF-05		RONAASF-06	
Sample Name	RONAASF-02-SB-[39-40]		RONAASF-03-[43-44]		RONAASF-04-[43-44]		RONAASF-05-[43-44]		RONAASF-06-SB-43-44	
Parent Sample ID										
Sample Date	11/18/2021		11/17/2021		11/17/2021		11/16/2021		11/17/2021	
Depth (ft bgs)	39-40		43-44		43-44		43-44		43-44	
Analyte	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)										
Perfluorobutanesulfonic acid (PFBS)	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	ND	U	0.32	J	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	ND	U	ND	U	ND	U	ND	U	ND	U

Notes:
1. No Screening Levels were applied due to sample depths.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.

Table 6-5. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	AOI01-01		AOI01-01		AOI01-02		AOI01-03		RONAASF-01	
	Sample Name	AOI01-01-GW		RonAASF-FD-GW-01		AOI-01-02-GW		AOI01-03-GW		RONAASF-01-GW	
	Parent Sample ID			AOI01-01-GW							
	Sample Date	11/16/2021		11/16/2021		11/18/2021		11/19/2021		11/18/2021	
Analyte	**Screening Level[1]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (ng/L)											
Perfluorobutanesulfonic acid (PFBS)	601	1.7		1.6	J	1.6	J	4.9		1.2	J
Perfluorohexanesulfonic acid (PFHxS)	39	12		12		16		16		2.9	
Perfluorononanoic acid (PFNA)	6	11		11		11		10		150	
Perfluorooctanesulfonic acid (PFOS)	4	6.8		6.9		85		26		31	
Perfluorooctanoic acid (PFOA)	6	76		76		89		43		130	

Notes:

1.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.

Values exceeding the Screening Level are shaded gray.

J = Estimated concentration.

J- = Estimated concentration, biased low.

ND = Analyte not detected above the LOD.

ng/L = Nanogram(s) per liter.

Qual = Qualifier.

Table 6-5. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	RONAASF-02		RONAASF-03		RONAASF-04		RONAASF-05		RONAASF-06	
	Sample Name	RONAASF-02-GW		RONAASF-03-GW		RONAASF-04-GW		RONAASF-05-GW		RONAASF-06-GW	
	Parent Sample ID										
	Sample Date	11/18/2021		11/17/2021		11/17/2021		11/17/2021		11/18/2021	
Analyte	**Screening Level[1]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (ng/L)											
Perfluorobutanesulfonic acid (PFBS)	601	1	J	4.8		1	J	1.1	J	1.2	J-
Perfluorohexanesulfonic acid (PFHxS)	39	20		120		7		11		5.7	J-
Perfluorononanoic acid (PFNA)	6	7.8		1.2	J	21		16		3.4	
Perfluorooctanesulfonic acid (PFOS)	4	7.8		55		8.7		21		9.8	J-
Perfluorooctanoic acid (PFOA)	6	35		16		16		50		7.6	J-

Notes:

1.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.

Values exceeding the Screening Level are shaded gray.

J = Estimated concentration.

J- = Estimated concentration, biased low.

ND = Analyte not detected above the LOD.

ng/L = Nanogram(s) per liter.

Qual = Qualifier.

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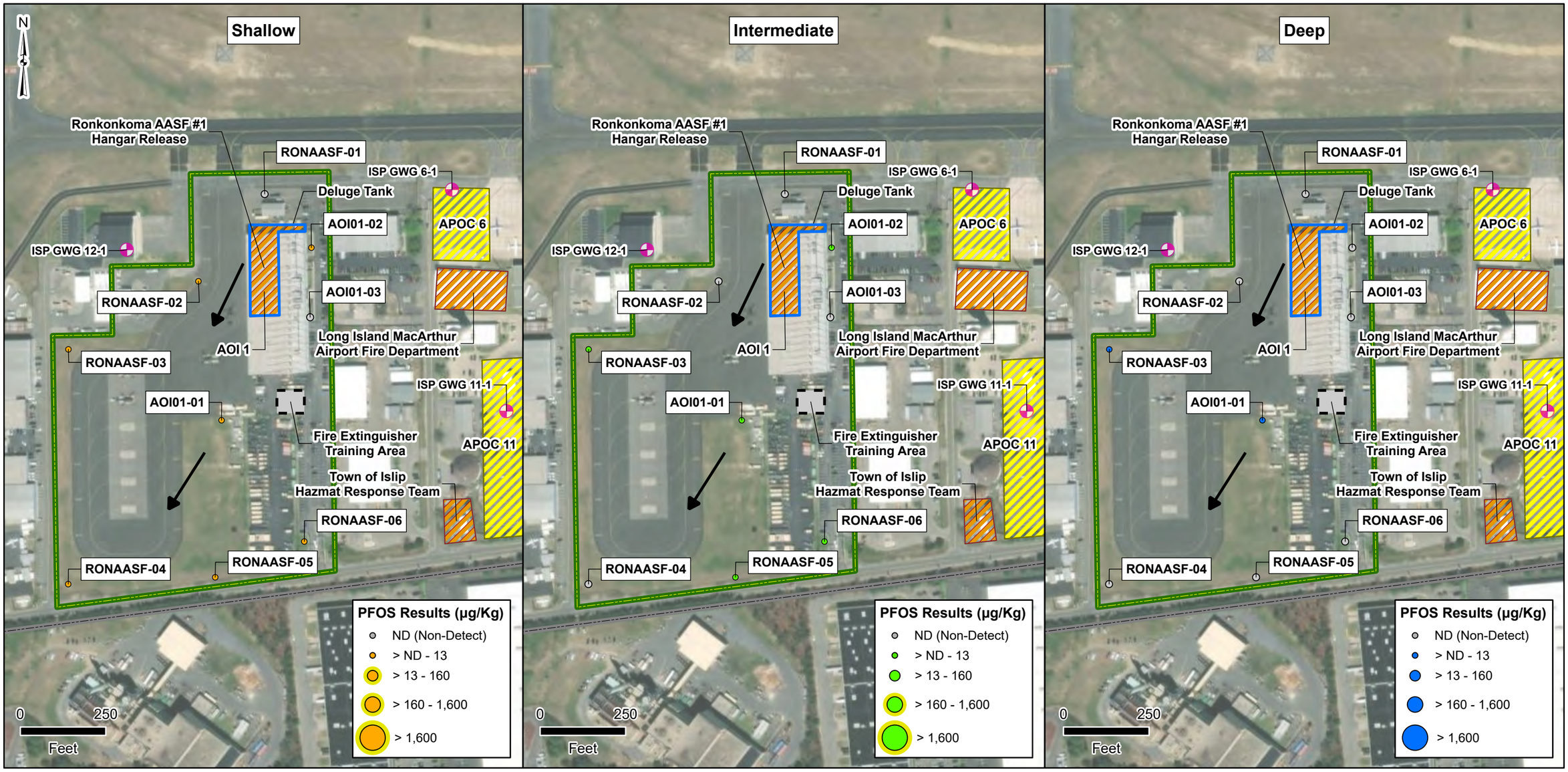
Figure 6-1
AOI 1
PFOS Detections in Soil



Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Airport Groundwater Grab Sample

Hydrogeology
- Groundwater Flow Direction

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

AOPCs were obtained from Draft Long Island MacArthur Airport Site Characterization Report by Arcadis, March 2022 prepared for the Town of Islip.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....December 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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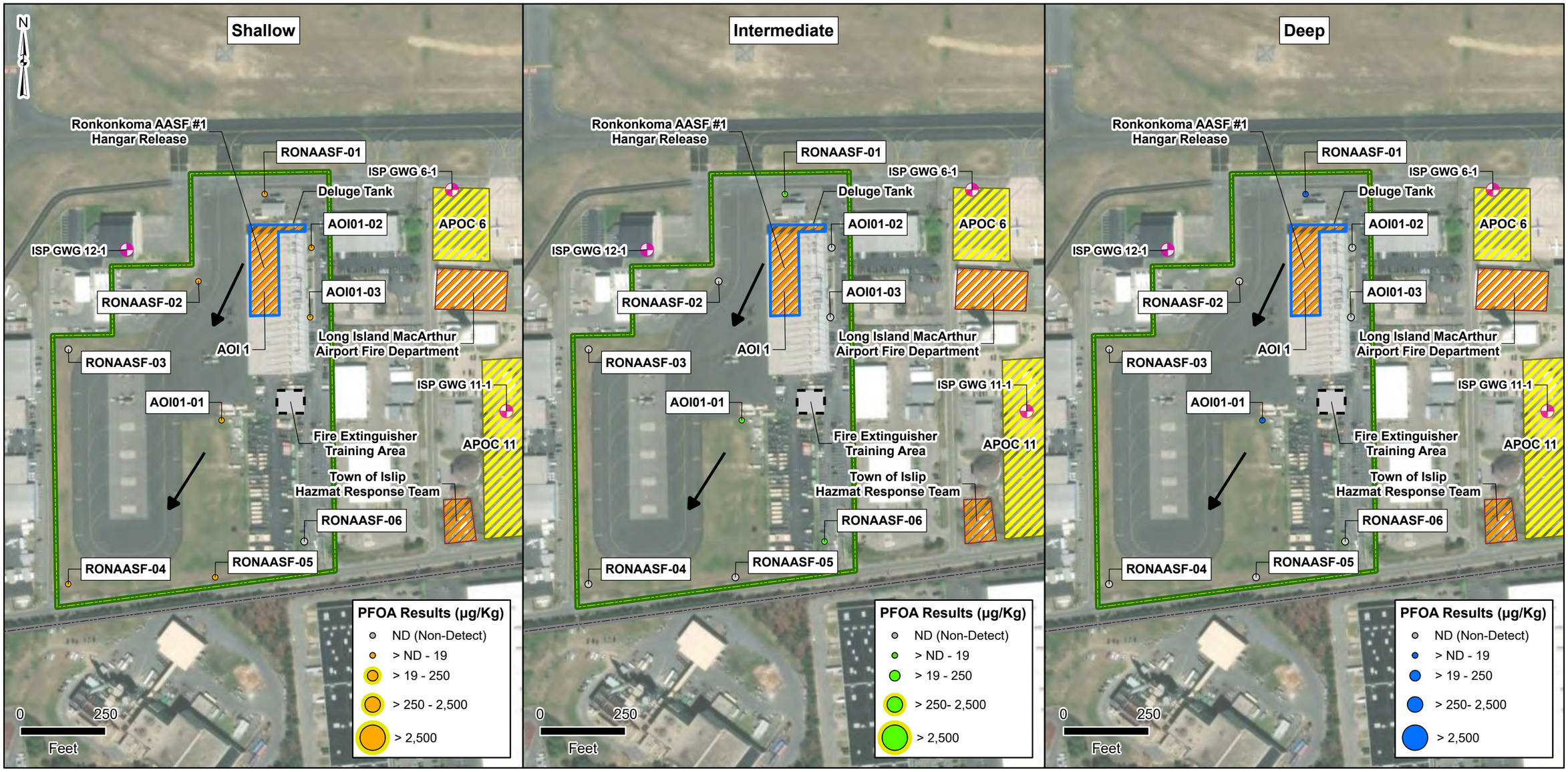
Figure 6-2
AOI 1
PFOA Detections in Soil



Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Airport Groundwater Grab Sample

Hydrogeology
- Groundwater Flow Direction

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

AOPCs were obtained from Draft Long Island MacArthur Airport Site Characterization Report by Arcadis, March 2022 prepared for the Town of Islip.

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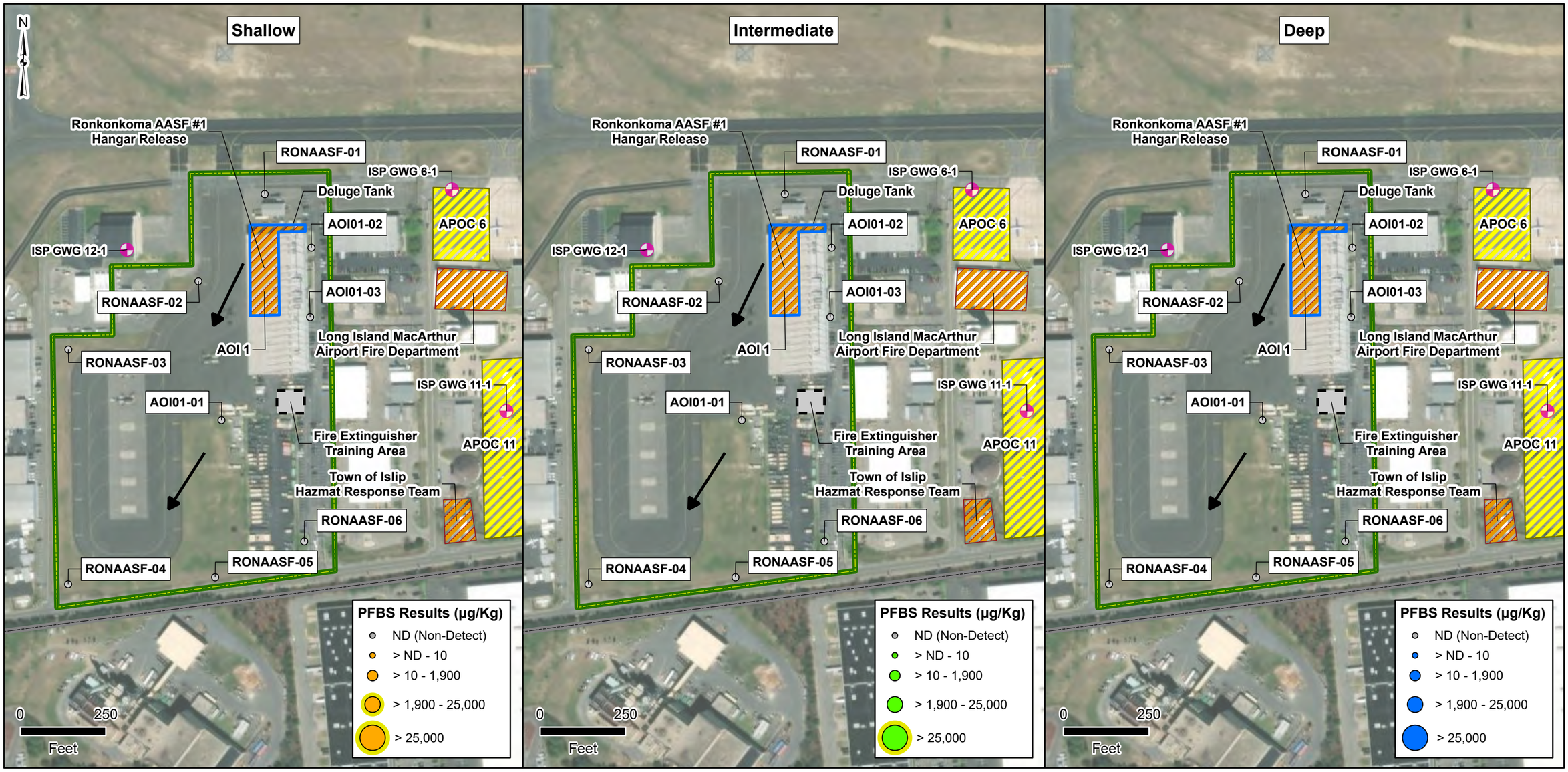
Ronkonkoma AASF #1, New York

Figure 6-3
AOI 1
PFBS Detections in Soil



Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Airport Groundwater Grab Sample

Hydrogeology
- Groundwater Flow Direction

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

AOPCs were obtained from Draft Long Island MacArthur Airport Site Characterization Report by Arcadis, March 2022 prepared for the Town of Islip.

Data Sources:
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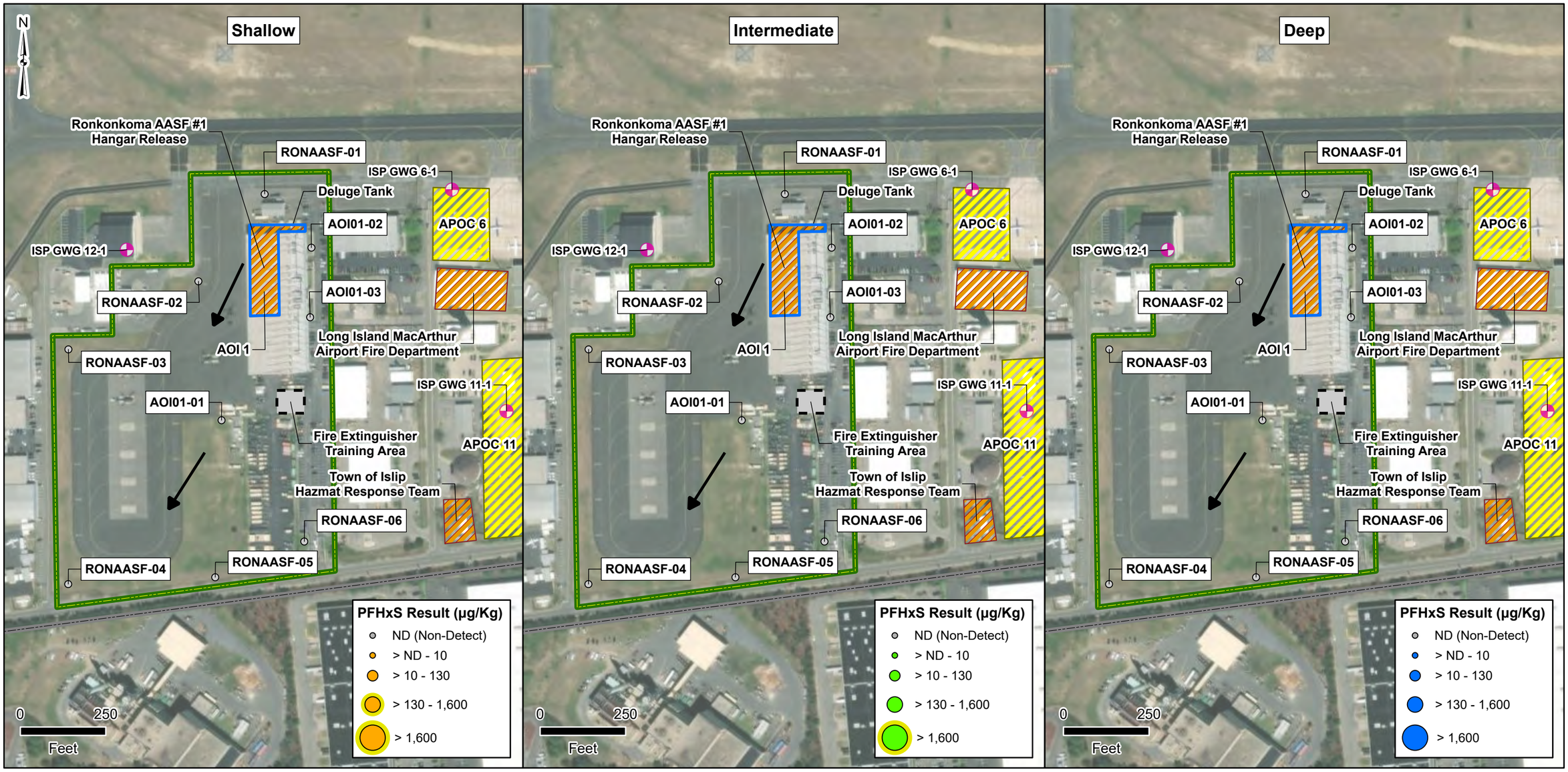
Ronkonkoma AASF #1, New York

Figure 6-4
AOI 1
PFHxS Detections in Soil



Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Airport Groundwater Grab Sample

Hydrogeology
- Groundwater Flow Direction

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

AOPCs were obtained from Draft Long Island MacArthur Airport Site Characterization Report by Arcadis, March 2022 prepared for the Town of Islip.

Data Sources:
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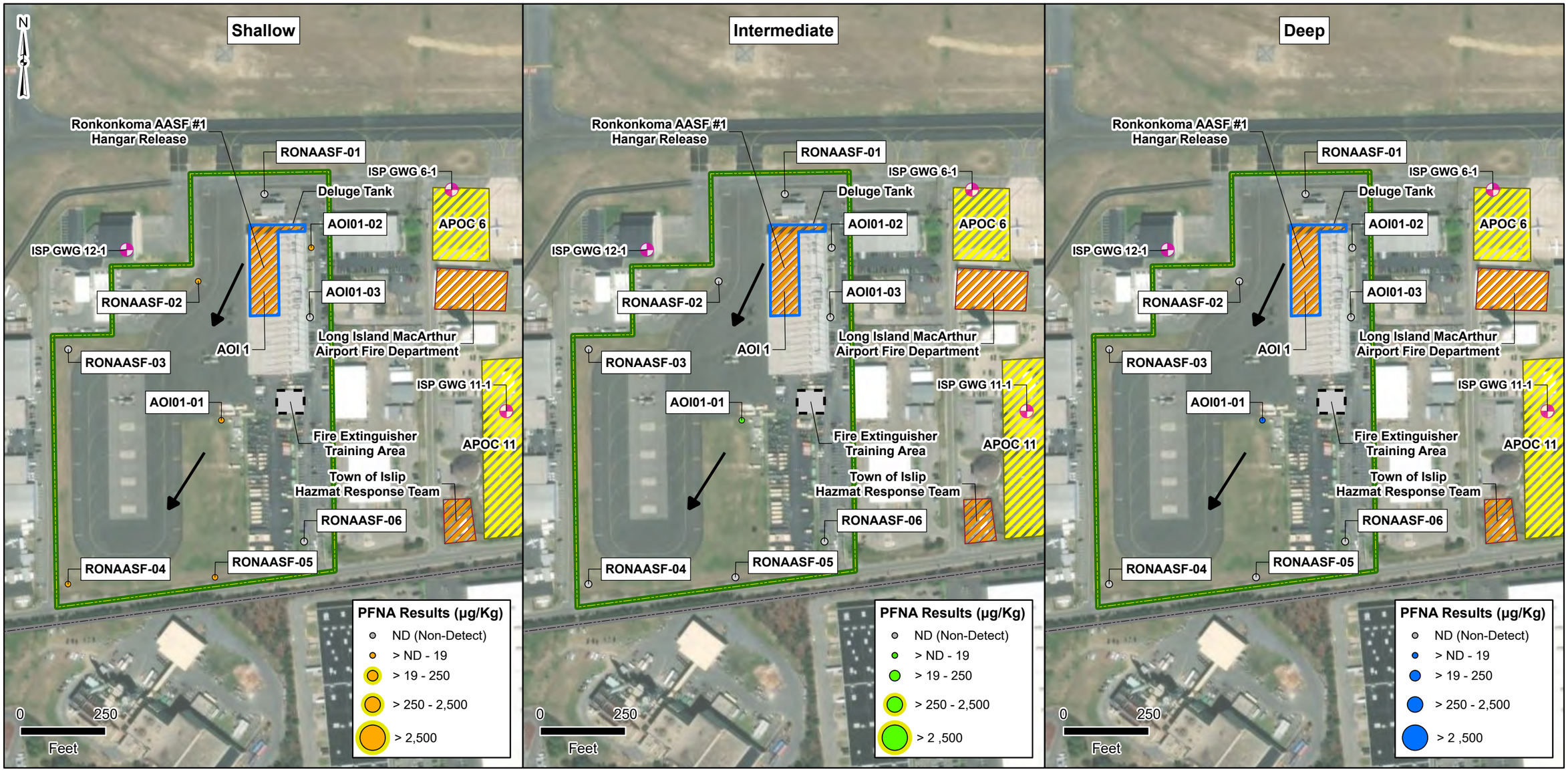
Ronkonkoma AASF #1, New York

Figure 6-5
AOI 1
PFNA Detections in Soil



Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Airport Groundwater Grab Sample

Hydrogeology
- Groundwater Flow Direction

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

AOPCs were obtained from Draft Long Island MacArthur Airport Site Characterization Report by Arcadis, March 2022 prepared for the Town of Islip.

Data Sources:
ESRI 2022
AECOM 2019

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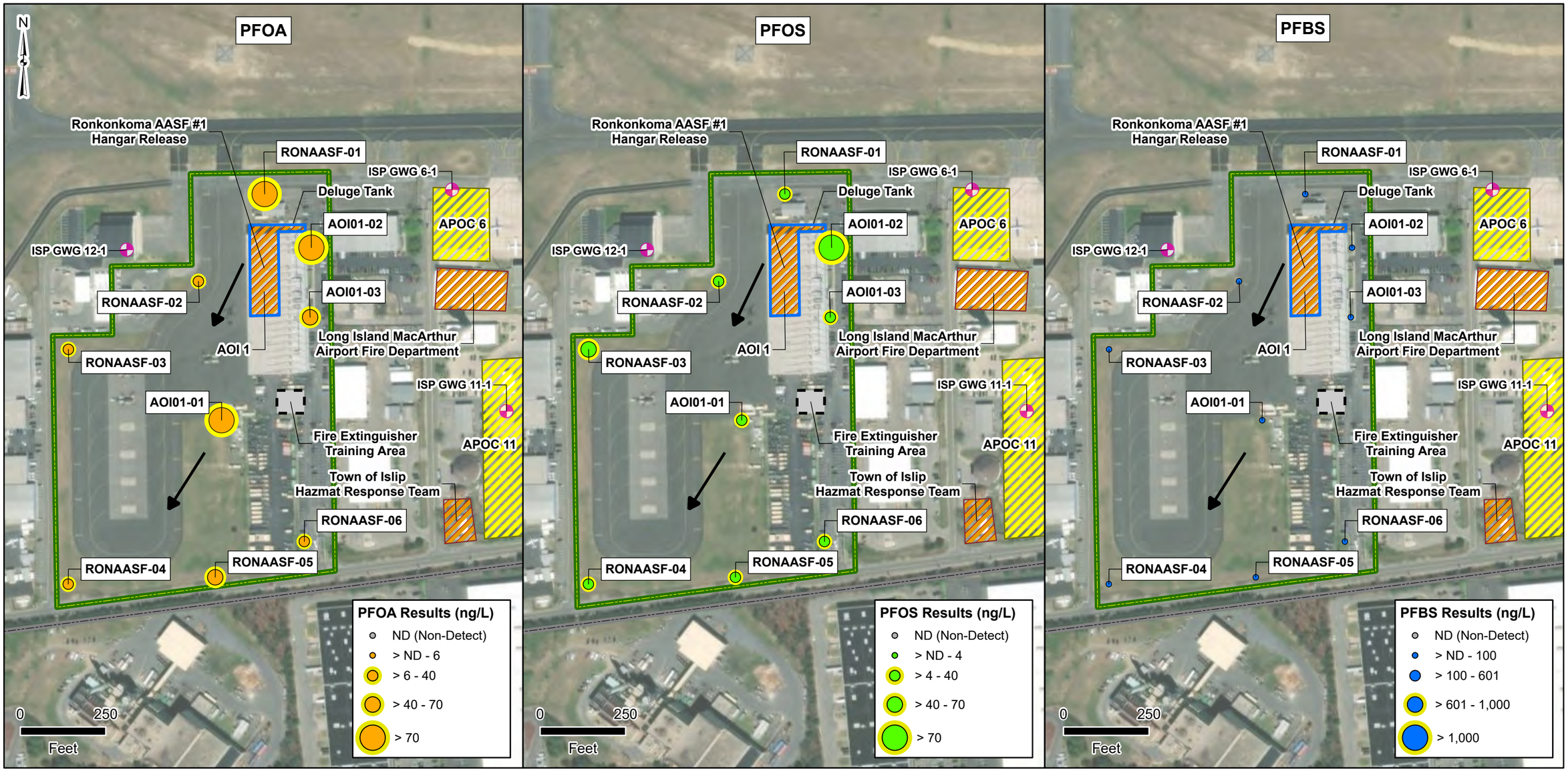
Figure 6-6
AOI 1
PFOA, PFOS and PFBS Detections in Groundwater



Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Airport Groundwater Grab Sample

Hydrogeology
- Groundwater Flow Direction

Notes:
PFOA = Perfluorooctanesulfonic acid
PFOS = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
Exceedances of the OSD SL are depicted with a yellow halo.

AOPCs were obtained from Draft Long Island MacArthur Airport Site Characterization Report by Arcadis, March 2022 prepared for the Town of Islip.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....December 2023
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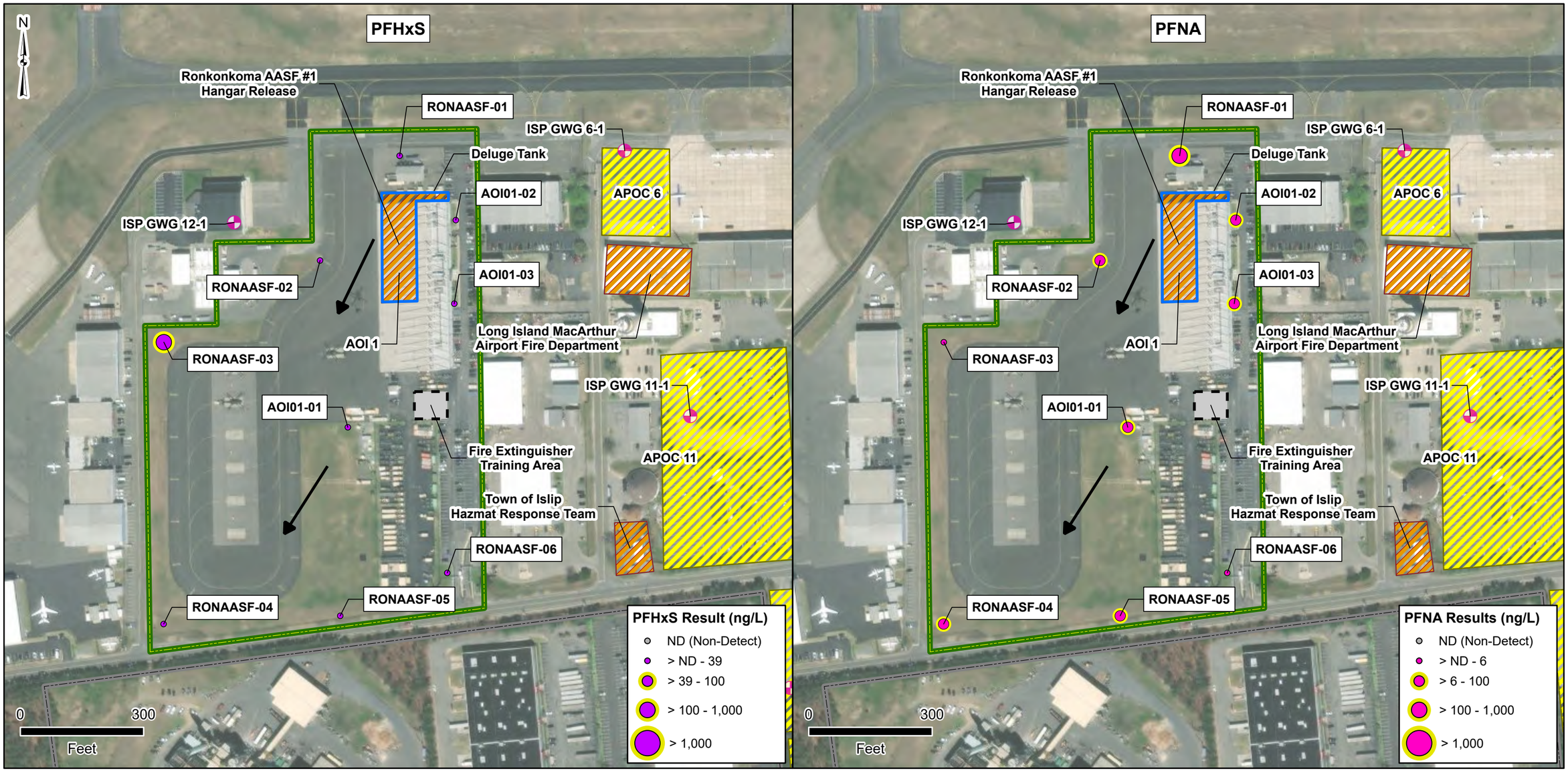
Figure 6-7
PFHxS and PFNA Detections in Groundwater



Facility Data
- Facility Boundary
- Long Island MacArthur Airport
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Well Type
- Airport Groundwater Grab Sample

Hydrogeology
- Groundwater Flow Direction

Notes:
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
Exceedances of the OSD SL are depicted with a yellow halo.

AOPCs were obtained from Draft Long Island MacArthur Airport Site Characterization Report by Arcadis, March 2022 prepared for the Town of Islip.

Data Sources:
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AECOM 2019

Date:.....December 2023
Prepared By:.....EA
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7. EXPOSURE PATHWAYS

The conceptual site model (CSM) for the AOI, 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 solely 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. SLs are presented in Section 6.1 of this report. 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
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 no identified complete 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 Facility workers (e.g., Facility staff and visiting soldiers), construction workers, trespassers, residents outside the Facility boundary, and recreational users outside of the Facility boundary. The CSM for AOI 1, revised based on the SI findings, is presented on **Figure 7-1**.

7.1 SOIL EXPOSURE PATHWAY

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

7.1.1 AOI 1 – Ronkonkoma AASF #1 Hangar Release and AFFF Storage

The presence of AFFF within the Ronkonkoma AASF #1 Hangar constitutes AOI 1 based on the possibility of a spill, leakage, or release. There has been one known instance of deluge system testing inside the hangar in which all HEF and residuals were reportedly captured and disposed of off-site. The potential release mechanism for PFAS would have been undocumented spills or leaks during filling of the two AFFF manual floor units.

AOI 1 is primarily paved with asphalt and/or thick concrete except for small, landscaped areas surrounding the AASF building (east of the hangars). The DPT borings were situated in landscaped areas.

PFOA, PFOS and PFNA were detected in surface soil at AOI 1 at concentrations below the SLs. Site workers and construction workers could contact constituents in surface soil via incidental ingestion and inhalation of dust. Therefore, the surface soil exposure pathway for site workers and construction workers are potentially complete. Additionally, PFOA, PFOS, and PFNA were detected in subsurface soil at concentrations below the SLs. Ground-disturbing activities to subsurface soil could result in construction worker exposure to detected constituents via incidental ingestion. Therefore, the exposure pathway for subsurface soil is potentially complete for the construction worker. The CSM for these AOIs is presented in **Figure 7-1**.

7.2 GROUNDWATER EXPOSURE PATHWAY

The SI results for 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 – Ronkonkoma AASF #1 Hangar Release and AFFF Storage

All of the five relevant compounds were detected in groundwater from the three temporary wells in AOI 1. In addition, PFOA, PFOS, and PFNA exceeded their SLs in one or more locations. The potential AOI 1 release could have reached groundwater through infiltration in the ground, with or without the help of precipitation and concentrated leaching structures (infiltrating catch basins). The CSM considers the exposure to both subsurface soils impacted by leaching and groundwater. Ingestion of groundwater by construction workers during construction was evaluated, but the pathway is considered incomplete because the depth to water is approximately 42 to 45 ft bgs, much deeper than normal trenching or construction activities.

Groundwater exceeding the SL for PFOA, PFOA, and PFNA is present at the downgradient property boundary (RONAASF-04 and -05). In addition, PFAS was confirmed to be in the downgradient water systems (both public and private wells) at concentrations exceeding the USEPA Health Advisory[5]. It is further noted that concentrations of PFAS compounds entering the Facility from upgradient off-Facility sources are higher than those migrating off the downgradient side of the property. Based upon the fluctuation in concentration across the Facility as reported in this SI and the findings pertaining to offsite upgradient sources (MacArthur Airport SCR discussed in **Section 3.2**), an on-site source is not indicated by the

[5] At the time of the study, the Health Advisory level was 70 ppt for PFOS and PFOA, individually or combined.

current data. However, the pathway is considered complete for off-Facility residents given the reported concentrations in groundwater leaving the Facility and the detections in the downgradient drinking water wells. The CSM is presented in **Figure 7-1**.

7.3 SURFACE WATER AND SEDIMENT EXPOSURE PATHWAY

PFAS are water soluble and can migrate readily from soil to surface water or groundwater. There are no natural surface water features within the facility therefore the surface water/sediment pathway is incomplete. **Figure 7-1.**

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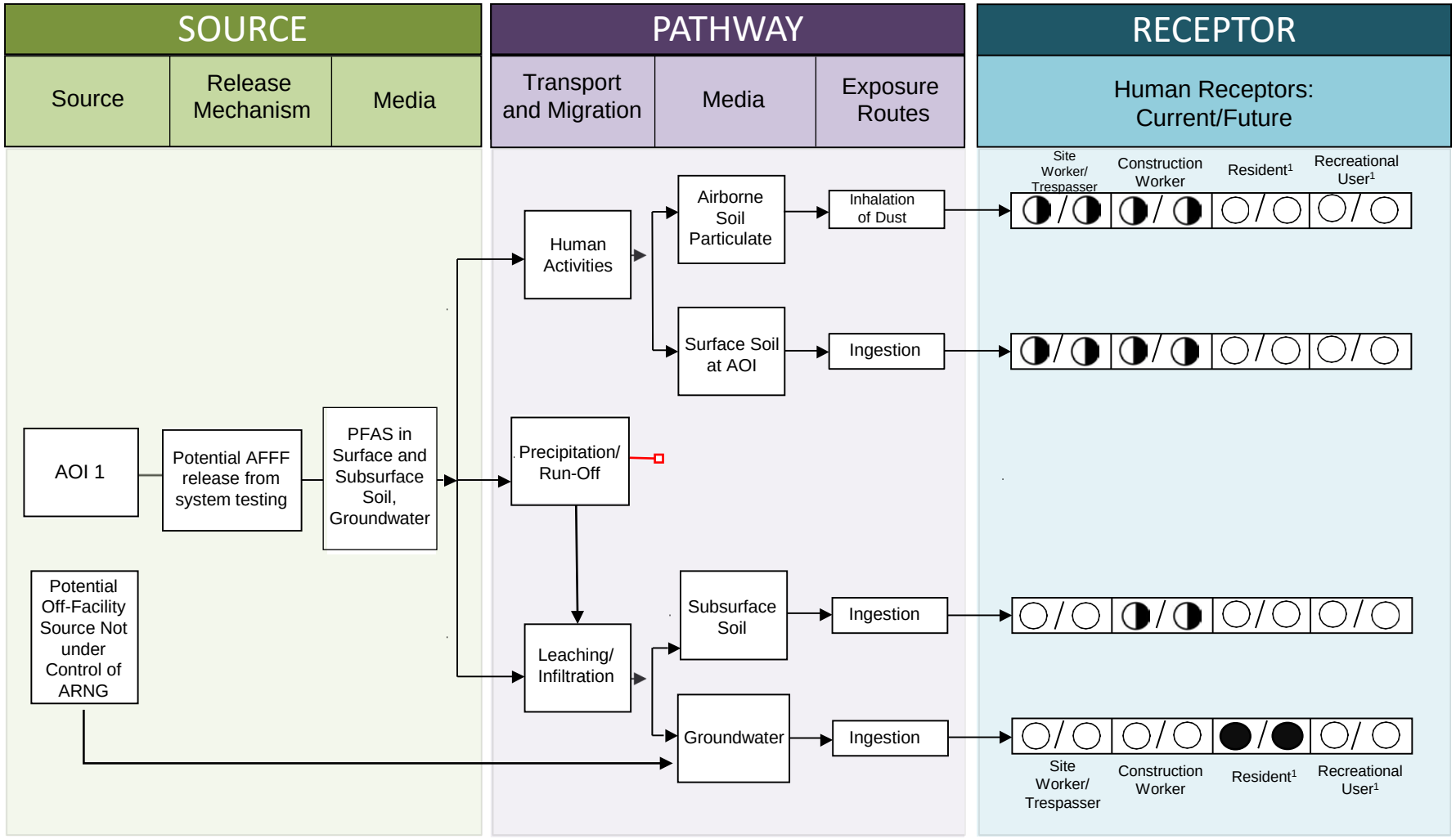

LEGEND

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

Notes:

1. The resident and recreational users refer to off-site receptors.

Figure 7-1
Conceptual Site Model
AOI 1 Ronkonkoma AASF #1

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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 SITE INSPECTION ACTIVITIES SUMMARY

The SI field activities at the Facility were conducted from 15 to 19 November 2021. The SI field activities included soil and groundwater sampling. Field activities were conducted in accordance with the UFP-QAPP Addendum (EA 2021a), except as previously noted in **Section 5.9**.

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

- Twenty-seven (27) soil samples from nine locations (soil borings locations)
- Nine (9) grab groundwater samples from nine temporary well locations
- Sixteen (16) 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 an 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 is described in **Section 7**.

8.2 OUTCOME

Based on the results of this SI, no further action by ARNG is warranted for AOI 1. This determination is made in consideration of all site history collected to date, the samples collected during this SI, and with consideration of data collected from known non-DoD adjacent releases. Sampling locations used as part of this investigation were biased towards areas considered highly likely to be associated with an onsite release. Stormwater drainage pathways and areas closest to potential release areas were targeted. All detections of OSD regulated compounds are well below associated SLs in soil collected from all intervals. There appears to be no correlation between the exceedances of PFNA, PFOS, PFHxS, and PFOA in groundwater and local releases. The highest concentrations of PFAS in groundwater observed on-site were found in the most upgradient samples collected at the facility. Concentrations were observed to consistently decrease with distance across the site, additional source area contributions were not observed in soil data nor in groundwater trends. Based on the CSM developed and revised based on the SI findings, there is potential for exposure to site/construction workers during surface and subsurface soil-disturbing activities. Additionally, there is potential for exposure to residential drinking water receptors, though the groundwater impacts are likely from off-Facility sources, not historical or current DoD activities at the Facility. Sample analytical concentrations collected during this SI were

compared against the project SLs for the relevant compounds in soil and groundwater, as described in **Table 6-1**. The following bullets summarize the SI results and findings:

- AOI 1:

  — All of the five relevant compounds (PFOS, PFOA, PFBS, PFNA, and PFHxS) were detected in groundwater in the source areas near the Facility boundary at AOI 1. PFOS, PFOA, and PFNA exceeded the SL in groundwater in all three AOI 1 temporary wells with a maximum concentration of 85, 89, and 11 ng/L, respectively. PFBS and PFHxS concentrations did not exceed the SLs. It should be noted that concentrations of PFAS compounds entering the Facility from upgradient off-Facility sources are higher than those migrating off the downgradient side of the property. Based upon the fluctuation in concentration across the Facility as reported in this SI and the findings pertaining to offsite upgradient sources (MacArthur Airport SCR discussed in Section 3.2), an on-site source is not indicated by the current data. Additionally, it should be noted that HEF, not AFFF was used/stored in the facility's deluge system. No conclusive information regarding the presence of fluorinated compounds in HEF is known; it is unlikely to result in concentrations of the relevant compounds that exceed their respective criteria based on the information available at the time of reporting including ARNG sampling at facilities where solely Jet-X HEF has been released. However, the pathway is considered complete for off-Facility residents given the reported concentrations in groundwater leaving the Facility and the detections in the downgradient drinking water wells. Based on the results of the SI (specifically higher concentrations in upgradient boundary wells and the discovery that the Facility used/stored HEF instead of the AFFF in the primary fire suppression system) and considering the Airport SCR, further evaluation of AOI 1 is not warranted.

  — PFOA, PFOS, and PFNA were detected in soil at AOI 1 at concentrations below the SLs. There were no detections of PFBS and PFHxS in soil.

- The Facility Boundary:

  — Groundwater at each of the six Facility boundary locations (RONAASF-01 through RONAASF-06) had exceedances of the SLs for at least two of the following compounds: PFOA, PFOS, PFNA, and PFHxS. PFBS was also detected in each groundwater sample but at concentrations below the SLs. The highest concentrations in groundwater were observed at RONAASF-01 and RONAASF-03, both located on the northern/upgradient Facility boundaries. This suggests potential contributions from off-Facility sources, including those documented sources in the Airport SCR. The Long Island MacArthur Airport SCR documents releases from six AOPCs, two of which are upgradient of the Facility (AOPCs 03 and 06). AOPC 06 and its groundwater sample location GWG 6-1, located east of the northern portion of the Facility, exhibited concentrations of PFOS and PFOA of 4,290 and 1,000 ng/L, respectively. Those off-site, up/cross-gradient concentrations demonstrate a plume with substantial concentrations of relevant compounds is present within the Airport

complex within the vicinity of the Facility and is entering the Ronkonkoma AASF #1 on its northeastern side.

— PFOA, PFOS and PFNA were detected 1 to 2 orders of magnitude lower than the soil SLs in samples from the six Facility boundary locations. There were no detections of PFBS and PFHxS in soil.

- Given current evidence that is supported by the SI findings, there is no indication of a DoD related release of PFAS at Ronkonkoma AASF #1. No further action by ARNG is warranted at this time.

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 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 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	Ronkonkoma AASF #1 Hangar Release and AFFF Storage	◐	●	●	No further action by ARNG

Legend:
● = Detected; exceedance of screening levels
◐ = Detected; no exceedance of screening levels
○ = Not detected

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Appendix A

Data Usability Assessment and Data Validation Reports

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DATA USABILITY ASSESSMENT

The Data Usability Assessment 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.

Data Quality Indicators (DQIs) (Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity) are important components in assessing data usability. These DQIs are evaluated in the subsequent sections. The results of the evaluation demonstrate that the data presented in this SI report are of high quality overall. Although most of the SI data are considered reliable, some degree of uncertainty can be associated with the data collected. Specific factors that may contribute to the uncertainty of the data evaluation are described below. The Data Validation Report (**Appendix A**) presents explanations for all qualified data in greater detail.

PRECISION

Precision is the degree of agreement among repeated measurements of the same characteristic on the same sample or on separate samples collected as close as possible in time and place. Field sampling precision is measured with the field duplicate relative percent differences (RPDs), and laboratory precision is measured with RPDs for laboratory duplicates, such as laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) pairs and matrix spike (MS) and matrix spike duplicate (MSD) pairs.

LCS/LCSD pairs were prepared by addition of known concentrations of each analyte to a matrix-free media known to be free of target analytes. Results for LCS/LCSD pairs met the criterion of RPD≤30 percent (%), as specified in the Uniform Federal Policy (UFP) – Quality Assurance Project Plan (QAPP) Addendum (EA 2021a), demonstrating that the analytical system was in control during sample preparation and analysis.

MS/MSD pairs were prepared, analyzed, and reported for each preparation batch for PFAS at a rate of 5%. MS/MSD results met the criterion of RPD≤30%, as specified in the UFP-QAPP Addendum (EA 2021a), demonstrating good analytical precision for the matrix being tested.

Field duplicate samples were collected at a rate of 10% to assess the overall sampling and measurement precision for this sampling effort. The field duplicate samples were within the project established precision limits presented in the UFP-QAPP Addendum (50% for solid samples, 30% for water samples) (EA 2021a) or differences were less than the average limit of quantitation (LOQ), indicating acceptable sampling and analytical precision.

No data were qualified due to issues with precision.

ACCURACY

Accuracy is a measure of confidence in a measurement. The smaller the difference between the measurement of a parameter and its "true" or expected value, the more accurate the measurement. The more precise or reproducible the result, the more reliable or accurate the result. Accuracy is measured through percent recoveries in calibration verification samples, LCS/LCSD, and MS/MSD, and through extraction internal standards (EIS).

LCS/LCSD samples were prepared by addition of known concentrations of each analyte to a matrix-free media known to be free of target analytes. LCS/LCSD samples were analyzed for each analytical batch and demonstrated that the analytical system was in control during sample preparation and analysis, with the following exceptions. Seven analytes had recoveries below acceptance criteria, in the range of 64% to 71%, in one LCS. Four detected results for affected compounds in associated groundwater sample RONAASF-06-GW were qualified "J-", while three non-detected results for affected compounds were X qualified. The project team determined these qualified results are usable for project purposes despite LCS recoveries marginally below acceptance criteria and affected non-detect results were UJ qualified.

MS/MSDs were performed on soil samples RONAASF-02-SB-[14-15'] and RONAASF-05-[43-44'] and groundwater sample RONAASF-05-GW. Analyte recoveries in MS/MSD samples demonstrated that the analytical system was in control for both soil and water.

EIS were added by the laboratory during sample extraction to measure relative responses of target analytes and used to correct for bias associated with matrix interferences and sample preparation efficiencies, injection volume variances, mass spectrometry ionization efficiencies, and other associated preparation and analytical anomalies. Several field samples displayed EIS area counts less than the lower quality control (QC) limit of 50%. One positive field sample result was associated with an EIS recovery less than the QC limit, but greater than 20%, and was qualified "J+" and five field sample results associated with EIS recoveries greater than the QC limit were qualified "J-"; these qualified results are considered usable as estimated values with a positive or negative bias, respectively. Eighteen non-detect field sample results associated with EIS recoveries less than the QC limit, but greater than 20%, were qualified UJ; these qualified results are also considered usable. The non-detect results for n-methyl perfluorooctanesulfonamidoacetic acid and n-ethyl perfluorooctanesulfonamidoacetic acid in two soil samples were associated with EIS recoveries less than 20%, and were qualified "X" by the validator, indicating that these results needed further evaluation during the data usability assessment. The project team has determined that results qualified "X" due to very low EIS recoveries are usable for project purposes and affected non-detect results were UJ qualified.

It should be noted that although PFAS is less likely to sorb to soil in comparison to other contaminants, it does sorb to organic carbon in soil. Based on the elevated turbidity in sample AOI01-02-GW, the sample was centrifuged prior to extraction. During this process, EIS (the isotopically labeled surrogates) were added to the sample prior to any centrifugation. These additions are made to ensure the EIS can accurately reflect the recoveries that you would expect for the native compounds. Centrifuging turbid water samples prior to analysis of PFAS is standard laboratory procedure and avoids artificially elevated PFAS concentrations that could

result from extracting PFAS from the whole sample. The data are usable for the intended purpose.

Calibration verifications were performed routinely to ensure that instrument responses for all calibrated analytes were within established QC criteria. All calibration verifications were within the project established precision limits presented in the UFP-QAPP Addendum (EA 2021a).

A transition ion ratio was outside the Quality Systems Manual (QSM)-specified limits for one soil result, which was qualified J. This result is usable as qualified.

REPRESENTATIVENESS

Representativeness qualitatively expresses the degree to which data accurately reflect site conditions. Factors that affect the representativeness of analytical data include appropriate sample population definitions, proper sample collection and preservation techniques, analytical holding times, use of standard analytical methods, and determination of matrix or analyte interferences.

Relating to the use of standard analytical methods, the laboratory followed the method as established in PFAS by liquid chromatography with tandem mass spectrometry (LC/MS/MS) compliant with QSM Version 5.3 Table B-15, including the specific preparation requirements (i.e., ENVI-Carb or equivalent used), mass calibration, spectra, all the ion transitions identified in Table B-15 were monitored, standards that contained both branch and linear isomers when available were used, and isotopically labeled standards were used for quantitation. The laboratory used approved standard methods in accordance with the UFP-QAPP Addendum (EA 2021a) for all analyses.

Field QC samples were collected to assess the representativeness of the data collected. Field duplicates were collected at a rate of 10% and MS/MSD samples were collected at a rate of 5%. Appropriate preservation techniques were followed by the field staff, and maximum holding times for extraction and analysis were met by the laboratory.

Instrument blanks and method blanks were prepared by the laboratory in each batch as a negative control. Instrument blanks and method blanks were non-detect for all target analytes with the following exceptions. Perfluorooctane sulfonate (PFOS) was detected in two laboratory blanks at concentrations below the limit of detection. Associated sample results were either non-detect or greater than five times the concentrations in the associated blanks, and no data were qualified.

Equipment blanks (EBs) and field blanks (FBs) were also collected for groundwater and soil samples. All FBs were non-detect for target analytes with the following exceptions. PFOS was detected in one FB and one EB at concentrations below the limit of detection. One detected sample result less than five times the concentrations in the associated blanks was U qualified.

COMPARABILITY

Comparability is the extent to which data from one study can be compared directly to either past data from the current project or data from another study. Using standardized sampling and analytical methods, units of reporting, and site selection procedures helps ensure comparability. Standard field sampling and typical laboratory protocols were used during the SI and are considered comparable to ongoing investigations.

COMPLETENESS

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount of data expected under normal conditions. The laboratory provided data meeting system QC acceptance criteria for all samples tested. Project completeness was determined by evaluating the planned versus actual quantities of data. Percent completeness per parameter is as follows:

- Per- and polyfluoroalkyl substances (PFAS) in groundwater by LC/MS/MS compliant with QSM Version 5.3 Table B-15 at 100%;
- PFAS in soil by LC/MS/MS compliant with QSM Version 5.3 Table B-15 at 100%;
- pH in soil by U.S. Environmental Protection Agency (USEPA) Method 9045D at 100%; and
- Total organic carbon (TOC) by USEPA Method 9060 at 100%.

SENSITIVITY

Sensitivity is the capability of a test method or instrument to discriminate between measurement responses representing different levels (e.g., concentrations) of a variable of interest. Examples of QC measures for determining sensitivity include laboratory fortified blanks, a detection limit study, and calibration standards at the LOQ. In order to meet the needs of the data users, project data must meet the measurement performance criteria for sensitivity and project LOQs specified in the UFP-QAPP Addendum (EA 2021a). The laboratory provided applicable calibration standards at the LOQ and reported all field sample results at the lowest possible dilution. Additionally, any analytes detected below the LOQ and above the detection limit were reported and qualified “J” as estimated values by the laboratory.

DATA USABILITY SUMMARY

Overall, the data are usable for evaluating the presence or absence of PFAS at the facility. Sufficient usable data were obtained to meet the objectives of the SI and to complete the comparison to risk-based screening levels.

Data Validation Report

Army Aviation Support Facility #1
Ronkonkoma, New York
Project # 3031200026.3000.****

Prepared for:

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2/9/2022

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Table of Contents

List of Tables

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List of Acronyms

%	percent
ARNG	Army National Guard
CCV	continuing calibration verification
COC	chain of custody
DoD	Department of Defense
EA	EA Engineering, Science, and Technology, Inc. PBC
EIS	extracted internal standard
EPA	United States Environmental Protection Agency
Eurofins	Eurofins Environment Testing America
FTS	fluorotelomer sulfonic acid
ICAL	initial calibration
ICV	initial calibration verification
ID	identification
ISC	instrument sensitivity check
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
NEtFOSAA	ethyl perfluorooctanesulfonamidoacetic acid
ng/L	nanograms per liter
NMeFOSAA	methyl perfluorooctanesulfonamidoacetic acid
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoA	perfluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFTeDA	perfluorotetradecanoic acid
QAPP	quality assurance project plan
QC	quality control
QSM	Quality Systems Manual for Environmental Laboratories

RPD	relative percent difference
UFP	Uniform Federal Policy
Wood	Wood Environment & Infrastructure, Solutions, Inc.

1.0 Introduction

EA Engineering, Science, and Technology, Inc. PBC (EA) collected 30 solid samples (including 3 field duplicates) and 22 water samples (including 1 field duplicate, 8 equipment blanks, and 4 field blanks) between 16 and 19 November 2021. EA submitted the sample to Eurofins Environment Testing America (Eurofins), located in Lancaster, Pennsylvania, where the samples were received on 18 and 22 November 2021 and assigned to job numbers 410-64055-1 and 410-64395-1. Eurofins analyzed the samples for per- and polyfluoroalkyl substances (PFAS) by liquid chromatography tandem mass spectrometry compliant with Table B 15 of the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 and/or pH by United States Environmental Protection Agency (EPA) Method 9045D. Eurofins subcontracted total organic carbon analysis by EPA Method 9060A to CT Laboratories, located in Baraboo, Wisconsin. The field sample identifications (IDs), sample matrices, collection dates, and laboratory sample IDs are presented in Table 1.

2.0 Data Validation Methodology

Wood Environment & Infrastructure Solutions, Inc. (Wood) performed DoD Stage 2B validation on 100 percent (%) of the PFAS data from the field samples. Wood did not validate the data from the other analyses. The Stage 2B validation includes review of the quality control (QC) results in the laboratory's analytical report and reported on QC summary forms with no review of the associated raw data. Data from equipment and field blanks did not undergo validation because results from these samples are only used to assess data usability for field samples. This data validation has been performed in accordance with:

- EA, 2020. Final Programmatic Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP), Site Inspection for Per- and Polyfluoroalkyl Substances Impacted Sites, Army National Guard (ARNG) Installations, Nationwide, December.
- EA, 2021. Final Site Inspection UFP-QAPP Addendum, Army Aviation Support Facility #1, Ronkonkoma, New York, October.
- DoD, 2019a. DoD QSM, Version 5.3. May.
- DoD, 2019b. General Data Validation Guidelines, Revision 1. November.
- DoD, 2020. Data Validation Guidelines Module 3: Data Validation Procedure of Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15. May.

The laboratory's certified analytical report and supporting documentation were reviewed to assess the following:

- Data package and electronic data deliverable completeness;
- Laboratory case narrative review;
- Chain of custody (COC) compliance;
- Holding time compliance;
- QC sample frequency;
- Initial calibration (ICAL), initial calibration verification (ICV), and continuing calibration verification (CCV) compliance with method specified criteria;
- Presence or absence of laboratory contamination as demonstrated by laboratory blanks;

- Accuracy and bias as demonstrated by recovery of surrogate spikes, laboratory control sample (LCS), and matrix spike (MS) samples;
- Internal standard recoveries;
- Analytical precision as relative percent difference (RPD) of analyte concentration between LCS/LCS duplicate (LCSD), laboratory duplicates, or MS/MS duplicate (MSD);
- Sampling and analytical precision as RPD of analyte concentration between primary samples and field duplicates;
- Assessment of field contamination as demonstrated by equipment and field blanks; and
- Insofar as possible, the degree of conformance to method requirements and good laboratory practices.

In general, it is important to recognize that no analytical data are guaranteed to be correct, even if all QC audits are passed. Strict QC serves to increase confidence in data, but any reported value may potentially contain error.

3.0 Explanation of Data Quality Indicators

Summary explanations of the specific data quality indicators reviewed during this data quality review are presented below.

3.1 Laboratory Control Sample Accuracy and Precision

LCSs and LCSDs are aliquots of analyte free matrices that are spiked with the analytes of interest for an analytical method, or a representative subset of those analytes. The spiked matrix is then processed through the same analytical procedures as the samples they accompany.

LCS recovery and precision are an indication of a laboratory's ability to successfully perform an analytical method in an interference free matrix.

3.2 Matrix Spike Accuracy and Precision

MSs and MSDs are prepared by adding known amounts of the analytes of interest for an analytical method, or a representative subset of those analytes, to an aliquot of sample. The spiked sample is then processed through the same extraction, concentration, cleanup, and analytical procedures as the unspiked samples in an analytical batch.

MS recovery and precision are an indication of a laboratory's ability to successfully recover an analyte in the matrix of a specific sample or closely related sample matrices. It is important not to apply MS results for any specific sample to other samples without understanding how the sample matrices are related.

3.3 Blank Detections

Blank samples are aliquots of analyte free matrix that are used as negative controls to verify that the sample collection, storage, preparation, and analysis system does not produce false positive results.

Equipment blanks are prepared by passing analyte free water through or over sample collection equipment and collecting the water in sample containers. Equipment blanks are used to monitor for possible sample contamination during the sample collection process and serve as a check on the effectiveness of field decontamination procedures.

Field blanks are prepared by pouring an aliquot of analyte free water into a sample container in the field. Field blanks are analyzed for the analytical suite required for the project. Field blanks are used to monitor for possible sample contamination originating from the water used for equipment decontamination.

Laboratory blanks are processed by the laboratory using the same procedures as the field samples.

3.4 Laboratory and Field Duplicate Precision

Laboratory and field duplicate analysis verify acceptable method precision by the laboratory at the time of preparation and analysis and/or sampling precision at the time of collection.

4.0 Definitions of Qualifiers that May be Used During Data Validation

The qualifiers used in the text are the qualifiers applied for each individual QC issue and may not reflect the final qualifiers applied to the data.

J The reported result is an estimated quantity with an unknown bias.

J+ The result is an estimated quantity, but the result may be biased high.

J- The result is an estimated quantity, but the result may be biased low.

U The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.

UJ The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

X The sample results were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

5.0 Qualification Reason Codes

Wood applied the following reason codes to the data during validation:

DL The detected concentration is less than the limit of quantitation (LOQ).

EB The analyte was detected in the associated equipment blank.

EM Ion transition ratio is outside of expected limits.

FB The analyte was detected in the associated field blank.

HI High extracted internal standard (EIS) recovery.

LI Low EIS recovery.

LL Low LCS recovery.

6.0 Chain of Custody and Sample Receipt Condition Documentation

The samples were received at the laboratory under proper COC, intact, properly preserved, and at temperatures within the QAPP specified temperature range of 2 to 6 degrees Celsius, with the following exceptions:

- According to the case narrative, the collection time recorded on the COC for sample AOI01-01-[0-2] was 08:01 and the time recorded on the sample label was 08:15. Eurofins logged in the sample using the time recorded on the COC.
- According to the case narrative, samples AOI01-02-SB-[43-44'], RONAASF-02-GW, and AOI-01-02-GW were received by the laboratory but were not recorded on the COC. Eurofins logged in the samples for PFAS analysis using the information recorded on the sample labels.
- According to the case narrative, the collection time recorded on the COC for sample RONAASF-03-GW was 15:42 and the time recorded on the sample label was 15:30. Eurofins logged in the sample using the time recorded on the COC.

7.0 Specific Data Validation Findings

Results from these samples may be considered usable with the limitations and exceptions described in Sections 7.1 through 8.0.

7.1 Per- and Polyfluoroalkyl Substances Analysis

PFAS results generated by Eurofins are usable with the limitations described in Sections 7.1.1 through 7.1.12.

7.1.1 Holding Time Compliance

The samples were extracted for PFAS within the QAPP-specified maximum holding time of 14 days from sample collection for water samples and 28 days from collection for solid samples, and the extracts were analyzed within the QAPP-specified maximum hold time of 28 days from extraction.

7.1.2 Initial Calibration Compliance

The ICAL associated with the analysis of these samples met the QAPP-specified criteria of the calibration standards calculating to 70 to 130% of their true concentrations and either correlation coefficients greater than or equal to 0.99 or relative standard deviations of the response factors less than or equal to 20%.

7.1.3 Initial Calibration Verification Accuracy

ICV recoveries were within the QAPP-specified 70% to 130% limits.

7.1.4 Instrument Sensitivity Check Accuracy

Instrument sensitivity check (ISC) recoveries were within the QSM-specified 70 to 130% limits and ISCs were analyzed at least every 12 hours.

7.1.5 Continuing Calibration Verification Accuracy

CCV recoveries were within the QAPP-specified 70 to 130% limits.

7.1.6 Laboratory Blank Detections

PFAS were not detected in the laboratory blanks associated with these samples, with the following exceptions:

- Perfluorooctanesulfonic acid (PFOS) was detected at a concentration of 0.572 nanograms per liter (ng/L) in the laboratory blank associated with the extraction of sample AOI01-03-GW, equipment blank RONAASF-EB-08, and field blank RONAASF-FRB-04. Data limitations are summarized below.
  - The PFOS concentration detected in sample AOI01-03-GW was greater than the LOQ and greater than five time the concentration detected in the blank. Data usability is not adversely affected by the blank detection.
  - Wood did not qualify any data in the equipment or field blanks based on the laboratory blank detection.
- PFOS was detected at a concentration of 0.666 ng/L in the laboratory blank associated with the extraction of sample RONAASF-03-GW. The PFOS concentration detected in the associated field sample was greater than the LOQ and greater than five times the concentration detected in the blank. Data usability is not adversely affected by the laboratory blank detection.

7.1.7 Equipment and Field Blank Detections

Target analytes were not detected in the equipment and field blanks collected with these samples, with the following exceptions:

- PFOS was detected at a concentration of 0.44 ng/L in field blank RONAASF-FRB-04, associated with samples AOI01-03-GW, AOI01-03-SB-[0-2'], AOI01-03-SB-[14-15'], and AOI01-03-SB-[43-44']. Data limitations are summarized below.
  - Wood U qualified the PFOS result from sample AOI01-03-SB-[0-2'] at the LOQ of 0.68 ng/g because the concentration detected in the sample was between the LOD and the LOQ. (Qualifier and reason code: U, FB)
  - PFOS was either was not detected in the remaining associated samples or the detected concentration was greater than the LOQ and more than five times the concentration detected in the blank. Data usability is not adversely affected by the blank detection.
- PFOS was detected at a concentration of 0.65 ng/L in equipment blank RONAASF-EB-08, associated with samples AOI01-03-GW, AOI01-03-SB-[0-2'], AOI01-03-SB-[14-15'], and AOI01-03-SB-[43-44']. Data limitations are summarized below.
  - Wood U qualified the PFOS result from sample AOI01-03-SB-[0-2'] at the LOD of 0.68 ng/g because the concentration detected in the sample was between the LOD and the LOQ. (Qualifier and reason code: U, EB)
  - PFOS was either was not detected in the remaining associated samples or the detected concentration was greater than the LOQ and more than five times the concentration detected in the blank. Data usability is not adversely affected by the blank detection.

7.1.8 Laboratory Control Sample Accuracy and Precision

LCS recoveries were within QSM 5.3-specified limits and RPDs between LCS and LCSD results were less than or equal to the QAPP-specified maximum of 30%, with the following exception:

- Perfluorohexanoic acid (PFHxA [70%]), perfluoroheptanoic acid (PFHpA [66%]), perfluorooctanoic acid (PFOA [68%]), perfluorodecanoic acid (PFDA [68%]), perfluorododecanoic acid (PFDoA [71%]), perfluorotetradecanoic acid (PFTeDA [69%]), and perfluorobutanesulfonic acid (PFBS [64%]) recoveries

were low in the LCS associated with the extraction of sample RONAASF-06-GW, equipment blank RONAASF-EB-05, and field blank RONAASF-FRB-03. Data limitations are summarized below.

- Wood X qualified the non-detected PFDA, PFDoA, and PFTeDA results from sample RONAASF-06-GW because of the low LCS recoveries. (Qualifier and reason code; X, LL)
- Wood J- qualified the detected PFHxA, PFHpA, PFOA, and PFBS results from sample RONAASF-06-GW because of the low LCS recoveries. (Qualifier and reason code: J-, LL)
- Wood did not qualify data from the associated equipment and field blank because they are QC samples.

7.1.9 Matrix Spikes/ Matrix Spike Duplicates Accuracy and Precision

Eurofins performed MS and MSD analyses on samples RONAASF-02-SB-[14-15'], RonAASF-05-[43-44], and RonAASF-05-GW. Recoveries were within QSM 5.3-specified limits and RPDs between MS and MSD results were less than or equal to the QAPP-specified maximum of 30%.

7.1.10 Laboratory Duplicate Precision

Eurofins did not perform duplicate analysis on the samples reviewed in this report.

7.1.11 Extracted Internal Standard Accuracy

Eurofins' reported EIS recoveries are based on the average response from the initial calibration instead of the area counts from either the ICAL midpoint standard or the areas measured in the initial CCV. For this assessment Wood recalculated EIS recoveries for field samples based on QC summary form VIII.

EIS recoveries were within the QAPP-specified limits of 50 to 150% of areas measured in the ICAL midpoint standard or 50 to 150% of the areas measured in the initial CCV on days when ICAL is not performed, with the following exceptions:

- Recoveries of the EISs d3-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA) and d5-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) were low in samples AOI01-01-[14-15] (34%, 44%), AOI01-01-[47-48] (37%, 45%), AOI01-03-SB-[43-44'] (35%, 39%), RONAASF-01-SB-[14-15] (38%, 43%), RONAASF-02-SB-[0-2] (34%, 41%), RONAASF-02-SB-[14-15'] (37%, 38%), RonAASF-05-[0-2] (28%, 42%), RonAASF-04-[0-2] (8%, 9%), RonAASF-04-[14-15] (25%, 34%), RonAASF-FD-SB-02 (10%, 16%), and RONAASF-FD-SB-03 (25%, 32%). Data limitations are summarized below.
  - Wood X qualified the NMeFOSAA and NEtFOSAA results from samples RonAASF-04-[0-2] and RonAASF-FD-SB-02 because of the extremely low EIS recoveries. (Qualifier and reason code: X, LI)
  - Wood UJ qualified the non-detected NMeFOSAA and NEtFOSAA results from samples AOI01-01-[14-15], AOI01-01-[47-48], AOI01-03-SB-[43-44'], RONAASF-02-SB-[0-2], RONAASF-02-SB-[14-15'], RonAASF-05-[0-2], RonAASF-04-[14-15], and RONAASF-FD-SB-03 because of the low EIS recoveries. (Qualifier and reason code: UJ, LI)
  - Wood UJ qualified the non-detected NMeFOSAA result from sample RONAASF-01-SB-[14-15] because of the low EIS recovery. (Qualifier and reason code: UJ, LI)
  - Wood J+ qualified the detected NEtFOSAA result from sample RONAASF-01-SB-[14-15] because of the low EIS recovery. (Qualifier and reason code: J+, LI)

- Recovery of the EIS d3-NMeFOSAA was low at 45% in sample RonAASF-03-[0-2]. Wood UJ qualified the non-detected NMeFOSAA result because of the low EIS recovery. (Qualifier and reason code: UJ, LI)
- Recoveries of the EISs $^{13}C_3$-PFBS (153%), M2-4:2 FTS (185%), $^{13}C_3$-perfluorohexanesulfonic acid (PFHxS [153%]), M2-6:2 FTS (162%), $^{13}C_8$-PFOS (154%), and M2-8:2 FTS (164%) were high in sample RONAASF-06-GW. Data limitations are summarized below.
  - Wood J- qualified the detected PFBS, PFHxS, perfluoroheptanesulfonic acid, 6:2 FTS, and PFOS results from this sample because of the high EIS recoveries. (Qualifier and reason code: J-, HI)
  - Perfluoropentanesulfonic acid, perfluorononanesulfonic acid, perfluorodecanesulfonic acid, 4:2 FTS, and 8:2 FTS were not detected in this sample and data usability is not adversely affected by the high EIS recoveries.
- Recoveries of the EIS M2-4:2 fluorotelomersulfonic acid (FTS) were high in samples AOI01-01-GW (159%), RonAASF-04-GW (184%), and RonAASF-05-GW (221%). 4:2 FTS was not detected in these samples and data usability is not adversely affected by the high EIS recoveries.
- Recovery of the EIS d3-NMeFOSAA was low at 47% in the MS performed on sample RONAASF-02-SB-[14-15']. Wood does not qualify data from field samples based on EIS recoveries in the associated MS.
- Recoveries of the EIS M2-4:2 FTS were high at 190% and 182% in the MS and MSD performed on sample RonAASF-05-GW. Wood does not qualify data from field samples based on EIS recoveries in the associated MS or MSD.
- Recoveries of the EIS M2-8:2 FTS were high in equipment blank RonAASF-EB-02 and field blank RONAASF-FRB-03 at 151% and 152%, respectively. 8:2 FTS was not detected in the blanks and data usability is not adversely affected by the high EIS recoveries.

7.1.12 Data Reporting and Analytical Procedures

Eurofins J qualified detected results with concentrations less than the LOQ. Wood agrees these results are quantitatively uncertain and has maintained Eurofins' J qualifiers. (Qualifier and reason code: J, DL)

Eurofins I qualified data when the ion transition rations are outside of expected limits. Wood J qualified all of Eurofins' I qualified results. (Qualifier and reason code: J, EM)

8.0 Field Duplicate Precision

EA collected field duplicates with samples:

- AOI01-01-[47-48] (RonAASF-FD-SB-01),
- AOI01-01-GW (RonAASF-FD-GW-01),
- RonAASF-03-[0-2] (RonAASF-FD-SB-02), and
- RONAASF-02-SB-[0-2] (RONAASF-FD-SB-03).

RPDs between primary and field duplicate results were less than the QAPP-specified maximum of 50% for solid samples or 30% for water samples, or differences between results were less than the average LOQ.

Detections in the primary samples and their field duplicates are summarized in Table 2.

9.0 Summary and Conclusions

Wood reviewed a total of 960 records from field samples and applied the following qualifiers to the data during validation:

- X: 7 records (0.73%) were X qualified as needing further evaluation during data usability assessment because of low LCS recoveries or extremely low EIS recoveries;
- J: 77 records (8.0%) were J qualified as being estimated values because of detected concentrations less than the LOQ and/or the ion transition ratio was outside of expected limits;
- J+: 1 record (0.10%) was J+ qualified because of low EIS recovery;
- J-: 8 records (0.83%) were J- qualified because of low LCS and/or high EIS recoveries;
- U: 1 record (0.10%) was U qualified because of detections in the associated equipment and field blanks; and
- UJ: 18 records (1.9%) were UJ qualified as being estimated non-detected values because of low EIS recoveries.

10.0 References

EA, 2020. Final Programmatic UFP-QAPP, Site Inspection for Per- and Polyfluoroalkyl Substances Impacted Sites, ARNG Installations, Nationwide, December.

EA, 2021. Final Site Inspection UFP-QAPP Addendum, Army Aviation Support Facility #1, Ronkonkoma, New York, October.

DoD, 2019a. DoD QSM, Version 5.3. May.

DoD, 2019b. General Data Validation Guidelines, Revision 1. November.

DoD, 2020. Data Validation Guidelines Module 3: Data Validation Procedure of Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15.

11.0 Limitations

This report was prepared exclusively for EA by Wood Environment & Infrastructure Solutions, Inc. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in Wood services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This Data Validation report is intended to be used by EA for the Nationwide ARNG Installations Site Inspections for Per- and Polyfluoroalkyl Substances project only, subject to the terms and conditions of its contract with Wood. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

Tables

Table 1
Field Samples Submitted to Eurofins Environment Testing America
Army Aviation Support Facility #1
Ronkonkoma, New York

Field Sample Identification	Matrix	Collection Date and Time	Laboratory Sample Identification	Notes
AOI01-01-[0-2]	Solid	11/16/2021 8:01	410-64055-1	
AOI01-01-[14-15]	Solid	11/16/2021 8:55	410-64055-2	
AOI01-01-[47-48]	Solid	11/16/2021 10:02	410-64055-3	
RonAASF-FD-SB-01	Solid	11/16/2021 0:00	410-64055-4	Field duplicate of AOI01-01-[47-48]
RonAASF-05-[0-2]	Solid	11/16/2021 11:08	410-64055-7	
RonAASF-05-[14-15]	Solid	11/16/2021 11:32	410-64055-8	
RonAASF-05-[43-44]	Solid	11/16/2021 13:13	410-64055-9	
RonAASF-04-[0-2]	Solid	11/16/2021 14:14	410-64055-10	
AOI01-01-GW	Water	11/16/2021 12:49	410-64055-11	
RonAASF-FD-GW-01	Water	11/16/2021 0:00	410-64055-12	Field duplicate of AOI01-01-GW
RonAASF-04-[14-15]	Solid	11/17/2021 7:21	410-64055-14	
RonAASF-04-[43-44]	Solid	11/17/2021 8:36	410-64055-15	
RonAASF-03-[0-2]	Solid	11/17/2021 9:35	410-64055-16	
RonAASF-03-[14-15']	Solid	11/17/2021 10:05	410-64055-17	
RonAASF-03-[43-44']	Solid	11/17/2021 11:15	410-64055-18	
RonAASF-FD-SB-02	Solid	11/17/2021 0:00	410-64055-19	Field duplicate of RONAASF-03-[0-2]
RonAASF-06-[0-2]	Solid	11/17/2021 12:46	410-64055-20	
RonAASF-05-GW	Water	11/17/2021 8:11	410-64055-21	
RonAASF-04-GW	Water	11/17/2021 11:10	410-64055-24	
RonAASF-06-[14-15']	Solid	11/17/2021 13:23	410-64055-25	
RONAASF-06-SB-43-44'	Solid	11/17/2021 14:35	410-64395-1	
RONAASF-03-GW	Water	11/17/2021 14:28	410-64395-2	
RONAASF-01-SB-[0-2]	Solid	11/18/2021 7:35	410-64395-4	
RONAASF-01-SB-[14-15]	Solid	11/18/2021 8:00	410-64395-5	
RONAASF-01-SB-[43-44]	Solid	11/18/2021 9:10	410-64395-6	
RONAASF-06-GW	Water	11/18/2021 8:48	410-64395-9	
RONAASF-02-SB-[0-2]	Solid	11/18/2021 10:10	410-64395-11	
RONAASF-FD-SB-03	Solid	11/18/2021 0:00	410-64395-12	Field duplicate of RONAASF-02-SB-[0-2]
RONAASF-02-SB-[14-15']	Solid	11/18/2021 10:56	410-64395-13	
RONAASF-01-GW	Water	11/18/2021 11:10	410-64395-14	
RONAASF-02-SB-[39-40']	Solid	11/18/2021 11:55	410-64395-16	
AOI01-02-SB-[0-2']	Solid	11/18/2021 14:00	410-64395-17	
AOI01-02-SB-[10-15']	Solid	11/18/2021 14:25	410-64395-18	
AOI01-03-SB-[0-2']	Solid	11/19/2021 7:30	410-64395-19	
AOI01-03-SB-[14-15']	Solid	11/19/2021 7:57	410-64395-20	
AOI01-03-SB-[43-44']	Solid	11/19/2021 8:55	410-64395-21	
AOI01-03-GW	Water	11/19/2021 10:52	410-64395-25	
AOI01-02-SB-[43-44']	Solid	11/18/2021 15:15	410-64395-26	
RONAASF-02-GW	Water	11/18/2021 14:22	410-64395-27	
AOI-01-02-GW	Water	11/18/2021 16:42	410-64395-28	

Table 2
Target Analyte Detections in Primary and Field Duplicate Samples
Army Aviation Support Facility #1
Ronkonkoma, New York

Analyte	Average Limit of Quantitation	Primary Result	Field Duplicate Result	Relative Percent Difference	Notes
Samples AOI01-01-[47-48] and RonAASF-FD-SB-01					
Perfluorooctanoic acid	0.60 ng/g	0.66	0.30 J	75%	± LOQ
Perfluorononanoic acid	0.59 ng/g	0.31 J	0.41 U	NC	
Perfluorooctanesulfonic acid	0.59 ng/g	0.43 J	0.41 U	NC	
6:2 Fluorotelomer sulfonic acid	2.0 ng/g	0.68 J	1.6 U	NC	± LOQ
Samples AOI01-01-GW and RonAASF-FD-GW-01					
Perfluorohexanoic acid	1.7 ng/L	64	65	1.6%	
Perfluoroheptanoic acid	1.7 ng/L	69	70	1.4%	
Perfluorooctanoic acid	1.7 ng/L	76	76	0.0%	
Perfluorononanoic acid	1.7 ng/L	11	11	0.0%	
Perfluorobutanesulfonic acid	1.7 ng/L	1.7	1.6 J	6.1%	
Perfluorohexanesulfonic acid	1.7 ng/L	12	12	0.0%	
Perfluorooctanesulfonic acid	1.7 ng/L	6.8	6.9	1.5%	
Perfluoropentanesulfonic acid	1.7 ng/L	1.2 J	1.1 J	8.7%	
Perfluoroheptanesulfonic acid	1.7 ng/L	0.87 U	0.47 J	NC	± LOQ
Perfluorobutanoic acid	4.4 ng/L	34	34	0.0%	
Perfluoropentanoic acid	1.7 ng/L	86	85	1.2%	
6:2 Fluorotelomer sulfonic acid	4.4 ng/L	26	23	12%	
Samples RonAASF-03-[0-2] and RonAASF-FD-SB-02					
Perfluorooctanesulfonic acid	0.64 ng/g	0.41 J	0.36 J	13%	
Perfluorononanoic acid	0.64 ng/g	0.43 U	0.31 J	NC	± LOQ
Perfluoroundecanoic acid	0.64 ng/g	0.39 J	0.41 U	NC	
Samples RONAASF-02-SB-[0-2] and RONAASF-FD-SB-03					
Perfluorooctanoic acid	0.64 ng/g	0.24 J	0.23 J	4%	
Perfluorononanoic acid	0.64 ng/g	0.22 J	0.44 U	NC	± LOQ
Perfluorooctanesulfonic acid	0.64 ng/g	1.2	1.2 J	0.0%	
Perfluoroundecanoic acid	0.64 ng/g	0.34 J	0.27 J	23%	

Notes:
NC = not calculable
ng/g = nanograms per gram
ng/L = nanograms per liter

Qualifier Definitions:
J = The reported result is an estimated quantity with an unknown bias.
U = The analyte was not detected and was reported as less than the limit of detection.

Reason Code:
± LOQ = the difference between analyte concentrations is less than the limit of quantitation, indicating acceptable sampling and analytical precision.

Table 3
Qualifiers Applied During Validation
Army Aviation Support Facility #1
Ronkonkoma, New York

Sample Identification	Analyte	Concentration	Qualifier and Reason Code
AOI01-01-[0-2]	Perfluorododecanoic acid	0.36 ng/g	J DL
AOI01-01-[0-2]	Perfluoroheptanoic acid	0.31 ng/g	J DL
AOI01-01-[0-2]	Perfluoropentanoic acid	0.25 ng/g	J DL
AOI01-01-[0-2]	Perfluorotridecanoic acid	0.38 ng/g	J DL
AOI01-01-[14-15]	6:2 Fluorotelomer sulfonic acid	1.5 ng/g	J DL
AOI01-01-[14-15]	NEtFOSAA	0.40 ng/g	UJ LI
AOI01-01-[14-15]	NMeFOSAA	0.40 ng/g	UJ LI
AOI01-01-[14-15]	Perfluorononanoic acid	0.31 ng/g	J DL
AOI01-01-[47-48]	6:2 Fluorotelomer sulfonic acid	0.68 ng/g	J DL
AOI01-01-[47-48]	NEtFOSAA	0.39 ng/g	UJ LI
AOI01-01-[47-48]	NMeFOSAA	0.39 ng/g	UJ LI
AOI01-01-[47-48]	Perfluorononanoic acid	0.31 ng/g	J DL
AOI01-01-[47-48]	Perfluorooctanesulfonic acid	0.43 ng/g	J DL
AOI01-01-GW	Perfluoropentanesulfonic acid	1.2 ng/L	J DL
AOI-01-02-GW	NEtFOSAA	2.3 ng/L	J DL
AOI-01-02-GW	Perfluorobutanesulfonic acid	1.6 ng/L	J DL
AOI-01-02-GW	Perfluorooctanesulfonamide	0.81 ng/L	J DL
AOI-01-02-GW	Perfluoropentanesulfonic acid	0.78 ng/L	J DL
AOI01-02-SB-[0-2]	NEtFOSAA	0.22 ng/g	J DL
AOI01-02-SB-[0-2]	Perfluorododecanoic acid	0.43 ng/g	J DL
AOI01-02-SB-[0-2]	Perfluorononanoic acid	0.22 ng/g	J DL
AOI01-02-SB-[0-2]	Perfluorooctanesulfonic acid	0.35 ng/g	J DL
AOI01-02-SB-[0-2]	Perfluorooctanoic acid	0.26 ng/g	J DL
AOI01-02-SB-[0-2]	Perfluorotetradecanoic acid	0.21 ng/g	J DL
AOI01-02-SB-[0-2]	Perfluorotridecanoic acid	0.35 ng/g	J DL
AOI01-02-SB-[10-15]	NEtFOSAA	0.21 ng/g	J DL
AOI01-02-SB-[10-15]	Perfluorooctanesulfonic acid	0.23 ng/g	J DL
AOI01-03-GW	Perfluoroheptanesulfonic acid	1.4 ng/L	J DL
AOI01-03-GW	Perfluoropentanesulfonic acid	0.66 ng/L	J DL
AOI01-03-SB-[0-2]	Perfluorodecanoic acid	0.26 ng/g	J DL
AOI01-03-SB-[0-2]	Perfluorododecanoic acid	0.23 ng/g	J DL
AOI01-03-SB-[0-2]	Perfluorooctanesulfonic acid	0.68 ng/g	U FB, EB
AOI01-03-SB-[0-2]	Perfluorooctanoic acid	0.38 ng/g	J DL
AOI01-03-SB-[0-2]	Perfluorotridecanoic acid	0.47 ng/g	J DL
AOI01-03-SB-[0-2]	Perfluoroundecanoic acid	0.48 ng/g	J DL
AOI01-03-SB-[43-44]	NEtFOSAA	0.40 ng/g	UJ LI
AOI01-03-SB-[43-44]	NMeFOSAA	0.40 ng/g	UJ LI
RONAASF-01-GW	8:2 Fluorotelomer sulfonic acid	1.4 ng/L	J DL
RONAASF-01-GW	Perfluorobutanesulfonic acid	1.2 ng/L	J DL
RONAASF-01-SB-[0-2]	Perfluorooctanoic acid	0.22 ng/g	J DL
RONAASF-01-SB-[14-15]	NEtFOSAA	0.29 ng/g	J+ LI, DL
RONAASF-01-SB-[14-15]	NMeFOSAA	0.39 ng/g	UJ LI

Table 3
Qualifiers Applied During Validation
Army Aviation Support Facility #1
Ronkonkoma, New York

Sample Identification	Analyte	Concentration	Qualifier and Reason Code
RONAASF-01-SB-[14-15]	Perfluorooctanoic acid	0.24 ng/g	J DL, EM
RONAASF-01-SB-[43-44]	Perfluorooctanoic acid	0.26 ng/g	J DL
RONAASF-02-GW	Perfluorobutanesulfonic acid	1.0 ng/L	J DL
RONAASF-02-GW	Perfluoroheptanesulfonic acid	0.44 ng/L	J DL
RONAASF-02-SB-[0-2]	NEtFOSAA	0.41 ng/g	UJ LI
RONAASF-02-SB-[0-2]	NMeFOSAA	0.41 ng/g	UJ LI
RONAASF-02-SB-[0-2]	Perfluorononanoic acid	0.22 ng/g	J DL
RONAASF-02-SB-[0-2]	Perfluorooctanoic acid	0.24 ng/g	J DL
RONAASF-02-SB-[0-2]	Perfluoroundecanoic acid	0.34 ng/g	J DL
RONAASF-02-SB-[14-15]	NEtFOSAA	0.41 ng/g	UJ LI
RONAASF-02-SB-[14-15]	NMeFOSAA	0.41 ng/g	UJ LI
RONAASF-02-SB-[39-40]	NEtFOSAA	0.93 ng/g	J DL
RONAASF-02-SB-[39-40]	NMeFOSAA	0.79 ng/g	J DL
RONAASF-03-[0-2]	NMeFOSAA	0.43 ng/g	UJ LI
RONAASF-03-[0-2]	Perfluorooctanesulfonic acid	0.41 ng/g	J DL
RONAASF-03-[0-2]	Perfluoroundecanoic acid	0.39 ng/g	J DL
RONAASF-03-[14-15]	Perfluorooctanesulfonic acid	0.39 ng/g	J DL
RONAASF-03-[43-44]	Perfluorooctanesulfonic acid	0.32 ng/g	J DL
RONAASF-03-GW	Perfluoroheptanesulfonic acid	1.1 ng/L	J DL
RONAASF-03-GW	Perfluorononanoic acid	1.2 ng/L	J DL
RONAASF-04-[0-2]	NEtFOSAA	0.40 ng/g	X LI
RONAASF-04-[0-2]	NMeFOSAA	0.40 ng/g	X LI
RONAASF-04-[0-2]	Perfluorononanoic acid	0.31 ng/g	J DL
RONAASF-04-[0-2]	Perfluorooctanesulfonic acid	0.39 ng/g	J DL
RONAASF-04-[0-2]	Perfluorooctanoic acid	0.30 ng/g	J DL
RONAASF-04-[0-2]	Perfluoropentanoic acid	0.21 ng/g	J DL
RONAASF-04-[14-15]	NEtFOSAA	0.40 ng/g	UJ LI
RONAASF-04-[14-15]	NMeFOSAA	0.40 ng/g	UJ LI
RONAASF-04-GW	Perfluorobutanesulfonic acid	1.0 ng/L	J DL
RONAASF-04-GW	Perfluoroundecanoic acid	0.85 ng/L	J DL
RONAASF-05-[0-2]	NEtFOSAA	0.42 ng/g	UJ LI
RONAASF-05-[0-2]	NMeFOSAA	0.42 ng/g	UJ LI
RONAASF-05-[0-2]	Perfluoroheptanoic acid	0.23 ng/g	J DL
RONAASF-05-[0-2]	Perfluorohexanoic acid	0.32 ng/g	J DL
RONAASF-05-[0-2]	Perfluorooctanesulfonic acid	0.53 ng/g	J DL
RONAASF-05-[0-2]	Perfluorooctanoic acid	0.51 ng/g	J DL
RONAASF-05-[0-2]	Perfluoropentanoic acid	0.43 ng/g	J DL
RONAASF-05-[0-2]	Perfluoroundecanoic acid	0.49 ng/g	J DL
RONAASF-05-[14-15]	Perfluorooctanesulfonic acid	0.43 ng/g	J DL
RONAASF-05-GW	8:2 Fluorotelomer sulfonic acid	1.4 ng/L	J DL
RONAASF-05-GW	Perfluorobutanesulfonic acid	1.1 ng/L	J DL
RONAASF-05-GW	Perfluoropentanesulfonic acid	0.51 ng/L	J DL

Table 3
Qualifiers Applied During Validation
Army Aviation Support Facility #1
Ronkonkoma, New York

Sample Identification	Analyte	Concentration	Qualifier and Reason Code
RONAASF-06-[0-2]	Perfluorodecanoic acid	0.21 ng/g	J DL
RONAASF-06-[0-2]	Perfluorooctanesulfonic acid	0.54 ng/g	J DL
RONAASF-06-[0-2]	Perfluoroundecanoic acid	0.25 ng/g	J DL
RONAASF-06-[14-15]	Perfluorooctanoic acid	0.20 ng/g	J DL
RONAASF-06-[14-15]	Perfluoropentanoic acid	0.20 ng/g	J DL
RONAASF-06-GW	6:2 Fluorotelomer sulfonic acid	24 ng/L	J- HI
RONAASF-06-GW	Perfluorobutanesulfonic acid	1.2 ng/L	J- LL, HI, DL
RONAASF-06-GW	Perfluorodecanoic acid	0.88 ng/L	X LL
RONAASF-06-GW	Perfluorododecanoic acid	0.88 ng/L	X LL
RONAASF-06-GW	Perfluoroheptanesulfonic acid	0.46 ng/L	J- HI, DL
RONAASF-06-GW	Perfluoroheptanoic acid	8.5 ng/L	J- LL
RONAASF-06-GW	Perfluorohexanesulfonic acid	5.7 ng/L	J- HI
RONAASF-06-GW	Perfluorohexanoic acid	15 ng/L	J- LL
RONAASF-06-GW	Perfluorooctanesulfonic acid	9.8 ng/L	J- HI
RONAASF-06-GW	Perfluorooctanoic acid	7.6 ng/L	J- LL
RONAASF-06-GW	Perfluorotetradecanoic acid	0.88 ng/L	X LL
RONAASF-FD-GW-01	Perfluorobutanesulfonic acid	1.6 ng/L	J DL
RONAASF-FD-GW-01	Perfluoroheptanesulfonic acid	0.47 ng/L	J DL
RONAASF-FD-GW-01	Perfluoropentanesulfonic acid	1.1 ng/L	J DL
RONAASF-FD-SB-01	Perfluorooctanoic acid	0.30 ng/g	J DL
RONAASF-FD-SB-02	NEtFOSAA	0.41 ng/g	X LI
RONAASF-FD-SB-02	NMeFOSAA	0.41 ng/g	X LI
RONAASF-FD-SB-02	Perfluorononanoic acid	0.31 ng/g	J DL
RONAASF-FD-SB-02	Perfluorooctanesulfonic acid	0.36 ng/g	J DL
RONAASF-FD-SB-03	NEtFOSAA	0.44 ng/g	UJ LI
RONAASF-FD-SB-03	NMeFOSAA	0.44 ng/g	UJ LI
RONAASF-FD-SB-03	Perfluorooctanoic acid	0.23 ng/g	J DL
RONAASF-FD-SB-03	Perfluoroundecanoic acid	0.27 ng/g	J DL

Notes:
NEtFOSAA = N-ethylperfluorooctanesulfonamidoacetic acid
ng/g = nanograms per gram
ng/L = nanograms per liter
NMeFOSAA = N-methylperfluorooctanesulfonamidoacetic acid

Table 3
Qualifiers Applied During Validation
Army Aviation Support Facility #1
Ronkonkoma, New York

Qualifier Definitions:

J = The reported result is an estimated quantity with an unknown bias.

J+ = The result is an estimated quantity, but the result may be biased high.

J- = The result is an estimated quantity, but the result may be biased low.

U = The analyte was not detected and was reported as less than the limit of detection (LOD). The LOD has been adjusted for any dilution or concentration of the sample.

UJ = The analyte was not detected and was reported as less than the LOD. However, the associated numerical value is approximate.

X = The sample results were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

Reason Codes:

DL = The detected concentration is less than the limit of quantitation.

EB = The analyte was detected in the associated equipment blank.

EM = Ion transition ratio is outside of expected limits.

FB = The analyte was detected in the associated field blank.

HI = High extracted internal standard (EIS) recovery.

LI = Low EIS recovery.

LL = Low laboratory control sample recovery.

Appendix B

Field Documentation

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Appendix B1

Logs of Daily Notice of Field Activities

Log of Daily Notice of Field Activity
Ronkonkoma AASF #1, NY

Date	EA Personnel	Weather	Summary Daily Activities	Issues	Progress to Date	Subcontractor(s)/ Visitors
11/19/2021	Catherine Maxwell and Caitlin Helms	Sunny, 48 degrees	Drilling, soil sampling, and temporary well installation were completed at 1 location: AOI01-03. The groundwater table was encountered at 44' and the well was set at 48' ft. Groundwater sampling was completed at AOI01-03 using a 0.85" PFAS-free bladder pump. IDW groundwater was placed in a 55-gal drum staged in the hangar. The drum is half full. IDW soil was returned to bore holes during abandonment activities. All 9 locations were gauged and surveyed (elevation and gps coordinates) then abandoned using bentonite chips and soil cuttings. Minimal cuttings required placement on the ground surface. The one location in asphalt was topped with coldpatch.	None	9 of 9 wells installed 9 of 9 groundwater samples collected 9 of 9 sets of soil samples completed 9 of 9 wells surveyed and abandoned. Field work is complete.	ADT/Cascade Drillers (Luke and Todd) Scalice Surveyors (Jason and Nick) NYARNG - Vic Figliuolo
11/18/2021	Catherine Maxwell, Caitlin Helms, and Enock Bunyon	Sunny, 50 degrees	Drilling, sampling, and temporary well installation were completed at 3 locations: RONAASF-01, RONAASF-02, and AOI01-02. The groundwater table was encountered at 44' at each location and wells were all set at 48' bgs. The rig was left overnight (mast down, cones around) at AOI01-02. Groundwater sampling was completed at RONAASF-06, -01, -02, and AOI01-02 using a 0.85" PFAS-free bladder pump. IDW groundwater was placed in a 55-gal drum staged in the hangar. IDW soil was held near the boring locations.	None	8 of 9 wells installed 8 of 9 groundwater samples collected 8 of 9 sets of soil samples completed Work will commence at 7:00 am 11/19/21.	ADT/Cascade Drillers (Luke and Todd) ARNG G-9 - Jennifer Li NYARNG - Vic Figliuolo
11/17/2021	Catherine Maxwell, Caitlin Helms, and Enock Bunyon	Sunny, 45 degrees	Drilling, soil sampling, and temporary well installation were completed at three locations: RONAASF-04, RONAASF-03, and RONAASF-06. Groundwater sampling was completed at RONAASF-05 and RONAASF-04.	None	5 of 9 wells installed 4 of 9 groundwater samples collected 5 of 9 sets of soil samples completed Work will commence at 6:30 am 11/18/21	ADT/Cascade Drillers (Luke and Todd) USACE - Kim Berg ARNG G-9 - Jennifer Li NYARNG - Vic Figliuolo
11/16/2021	Catherine Maxwell, Caitlin Helms, and Enock Bunyon	Sunny, 50 degrees	Drilling, soil sampling, and temporary well installation were completed at two locations: AOI01-01 and RONAASF-05. The groundwater table was encountered at 48' and 44', respectively, and wells were set approximately 4-5 ft into the water table. Drilling and soil sampling was begun at RONAASF-04 (completed preclear 0-5') but unable to be completed based on time limitations within the flightline. We will begin here tomorrow. The rig was left overnight at this location. Groundwater sampling was completed at AOI01-01. IDW groundwater was placed in a 55-gal drum staged in the hangar. IDW soil was held near the boring locations.	None	2 of 9 wells installed 1 of 9 groundwater samples collected 2 of 9 sets of soil samples completed Work will commence at 6:30 am 11/17/21	ADT/Cascade Drillers (Luke and Todd) completed field activities overseen USACE - Kim Berg ARNG G-9 - Jennifer Li NYARNG - CW5 Vic Figliuolo
11/15/2021	Catherine Maxwell	Sunny, 40 degrees	Catherine Maxwell, Jennifer Li, CW5 Haack, and Steve Merenes escorted X-Ray locating services personnel to all 9 temporary well point locations. X-Ray Locating performed a utlity clearence within a 20 foot radius of each well point.	RonAASF-06 was proposed outside the site secure fencing. This location inside the fence for security and access reasons since the wells will be left unprotected overnight. The location was moved approximately 50' north and remains in a grassy island.	The sample location reconnaissance is complete. Drilling and Sampling activities will begin on 16 November 2021.	X-Ray Locating (2 personnel) ARNG G-9 - Jennifer Li NYARNG - CW5 Haack and Steve Merenes

Appendix B2

Sampling Forms

Calibration Logs

FIELD CALIBRATION FORM
YSI 3800
pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY, ORP, AND DISSOVED OXYGEN

CALIBRATION
DATE: 11/16/21
TIME: 0640
METER ID: 94147

pH CALIBRATION

pH STANDARD	INITIAL READING	FINAL READING
4.0	3.99	4.0
7.0	7.07	7.01
10.0	10.19	10.14

End of day (Bump Test
Initial Reading 7.19
Final reading 7.07

CONDUCTIVITY CALIBARATION

CONDUCTIVITY STANDARD	STANDARD READING	FINAL READING
	1.409 ms/cm	1.403 ms/cm

TEMPERATURE CALIBRATION

	NBS THERMOMETOR	YSI READING
AMBIENT WATER	13.19	13.24

Dissolved Oxygen

Turbidity

FIELD CALIBRATION FORM
YSI 3800
pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY, ORP, AND DISSOVED OXYGEN

TURBIDITY CALIBRATION

STANDARD	INITIAL READING	FINAL READING
0 NTU	0.7	0.0
200 NTU		
800 NTU		

ORP CALIBRATION

STANDARD	FINAL READING
231 MV	No standard provided

DISSOLVED OXYGEN CALIBRATION

STANDARD	INTITIAL READING	FINAL READING
100% AIR SATURATION	103.1	100

COMMENTS

No standard provided for ORP calib

SIGNATURE

Emily Finn

FIELD CALIBRATION FORM
YSI 3800
pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY, ORP, AND DISSOVED OXYGEN

CALIBRATION	
DATE:	11/17/2021
TIME:	0700
METER ID:	102222

pH CALIBRATION

pH STANDARD	INITIAL READING	FINAL READING
4.0	4.09	4.01
7.0	7.03	7.0
10.0	10.05	10.01

End of day (Bump Test)
pH (7)
Initial reading – 7.09
Final reading – 7.01

CONDUCTIVITY CALIBARATION

CONDUCTIVITY STANDARD	STANDARD READING	FINAL READING
	1.409 ms/cm	1.453 ms/cm

End of day
standard – 1.409 ms/cm
Final – 1.421 ms/cm

TEMPERATURE CALIBRATION

	NBS THERMOMETOR	YSI READING
AMBIENT WATER	5.7°C	5.7°C

End of day
NBS °C – 11.2° C
YSI – 11.2°C

11/17/21

FIELD CALIBRATION FORM
YSI 3800
pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY, ORP, AND DISSOVED OXYGEN

TURBIDITY CALIBRATION

STANDARD	INITIAL READING	FINAL READING
0 NTU	0.7	0.2
200 NTU		
800 NTU		

End of day
0 NTU
Initial - 1.2
Final - 0.4

ORP CALIBRATION

STANDARD	FINAL READING
231 MV	No standard provided

DISSOLVED OXYGEN CALIBRATION

STANDARD	INTITIAL READING	FINAL READING
100% AIR SATURATION	99.8	100.1

End of day
Initial - 101.
Final - 100

COMMENTS

No standard provided for ORP (mV).

SIGNATURE

FIELD CALIBRATION FORM
YSI 3800
pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY, ORP, AND DISSOVED OXYGEN

CALIBRATION
DATE: 11/18/2021
TIME: 0640
METER ID: 102222

pH CALIBRATION

pH STANDARD	INITIAL READING	FINAL READING
4.0	4.02	3.99
7.0	7.14	7.03
10.0	9.95	10.0

CONDUCTIVITY CALIBARATION

CONDUCTIVITY STANDARD	STANDARD READING	FINAL READING
ms/cm	1.409 ms/cm	1.425
		~~N/A~~

TEMPERATURE CALIBRATION

	NBS THERMOMETOR	YSI READING
AMBIENT WATER	15.8°C	15.8°C

FIELD CALIBRATION FORM
YSI 3800
pH, CONDUCTIVITY, TEMPERATURE, TURBIDITY, ORP, AND DISSOVED OXYGEN

TURBIDITY CALIBRATION

STANDARD	INITIAL READING	FINAL READING
0 NTU	0.7	0.0
200 NTU		
800 NTU		

ORP CALIBRATION

STANDARD	FINAL READING
231 MV	No standard provided

DISSOLVED OXYGEN CALIBRATION

STANDARD	INTITIAL READING	FINAL READING
100% AIR SATURATION	99.3	100

COMMENTS

No standard provided for ORP (mV)

SIGNATURE

Equipment Calibration Log

Site Name: Ronkonkoma NY	Client: ARNG/USACE
Job Number: 623175033	Personnel: C. Maxwell

Date & Time	Instrument Name	Instrument Make & Model	Instrument Serial Number	Standard Value	Calibrated Value	% Deviation	Bump Check (if applicable)	Comments or Adjustments Made
11/17/21 0615	PID	Tiger	T-108690	100.0	100.0	0	99.9	morning cal
1548							89.1	end of day bump
11/18/21 0720	PID	Tiger	T-108690	100.0	100.0	0	100.1	morning cal
↓	YSI	ProDSS	80169	~~pH 4~~				end of day
				pH 7	—		7.04	bump
				~~pH 10~~				
				~~Cond 1000~~				
				cond 1409	—		1915	bump
				0 NTU	—		3.1	↓
↓	↓	↓	↓	100% DO	—		99.3%	
11/18/21 1730	PID	Tiger	T-108690	100.0 ppm	—		100.0	end of day bump
11/19/21 0715	↓	↓	↓	100.0 ppm	100.0	0	100.1	morning cal
11/19/21 0730	YSI	ProDSS	80169	pH 4	3.94		↓	↓
↓	↓	↓	↓	pH 7	7.03			
				pH 10	10.09			
				cond 1409	14.4			
				0 NTU	0.0			
↓	↓	↓	↓	100% DO	100%		↓	↓
11/19/21 0925	PID	Tiger	T-108690	100.0 ppm	—		98.4	post cal
11/19/21 0118	YSI	ProDSS	80169	pH 7	—		7.07	post-day ~~Cal~~ BUMP
↓	↓	↓	↓	cond 1409	—		1896	
				0 NTU	—		6.7 NTU	
↓	↓	↓	↓	100% DO	—		97.7	

WO: 471537

45.51

Dust Monitor Readings

DUSTTRAK

	DATE	TIME	READING (mg/m^3)	VOC (ppm iso)
AS OF Q	NOV 16	0800	~~0.003~~	
	"	0830	0.000	0.0
	"	0900	0.000	0.0
	"	0930	0.000	0.0
	"	~~1000~~	0.000	0.0
	~~NOV 16~~			~~0.0~~
ROWHSF-05		1125	0.0000	0.0
		1202	0.033	0.1
		1230	0.006	0.1
		1300	0.001	0.1
		1330	0.000	
ROWHSF-04	"	1409	0.004	0.0
	"	1439	0.002	0.0

UPGRADIENT READ: 0.020 mg/m³

RONMASF 04 DATE	TIME	READING (mg/m³)	VOC
11/17/2021	7:30	0.037 mg/m³	0.0
	0800	0.08	0.0
	0830	0.014	0.0
RONMASF 03	0930	0.003 mg/m³	0.0 ppm
	1003	0.003 mg/m³	0.0 ppm
	1040	0.004 mg/m³	0.0 ppm
	1101	0.003 mg/m³	0.0
RONMASF-06	1300	0.008 mg/m³	0.0 ppm
	1334	0.006	0.0 ppm
	1359	0.008	0.1 ppm
	1430	0.017	0.0
		0.008	

11/18/21	Time	Reading	VOC
BOUNDARY-01	0730	0.033	0.0
	0800	0.069	0.0
	0830	0.044	0.0
	0900	0.048	0.0
02	1000	0.003	0.0
	1030	0.033	0.0
	1100	0.034	0.0
	1130	0.033	0.0
	1200	0.083	0.0
	1230	0.047	0.0
BOUND 01-02	1345	0.088	0.0
	1415	0.036	0.0
	1445	0.032	0.0
	1510	0.081	0.0

Purge Logs

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 6342503B3
Ronkonkoma AMSF

WELL ID RONAMSF-01 SAMPLE NO. RONAMSF-01-GW
WELL/SITE DESCRIPTION asphalt N of Hangar

DATE 11 / 18 / 21 TIME 1000 AIR TEMP. _____

WELL DEPTH 50.1 ft CASING HEIGHT _____ ft
WATER DEPTH 45.25 ft WELL DIAMETER 1 in
WATER COL. HEIGHT _____ ft SANDPACK DIAM. N/A in
EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)
PUMP RATE 0.12 (gpm) (LPM)
PUMP TIME _____ min
WELL WENT DRY? ( ) Yes ( ) No PUMP TIME _____ min
VOL. REMOVED _____ (gal) (L) RECOVERY TIME _____ min
PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond. mS/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate L/min
11/18	1015	—	6.72	0.136	16.7	10.3	904.5	6.90	45.25	0.12
	1021	0.72	6.81	0.119	15.9	1.5	185.4	7.85	45.23	
	1025	0.48	6.82	0.115	15.5	7.3	66.1	8.28	45.25	
	1030	0.60	6.79	0.110	15.4	20.4	22.5	8.97	45.25	
	1035	0.60	6.77	0.105	15.3	31.4	10.9	9.22	45.23	
	1040	0.60	6.74	0.104	15.7	40.5	9.6	9.41	45.23	
	1045	0.60	6.73	0.106	15.6	46.1	8.0	9.44	45.23	
	1050	0.60	6.72	0.105	15.6	51.3	8.6	9.50	45.23	
	1055	0.60	6.72	0.105	15.6	56.3	9.1	9.57	45.23	
	1100	0.60	6.71	0.104	15.7	60.5	9.1	9.54		

COMMENTS sample collected @ 1110. Shaker test performed, no bubbles.

SIGNATURE _____

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 634250383
Ronkonkoma AAFSF

WELL ID RONAAFSF-02 SAMPLE NO. RONAAFSF-02-GW

WELL/SITE DESCRIPTION Grassy field west of AAFSF #1

DATE 11/18/21 TIME 1312 AIR TEMP. _____

WELL DEPTH 49.98 ft CASING HEIGHT _____ ft

WATER DEPTH 44.93 ft WELL DIAMETER 1 in

WATER COL. HEIGHT _____ ft SANDPACK DIAM. None in

EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)

PUMP RATE 0.165 (gpm) (LPM)

PUMP TIME 1324 min

WELL WENT DRY? ( ) Yes (X) No PUMP TIME _____ min

VOL. REMOVED _____ (gal) (L) RECOVERY TIME _____ min

PURGE AGAIN? ( )Yes (X) No TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond. ms/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate LPM
11/18/21	1327	-	6.53	0.373	16.8	-87.9	406.5	2.24	44.95	0.165
	1332	0.825	6.44	0.380	16.4	-68.6	145.2	3.02	44.93	0.165
	1337	0.99	6.37	0.380	16.4	-49.9	75.0	4.01	44.92	0.165
	1342	1.155	6.30	0.379	16.3	-34.1	38.9	4.75	44.93	0.165
	1347	1.32	6.26	0.376	16.3	-22.3	56.2	5.40	44.93	0.165
	1352	1.485	6.24	0.373	16.3	-17.0	18.6	5.46	44.93	0.165
	1357	1.65	6.19	0.372	16.3	2.8	18.6	6.15	44.93	0.165
	1402	1.815	6.18	0.371	16.4	6.0	21.3	6.51	44.93	0.165
	1407	1.98	6.16	0.370	16.3	12.9	9.6	6.74	44.93	0.165
	1412	2.145	6.16	0.369	16.3	16.5	12.2	6.84	44.93	0.165
	1417	2.31	6.16	0.369	16.3	17.7	11.9	6.85	44.93	0.165
	1422	2.475	6.16	0.369	16.3	17.2	11.8	6.90	44.93	0.165

COMMENTS Sample Time 1422, shake test performed - No Bubbles observed

SIGNATURE _____

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 6342.0383
Ronkonkoma ~~AASF~~

WELL ID RONAASF-03 SAMPLE NO. RONAASF-03-GW

WELL/SITE DESCRIPTION Grassy field west of AASF #1

DATE 11/17/21 TIME 1320 AIR TEMP. _____

WELL DEPTH 49.85 ft CASING HEIGHT _____ ft
WATER DEPTH 44.37 ft WELL DIAMETER _____ in
WATER COL. HEIGHT _____ ft SANDPACK DIAM. _____ in
EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)
PUMP RATE _____ (gpm) (LPM)
PUMP TIME _____ min
WELL WENT DRY? ( ) Yes ( ) No PUMP TIME _____ min
VOL. REMOVED _____ (gal) (L) RECOVERY TIME _____ min
PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond. ms/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate
11/17/21	1324	-	7.06	0.573	15.1	-140.4	25.1	11.21	44.37	0.175
	1326	0.875	7.06	0.472	15.1	-138.0	16.5	11.19	44.37	0.175
	1331	1.05	7.05	0.670	15.1	-138.4	21.7	11.16	44.36	0.175
Resumed purge →	1348	1.225	6.95	0.659	15.0	119.1	490.1	11.05	44.37	0.160
	1353	1.385	6.93	0.655	14.9	-126.6	263.1	11.15	44.37	0.160
	1358	1.545	6.91	0.649	14.9	-123.3	271.4	11.20	44.37	0.160
	1403	1.705	6.86	0.661	14.8	-115.5	76.8	11.48	44.37	0.160
	1408	1.865	6.86	0.658	14.8	-116.5	60.2	11.43	44.37	0.160
	1413	2.025	6.86	0.654	14.7	-114.8	30.4	11.60	44.37	0.160
	1418	2.185	6.86	0.629	14.7	-113.8	15.8	11.52	44.37	0.160
	1423	2.345	6.86	0.623	14.7	-113.9	13.3	11.52	44.37	0.160
↓	1428	2.505	6.86	0.625	14.7	-113.6	11.3	11.49	44.37	0.160

COMMENTS Stopped purging at 1334 to clean inside YSI. Resumed purging again at 1348. Sample Time 1428. Shake test performed – no bubbles

SIGNATURE _____

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 6342503.83 RonKoma AASF

WELL ID RONAASF-04 SAMPLE NO. RONAASF-04-GW

WELL/SITE DESCRIPTION

DATE 11/17/21 TIME 0934 AIR TEMP.

WELL DEPTH 49.97 ft CASING HEIGHT ft

WATER DEPTH 44.46 ft WELL DIAMETER 1 in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE 0.165 changed to 0.15 at 1020 (gpm) (LPM)

PUMP TIME 100 min

WELL WENT DRY? ( ) Yes (X) No PUMP TIME min

VOL. REMOVED (gal) (L) RECOVERY TIME min

PURGE AGAIN? ( )Yes (X) No TOTAL VOL. REMOVED (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond. ms/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate L/m
11/17/21	1000	-	6.44	0.271	15.5	-41.8	498	4.43	44.46	0.165
	1005	0.825	6.45	0.271	15.6	-48.9	316	4.32	44.46	0.165
	1010	0.99	6.43	0.270	15.8	-54.5	93.0	4.35	44.46	0.165
	1015	1.155	-	-	-	-	-	-	-	-
	1020	1.34	6.44	0.266	16.6	-43.9	61.4	4.84	44.46	0.150
	1025	1.29	6.41	0.267	16.3	-50.5	28.1	4.13	44.46	0.150
	1030	1.44	6.38	0.263	15.7	-57.8	10.9	4.04	44.46	0.150
	1035	1.59	6.38	0.258	16.0	-52.1	7.2	4.95	44.46	0.150
	1040	1.74	6.36	0.256	16.0	-50.6	7.1	4.89	44.46	0.150
	1045	1.89	6.31	0.248	15.7	-43.1	5.0	5.27	44.46	0.150
	1050	2.04	6.30	0.245	15.5	-37.5	4.6	5.45	44.46	0.150
	1055	2.19	6.27	0.240	15.5	-27.4	4.7	5.83	44.45	0.150
	1100	2.34	6.27	0.239	15.5	-21.6	4.7	5.98	44.46	0.150

NO reading

COMMENTS Battery dead. stopped purging at 1013. started purging again 1020. Sample time 1110. shake test performed - No bubbles observed.

SIGNATURE

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

WELL ID PONAASF-04 SAMPLE NO. PONAASF-04-GW

WELL/SITE DESCRIPTION _____

DATE ____/____/____ TIME _____ AIR TEMP. _____

WELL DEPTH _____ ft CASING HEIGHT _____ ft

WATER DEPTH 44.46 ft WELL DIAMETER 1 in

WATER COL. HEIGHT _____ ft SANDPACK DIAM. _____ in

EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)

PUMP RATE _____ (gpm) (LPM)

PUMP TIME _____ min

WELL WENT DRY? ( ) Yes ( ) No PUMP TIME _____ min

VOL. REMOVED _____ (gal) (L) RECOVERY TIME _____ min

PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit:	pH	Cond.	Temp.	ORP	Turb.	DO	Depth to Water from TOC	Pump Rate
11/17/21	1105	2.49	6.26	0.238	15.4	-18.9	4.9	6.10	44.45	0.150
	1110	2.64	6.26	0.238	15.3	-16.3	5.4	6.41	44.46	0.150
~~———~~	~~1115~~	~~2.79~~								

COMMENTS _____

SIGNATURE _____

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 634250383
Ronkonkoma AASF

WELL ID RONAASF-05 SAMPLE NO. RONAASF-05-GW
WELL/SITE DESCRIPTION Grassy field south of AASF #1 (Ronkonkoma)

DATE 11 / 17 / 21 TIME 0728 AIR TEMP. _____

WELL DEPTH ~~43.71~~ 49.75 ft CASING HEIGHT _____ ft
WATER DEPTH 43.71 ft WELL DIAMETER 1 in
WATER COL. HEIGHT _____ ft SANDPACK DIAM. None in
EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)
PUMP RATE 0.150 L/M (gpm) (LPM)
PUMP TIME 0730 min
WELL WENT DRY? ( ) Yes (X) No PUMP TIME _____ min
VOL. REMOVED 2.4 (gal) (L) RECOVERY TIME _____ min
PURGE AGAIN? ( ) Yes (X) No TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond. ms/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate L/M
11/17/21	0731	-	6.34	0.257	12.8	-9.9	183	7.17	43.71	0.150
	0736	0.75	6.93	0.258	13.1	-14.7	126	6.83	43.71	0.150
	0741	1.5	6.18	0.261	13.4	-32.1	24.7	6.18	43.72	0.150
	0746	1.65	6.37	0.252	13.6	-38.9	5.5	6.37	43.72	0.150
	0751	1.8	6.37	0.245	13.6	-32.2	4.1	6.87	43.72	0.150
	0756	1.95	6.38	0.243	13.7	-25.2	3.1	6.88	43.72	0.150
	0801	2.1	6.38	0.241	13.7	-24.3	3.1	7.52	43.72	0.150
	0806	2.25	6.38	0.240	13.7	-24.7	4.4	7.54	43.72	0.150
	0811	2.4	6.38	0.240	13.7	-23.9	3.2	7.54	43.72	0.150

COMMENTS 1430 - Battery died. 1438 pulled pump up and 1441 started pump again. started pumping at RONAASF-05 0730 on 11/17/21. Sample Time 0811. shake test performed - No bubbles MS/MSD Collected for RONAASF-05

SIGNATURE Eglinton

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA #34250383 RONKONKOMA AFSF

WELL ID RONAASF-06 SAMPLE NO. RONAASF-06-GW

WELL/SITE DESCRIPTION Grassy field west of main entrance into AFSF.

DATE 11/18/21 TIME 0729 AIR TEMP. _____

WELL DEPTH 49.49 ft CASING HEIGHT _____ ft

WATER DEPTH 45.19 ft WELL DIAMETER 1 in

WATER COL. HEIGHT _____ ft SANDPACK DIAM. None in

EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)

PUMP RATE 0.150 (gpm) (LPM)

PUMP TIME 0753 min

WELL WENT DRY? ( ) Yes (X) No PUMP TIME _____ min

VOL. REMOVED _____ (gal) (L) RECOVERY TIME _____ min

PURGE AGAIN? ( )Yes (X) No TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond. ms/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate L/M
11/18/4	0753	-	6.51	0.329	16.1	-123.9	232.7	2.34	45.19	0.150
	0758	0.75	6.55	0.372	16.1	-130.9	164.3	2.23	45.21	0.150
	0803	0.9	6.55	0.409	16.2	-131.5	61.3	2.31	45.21	0.150
	0808	1.05	6.53	0.455	16.2	-128.2	29.7	2.50	45.21	0.150
	0813	1.2	6.49	0.486	16.4	-122.5	16.8	2.74	45.21	0.150
	0818	1.35	6.46	0.499	16.3	-116.9	12.5	2.93	45.21	0.150
	0823	1.5	6.43	0.510	16.3	-110.8	10.8	3.15	45.20	0.150
	0828	2.15	6.38	0.523	16.3	-100.4	12.8	3.56	45.20	0.150
	0833	2.3	6.34	0.522	16.3	-92.3	14.7	4.0	45.20	0.150
	0838	2.45	6.32	0.524	16.3	-88.0	14.9	4.26	45.19	0.150
	0843	2.6	6.31	0.524	16.2	-85.7	14.4	4.27	45.19	0.150
↓	0848	2.75	6.31	0.524	16.3	-84.9	14.7	4.29	45.19	0.150

COMMENTS Sample Time - 0848. Shake test performed - No bubbles observed

SIGNATURE _____

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 6342503 83 Ronkonkoma AASF

WELL ID AOI01-01 SAMPLE NO. AOI01-01-GW

WELL/SITE DESCRIPTION Grassy field south of Ronkonkoma AASF #1

DATE 11 / 16 / 2021 TIME 1115 AIR TEMP. 46°F

WELL DEPTH ~54 ft CASING HEIGHT ____ ft

WATER DEPTH 46.52 ft WELL DIAMETER 1 in

WATER COL. HEIGHT ~8' ft SANDPACK DIAM. none in

EQUIVALENT VOLUME OF STANDING WATER ____ (gal) (L)

PUMP RATE 0.125 L/M (gpm) (LPM)

PUMP TIME 1134 min

WELL WENT DRY? ( ) Yes ( ) No PUMP TIME 1139 min

VOL. REMOVED 8.75 (gal) (L) RECOVERY TIME 1249 min

PURGE AGAIN? ( ) Yes (X) No TOTAL VOL. REMOVED 3 (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond. ms/cm	Temp. °C	ORP mV	Turb. NTU	DO mg/L	Depth to Water from TOC	Pump Rate mL/M
11/16/21	1139	-	6.69	0.534	15.7	-136.2	109.7	2.68	46.52	0.125
11/16/21	1144	0.625	6.70	0.517	15.5	-124	56	2.99	46.51	0.125
	1149	1.25	6.68	0.496	15.4	-124.1	48	3.00	46.51	0.125
	1154	1.875	6.68	0.495	15.3	-124.3	46	3.01	46.51	0.125
	1159	2.5	6.68	0.496	15.3	-124.4	36	3.01	46.51	0.125
	1204	3.125	6.64	0.476	15.5	-122.3	15.6	2.99	46.51	0.125
	1209	3.75	6.62	0.463	15.3	-119.5	7.5	3.38	46.51	0.125
	1214	4.375	6.61	0.457	15.2	-115.9	6.5	3.14	46.50	0.125
	1219	5.0	6.57	0.438	15.1	-104.6	5.6	3.42	46.50	0.125
	1224	5.625	6.56	0.435	15.1	-103.9	4.9	3.46	46.50	0.125
	1229	6.25	6.55	0.434	15.1	-103.7	4.7	3.49	46.50	0.125
	1234	6.875	6.50	0.409	15.2	-73.5	4.8	4.47	46.51	0.125
	1239	7.5	6.50	0.404	15.3	-73.4	4.6	4.43	46.51	0.125

COMMENTS ____

SIGNATURE [signature]

EA Engineering, Science, and Technology, Inc.

2 of 2

WELL PURGING AND SAMPLING RECORD

WELL ID AOI01-01 SAMPLE NO. _____

WELL/SITE DESCRIPTION _____

DATE ____/____/____ TIME _____ AIR TEMP. _____

WELL DEPTH See page 1 ft CASING HEIGHT _____ ft

WATER DEPTH _____ ft WELL DIAMETER _____ in

WATER COL. HEIGHT _____ ft SANDPACK DIAM. _____ in

EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)

PUMP RATE _____ (gpm) (LPM)

PUMP TIME _____ min

WELL WENT DRY? ( ) Yes ( ) No PUMP TIME _____ min

VOL. REMOVED _____ (gal) (L) RECOVERY TIME _____ min

PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit:	pH	Cond.	Temp.	ORP	Turb.	DO	Depth to Water from TOC	Pump Rate
11/16/21	1244	8.125	6.50	0.404	15.2	-72.7	4.3	4.41	46.57	0.125
11/16/21	1249	8.75	6.50	0.403	15.2	-72.8	5.1	4.40	4651	0.125

COMMENTS Sample time 1249 - 3 bottles for PFAS
also collect RONAAS - FD-GW-01
Shake test performed - no bubbles

SIGNATURE _____

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 634250383
RONKONKOMA LIRF

WELL ID A0101-02 SAMPLE NO. A0101-02-GW
WELL/SITE DESCRIPTION NE of Hangar

DATE 11/18/21 TIME _____ AIR TEMP. 60°

WELL DEPTH ~48' bgs 49.98 ft CASING HEIGHT ~2' ft
WATER DEPTH 44.95 ft WELL DIAMETER 1" in
WATER COL. HEIGHT _____ ft SANDPACK DIAM. none in
EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)
PUMP RATE 180 mL/min (gpm) (LPM)
PUMP TIME 60 min min
WELL WENT DRY? ( ) Yes (X) No PUMP TIME 60 min
VOL. REMOVED 2.5 (gal) (L) RECOVERY TIME — min
PURGE AGAIN? ( ) Yes (X) No TOTAL VOL. REMOVED _____ (gal) (L)

11/18/21 Date	Time	Volume Removed Unit: gal	pH SU	Cond. mS/cm	Temp. °C	ORP mV	Turb. NTU	mg/L DO [redacted]	Depth to Water from TOC	Pump Rate [redacted] mL/min
[redacted]	1540	—								
	1550	—	6.73	1.151	16.5	-84.4	1633	2.77	44.98	180
	1555	—	6.78	1.035	16.2	-112.5	875	2.33	44.96	180
	1600	0.25 gal	6.78	0.930	16.1	-118.3	672	2.33	44.98	180
	1605	0.3 gal	6.77	0.822	15.9	-117.6	382	2.62	44.97	180
	1610	0.5 gal	6.75	0.757	15.8	-114.9	256.4	2.82	44.97	180
	1615	0.75 gal	6.74	0.715	15.7	-110.6	172.3	3.13	44.97	180
	1620	1.0 gal	6.72	0.679	15.7	-107.1	135.2	3.31	44.96	180
	1625	1.25 gal	6.71	0.652	15.6	-103.6	107.0	3.49	44.98	180
	1630	1.5 gal	6.70	0.630	15.5	-100.0	78.7	3.70	44.97	180
	1635	1.75	6.68	0.619	15.5	-94.6	58.8	3.95	44.98	180
	1640	2.0 gal	6.67	0.608	15.5	-91.2	94.5	4.11	44.98	180

COMMENTS Sample collected at 1642. Shaker test performed — no foaming.

SIGNATURE [signature]

EA Engineering, Science, and Technology, Inc.

WELL PURGING AND SAMPLING RECORD

EA 634250383
RonLonkoma AASF

WELL ID A0101-03 SAMPLE NO. A0101-03-GW
WELL/SITE DESCRIPTION East of hangar, grass

DATE 11 / 19 / 21 TIME 0905 AIR TEMP. _____

WELL DEPTH 49.50 ft
WATER DEPTH 45.47 ft
WATER COL. HEIGHT _____ ft
CASING HEIGHT _____ ft
WELL DIAMETER 1 in
SANDPACK DIAM. N/A in
EQUIVALENT VOLUME OF STANDING WATER _____ (gal) (L)
PUMP RATE [redacted] .12 (gpm) (LPM)
PUMP TIME _____ min
WELL WENT DRY? ( ) Yes ( ) No
PUMP TIME _____ min
VOL. REMOVED _____ (gal) (L)
RECOVERY TIME _____ min
PURGE AGAIN? ( )Yes ( ) No
TOTAL VOL. REMOVED _____ (gal) (L)

Date	Time	Volume Removed Unit: L	pH	Cond.	Temp.	ORP	Turb.	DO	Depth to Water from TOC	Pump Rate L/min
11/19	1000									
	1005	0.19	6.67	0.975	15.5	-76.5	199.0	3.84	[redacted]	0.038
	1010	[redacted] 8.94	6.65	0.977	15.5	-74.2	81.1	3.42	45.46	.07
	1015	8.99	6.65	0.973	15.4	-74.1	55.0	3.49	45.48	.09
	1020	1.59	6.65	0.972	15.6	-74.5	40.0	3.51	45.44	.12
	1025	2.19	6.64	0.971	15.4	-74.1	38.9	3.62	45.46	.12
*	1030	Emptied flow-thru cell due to stabilized parameters in order to try for a lower turbidity reading								
	1035	3.39	6.65	0.968	15.7	-62.7	29.0	4.11	45.46	.12
	1040	3.99	6.63	0.968	15.7	-60.3	22.4	4.18	45.46	.12
	1045	4.59	6.67	0.965	15.7	-58.6	19.5	4.28	45.46	.12
	1050	5.19	6.62	0.965	15.7	-56.9	19.0	4.36	45.46	.12

COMMENTS Sample collected at 1052. Shaker test performed, no foaming.

SIGNATURE [redacted]

Safety Checklists

U.S. Army Corps of Engineers
Safety Inspection Checklist
Drilling Equipment

Print Form

Date of Inspection: 11/16/21

Location (Plant or Facility): Ronkonkoma, NY	Contract Number: W912DR-19-D-0005
Contractor Name: ADT	Project Name: PFAS SI
Inspector Name (Print): Catherine Maxwell	for Signature: Catherine Maxwell

This checklist serves as a guide only, it does not replace or eliminate the need to comply with the requirements set forth in Engineering Manual 385-1-1, Safety and Health Requirements Manual, dated 15 September 2008. The references included in this checklist correspond to the applicable sections of EM 385-1-1.

Item Description	REF	Yes	No	N/A	Remarks (Any NO or N/A item)
1. Is drilling equipment operated, inspected, and maintained as specified in the manufacturer's operating manual?	18.H.02	X			
2. Is a copy of the manual for all drilling equipment available?	18.H.02	X			w/ Mechanic
3. Has a survey been conducted to identify overhead electrical hazards and potential ground hazards and their locations identified in the site layout plan?	18.H.03	X			
4. Are all findings of the survey a part of the AHA?	18.H.03.b	X			in CSM field notes + ground marked
5. Does the AHA contain copies of Material Safety Data Sheets for all drilling fluids available?	18.H.03.a	X			
6. Have all members of the drilling crew been trained the operation, inspection, and maintenance of the equipment; the safety features and procedures to be used; and overhead electrical lines and underground hazards?	18.H.05	X			
7. Does the drilling equipment have two easily accessible emergency shut down devices (one for the operator and one for the helper)?	18.H.06	X			
8. Is the equipment posted with a warning of electrical hazards?	18.H.07	X			
9. Is there a spotter or an electrical proximity warning device available to ensure safe distances from power lines are maintained?	18.H.07.b			X	N/A no OV lines
10. Before moving earth drilling equipment, has the travel route been surveyed for overhead and terrain hazards, particularly overhead electrical hazards, mast lowered?	18.H.08	X			11 11
11. Is equipment set-up in a stable manner, with cribbing if necessary?	18.H.09	X			
12. Are outriggers being used in accordance with the manufacturer's recommendations, if drilling is in confined space are requirements of 34A followed?	18.H.09			X	TextField2
13. Are drill rigs properly secured/identified when parked on highway or shoulder?	18.H.10	X			
14. Are drill crew members prohibited from wearing loose clothing, jewelry, or equipment which might become caught in moving machinery?	18.H.11.b	X			

U.S. Army Corps of Engineers
Safety Inspection Checklist
Drilling Equipment

Date of Inspection: 9/16/21

Item Description	REF	Yes	No	N/A	Remarks (Any NO or N/A item)
15. Are slip rings or other rod slipping devices on the drill?	18.H.11.h	X			winch
16. Are steps being taken to control dust?	18.H.11.i	X			water
17. Are augers cleaned only when the rotating mechanism is in neutral and the auger is stopped?	18.H.11.j			X	
18. Are augers guarded?	18.H.11.j			X	
19. Are open bore holes capped and flagged?	18.H.11.k	X			
20. Are open excavations barricaded?	18.H.11.k			X	

Other Remarks

INITIAL SAFETY INSPECTION CHECKLIST
(TO BE COMPLETED FIRST DAY OF SITE ACTIVITIES)

Site: Ronkonkoma, NY
Location: " "
Project No.: 63425038.3
Client: USACE / ARNG

Prepared by SSHO: Catherine Maxwell
Project Manager: Mike O'Neill
Date: 11/16/21

Rating	S	U	N/A	Comments/Immediate Corrective Action[a]
Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) General Requirements				
Was a pre-entry safety briefing conducted? If so, did it include the following: • Site personnel and roles and authority to stop work? • Competent person(s) for identifying hazards? • Disclosure of potential hazards? • Emergency response procedures including rally point, contacts, location and directions of nearest medical support (hospital)? • Use of fire extinguishers • Vehicle rules/regulations? • Equipment to be used and those personnel qualified to use the equipment? • Methods of decontamination? • Storing/staging of wastes and materials? • Location/use of Safety Data Sheets? • Site control, including requirements for documenting entry into the site and procedures for entry and exit into work zones? • Task specific personal protective equipment (PPE) requirements? • Applicable standard operating procedures? • Environmental monitoring requirements and action levels? • Responsibilities for safety of personnel/property? • Safe work practices? • Procedures for maintaining personnel and site sanitation?	✓			
Approved APP/SSHP onsite?	✓			
APP/SSHP compliance agreement form signed by onsite personnel, including subcontractors?	✓			
New activities or hazards identified and incorporated into revised APP/SSHP?	✓			
Names of onsite personnel recorded on site sign-in sheet?	✓			

Rating	S	U	N/A	Comments/Immediate Corrective Action[a]
Applicable Safety Data Sheets onsite or available?	✓			
Hazard labeling practices currently being used?	✓			
Records of daily inspections available for review?	✓			
Daily tailgate safety meetings conducted and documented?	✓			
Onsite personnel meet SSHP requirements for medical examinations, fit testing (if applicable), and training (including subcontractors)?	✓			
Documentation of training, medical examinations, and fit tests available from employer (as applicable)?	✓			
Compliance with specified safe work practices?	✓			
Exclusion (EZ), Contamination Reduction (CRZ), and Support Zones (SZ) delineated and enforced?	✓			
Windsock, flag, or ribbons in place to indicate wind direction?	✓			
SZ located upwind from EZ and CRZ, as practicable?	✓			
Emergency Planning				
Emergency telephone numbers posted?	✓			
Emergency telephone numbers up to date?	✓			
Emergency route to hospital posted?	✓			
Local emergency providers notified of site activities?	✓			
Fire extinguisher on site, of adequate size, and inspected within past month?	✓			
Review weather emergency procedures?	✓			
Adequate safety equipment inventory available?	✓			
First aid provider and first aid supplies available?	✓			
Eyewash available?	✓			
Communication equipment readily available for emergencies?	✓			
Any reported accidents/incidents at this site? If so, are the accident/incident reports available for review?	✓			none
Air Monitoring				
Monitoring equipment specified in SSHP available and in working order (See Instrumentation list below)?	✓			
Monitoring equipment calibrated and calibration records available?	✓			
Personnel know how to operate monitoring equipment and equipment manuals available on site?	✓			
Environmental monitoring performed as specified in SSHP?	✓			
Air monitoring instrumentation includes: • Combustible gas meter?				n/a
PPE (SSHO to enforce PPE requirements for EA and subcontractor employees)				
Proper dermal protection worn when handling/ contacting hazardous chemicals or contaminated environmental media?	✓			

Rating	S	U	N/A	Comments/Immediate Corrective Action[a]
Required PPE (hard hats, safety boots / shoes, eye protection with side shields) being worn?	✓			
PPE inspection completed by SSHO?	✓			
Hearing protection available? Worn when required?	✓			
Heavy Equipment Operations				
Equipment operators experienced/properly trained?	✓			
Dust control measures implemented in EZ, as necessary?	✓			none necessary
Equipment regularly inspected and maintained?	✓			
Utility lines located and marked prior to construction activities?	✓			
Clearance/digging permits kept onsite and available for review?	✓			
When backing a vehicle up is a spotter used?	✓			
Supplies				
Decontamination equipment and supplies on site?	✓			
Fire extinguishers (functioning, inspected, and in field vehicles)?	✓			
Spill cleanup supplies on site?				
Investigation-Derived Waste (IDW)				
Wastes properly disposed of?	✓			
Designated location for drummed IDW?	✓			
IDW containers properly labeled?	✓			
Additional Comments:				

a. If a deficiency is noted that cannot be immediately corrected, the SSHO will monitor the progress in correcting the deficiency and will document following:

- Date the deficiency was identified
- Description of the deficiency
- Name of the person responsible for correcting the deficiency
- Projected date of correction
- Actual date of correction.

Notes:
N/A = Not applicable
S = Satisfactory
U = Unsatisfactory

Site Safety and Health Officer's Signature

11/16/21
Date

TAILGATE SAFETY MEETING

11/16/21

1. Reason for Briefing:			
X	Daily Safety Briefing		New Site Procedure
X	Initial Safety Briefing		New Site Information
	New Task Briefing		Review of Site Information
	Periodic Safety Meeting		Other: (Specify)

2. Personnel Attending:		
Name	Signature	Position
C. Maxwell		EA Archeologist
C. Helms		DRILL ASST
Luke		Drilling
Todd		ARNG PM
Jen Li		USACE
Kim (arrives 1200)		EA
Enock Bunyon		

Briefing Given By:

Catherine Maxwell, SSHO

3. Topics: (Check All That Apply)			
✓	Site Safety Personnel	✓	Decontamination Procedures
✓	Site/Work Area Description	✓	Emergency Response/Equipment
✓	Physical Hazards	✓	On-Site Injuries/Illnesses
✓	Chemical/Biological Hazards	✓	Reporting Procedures
✓	Heat/Cold Stress	✓	Directions to Medical Facility
✓	Work/Support Zones		Drug and Alcohol Policies
✓	PPE	✓	Medical Monitoring
✓	Safe Work Practices	✓	Evacuation/Egress Procedures
✓	Air Monitoring	✓	Communications
✓	Task Being Performed		Confined Spaces
	OE Precautions		Other:

4. Remarks:

VISITORS LOG

Project Location: Ronkonkoma, NY **Month of:** November

DATE:	NAME:	AGENCY OR COMPANY:	PURPOSE OF VISIT:	SAFETY BRIEFING:	ESCORT REQ:	TIME IN:	TIME OUT:	REMARKS:
11/16/21	Todd Laderwager	ADT	Drill	Y	Y	0645	1500	
↓	Catherine Maxwell	EA	SI	↓	Y	0630	1600	
	Caitlin Helms	EA	SI		Y	0645	1600	
	Luke Caballero	ADT	Drill		Y	0700	1500	
↓	Jen Li	ARNG	oversight	↓	Y	0700	1500	
	Enock Bunyon	EA	SI	Y	Y	0830	1600	
	Kim Berg	EA	oversight	Y	Y	1200	1500	

11/17/21

TAILGATE SAFETY MEETING

1. Reason for Briefing:			
X	Daily Safety Briefing		New Site Procedure
	Initial Safety Briefing		New Site Information
	New Task Briefing		Review of Site Information
	Periodic Safety Meeting		Other: (Specify)

2. Personnel Attending:

Name	Signature	Position
Catherine Maxwell		EA Engineer/CSHO
Caitlin Helms		EA Geo
Luke		Driller Asst
Todd		Driller
Jen Li		Acting PM
Enock Bunyon		EA
Kim Berg		USACE

Briefing Given By: Catherine Maxwell

3. Topics: (Check All That Apply)

✓	Site Safety Personnel	✓	Decontamination Procedures
	Site/Work Area Description	✓	Emergency Response/Equipment
✓	Physical Hazards	✓	On-Site Injuries/Illnesses
✓	Chemical/Biological Hazards	✓	Reporting Procedures
✓	Heat/Cold Stress		Directions to Medical Facility
✓	Work/Support Zones		Drug and Alcohol Policies
✓	PPE		Medical Monitoring
✓	Safe Work Practices		Evacuation/Egress Procedures
✓	Air Monitoring	✓	Communications
✓	Task Being Performed		Confined Spaces
	OE Precautions		Other:

4. Remarks:

VISITORS LOG

Project Location: Ronkonkoma AASF **Month of:** 11/17

DATE:	NAME:	AGENCY OR COMPANY:	PURPOSE OF VISIT:	SAFETY BRIEFING:	ESCORT REQ:	TIME IN:	TIME OUT:	REMARKS:
11/17/21	C. Maxwell	EA	SI	Y	Y	0615	1610	
11/17/21	Todd	ADT	Drill		Y	0615	1535	
	Luke	ADT	Drill		Y	0630	1535	
	C. Helms	EA	SI		Y	0630	1610	
	E Bunyon	EA	SI		X	0645	1610	
	J. Li	ARNG	SI		Y	0630	1535	
	K. Berg	USACE	SI		Y	0700	1535	

TAILGATE SAFETY MEETING 11/18/21

1. Reason for Briefing:

Y	Daily Safety Briefing		New Site Procedure
	Initial Safety Briefing		New Site Information
	New Task Briefing		Review of Site Information
	Periodic Safety Meeting		Other: (Specify)

2. Personnel Attending:

Name	Signature	Position
C. Maxwell		SSHO/Engineer
C. Helms		EA Geo
Todd		Driller
Luke		Driller Asst
Jen Li		ARNG PM
Enoch		EA
Donald Howe		EA

Briefing Given By: EA Catherine Maxwell

3. Topics: (Check All That Apply)

	Site Safety Personnel	✓	Decontamination Procedures
✓	Site/Work Area Description	✓	Emergency Response/Equipment
✓	Physical Hazards	✓	On-Site Injuries/Illnesses
✓	Chemical/Biological Hazards		Reporting Procedures
✓	Heat/Cold Stress	✓	Directions to Medical Facility
✓	Work/Support Zones	✓	Drug and Alcohol Policies
✓	PPE	✓	Medical Monitoring
✓	Safe Work Practices		Evacuation/Egress Procedures
✓	Air Monitoring		Communications
✓	Task Being Performed		Confined Spaces
	OE Precautions		Other:

4. Remarks:

VISITORS LOG

Project Location: Ponkonkoma **Month of:** 11/18/21

DATE:	NAME:	AGENCY OR COMPANY:	PURPOSE OF VISIT:	SAFETY BRIEFING:	ESCORT REQ:	TIME IN:	TIME OUT:	REMARKS:
11/8/21	C. Maxwell	EA	SI	Y	Y	0610	1700	
↓	C. Helms	EA	SI	↓	↓	0630	1700	
↓	E. Bunyon	EA	SI	↓	↓	0640	1600	
↓	Link	ADT	Drill	↓	↓	0600	1535	
↓	Jen Li	ARNG	SI	↓	↓	0635	1250	
↓	Todd	ADT	Drill	↓	↓	0625	1535	
	Donald Howe	EA	SI Obs.	Y	Y	1140	1355	

TAILGATE SAFETY MEETING 11/19/21

1. Reason for Briefing:

X	Daily Safety Briefing		New Site Procedure
	Initial Safety Briefing		New Site Information
	New Task Briefing		Review of Site Information
	Periodic Safety Meeting		Other: (Specify)

2. Personnel Attending:

Name	Signature	Position
Catherine Maxwell		EA
Caitlin Helms		EA
Kyle Todd		DT II Drilling
Jason Scalia		Surveyor
Nick Bosco		Surveying

Briefing Given By:

3. Topics: (Check All That Apply)

X	Site Safety Personnel	X	Decontamination Procedures
X	Site/Work Area Description	X	Emergency Response/Equipment
X	Physical Hazards	X	On-Site Injuries/Illnesses
	Chemical/Biological Hazards	X	Reporting Procedures
X	Heat/Cold Stress	X	Directions to Medical Facility
X	Work/Support Zones	X	Drug and Alcohol Policies
X	PPE		Medical Monitoring
X	Safe Work Practices	X	Evacuation/Egress Procedures
X	Air Monitoring	X	Communications
X	Task Being Performed		Confined Spaces
	OE Precautions		Other:

4. Remarks:

Diswssed tired/friday ness, be cognicant, watch out for each other, not too much rush

VISITORS LOG

Project Location: Ronkonkoma NY **Month of:** Nov.

DATE:	NAME:	AGENCY OR COMPANY:	PURPOSE OF VISIT:	SAFETY BRIEFING:	ESCORT REQ:	TIME IN:	TIME OUT:	REMARKS:
11/19/21	Catherine Maxwell	EA	SI	Y	Y	0645	1340	
	Caitlin Helms	EA				0645	1130	
	Todd	ADT				0645	1340	
	Luke	ADT				0645	1349	
	Jason	Salice				0900	1245	
	Nick	Salice				0900	1245	

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Appendix B3

Survey Data

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Ronkonkoma AASF #1 Survey Data
Scalice Land Surveying P.C.
19 November 2021

ID Number	Northing	Easting	Elevation	Notes
1	227816.928	1232068.242	82.565	SPIKE
2	227591.187	1232010.418	81.156	SPIKE
1001	227932.136	1232077.056	85.654	AOI01-01/TOC
1002	227473.808	1232053.332	82.323	RONAASF-05/TOC
1003	227458.736	1231623.616	82.772	RONAASF-04/TOC
1006	228144.141	1231631.978	83.61	RONAASF-03/TOC
1007	228338.625	1232014.024	84.59	RONAASF-02/TOC
1008	228591.072	1232210.441	85.229	RONAASF-01/TOC
1012	227575.277	1232314.71	83.955	RONAASF-06/TOC
1013	228229.851	1232339.283	85.067	AOI01-03/TOC
1014	228433.019	1232345.364	83.408	AOI01-02/TOC
2001	227932.136	1232077.056	82.524	AOI01-01/GROUND
2002	227473.808	1232053.332	80.403	RONAASF-05/GROUND
2003	227458.736	1231623.616	80.872	RONAASF-04/GROUND
2006	228144.141	1231631.978	81.74	RONAASF-03/GROUND
2007	228338.625	1232014.024	82.34	RONAASF-02/GROUND
2008	228591.072	1232210.441	83.369	RONAASF-01/GROUND
2012	227575.277	1232314.71	81.555	RONAASF-06/GROUND
2013	228229.851	1232339.283	83.087	AOI01-03/GROUND
2014	228433.019	1232345.364	83.028	AOI01-02/GROUND

Universal Transverse Mercator zone projection with World Geodetic System 1984 datum (horizontal)
North American Vertical Datum 1988 (vertical)
TOC = top of PVC casing

Appendix B4

Field Change Request Form

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FIELD CHANGE REQUEST FORM
ARNG PFAS SITE INSPECTION PROGRAM

Contract: W912DR-19-D-005
Installation: Ronkonkoma AASF (NYARNG)
Project No. 634250383
Requested By: Catherine Maxwell, EA SSHO
Field Change Request Number: 01

Description of Modification: The location of RONAASF-06 was moved approximately 50' north.

Reason for Modification: The original location of RONAASF-06 was on the southern border of the facility, in a landscaped island near the entrance driveway. The site fencing proceeds inwards near the driveway to accommodate the guard shack and, therefore, the drilling location was outside the fenceline, but inside the 'facility boundary'. To facilitate access with the drill rig and security of the monitoring well after installation, the location was moved north, inside the fenceline and adjacent to the guard shack. The monitoring well could be tampered with outside of the facility secure fencing. Jen Li (ARNG) concurred with this change of location onsite. Utility clearance was obtained at the new location. The revised location remains appropriate for downgradient/facility boundary monitoring.

Approval

Representing: EA
By: Michael O'Neill
Title: Project Manager
Date: 11/15/2021

Representing: ARNG G-9
By:
Title: Project Manager
Date:

Representing: USACE
By: Timothy Peck
Title: Program Manager
Date:

Appendix C

Photographic Log

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Appendix C - Photographic Log

Site Inspection for PFAS	Ronkonkoma Army Aviation Support Facility #1	New York

Photograph No. 1

Date: 15 November 2021

Time: 1230

Description:
GPR and utility location at RONAASF-03. Facility fenceline and adjacent MacArthur Airport facilities in the background.

Orientation:
Northwest

Photograph No. 2

Date: 15 November 2021

Time: 1500

Description:
GPR and utility location at RONAASF-06.

Orientation:
East

Appendix C - Photographic Log

Site Inspection for PFAS	Ronkonkoma Army Aviation Support Facility #1	New York

Photograph No. 3

Date: 17 November 2021
Time: 0710

Description:
Soil classification and sampling at RONAASF-04.

Orientation:
Southwest

Photograph No. 4

Date: 17 November 2021
Time: 0950

Description:
Installation of temporary well point in the borehole at RONAASF-04. Dust monitoring equipment is visible in the background.

Orientation:
East

Appendix C - Photographic Log

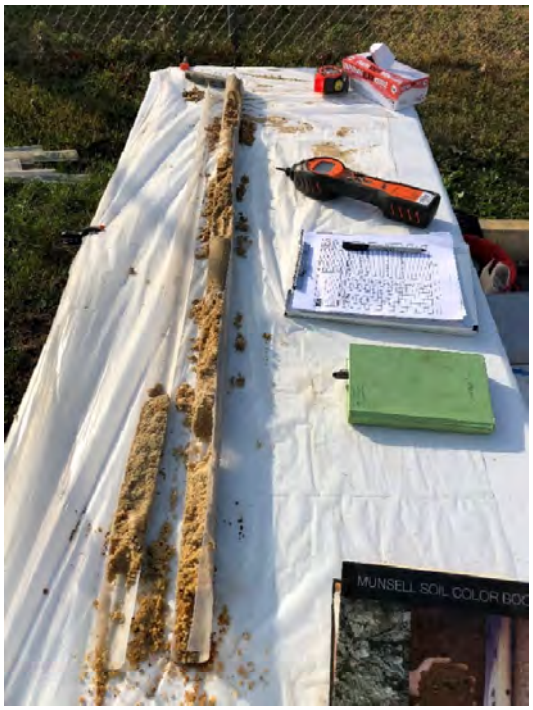
Site Inspection for PFAS	Ronkonkoma Army Aviation Support Facility #1	New York

Photograph No. 5

Date: 17 November 2021
Time: 1330

Description:
Representative soil sample sleeve from the geoprobe with screening/classification equipment. Sand was prevalent at the site.

Orientation:
Down



Photograph No. 6

Date: 17 November 2021
Time: 1330

Description:
Boring advancement at RONAASF-06.

Orientation:
South

Appendix C - Photographic Log

Site Inspection for PFAS	Ronkonkoma Army Aviation Support Facility #1	New York

Photograph No. 7

Date: 18 November 2021
Time: 1420

Description:
Representative view of gravelly sand at the site. Sand varied in color from tan to red to orange.

Orientation:
Down

Photograph No. 8

Date: 19 November 2021
Time: 1255

Description:
View of location AOI01-02 post-abandonment.

Orientation:
Northwest

Appendix C - Photographic Log

Site Inspection for PFAS	Ronkonkoma Army Aviation Support Facility #1	New York

Photograph No. 9

Date: 17 November 2021
Time: 0740

Description:
Representative view of groundwater purging and monitoring setup using PFAS-free bladder pump.

Orientation:
Southeast

Date: 15 November 2021
Time: 1015

Description: Photo taken during SI of the Jet-X™ high expansion foam (HEF) tanks inside the hangar. Note the inset describing the tanks contain Jet-X.

Appendix D

Technical Planning Project Meeting Minutes

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Meeting Minutes
Ronkonkoma Army Aviation Support Facility (AASF) #1 – Site Inspection (SI)
Technical Project Planning (TPP) – Meeting 3
SI for Per- and Polyfluoroalkyl Substances (PFAS) Impacted Sites, Army National Guard (ARNG) Installations, Nationwide
Contract Number (No.) W912DR-19-D-0005, Task Order No. W912DR20F0383
Wednesday, 6 July 2023
1200 to 1330 hours EST

Participants		
Name	Affiliation*	E-Mail
Brian Jankauskas	NYSDEC	brian.jankauskas@dec.ny.gov
John Swartwout	NYSDEC	john.swartwout@dec.ny.gov
Julia Kenney	NYSDOH	julia.kenney@health.ny.gov
Charlotte Bethoney	NYSDOH	-
Shelley LaRose	Long Island MacArthur Airport	slarose@islipny.gov
Robert Schneider	Long Island MacArthur Airport	RSCHNEIDER@islipny.gov
Taryn Jewell	Long Island MacArthur Airport	-
Steven Feldman	Arcadis	-
Agnes Link-Harrington	Arcadis	-
Christopher Engler	Arcadis	christopher.engler@arcadis.com
Jennifer Li	ARNG – G9	jennifer.j.li2.ctr@army.mil
Emily Cline	USACE Baltimore	Emily.J.Cline@usace.army.mil
Kim Berg	USACE Baltimore	kimberly.a.berg@usace.army.mil
Josiah Fernandez	USACE Baltimore	-
Greg Austin	NYARNG	gregory.t.austin.nfg@army.mil
James Williamson	NYARNG	james.l.williamson133.nfg@army.mil
1LT Steves Vanderpool	NYARNG	steves.vanderpool.mil@army.mil
Mike Kepner	EA	mkepner@eaest.com
Mike O'Neill	EA	moneill@eaest.com

*NYSDEC – New York State Department of Environmental Conservation; NYSDOH – New York State Department of Health; ARNG G9 – Army National Guard; NYARNG –New York Army National Guard; USACE – United States Army Corps of Engineers; and EA – EA Engineering, Sciences, and Technology, Inc., PBC

Mike Kepner (EA SI Task Manager) welcomed participants and began the meeting with an overview of the agenda and a roll call with introductions. He noted the purpose of the meeting was to discuss the results of the SI for PFAS that was conducted to determine presence/absence of releases at Ronkonkoma AASF #1, New York. The meeting was held virtually so there was no sign-in sheet for attendees; however, an attendance record was maintained. The TPP briefing slides are included as **Attachment A** to these meeting minutes.

Mr. Kepner conducted a safety moment, summarizing the importance of emergency preparedness. He highlighted that it is important to have awareness of the potential hazards in the area you reside in and how potential emergencies are relayed in that area. He also explained that it is vital to have emergency supplies and a well thought out escape plan in the case that evacuation is required.

Key points discussed during the presentation are provided below.

Programmatic Discussion (Slides 5-7):

- The TPP process is a USACE-established process with the main goal of engaging stakeholders in project planning and reporting. The ARNG follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process for their nationwide program that incorporates state-specific guidance, as necessary.
- The previous TPP1/2 meeting provided an overview of the ARNG program/SI process, defined the data quality objectives, provided an opportunity for stakeholders to discuss the SI Work Plan, and discussed the proposed SI approach.
- The purpose of the TPP3 meeting is to present the SI results and revised conceptual site model (CSM) and afford the stakeholders opportunity to discuss the SI report and any comments on the SI Report.

Ronkonkoma AASF Preliminary Assessment (PA) Findings and SI Approach (Slides 8-12):

- Mr. Kepner provided a brief overview of the PA findings. During the PA, two potential PFAS source areas were identified.
    - Potential Source Areas: Area of Interest (AOI) 1 consists of the Ronkonkoma AASF #1 Hangar Release and Aqueous Film Forming Foam (AFFF) Storage.
        - According to the PA, in 2007, the hangar was equipped with a fire suppression deluge system containing 3% Ansul AFFF high expansion foam.
        - It should be noted that ARNG personnel verified the deluge system contains Jet-X ™ High Expansion Foam (HEF), not AFFF during the SI.
        - HEF may contain fluorinated compounds but is unlikely to result in concentrations of the relevant compounds that exceed their respective criteria based on the information available at the time of reporting.
        - AFFF is present at the hangar stored in two 36-gallon manual floor units which have no documented release or use.
- In addition to the AOIs, the PA identified several adjacent areas of concern.
    - The Long Island MacArthur Airport, located north and upgradient of AOI 1, is considered an adjacent source due to the potential use of AFFF in association with typical airport operations and the unknown nature of fire suppression systems in any of the private hangars.
    - Additionally, on the western edge of the airport, in 1999, a helicopter crash occurred on a runway and it is unknown whether emergency units utilized fire suppression materials containing AFFF.
    - The second area of concern (AOC) is the Long Island MacArthur Fire Department which is located approximately 300 feet (ft) northeast (cross-gradient) of the facility.
    - The Town of Islip Hazardous Materials Response Team works in tandem with the Long Island MacArthur Airport Fire Department, and during the PA site visit, a pallet of 5-gallon buckets that were labeled as Ansul products was observed in the facility parking lot (cross-gradient).

- The SI data quality objectives were reviewed and consist of determining presence or absence of relevant PFAS compounds related to the potential release at the AOI, refining the CSM, and checking for alternate sources of PFAS contamination.
- The summary of the SI approach included a review of the screening levels (SLs) used for this SI program. SI soil and groundwater data were compared to Office of the Secretary of Defense (OSD) SLs.
    - Soil 0-2 ft depth was compared to residential SLs; soil 2-15 ft depth was compared to industrial SLs.
    - Groundwater was compared to tap water SLs.
    - Perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), perfluorobutanesulfonate (PFBS), perfluorohexane sulfonic acid (PFHxS), and perfluorononanoic acid (PFNA) were compared to SLs. The hexafluoropropylene oxide – dimer acid (HFPO-DA) SL was established after SI planning and execution and therefore was not included as an analyte. The presence of HFPO-DA is not anticipated at the Facility because HFPO-DA is generally not a component of military specification AFFF and is generally not a component of other products the military used.

Ronkonkoma AASF #1 CSM, Activities, and Results (Slides 13- 31):

- Mr. Kepner indicated that flow is generally away from the impervious runways and roads within the airport, with some of that drainage being directed to the south towards dry wells to the north and northeast of the AASF.
    - Surface and subsurface drainage within the actual AASF is generally to the south. According to the ARNG Assets map, the subsurface system parallels the hangar.
- Ronkonkoma AASF #1 is underlain by unconsolidated glacial sediments and gravel. The facility is located above the Upper Glacial Aquifer.
    - Based on observations from the SI, depth to groundwater is 38-39 ft above mean sea level across the facility and shallow groundwater flow is generally to the southwest.
- As part of the investigation, EA installed nine temporary wells using direct push.
    - The six wells with RONAASF nomenclature were considered boundary wells to assess what was coming on to and leaving the facility.
    - The remaining three wells were installed to the east and south of the Hangar to directly assess the AOI.
    - In general, as a programmatic rule of thumb, installing wells in impervious areas is avoided.
        - During this investigation, only location RONAASF-01 had asphalt at the surface; all other locations were in grassy areas.
    - EA collected three soil samples from each location:
        - One shallow sample from 0 to 2 ft bgs,
        - One intermediate sample from 14-15 ft bgs, and
        - One deep sample from 44-48 ft bgs.
    - EA collected grab groundwater samples from nine temporary monitoring wells (ranging from approximately 48-52 ft bgs).
- Mr. Kepner summarized the results of the SI investigation
    - PFAS was confirmed to be present in soil and groundwater at AOI 1.

  - PFOS, PFOA, and PFNA detected in soil.
    - No PFAS compounds were found above the OSD SLs.
    - Highest concentrations of PFOS (1.6 micrograms per kilogram [µg/kg]) and PFNA (1.6µg/kg) were detected in surface soil at AOI01-01.
  - Mr. Kepner summarized the AOI groundwater samples.
    - Highest detection of PFOA at the AOI was 89 nanograms per liter (ng/L) (AOI01-02).
    - Highest detection of PFOS at the AOI was 85 ng/L (AOI01-02).
    - Highest detection of PFNA at the AOI was 11 ng/L (AOI01-01).
  - Mr. Kepner summarized the boundary groundwater samples.
    - Highest detection of PFOA at the boundary (upgradient) was 130 ng/L (RONAASF-01).
    - PFHxS was detected in groundwater at RONAASF-03 at a concentration of 120 ng/L (no other detections).
    - Highest detection of PFOS at the boundary was 55 ng/L (RONAASF-03).
    - Highest detection of PFNA at the boundary was 150 ng/L (RONAASF-01).
- Mr. Kepner reviewed the updated CSM.
- Following the CSM discussion, Mr. Kepner summarized the MacArthur Airport Site Characterization Report Sampling.
  - He explained that 12 wells were sampled as part of the investigation.
  - He explained that well GWG-6-1, which was sampled to help assess AOC 6 (old fire house), is the closest well to the area of the AASF where we had the highest detections of PFOS and PFOA.
    - At this well, PFOS was detected in groundwater at a concentration of 4,250 ng/L and PFOA was detected at a concentration of 1,000 ng/L. Both concentrations were significantly higher than anything detected in the ARNG SI.
    - Additionally on the upgradient side of this well, PFOS was detected at concentrations of greater that 7,000 ng/L and 22,000 ng/L in two wells to the northwest. These wells were sampled to assess a fire training area.
    - In addition to PFOS, PFOA was detected at concentrations of 834 and 1,300 ng/L within these wells.
    - Mr. Kepner explained that releases associated with the fire training area and fire house may be leading to the exceedances detected within the AASF.
- In conclusion, Mr. Kepner explained that exceedances of the screening levels in groundwater on-site appear to be migrating from upgradient, off-site sources not under the control of the ARNG.
- These off-site, up/cross-gradient concentrations demonstrate that a plume with substantial concentrations of relevant compounds is present within the Airport complex in the vicinity of the facility and is entering the Ronkonkoma AASF #1 on its northeastern side.

Questions:

- Ms. Shelley LaRose asked for some insight on how locations for borings and wells were selected and why a well was not installed directly outside the hangar door to account for foam release.
    - Mr. Kepner explained that programmatically, an attempt is made to avoid punching through impervious surfaces. As such, no wells were installed directly outside the door. So for the most part, wells are installed within the nearest grass area and locations are also dictated by the presence of underground utilities.
    - Ms. Jen Li added that the investigation targeted downgradient boundary areas (using three wells along the downgradient boundary) in hopes of capturing any groundwater contamination that may be flowing off of those sites that could have been missed otherwise.
- Ms. Agnes Link-Harrington asked what the infrastructure of the subsurface was in relation the deluge system. Are there two long trench drains that go to the underground tanks?
    - Ms. Li explained that based on her recollection, there is no additional infrastructure.
- Ms. Agnes Link-Harrington asked why the fire extinguisher training area was not included as a release area.
    - Ms. Li explained that PA interviews confirmed that no foam was used at that training area. The training area was only used for dry extinguishers. Additionally, several samples were collected downgradient of the fire training area, so they would have accounted for any release from there.
- Mr. Brian Jankauskas asked if the subsurface drainage features and dry wells illustrated on the ARNG asset figure can be incorporated into the report.
    - Mr. Kepner and Ms. Li confirmed that aspects of the figure can be included. Additionally, it was confirmed that the assets figure will be distributed to the group.
- Mr. Jankauskas asked if Mr. Kepner could expand on how wells were installed and how groundwater elevations and flow were determined during the investigation.
    - Mr. Kepner explained that temporary wells were installed using direct push.
    - When groundwater was reached, the boring was over-drilled and 5 ft of slotted screen was placed.
    - Wells were left to equilibrate for 24 hours before a synoptic well gauging occurred,
    - Ms. Li added that a licensed surveyor was used to measure the top of casing at each location and those measurements were used in conjunction with water level measurements.
- Ms. Agnes Link-Harrington asked if the deepest soil samples were completely saturated.
    - Mr. Kepner explained that they were collected a foot above the groundwater interface, so they were not completely saturated.
    - Ms. Li added that groundwater depths measured during the well installation and synoptic measurements tend to vary.
- Mr. Steven Feldman asked if state regulations are considered during these investigations.
    - Ms. Li confirmed that the program screening levels come from OSD and are based on the EPA Regional Screening Levels.

- Ms. Agnes Link-Harrington mentioned that the groundwater lab reports are missing from Appendix F.
    - Mr. Kepner confirmed that those can be included with the backcheck version of the report.
- Mr. Feldman explained that he disagrees with using site-specific measurements to infer what the groundwater flow regime is upgradient of the AASF.
    - Ms Link-Harrington asked that slides be corrected to show flow arrows were annotated by EA versus which parts are from SCR figures.
    - Ms. Li mentioned that the slide will be corrected, as the presentation will become a part of the final report.
- Mr. Feldman asked how certain we are that there was not an on-site source. Is there confidence in the CSM that was developed?
    - Ms. Li explained that based on our current understanding and the swath of data collected across the site, including our most downgradient boundary, the data to date indicates that we do not have a local release on-site and in consultation with our attorney, it is supportive of the no further action at this time.

Action Items:

- Formal RTC will be submitted for approval
- EA will finalize the SI report.

ATTACHMENT A

TPP Briefing Slides

Army Aviation Support Facility #1 Ronkonkoma, New York

New York Army National Guard (NYARNG)

Technical Project Planning (TPP) Meeting 3

Preliminary Assessments and Site Inspections (PA/SI) for Perfluorooctanesulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA) Impacted Sites

July 2023

EA Engineering, Science, and Technology, Inc., PBC

Introductions

- ARNG G9
  - Jennifer Li, SI Project Manager
- United States Army Corps of Engineers (USACE)
  - Emily Cline, Program Manager/SI Project Manager
  - Kim Berg, Technical Support
- NYARNG
  - James Williamson, Environmental Program Manager NYARNG
  - 1LT Steves Vanderpool, Environmental Protection Specialist Division of Military & Naval Affairs
  - Greg Austin, Environmental Compliance NYARNG
- New York State Department of Environmental Conservation (NYSDEC)
  - Brian Jankauskas
  - John Swartwout
- New York State Department of Health (NYSDOH)
  - Julia Kenney
- Long Island MacArthur Airport
  - Shelley LaRose-Arken
  - Robert Schneider
- EA Engineering, Science, and Technology, Inc., PBC (EA)
  - Michael O'Neill, Project Manager
  - Michael Kepner, SI Task Manager

Agenda

- Introductions
- Safety Moment
- TPP Meeting Goals
- Army National Guard (ARNG) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Process Overview
- PA Overview
- SI Results
- Next Steps
- Questions and Open Discussion

Safety Moment
Emergency Preparedness

- Know your local potential hazards (fire, flooding, hurricane, blizzards, etc.)
- Know how authorities in your area will relay important information (reverse 911 calls, Nixel, Auto-Alerts, etc.),
- Establish contingency plans if your power goes out (e.g., backup phone charger, access to a radio, etc.)
- Keep emergency supplies (flashlights, batteries, food, water) in a known location and check/refresh annually
- If you need to evacuate, keep in mind:
  - Ready: Have a plan, know what you need to take (pets, meds, important documents), where you're going, who you'll notify
  - Set: Load your vehicle, park outside your garage (in case of power outage) facing out, pay attention to local news and alerts
  - Go: When ordered to evacuate, leave the area

Meeting Goals

TPP 1/2 Review

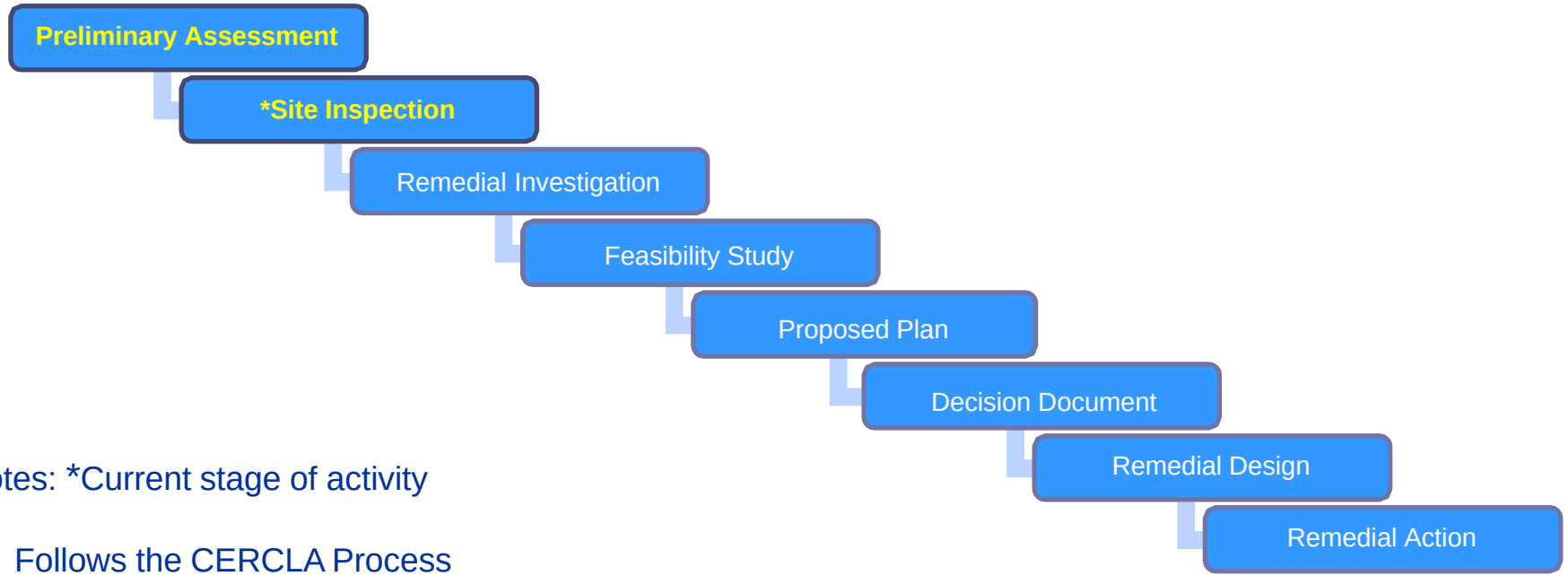
- Provided an overview of ARNG PA/SI Program
- Defined objectives for SI data collection
- Encouraged stakeholder involvement
- Reviewed project schedule
- Captured action items
- Discussed proposed SI approach

TPP 3

- ARNG CERCLA program overview
- Revisit the PA findings
- Present SI Results and revised conceptual site model (CSM)
- Resolve comments/concerns and gain concurrence on presentation of findings in Draft Final SI Report
- Discuss future actions at the site

ARNG PA/SI Overview

Work Phases



Notes: *Current stage of activity

- Follows the CERCLA Process
- An interim removal action can be conducted or a No Further Action determination can be made at any phase

ARNG CERCLA Status Overview

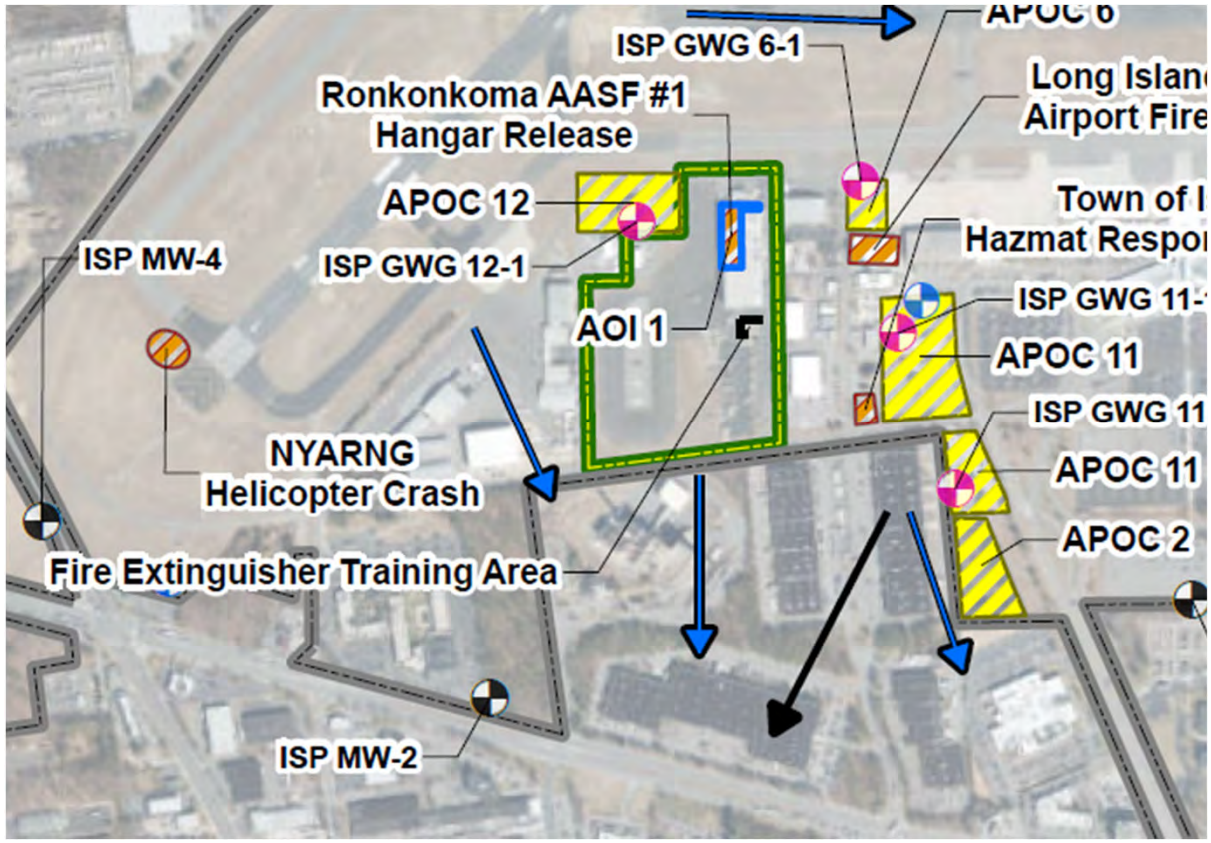
- PA for Ronkonkoma Army Aviation Support Facility #1 completed by ARNG
- SI fieldwork completed in November 2021
- Draft Final SI Report provided to NYSDEC and NYSDOH; results presented today

Summary of PA Findings

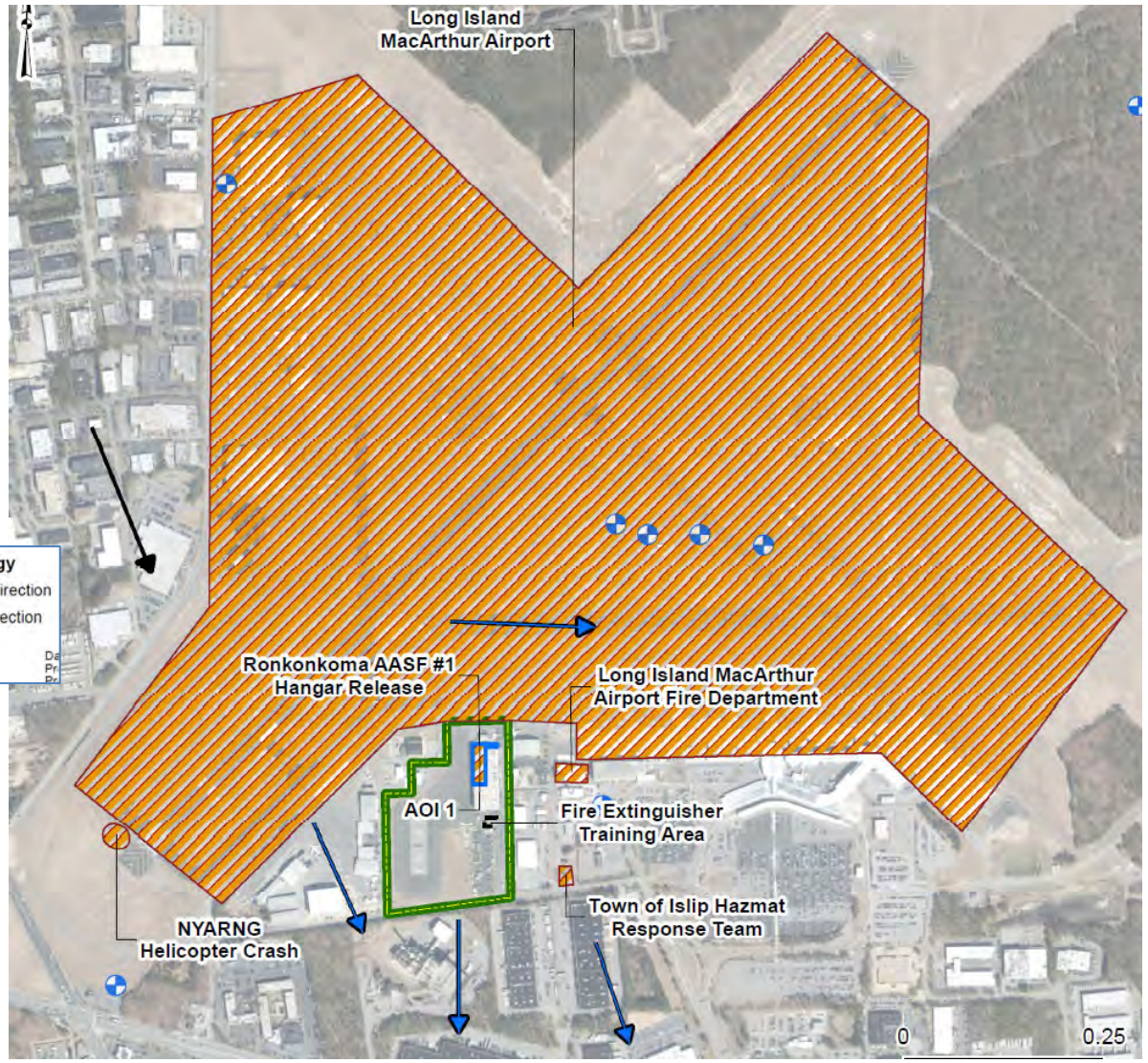
- Potential Source Areas: One identified during the PA and grouped into 1 Area of Interest (AOI)
- AOI 1 consists of the Ronkonkoma AASF #1 Hangar Release and AFFF Storage.
  - According to the PA, in 2007, the hangar was equipped with a fire suppression deluge system containing 3% Ansul AFFF high expansion foam.
    - It should be noted that, ARNG personnel verified the deluge system contains Jet-X ™ HEF, not AFFF during the SI.
    - HEF may contain fluorinated compounds but is unlikely to result in concentrations of the relevant compounds that exceed their respective criteria based on the information available at the time of reporting.
  - AFFF is present at the hangar stored in two 36-gallon manual floor units which have no documented release or use.

Summary of PA Findings

- AOI 1- Ronkonkoma AASF #1 Hangar Release and AFFF Storage



Summary of PA Findings - Adjacent Sources



SI Data Quality Objectives

- Primary SI Data Quality Objectives (DQOs)
  - Confirm the presence/ absence of a release at a potential source area
  - Gather data for refinement of conceptual site model
    - Source-Pathway-Receptor relationships
- Enhanced SI DQOs
  - Determine the presence/ absence at the facility boundary
  - Check for alternate sources, up- or downgradient

Summary of SI Approach

- Data compared to Office of the Secretary of Defense (OSD) Screening Levels (SLs) for soil and groundwater
  - Memorandum from the OSD dated 6 July 2022
- AOIs exceeding OSD SLs may proceed to the next phase under CERCLA where releases are attributable to the DoD.(Remedial Investigation)
  - Soil from 0-2 feet compared to Residential SL, 2-15 feet compared to Industrial SL, >15 feet not compared to either SL

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

Notes:

1. Assistant Secretary of Defense, 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. 6 July 2022.
2. Screening values for Hexafluoropropylene oxide-dimer acid (HFPO-DA) were established after SI planning and execution and thus not included as an analyte. Future CERCLA phases will include HFPO-DA if warranted.

µg/kg = Microgram(s) per kilogram

ng/L = Nanogram(s) per liter

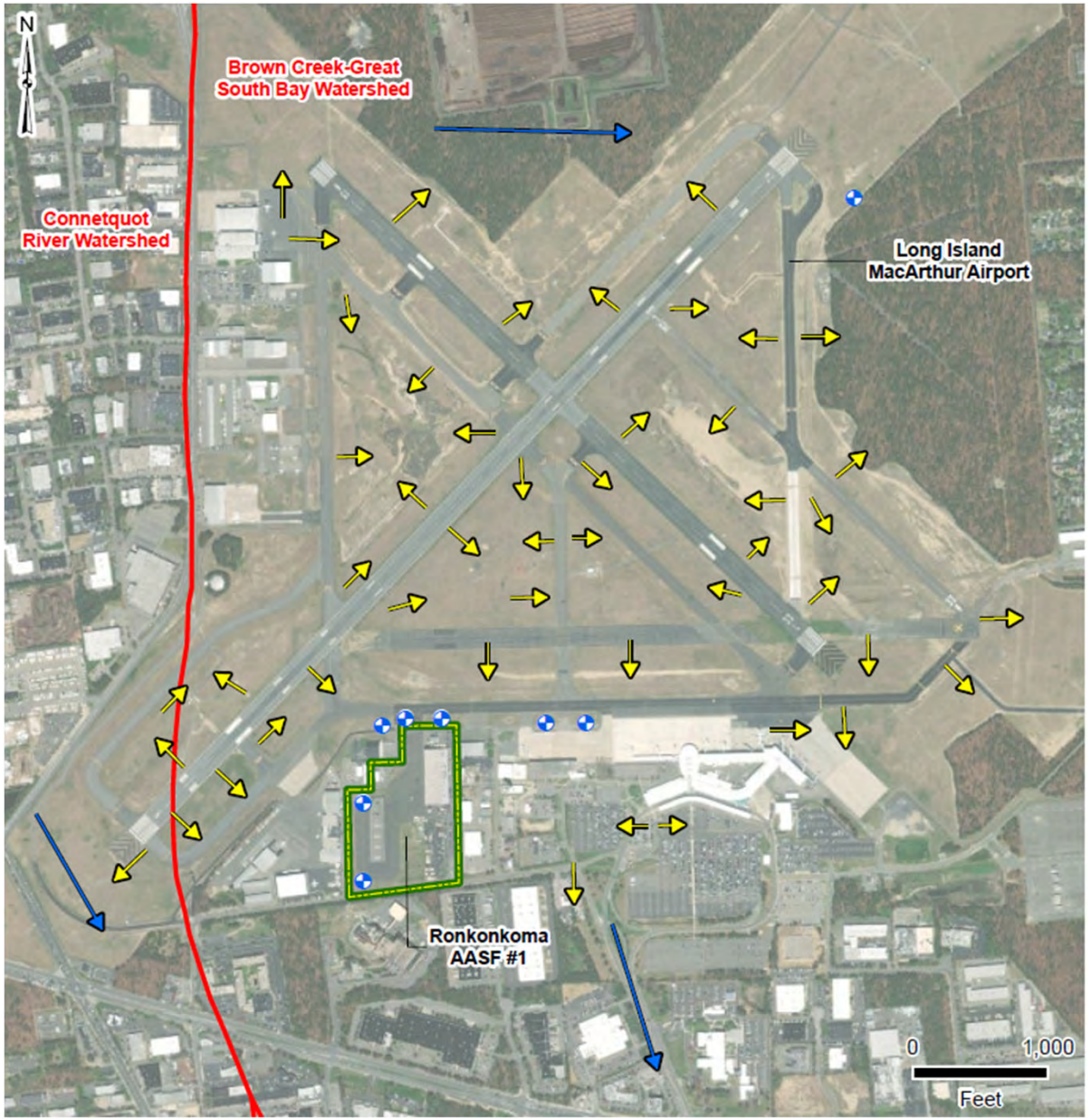
CSM – Surface Water

Facility Data

- Facility Boundary

Hydrology/Hydrogeology

- Dry Well Location
- Surface Run-off Flow Direction
- Surface Water Flow Direction
- Watershed Boundary



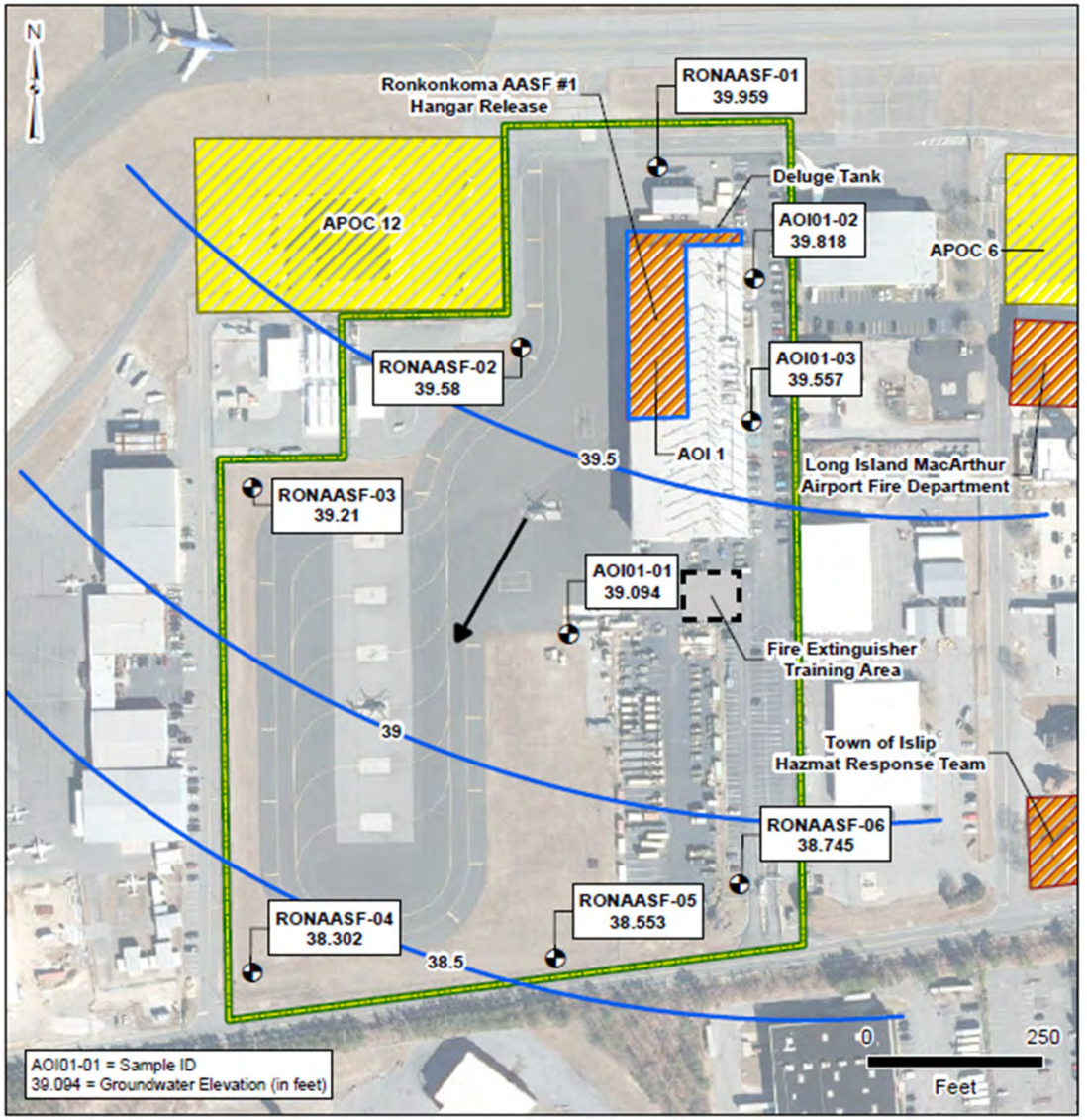
CSM – Groundwater

Facility Data

- Facility Boundary
- Area of Interest
- Area of Potential Concern
- Potential PFAS Release
- No Suspected Release

Hydrogeology

- Well Location
- Groundwater Flow Direction
- Groundwater Elevation Contour Interval (0.5 foot)

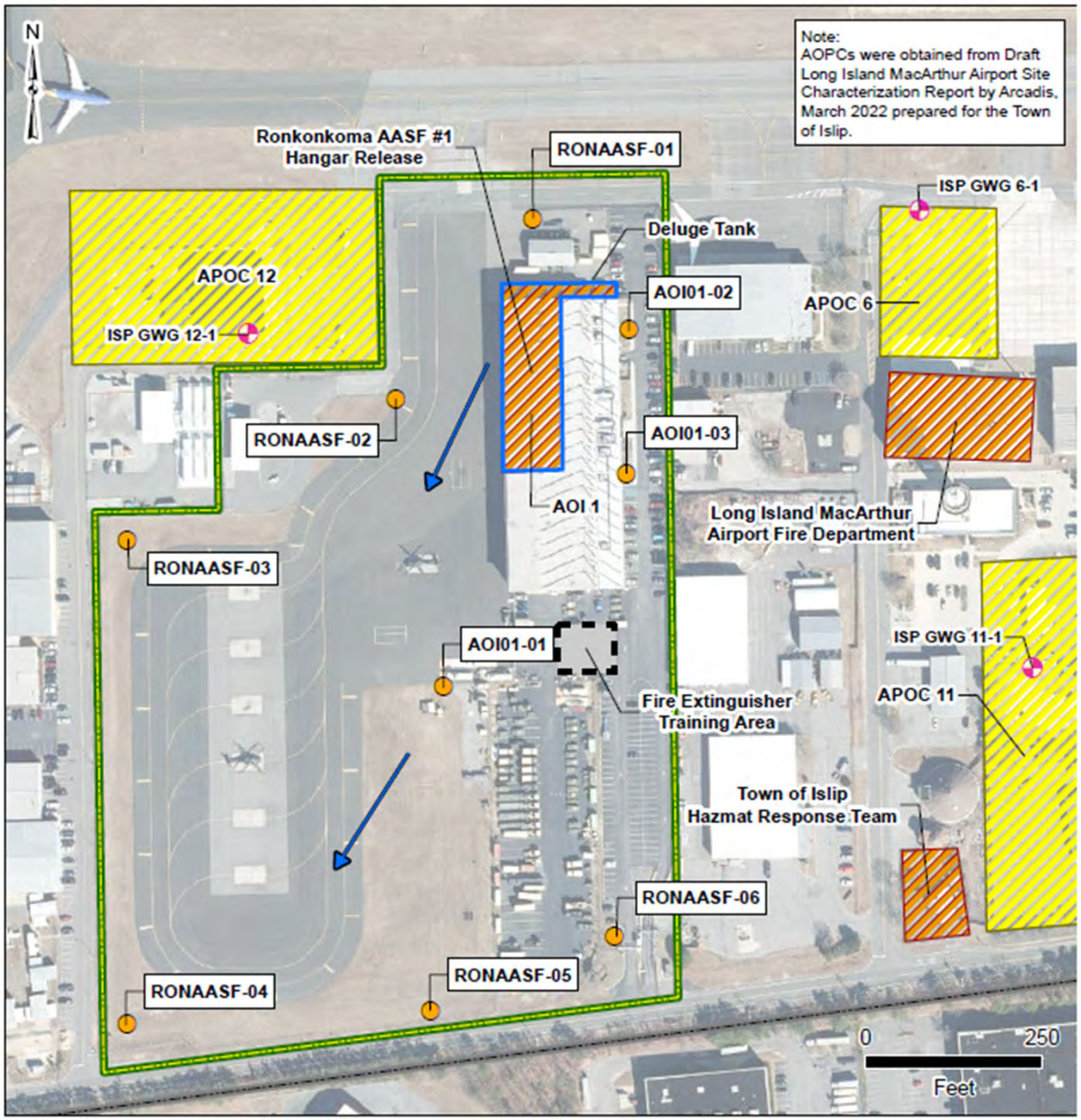


Summary of SI Approach

- Approach
  - Soil samples from each location: at source (0 to 2 feet [ft] below ground surface [bgs]), at mid-point (14-15 ft bgs), and above water table (44-48 ft bgs).
  - Temporary monitoring wells for groundwater (GW) grab samples (ranging from approximately 48 – 52 ft bgs)
- Total Samples
  - Twenty-seven (27) soil samples from nine locations (soil borings locations)
  - Nine (9) grab groundwater samples from nine temporary well locations
  - Sixteen (16) various quality assurance (QA)/quality control (QC) samples.

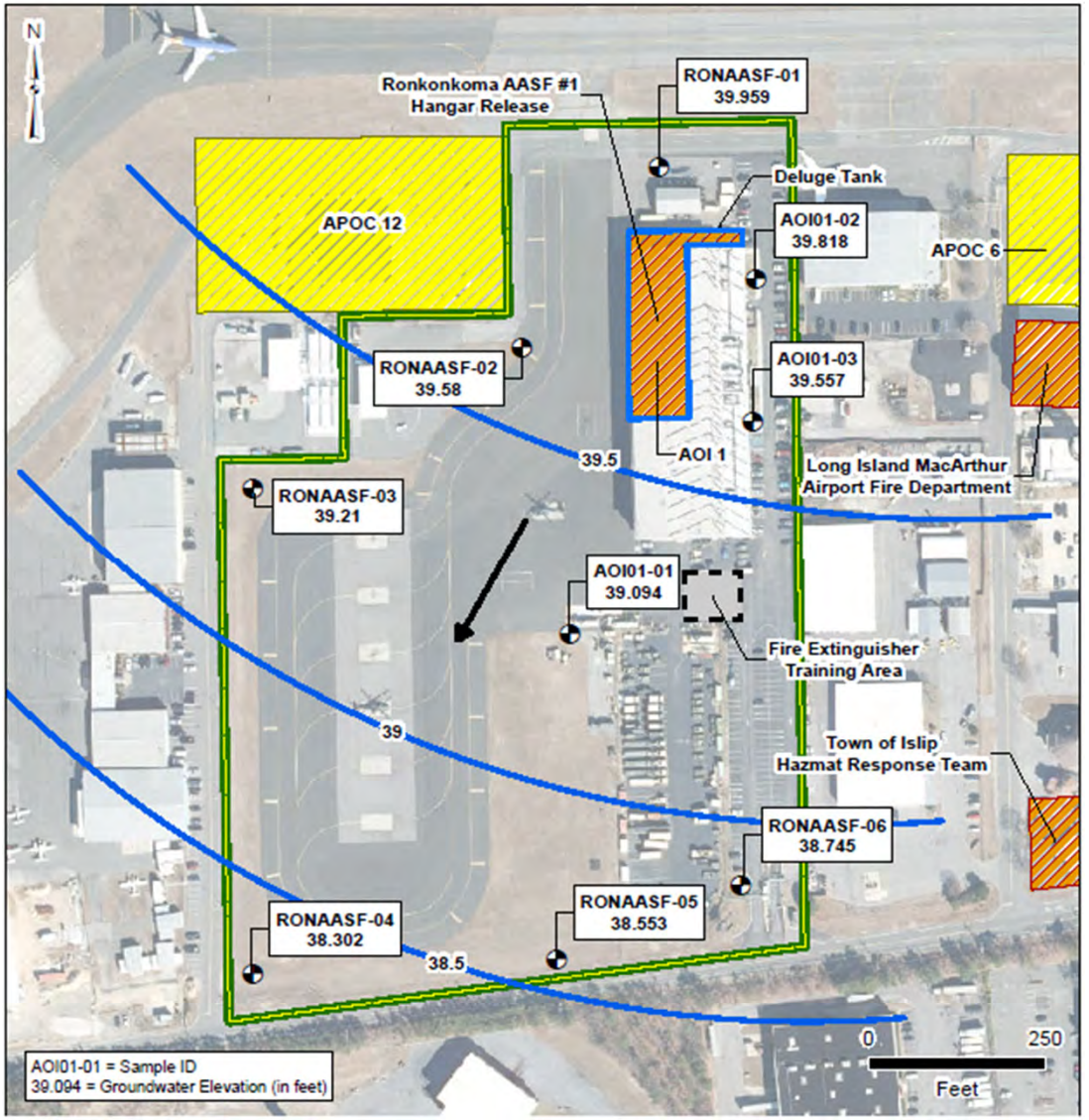
Summary of SI Approach

SI Sampling Locations



Summary of SI Findings

Groundwater Contours



Summary of SI Findings

- PFAS in soil and groundwater (GW) confirmed at AOI 1
- Perfluorooctanesulfonic acid (PFOS), Perfluorooctanoic acid (PFOA), and Perfluorononanoic Acid (PFNA) detected in soil
  - No PFAS compounds found above the OSD SLs
  - Highest concentrations of PFOS (1.6 g/kg) and PFNA (1.6 g/kg) were detected in surface soil at AOI01-01
- PFOA, PFOS, and PFNA in groundwater above OSD SLs

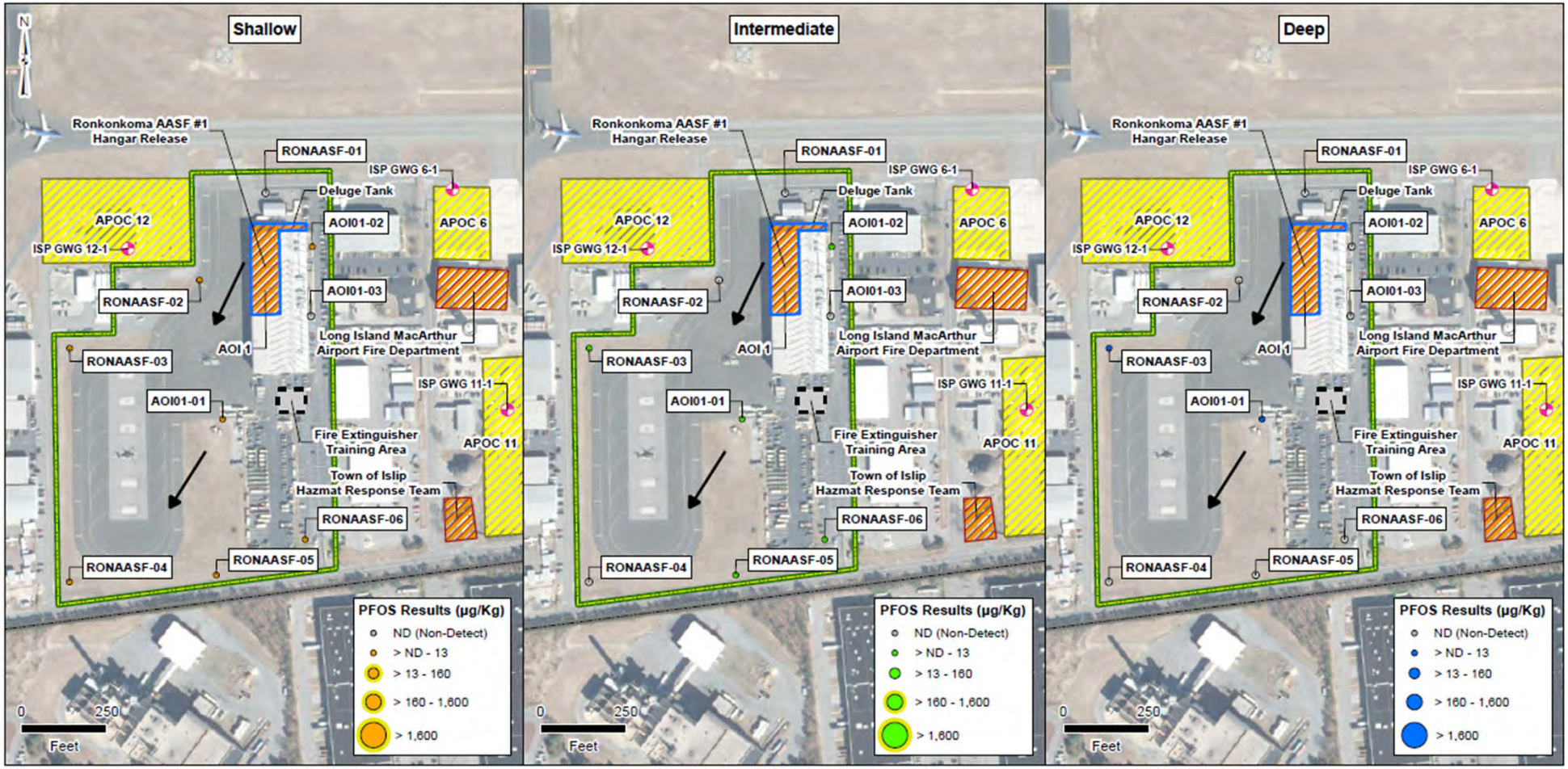
<u>AOI Samples</u>

- Highest detection of PFOA at the AOI was 89 ng/L (AOI01-02)
- Highest detection of PFOS at the AOI was 85 ng/L (AOI01-02)
- Highest detection of PFNA at the AOI was 11 ng/L (AOI01-01)

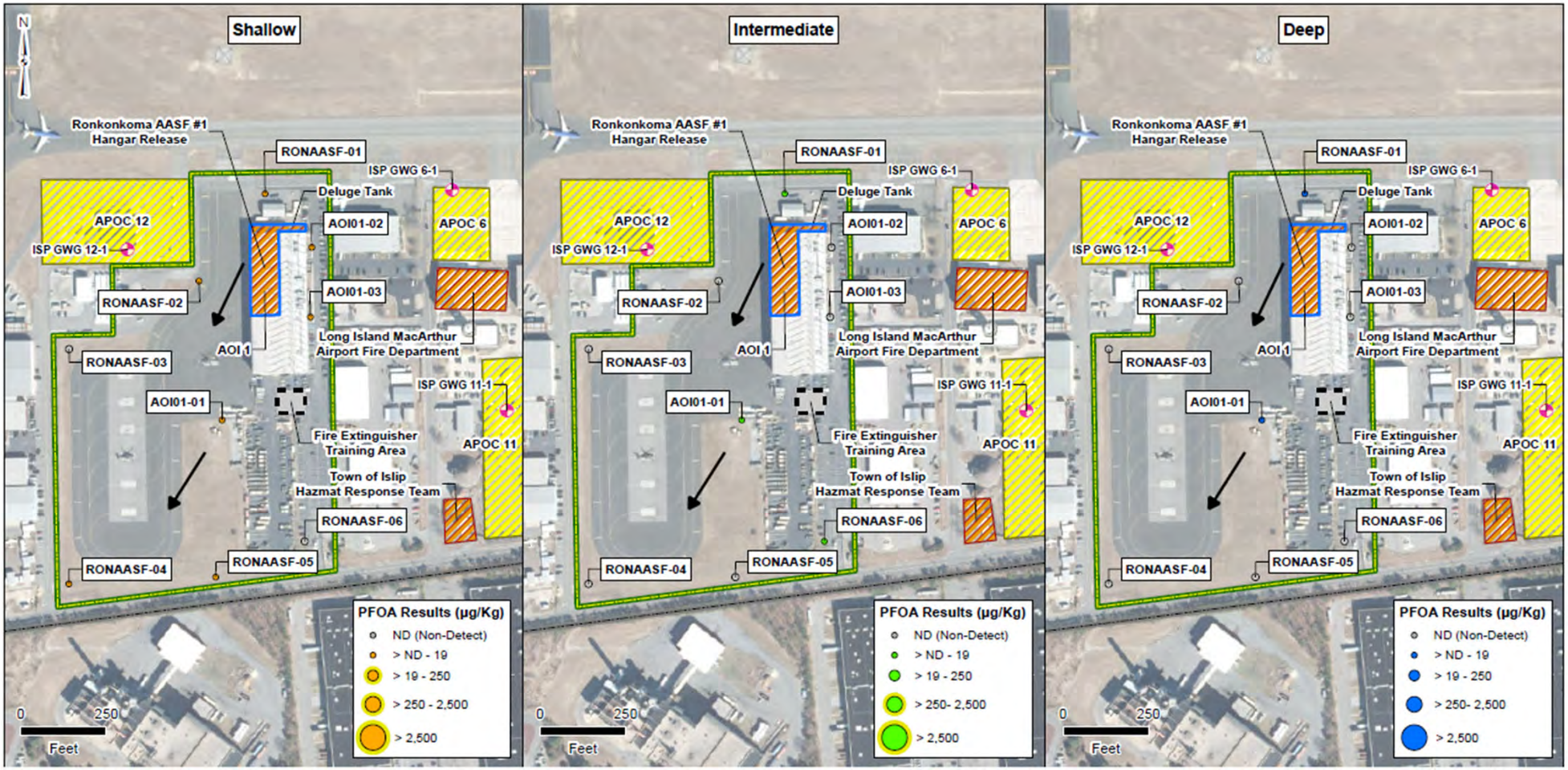
<u>Boundary Samples</u>

- Highest detection of PFOA at the boundary (upgradient) was 130 ng/L (RONAASF-01)
- PFHxS was detected in groundwater at RONAASF-03 at a concentration of 120 ng/L (no other detections)
- Highest detection of PFOS at the boundary was 55 ng/L (RONAASF-03)
- Highest detection of PFNA at the boundary was 150 ng/L (RONAASF-01)

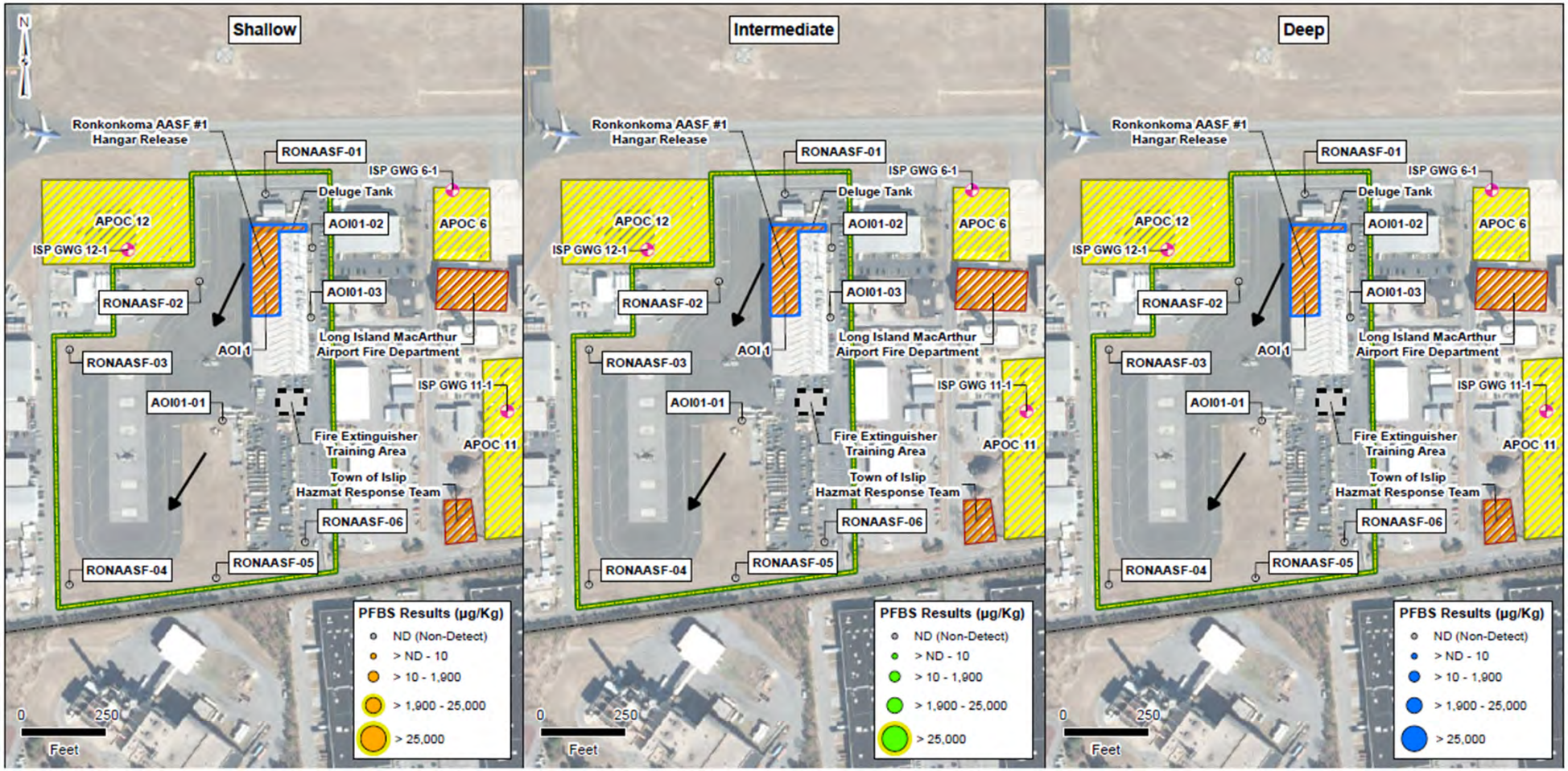
Summary of SI Findings
PFOS in Soil



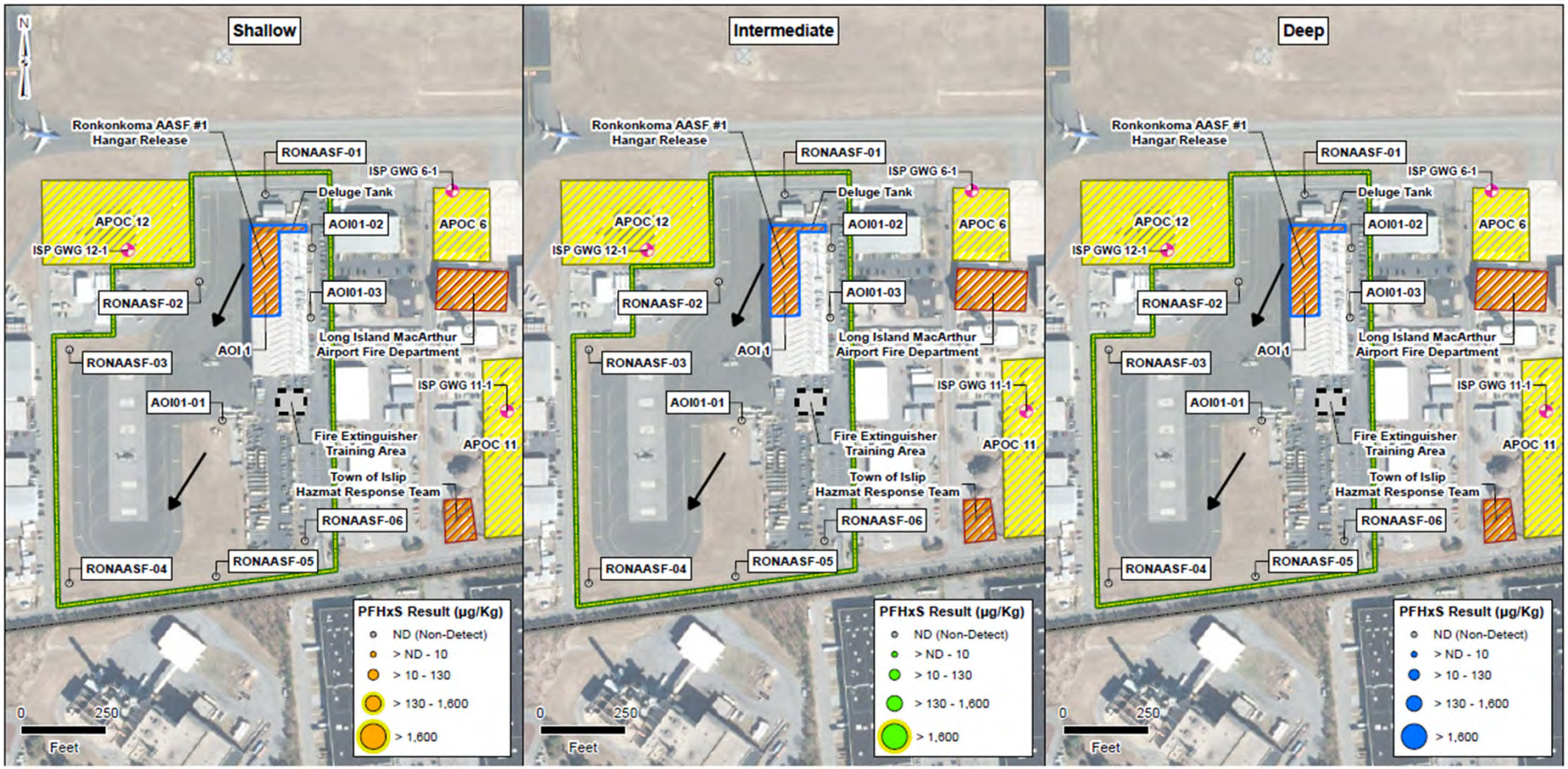
Summary of SI Findings
PFOA in Soil



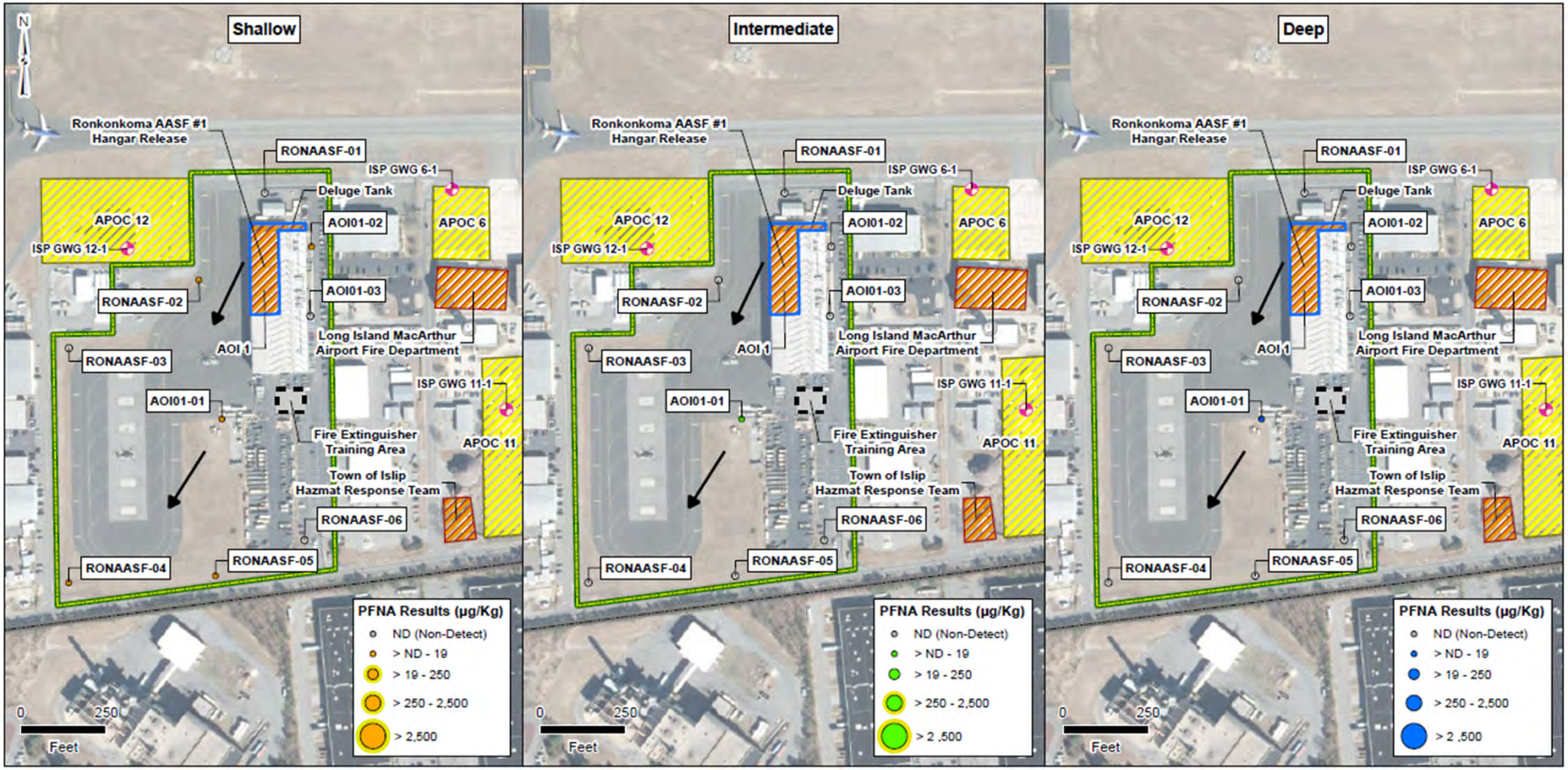
Summary of SI Findings
PFBS in Soil



Summary of SI Findings
PFHxS in Soil

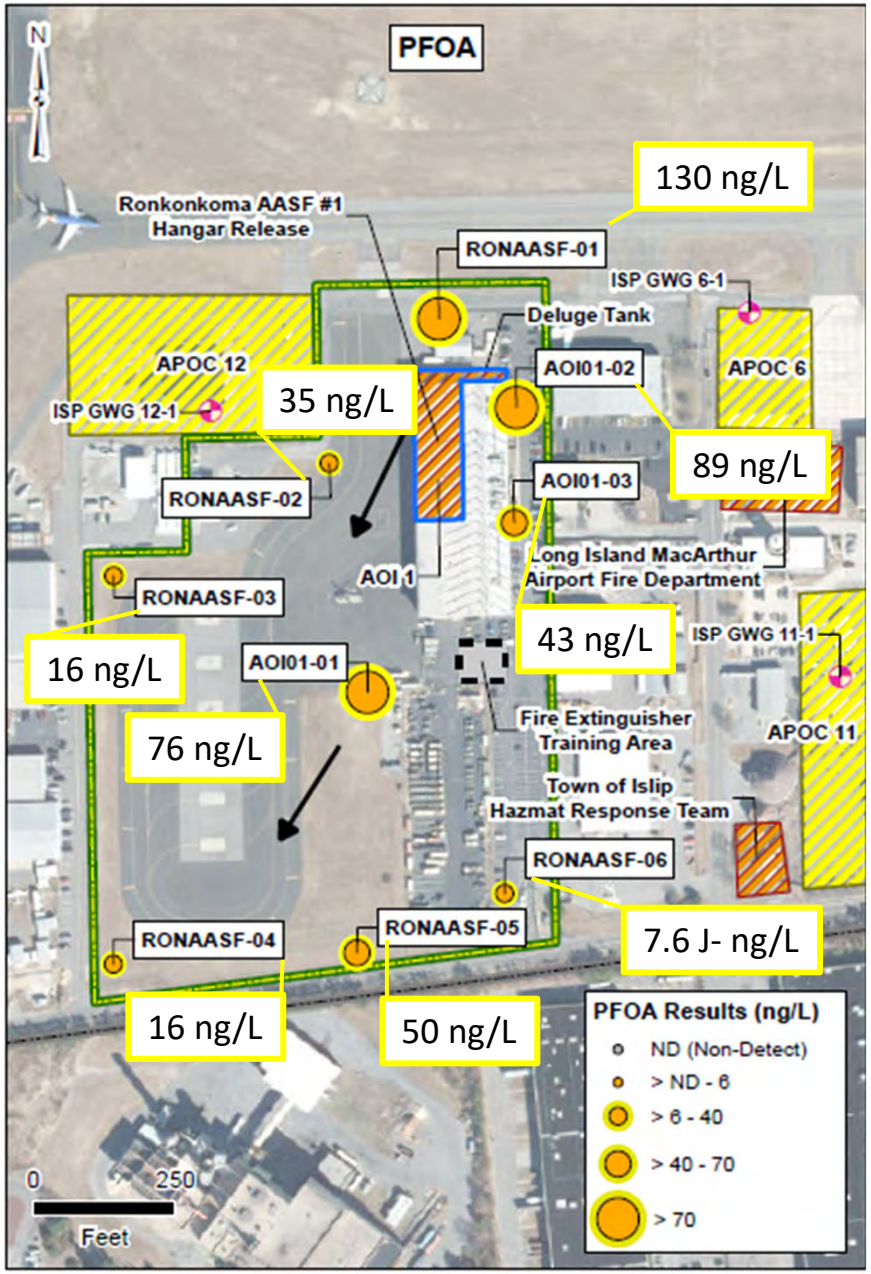


Summary of SI Findings
PFNA in Soil



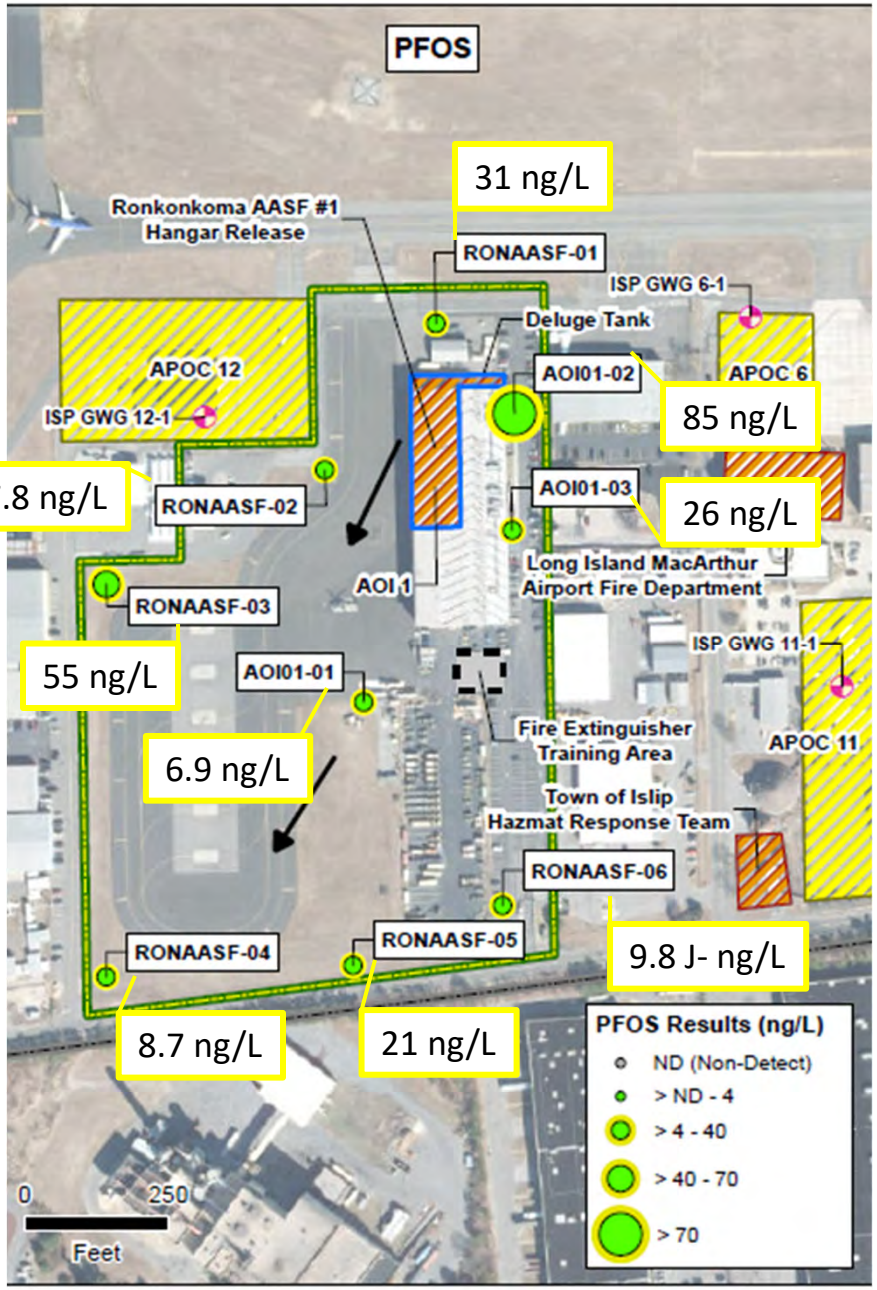
Summary of SI Findings

Grab Groundwater PFOA



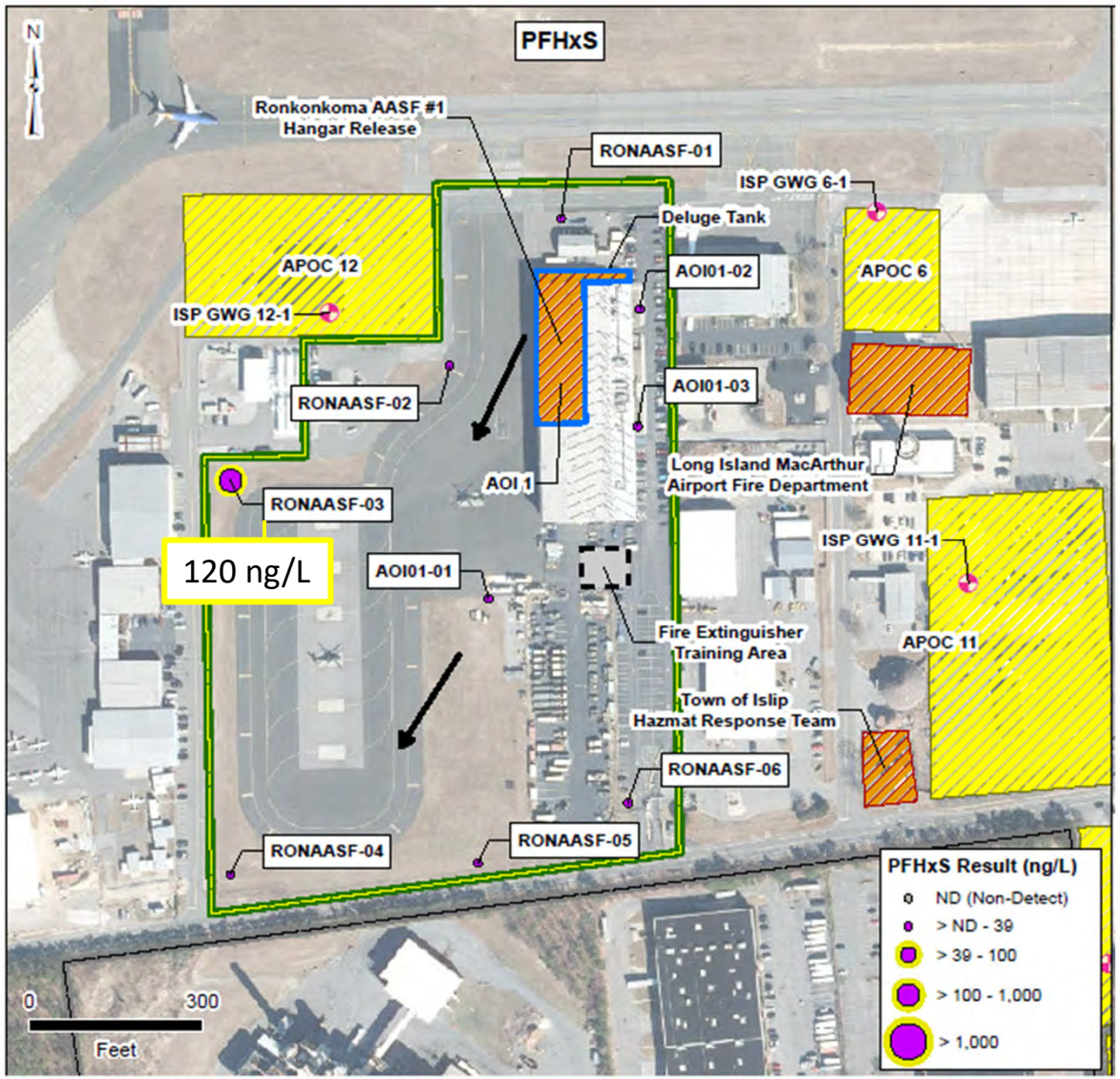
Summary of SI Findings

Grab Groundwater PFOS



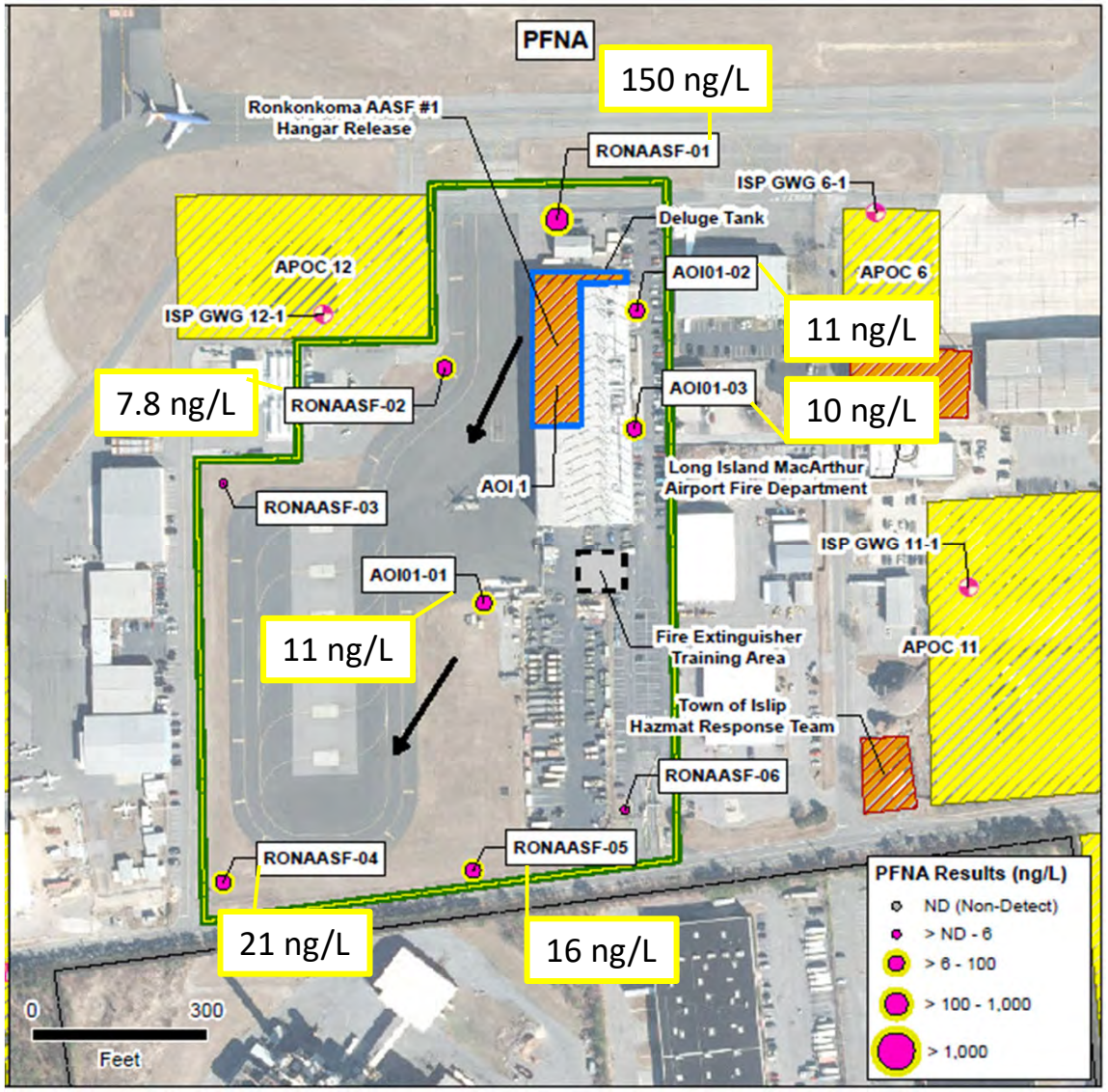
Summary of SI Findings

Grab Groundwater PFHxs



Summary of SI Findings

Grab Groundwater PFNA



SI CSM: AOI 1

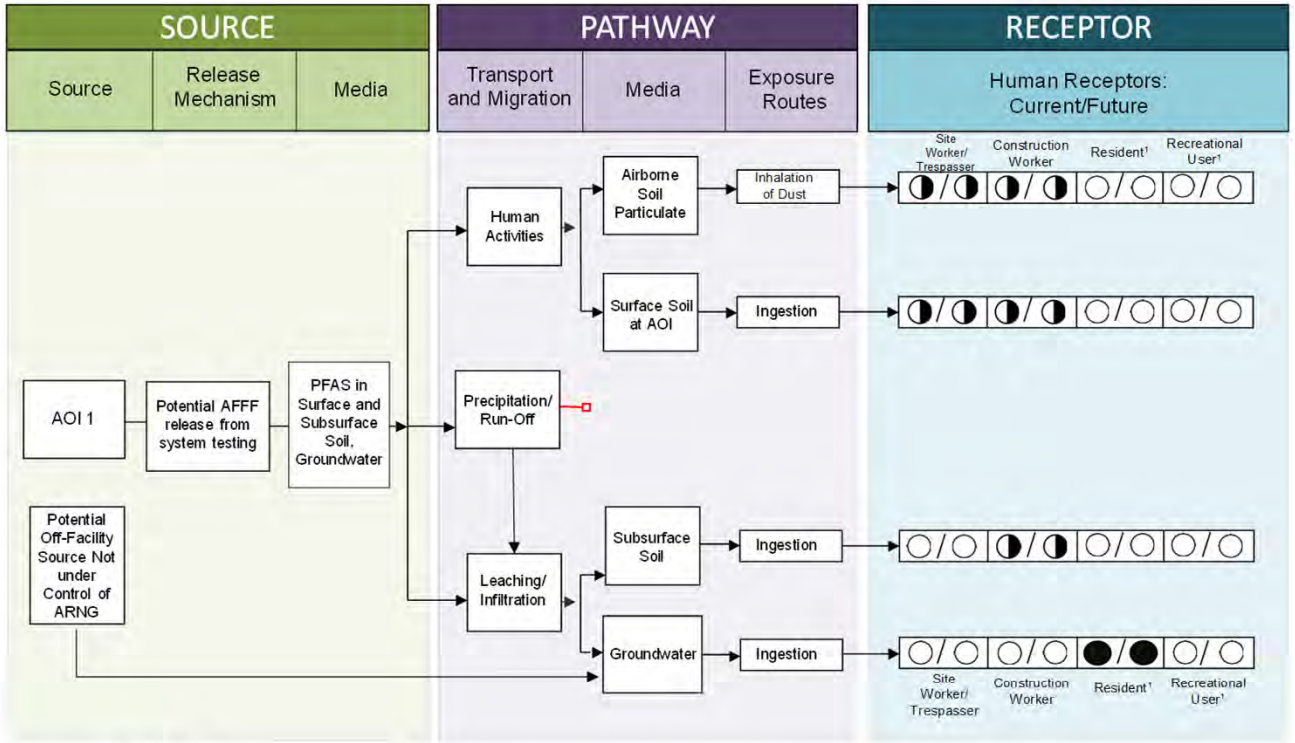
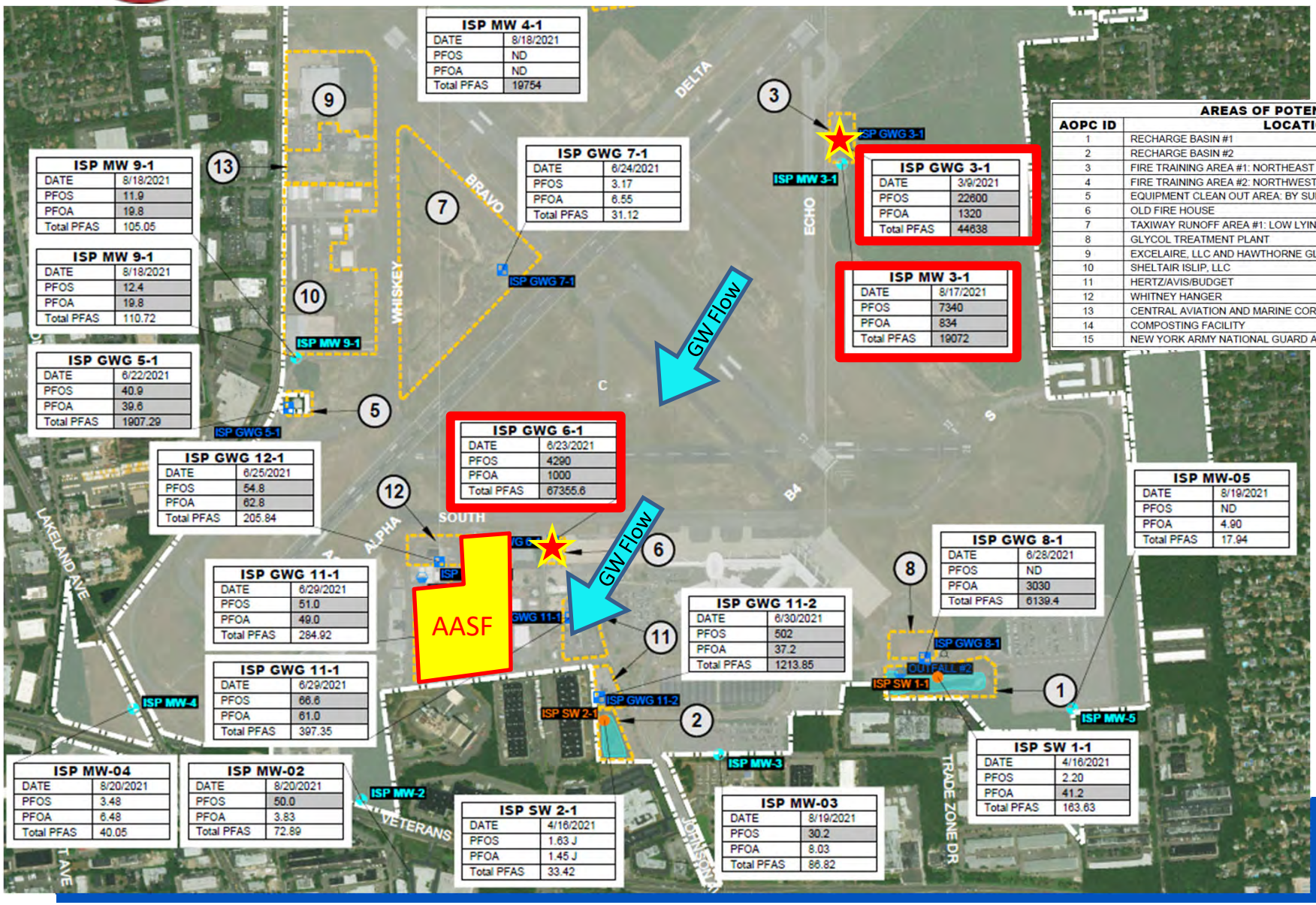


Figure 7-1
Conceptual Site Model
AOI 1 Ronkonkoma AASF #1

MacArthur Airport Site Characterization Report



AREAS OF POTENTIAL CONCERN	
AOPC ID	LOCATION DESCRIPTION
1	RECHARGE BASIN #1
2	RECHARGE BASIN #2
3	FIRE TRAINING AREA #1: NORTHEAST WOODED AREA
4	FIRE TRAINING AREA #2: NORTHWEST, BEHIND COMPOST FACILITY
5	EQUIPMENT CLEAN OUT AREA: BY SUFFOLK COUNTY WATER TOWER
6	OLD FIRE HOUSE
7	TAXIWAY RUNOFF AREA #1: LOW LYING AREA BETWEEN TAXIWAYS WHISKEY AND BRAVO
8	GLYCOL TREATMENT PLANT
9	EXCELAIRE, LLC AND HAWTHORNE GLOBAL AVIATON SERVICES
10	SHELTAIR ISLIP, LLC
11	HERTZ/AVIS/BUDGET
12	WHITNEY HANGER
13	CENTRAL AVIATION AND MARINE CORPORATION (CAMCO)
14	COMPOSTING FACILITY
15	NEW YORK ARMY NATIONAL GUARD AVIATION UNIT

Units:
ng/L

*Groundwater flow arrows are annotated based on measured GW flow within the AASF boundaries and expanded to the greater area.

Summary of SI Findings

AOI	Potential Release Area	Soil AOI	Groundwater AOI	Groundwater Facility Boundary	Future Action
1	Ronkonkoma AASF #1 Hangar Release and AFFF Storage	◐	●	●	No further action by ARNG

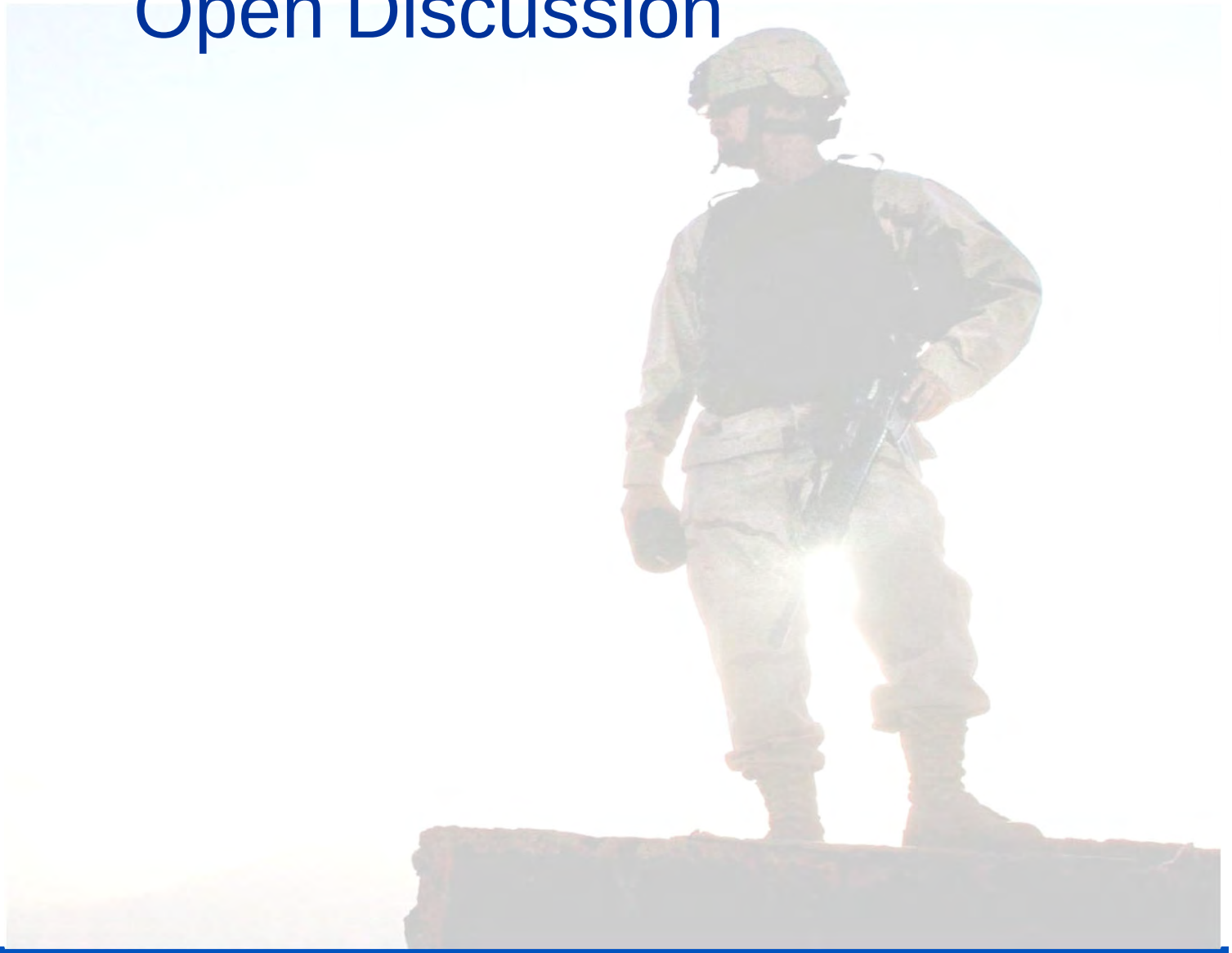
Legend:
● = Detected; exceedance of screening levels
◐ = Detected; no exceedance of screening levels
○ = Not detected

- Exceedances of the SLs in groundwater onsite appear to be migrating from upgradient, offsite sources not under the control of ARNG. These off-site, up/cross-gradient concentrations demonstrate a plume with substantial concentrations of relevant compounds is present within the Airport complex in the vicinity of the Facility and is entering the Ronkonkoma AASF #1 on its northeastern side.

Next Steps

- Finalize SI Report
  - Address comments from NYSDEC and NYSDOH
  - Finalization of SI report pending programmatic legal review of HFPO-DA language.
  - Schedule
- Based on the results of this SI, no further evaluation by the ARNG under CERCLA is warranted for the AOI identified.

Open Discussion



Acronyms

- µg/kg – micrograms per kilogram
- 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
- CSM – conceptual site model
- DoD – US Department of Defense
- DQO – data quality objective
- ft – feet
- GW – groundwater
- NA – not applicable
- ng/L – nanograms per liter
- NYSDEC - New York State Department of Environmental Conservation
- NYSDOH- New York State Department of Health
- 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
- RI – Remedial Investigation
- SI – Site Inspection
- SL – screening level
- TBD – to be determined
- TPP – Technical Project Planning
- US – United States
- UFP-QAPP – Uniform Federal Policy- Quality Assurance Project Plan
- USACE – U.S. Army Corp of Engineers

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Appendix E

Boring Logs and Well Construction Diagrams

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EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF

Drilling Method:	**Soil Boring/Well Number:**
DPT 7822DT	RONAASF-01
Sampling Method:	**Sheet 1 of 2**
DPT / Hand Auger	**Drilling**

Water Level:	45.27 ft below TOC			**Start**	**Finish**
Time:	1057			DATE: 11/18/2021	DATE: 11/18/2021
Date:	11/19/2021			TIME: 0725	TIME: 1000

Surface Conditions: Asphalt
Weather: Sun, wind
Temperature: 50-60 degrees F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
	N/A Hand Auger		0.2	0–2	0735: 10YR 3/1. 6" asphalt at surface. Dry, brown, varied sand and gravel below asphalt. Sample collected from 0-2 ft interval. Sample ID: RONAASF-01-SB-[0-2].
			0.0	3–4	0744: 10YR 4/3. Dry, brown, M to C sand and gravel. Sample collected from 3-5 ft interval. Sample ID: RONAASF-01-SB-[3-5].
	60/60		0.0	5–7	0758: 10YR 5/6. Moist, brown F-C sand. Rock and gravel fragments.
			0.2	8–9	0758: 10YR 6/6. Moist, tan F-C sand. Rock and gravel fragments.
SW	48/60		0.3	10–12	0800: 10YR 5/6 and 10YR 6/6. Moist, tan/brown, varied sand and gravel. Some rock fragments. Some orangey stripes.
			0.2	13–14	0800: 10YR 5/6 and 10YR 6/6. Moist, tan/brown, varied sand and gravel. Some rock fragments. Some orangey stripes. Sample colleted from 14-15 ft interval. Sample ID: RONAASF-01-SB-[14-15].
	60/60		0.3	15–17	0811: 10YR 4/4. Moist, brown/tan, varied F-C sand with gravel.
			0.4	18–19	0811: 10YR 8/2. Moist, brown/tan, varied F-C sand with gravel.
	60/60		0.2	20–22	0817: 10YR 5/2. Moist, tan F-C sand and gravel. Few rock fragments. Trace silt.
			0.2	23–24	0817: 10YR 6/4. Moist, tan sand. Some gravel.

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG	Location: Ronkonkoma AASF
		Project: PFAS SI	
	Drilling Method: DPT 7822DT		Soil Boring/Well Number: RONAASF-01

SW	60/60	PVC Slot 10	0.4	25–27	0825: 10YR 5/6. Moist, brown F-C sand with gravel.
			0.3	28–29	0825: 10YR 8/3. Moist, tan F-C sand with gravel.
	60/60		0.2	30–32	0835: 10YR 5/6. Moist, brown varied sand and gravel. Trace silt.
			0.1	33–34	0835: 10YR 8/4. Moist, tan M-C sand. Some gravel. Few darker orange lines. One black crumbled gravel (possibly asphalt).
	12/60		--	35–37	0849: Poor recovery due to rock in shoe. Recovered soil appeared to be blowback/collapse.
			--	38–39	0849: Poor recovery due to rock in shoe. Recovered soil appeared to be blowback/collapse.
	60/60		0.4	40–42	0910: 10YR 5/4. Moist to wet, brown F-C sand.
			0.3	43–44	0910: 10YR 8/3. Wet, tan F-C sand. Water table at depth of approximately 44 ft BGS. Sample colleted from 43-44 ft interval. Sample ID: RONAASF-01-SB-[43-44].
	--		--	45–48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:	N/A	ft
Bottom of Tubing:		ft
Top of Sand Pack:		ft
Top of Bentonite Seal:		ft

Logged by: C. Helms — Date: 11/18/2021

Drilling Contractor: ADT/Cascade — Driller: Luke

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF
Drilling Method:			**Soil Boring/Well Number:**
DPT 7822DT, Hand Auger			RONAASF-02
Sampling Method:			**Sheet 1 of 2**
Hand Auger / Acetate Liner			**Drilling**
Water Level:	45.01 ft below TOC		**Start** DATE: 11/18/2021 / **Finish** DATE: 11/18/2021
Time:	1054		TIME: 0950 / TIME: 1300
Date:	11/19/2021		

Surface Conditions: Grass
Weather: Windy, Sun
Temperature: 60°F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
	N/A Hand Auger		0.1	0–2	1010: 10YR 3/4. Dry, brown sand and gravel. Few cobbles. Sample and duplicate collected from 0-2 ft interval. Sample IDs: RONAASF-02-SB-[0-2] and RONAASF-FD-SB-03.
			0.1	2–4	1038: 3-4 ft: 10YR 4/6. Moist, reddish brown sand and gravel. Trace silt. Cobbles. Refusal on rock at 4 ft BGS. Proceed with geoprobe.
	60/60		0.1	4–6	1050: 10YR 6/6. Moist, brown silty sand, transitioning to M sand and gravel with rock fragments.
			0.0	6–8	1050: 10YR 6/4. Moist, yellow-brown F-C sand and gravel. Some rock fragments.
SW	60/60		0.2	8–10	1056: 10YR 5/8. Moist, yellow-brown F-C sand and gravel. Some rock fragments.
			0.3	10–12	1056: S.A.A. Slightly less gravel, and some orange layers stratified in soil. Sample collected from 14-15 ft interval and MS/MSD. Sample ID: RONAASF-02-SB-[14-15].
	60/60		0.3	12–14	1105: 10YR 5/3. Moist, tan F-C sand and gravel. Some rock fragements.
			0.3	14–16	1105: 10YR 5/3. Moist, tan F-C sand and gravel. Some rock fragements.
	60/60		0.6	16–18	1112: 10YR 6/4. Dry/moist, brown F-C sand with gravel.
			0.5	18–20	1112: 10YR 8/2. Dry/moist, tan F-C sand with gravel.

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG Project: PFAS SI	Location: Ronkonkoma AASF
	Drilling Method: DPT 7822DT, Hand Auger		Soil Boring/Well Number: RONAASF-02

SW	60/60	PVC Slot 10	0.6	25–27	1125: 10YR 8/2. Dry/moist, brown F-C sand with gravel.
	60/60		0.6	28–29	1125: 10YR 8/2. Dry/moist, tan F-C sand with gravel.
	60/60		0.8	30–32	1137: 10YR 8/2. Dry/moist, brown F-C sand with gravel.
	60/60		0.4	33–34	1137: 10YR 8/2. Dry/moist, tan F-C sand with gravel.
	60/60		0.4	35–37	1155: 10YR 8/2. Moist/wet, tan F-C sand with gravel.
	60/60		0.4	38–39	1155:10YR 8/2. Moist/wet, tan F-C sand with gravel. Sample collected from 39-40 ft interval. Sample ID: RONAASF-02-SB-[39-40].
	0/60		--	40–42	1220: Empty sleeve, but wet. Sample prior interval due to no recovery. Water table at depth of approximately 44 ft BGS.
	0/60		--	43–44	
	--		--	45–48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:		ft
Bottom of Tubing:		ft
Top of Sand Pack:		ft
Top of Bentonite Seal:		ft

Logged by: Catherine Maxwell — Date: 11/18/2021

Drilling Contractor: ADT/Cascade — Driller: Luke

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF
Drilling Method:			**Soil Boring/Well Number:**
DPT 7822DT			RONAASF-03
Sampling Method:			**Sheet 1 of 2**
Hand Auger to 5 ft Acetate Liner			**Drilling**
Water Level:	44.40		**Start** DATE: 11/17/2021 TIME: 0935 / **Finish** DATE: 11/17/2021 TIME: 1200
Time:	1044		
Date:	11/19/2021		

Surface Conditions: grass
Weather: Sun, windy
Temperature: 30-50 degrees F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
SM	N/A Hand Auger		0.2	0–2	0935: 10YR 3/2. Dry, brown varied silty sand. Some gravel. Sample and duplicate collected from 0-2 ft interval. Sample IDs: RONAASF-03-SB-[0-2] and RONAASF-FD-SB-02
SP			0.0	2–4	0940: 7.5YR 5/3. Dry, tan/reddish-brown M sand. Uniform. Complete preclear at 0945. Begin DPT.
SW	60/60		0.0	4–6	1000: 7.5YR 5/3. Dry, tan/reddish-brown F-C sand. Some gravel and rock fragments.
			0.2	6–8	1000: 10YR 6/4. Dry, tan/reddish-brown F-C sand. Some gravel and rock fragments. Some layers of uniform M sand throughout soil.
	60/60		0.3	8–10	1005: 10YR 6/6. Dry, brown to light tan F-M sand. Some gravel.
			0.2	10–12	1005: 10YR 6/6. Dry, brown to light tan F-M sand. Some gravel. Sample collected from 14-15 ft interval. Sample ID: RONAASF-03-SB-[14-15].
	60/60		0.3	12–14	1015: 10YR 6/3. Dry, M-C sand with gravel.
			0.2	14–16	1015: 10YR 6/3. Dry, M-C sand with gravel to 19 ft. Orange layer, color 7.5YR 6/8 at 19 ft.
	38/60		0.7	16–18	1026: 10YR 5/4. Moist, F-M sand with gravel. Few rock fragments.
			0.2	18–20	1026: 2.5Y 5/4. Moist, light olive-brown F-M sand with gravel. Few rock fragments.

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG	Location: Ronkonkoma AASF
		Project: PFAS SI	
	Drilling Method: DPT 7822DT		Soil Boring/Well Number: RONAASF-03

SW	60/60		0.3	25–27	1031: 10YR 5/6. Moist, F-C sand. Some gravel.
			0.2	28–29	1031: 10YR 8/2. Moist F-C sand. Some gravel.
	60/60		0.3	30–32	1045: 10YR 5/6. Moist, alternating light brown and tan F-C sand with gravel.
			0.4	33–34	1045: 10YR 7/1. Moist, light gray F-C sand with gravel.
	60/60		0.3	35–37	1101: 10YR 5/4. Moist, brown F-C sand with a trace of silt.
			0.2	38–39	1101: 10YR 7/2. Moist, light tan F-C sand.
	60/60		0.1	40–42	1115: 10YR 5/6. Moist-wet F-C sand. Some gravel.
		PVC	0.1	43–44	1115: 10YR 7/2. Wet F-C sand. Some gravel. Water table at depth of approximately 44 ft BGS. Sample collected from 43-44 ft interval. Sample ID: RONAASF-03-SB-[43-44].
		Slot 10		45–48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:		ft
Bottom of Tubing:		ft
Top of Sand Pack:		ft
Top of Bentonite Seal:		ft

Logged by: Catherine Maxwell/C. Helms Date: 11/17/2021

Drilling Contractor: ADT/Cascade Driller: Luke

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF
Drilling Method:			**Soil Boring/Well Number:**
DPT 7822DT			RONAASF-04
Sampling Method:			**Sheet of**
Hand Auger to 5 ft Acetate Liner			**Drilling**
Water Level:	44.47		**Start** DATE: 11/16/2021 TIME START: 1415
Time:	1041		**Finish** DATE: 11/17/2021 TIME FINISH: 0715
Date:	11/19/2021		TIME FINISH: 1500 TIME FINISH: 0930

Surface Conditions: Grass, level
Weather: Sun
Temperature: 30-40 degrees F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
SM	N/A Hand Auger		0.1	0–2	11/16/2021 1414: 10YR 4/6. Moist, brown silty sand. Sample collected from 0-2 ft interval. Sample ID: RONAASF-04-SB-[0-2].
SW	N/A Hand Auger		0.0	2–4	11/16/2021 1414: 10YR 5/6. Dry, brown/orange F-C sand.
SW	60/60		0.1	4–6	11/17/2021 0715: 10YR 6/8. Dry, brown F-C sand. Large gravel layers (quartz).
SW	60/60		0.0	6–8	0715: 10YR 6/4. Dry, light tan F-C sand. Large gravel layers (quartz).
SW	47/60		0.0	8–10	0721: 10YR 6/4. Dry, reddish tan F-C sand with gravel.
SW	47/60		0.0	10–12	0721: 10YR 6/4. Dry, reddish tan F-C sand with gravel. Sample collected from 14-15 ft interval. Sample ID: RONAASF-04-SB-[14-15].
SW	35/60		0.1	12–14	0728: 10YR 6/6. Dry, reddish tan F-C sand with gravel.
SW	35/60		0.0	14–16	0728: 10YR 7/6. Dry, reddish brown F-C sand with gravel.
SW	60/60		0.0	16–18	0736: 10YR 5/6 and 10YR 8/2. Dry to moist, light tan to orange-brown F-C sand. Some gravel
SW	60/60		0.0	18–20	0736: 10YR 5/6 and 10YR 8/2. Dry to moist, light tan to orange-brown F-C sand. Some gravel

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG	Location: Ronkonkoma AASF
		Project: PFAS SI	
	Drilling Method: DPT 7822DT		Soil Boring/Well Number: RONAASF-04

	60/60		0.0	25–27	0746: 10YR 4/6. Moist, brown F-C sand and gravel.
			0.0	28–29	0746: 10YR 8/2. Moist, brown F-C sand and gravel.
SW	60/60		0.0	30–32	0758: 10YR 6/6. Moist F-C sand. Some gravel.
			0.0	33–34	0758: 10YR 8/6. Moist F-C sand. Some gravel.
	60/60		0.9	35–37	0817: 10YR 6/4. Moist F-C sand. Trace silt.
			0.5	38–39	0817: 10YR 7/6. Moist F-C sand.
SW/SP	60/60		0.3	40–42	0836: 10YR 7/4. Wet M-C sand. Some gravel present in alternating, stratified layers.
		PVC	0.1	43–44	0836: 10YR 6/3. Wet M-C sand. Some gravel present in alternating, stratified layers. Water table at depth of approximately 44 ft BGS. Sample collected from 43-44 ft interval. Sample ID: RONAASF-04-SB-[43-44].
	--	10 Slot	--	45–48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:		ft
Bottom of Tubing:		ft
Top of Sand Pack:		ft
Top of Bentonite Seal:		ft

Logged by: Catherine Maxwell/C. Helms — Date: 11/16/2021 and 11/17/2021

Drilling Contractor: ADT — Driller: Luke

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF

Drilling Method:	**Soil Boring/Well Number:**
DPT 7822DT, Hand Auger	RONAASF-05
Sampling Method:	**Sheet 1 of 2**
Hand Auger / DPT	

				Drilling	
Water Level:	43.77			**Start**	**Finish**
Time:	1039			DATE: 11/16/2021	DATE: 11/16/2021
Date:	11/19/2021			TIME: 1100	TIME: 1345

Surface Conditions: Grass, level
Weather: Sun
Temperature: 40-50 degrees F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
SP	N/A Hand Auger		0.1	0–2	1108: 10YR 3/3. Dry, reddish-brown F sand. Trace M & C sand. Few gravel fragments. Sample collected from 0-2 ft interval. Sample ID: RONAASF-05-SB-[0-2].
			0.1	2–4	1112: 10YR 6/6. Dry, reddish-tan M sand. Uniform. Sample collected from 2-4 ft interval. Sample ID: RONAASF-05-SB-[2-4]. Complete pre-clear at 1117, begin DPT.
	60/60		0.0	5–7	1120: 10YR 5/6. Dry to moist, reddish-brown F-M sand with gravel.
			0.1	8–9	1120: 10YR 8/4 Dry to moist, orange/tan F-M sand. Some gravel.
	60/60		0.1	10–12	1132: 10YR 6/3. Dry to moist, tan/orange F-C sand. Some gravel.
			0.0	13–14	1132: 10YR 6/3. Dry to moist, tan/orange F-C sand. Some gravel. Sample collected from 14-15 ft interval. Sample ID: RONAASF-05-SB-[14-15].
SW	60/60		0.0	15–17	1143: 10YR 6/6. Moist, light tan to brown F-C sand.
			0.1	18–19	1143:10YR 6/6. Moist, light tan to brown F-C sand.
	60/60		0.1	20–22	1150: 10YR 5/6. Moist, light brown F-M sand. Some gravel.
			0.0	23–24	1150: 10YR 8/2. Moist, tan F-M sand. Some gravel.

EA Engineering, Science, and Technology, Inc., PBC

Job. No.	Client:	Location:
634250383	USACE/ARNG	Ronkonkoma AASF
	Project: PFAS SI	
Drilling Method:		**Soil Boring/Well Number:**
DPT 7822DT, Hand Auger		RONAASF-05

SW	60/60		0.5	25–27	1156: 10YR 4/6. Dry, tan F-M sand. Some C sand. Trace silt and gravel.
SP			0.1	28–29	1156: 10YR 7/3. Dry, light tan and orange M sand. Few gravel fragments.
	60/60		0.0	30–32	1210: 10YR 7/6. Dry to moist, Light orange/brown F-C sand with gravel.
SW			0.1	33–34	1210: 10YR 8/2. Moist, tan F-M sand with gravel.
SP	60/60		0.0	35–37	1230: 10YR 5/4. Moist, yellow-brown F-C sand.
			0.1	38–39	1230: 10YR 6/2. Moist, light brown/tan F-C sand.
SW	51/60		0.2	40–42	1313: 10YR 4/4. Moist, reddish-brown F-C sand. Some gravel.
SP		C V P	0.0	43–44	1313: 10YR 7/2. Wet to saturated, tan M sand. Water table at depth of approximately 44 ft BGS. Sample collected from 43-44 ft interval and MS/MSD. Sample ID: RONAASF-05-SB-[43-44].
		t o l S 10		45–48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:		ft
Bottom of Tubing:		ft
Top of Sand Pack:		ft
Top of Bentonite Seal:		ft

Logged by: Catherine Maxwell/C. Helms — Date: 11/16/2021

Drilling Contractor: ADT — Driller: Luke

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF
Drilling Method:			**Soil Boring/Well Number:**
DPT 7822DT, Hand Auger			RONAASF-06
Sampling Method:			**Sheet 1 of 2**
Hand Auger / DPT			**Drilling**
Water Level:	45.21		**Start** DATE: 11/17/2021 TIME: 1246 / **Finish** DATE: 11/17/2021 TIME: 1500
Time:	1106		
Date:	11/19/2021		

Surface Conditions:
Weather:
Temperature:

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
SM	N/A Hand Auger		0.0	0–2	1246: 7.5YR 3/1. Dry, dark brown silty sand with gravel. Sample collected from 0-2 ft interval. Sample ID: RONAASF-06-SB-[0-2].
			0.0	2–4	1246: 10YR 3/6. Moist dark reddish brown F-M sand with silt and gravel.
	60/60		0.3	4–6	1316: 10YR 7/6. Dry, brown F-C sand and gravel. Trace silt.
			0.2	6–8	1316: 10YR 8/8. Dry, orange-brown F-C sand with gravel.
SW	60/60		0.2	8–10	1323: 10YR 4/6. Moist, brown F-C sand. Some gravel.
			0.2	10–12	1323: 10YR 8/2. Moist, tan F-C sand and gravel/rock fragments.
	60/60		0.2	12–14	1323: 10YR 8/8. Dry, light brown F-C sand with gravel. Sample collected from 14-15 ft interval. Sample ID: RONAASF-06-SB-[14-15].
			0.3	14–16	1323: 10YR 8/2. Dry, light tan F-C sand with gravel.
	60/60		0.3	16–18	1346: 10YR 6/6. Moist, F-C sand with gravel.
SP			0.5	18–20	1346: 10YR 8/2. Moist, tan M sand. Trace C sand. Few gravel fragments.

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG Project: PFAS SI	Location: Ronkonkoma AASF
	Drilling Method: DPT 7822DT, Hand Auger		Soil Boring/Well Number: RONAASF-06

SW	60/60		0.4	25 26 27	1353: 10YR 6/6. Moist, F-C sand with gravel.
SP			0.2	28 29	1353: 10YR 8/2. Moist, tan M sand. Trace C sand. Few gravel fragments.
SW	60/60		0.4	30 31 32	1407: 10YR 6/6. Moist, F-C sand with gravel.
SP			0.3	33 34	1407: 10YR 8/2. Moist, tan M sand. Trace C sand. Few gravel fragments. At 35 ft BGS: 2.5YR 3/6. Reddish stained gravel at base of sample.
SW	60/60		0.4	35 36 37	1418: 7.5YR 5/6. Moist, gray-brown F-M sand. Some silt and C sand. Dense.
			0.3	38 39	1418: 10YR 6/6. Moist, red-tan M sand. Some F and C sand. Few gravel and rock fragments.
	60/60		0.3	40 41 42	1435: 10YR 5/4. Moist F-C sand with silt and gravel.
		PVC Slot 10	0.2	43 44	1435: 10YR 8/2. Wet F-C sand with silt and gravel. Water table at depth of approximately 44 ft BGS. Sample collected from 43-44 ft interval. Sample ID: RONAASF-06-SB-[43-44].
				45 46 47 48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:	ft
Bottom of Tubing:	ft
Top of Sand Pack:	ft
Top of Bentonite Seal:	ft

Logged by: Catherine Maxwell/C. Helms Date: 11/16/2021

Drilling Contractor: ADT Driller: Luke

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG		**Location:**
634250383	**Project:**	PFAS SI		Ronkonkoma AASF
Drilling Method:				**Soil Boring/Well Number:**
DPT 7822DT, Hand Auger				AOI01-01
Sampling Method:				**Sheet 1 of 2**
Hand Auger / Acetate Sleeve				**Drilling**
Water Level:	46.56			**Start** DATE: 11/16/2021 TIME: 0800 / **Finish** DATE: 11/16/2021 TIME: 1015
Time:	1036			
Date:	11/19/2021			

Surface Conditions: Grass
Weather: Sun
Temperature: 40-50 degrees F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
SM	N/A Hand Auger		0.0	0–2	0801: 10YR 3/4. Dry, F sand and silt. Trace F gravel. Cobble at 2 ft BGS. Sample collected from 0-2 ft interval. Sample ID: AOI01-01-SB-[0-2].
			0.0	2–4	0820: 10YR 5/6. Dry, F sand and silt. Trace F gravel. Complete pre-clear at 0830. Begin DPT.
	51/60		0.0	4–6	0838: 10YR 5/6. Moist reddish brown sand and silt.
			0.0	6–8	0838: 5Y 5/2. Reddish grey silt. Some F sand.
SM/ML	45/60		0.0	8–10	0848: 1 ft layer of gray silt, trace clay, and some F sand. Then 10YR 6/6. Moist to wet, tan M-C sand. Few gravel fragments.
SW			0.0	10–12	0855: 10YR 6/6. Moist to wet, tan M-C sand. Few gravel fragments. Sample collected from 14-15 ft interval. Sample ID: AOI01-01-SB-[14-15].
	47/60		0.0	12–14	0858: 10YR 5/6. Moist F-C sand. Some gravel.
			0.0	14–16	0858: At 17 ft: 10YR 3/1: Dark layer with no odor. Below 17 ft: 10YR 8/2. Moist, light tan F-M sand. Loose. Trace gravel.
	59/60		0.0	16–18	0900: 10YR 3/4. Moist, brown F-M sand. Some C sand and gravel.
			0.0	18–20	0900: 10YR 8/2. Moist, light tan M-C sand. Some gravel and rock fragments.
	38/60		0.0	20–22	0910: 5Y 8/2. Moist, brown F-M sand. Some C sand and gravel.
			0.0	22–24	0910: 5Y 8/2. Moist, light tan M-C sand. Some gravel and rock fragments.

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG	Location: Ronkonkoma AASF
		Project: PFAS SI	
	Drilling Method: DPT 7822DT, Hand Auger		Soil Boring/Well Number: AOI01-01

SW	60/60		0.0	30–32	0923: 10YR 4/4. Moist, brown F-M sand. Some C sand and gravel.
			0.0	33–34	0923: 10YR 8/2 and 10YR 5/6. Moist, light tan and orange varied sand and gravel.
SP	27/60		0.0	35–37	0934: 10YR 4/2. Moist to wet orangey tan silty F-M sand. Some gravel.
			0.0	38–39	0934: 10YR 7/4. Moist reddish tan F-M sand and gravel.
SW	18/60		0.0	40–42	0945: 10YR 3/2. Moist orangey tan F-M sand with silt. Some gravel.
			0.0	43–44	0945: 10YR 8/2. Moist, light tan F-M sand. Some gravel.
	60/60		0.0	45–47	1002: 10YR 3/2. Moist to wet, orangey brown F-M sand with silt.
SP		C V P t o l S 10	0.0	48–49	1002: 10YR 8/2. Wet pale tan F-C sand. Water table at depth of approximately 48 ft BGS. Sample collected from 47-48 ft interval. Sample ID: AOI01-01-SB-[47-48].
				50–52	Boring complete at 52 ft BGS. Drive casing to 52 ft BGS. No samples
					End of Exploration.

Temporary Monitoring Well Construction Information					Soil Vapor Point Installation Information	
Monitoring Well Diameter:	1	in			Depth of Soil Vapor Point:	ft
Bottom of Monitoring Well:	52	ft bgs			Bottom of Tubing:	ft
Stick Up or Flush Mount:	Stickup in open borehole				Top of Sand Pack:	ft
Screen Interval:	47	To	52	ft bgs	Top of Bentonite Seal:	ft
Riser Interval:	0	To	47	ft bgs		
Sand Pack Interval:	none	To		ft bgs		
Bentonite Seal:	none	To		ft bgs		
Grout Interval:	none	To		ft bgs		

Logged by: Catherine Maxwell/C. Helms Date: 11/16/2021

Drilling Contractor: ADT Driller: Luke

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF
Drilling Method:			**Soil Boring/Well Number:**
DPT 7822DT			AOI01-02
Sampling Method:			**Sheet 1 of 2**
Hand Auger / DPT			**Drilling**
Water Level:	43.59		**Start** DATE: 11/18/2021 / **Finish** DATE: 11/18/2021
Time:	1112		TIME: 1400 / TIME: 1530
Date:	11/19/2021		

Surface Conditions: Grass, East of Hangar
Weather: Sunny
Temperature: 50°F - 60°F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
SM	N/A Hand Auger		0.0	0–2	1400: 7.5YR 3/2. Dry, brown silty sand. Topsoil. Sample collected from 0-2 ft interval. Sample ID: AOI01-02-SB-[0-2].
SW			0.1	2–4	1410: 10YR 3/6. Dry, light orange/brown F-C sand with silt.
--	0/60		--	4–8	1420: No recovery.
			--	8–9	
SP	13/60		0.1	9–14	1425: 10YR 6/6. Moist, brown/yellow M sand. Little recovery, so midpoint sample collected with all recovered soil. Sample collected from 10-15 ft interval. Sample ID: AOI01-02-SB-[10-15].
SW	34/60		0.2	14–19	1430: Moist, alternating brown and tan F-C sand with gravel. Trace silt.
	18/60		0.3	19–22	1435: 2.5YR 7/4. Moist, brown F-C sand. Some gravel. Poor recovery.
			--	22–24	1435: 2.5YR 7/4. Moist, brown F-C sand. Some gravel. Poor recovery.

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG	Location: Ronkonkoma AASF
		Project: PFAS SI	
	Drilling Method: DPT 7822DT		Soil Boring/Well Number: AOI01-02

SW	40/60		0.3	25–27	1445: 2.5Y 5/4. Moist reddish brown F-C sand with gravel.
			0.5	28–29	1445: 10YR 7/1. Moist grey-tan F-C sand with gravel.
	48/60		0.8	30–32	1452: 2.5YR 5/3. Moist, brown F-C sand with gravel.
			0.3	33–34	1452: 10YR 8/2 and 10YR 7/8. Moist, light tan and orange F-C sand with gravel.
	55/60		0.6	35–37	1500: 2.5Y 6/4. Moist, brown M sand. Few gravel fragments.
			0.3	38–39	1500: 2.5Y 8/4. Moist tan and orange M sand. Few gravel fragments. At 38 ft BGS, thin layer of dark organic matter with no odor.
	60/60		0.5	40–42	1515: 2.5Y 5/4. Moist, tan/brown M sand. Few gravel fragments.
		PVC	0.4	43–44	1515: 2.5Y 7/2. Moist to wet, tan M-C sand and gravel. Water table at depth of approximately 44 ft BGS.
		Slot 10		45–48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:		ft
Bottom of Tubing:		ft
Top of Sand Pack:		ft
Top of Bentonite Seal:		ft

Logged by: Catherine Maxwell/C. Helms — Date: 11/18/2021

Drilling Contractor: ADT — Driller: Luke and Todd

EA Engineering, Science, and Technology, Inc., PBC

LOG OF SOIL BORING

Coordinates: Northing _____ Easting: _____
TOC Elevation:
Surface Elevation:
Reference Elevation:
Reference Description:

Job. No.	**Client:**	USACE/ARNG	**Location:**
634250383	**Project:**	PFAS SI	Ronkonkoma AASF
Drilling Method:			**Soil Boring/Well Number:**
DPT 7822DT			AOI01-03
Sampling Method:			**Sheet 1 of 2**
Hand Auger / DPT			**Drilling**
Water Level:	45.51		**Start** DATE: 11/19/2021 / **Finish** DATE: 11/19/2021
Time:	1120		TIME: 0700 / TIME: 0930
Date:	11/19/2021		

Surface Conditions: grass landscaped area
Weather: sun
Temperature: 50 degrees F

USCS Class.	In. Recvrd/ In. Driven	Boring Diagram	PID (ppm) 10.6 eV with isobutylene as reference gas	Depth in Feet	
SM	N/A Hand Auger		0.0	0–2	0730: 7.5YR 2.5/1. Dry, brown silty F-C sand. Few gravel fragments. Roots and organics present. Sample collected from 0-2 ft interval. Sample ID: AOI01-03-SB-[0-2].
SW	N/A Hand Auger		0.0	2–4	0735: 10YR 4/6. Dry, tan F-C sand. Some rounded gravel. Trace silt. Complete pre-clear at 0745 and begin DPT.
SW	36/60		0.0	4–6	0752: 10YR 4/4. Moist to wet, orangey-tan varied sands (F-C) and gravel.
SW	36/60		0.1	6–8	0752: 10YR 6/6. Moist to wet, orangey-tan varied sands (F-C) and gravel.
SW	43/60		0.0	8–10	0757: 10YR 4/4. Moist, brown/tan F-C sand and gravel.
SW	43/60		0.1	10–12	0757: 10YR 7/4. Moist, tan M-C sand and gravel. Rock fragments present between 14-14.5 ft BGS. Sample collected from 14-15 ft interval. Sample ID: AOI01-03-SB-[14-15].
SW	60/60		0.3	12–14	0808: 10YR 4/2. Moist, brown F-C sand with gravel.
SW	60/60		0.0	14–16	0808: 10YR 7/3. Moist, tan F-C sand with gravel.
SW	60/60		0.1	16–18	0815: 10YR 6/6. Moist, brown F-C sand with gravel.
SW	60/60		0.1	18–20	0815: 10YR 8/2. Moist, tan F-C sand with gravel.

EA Engineering, Science, and Technology, Inc., PBC	Job. No. 634250383	Client: USACE/ARNG	Location: Ronkonkoma AASF
		Project: PFAS SI	
	Drilling Method: DPT 7822DT		Soil Boring/Well Number: AOI01-03

SW	60/60		0.1	25–27	0822: 10YR 6/6. Moist, brown F-C sand with gravel.
			0.0	28–29	0822: 10YR 8/2 and 10YR 6/8. Moist, alternating layers of tan and orange F-C sand with gravel.
	60/60		0.2	30–32	0830: 10YR 6/6. Moist, brown F-C sand with gravel.
			0.0	33–34	0830: 10YR 8/2 and 10YR 6/8. Moist, tan and orange F-C sand with gravel.
	60/60		0.3	35–37	0842: 10YR 6/4. Moist/wet, brown F-C sand with gravel. Trace silt.
			0.0	38–39	0842: 10YR 8/2 and 10YR 6/8. Moist, tan F-C sand with gravel. Layers of orange lamination present throughout.
	60/60		0.1	40–42	0855: 10YR 8/2 and 10YR 6/8. Moist, tan F-C sand with gravel. Layers of orange lamination present throughout.
		PVC Slot 10	0.0	43–44	0855: 10YR 8/2 and 10YR 6/8. Moist, tan F-C sand with gravel. Layers of orange lamination present throughout. Water table at depth of approximately 44 ft BGS.
	--		--	45–48	Hammer casing to 48', no sample collected. Boring complete at 48 ft BGS. Set monitoring well.
					End of Exploration.

Temporary Monitoring Well Construction Information

Monitoring Well Diameter:	1	in		
Bottom of Monitoring Well:	48	ft bgs		
Stick Up or Flush Mount:	Stickup in open borehole			
Screen Interval:	43	To	48	ft bgs
Riser Interval:	0	To	43	ft bgs
Sand Pack Interval:	none	To		ft bgs
Bentonite Seal:	none	To		ft bgs
Grout Interval:	none	To		ft bgs

Soil Vapor Point Installation Information

Depth of Soil Vapor Point:	N/A	ft
Bottom of Tubing:		ft
Top of Sand Pack:		ft
Top of Bentonite Seal:		ft

Logged by: Catherine Maxwell/C. Helms
Date: 11/18/2021
Drilling Contractor: ADT
Driller: Luke and Todd

Appendix F

Analytical Results

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PFAS Results in Groundwater, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	AOI01-01				AOI01-01				AOI01-02				AOI01-03				RONAASF-01			
	Sample Name	AOI01-01-GW				RonAASF-FD-GW-01				AOI-01-02-GW				AOI01-03-GW				RONAASF-01-GW			
	Parent Sample ID					AOI01-01-GW															
	Sample Date	11/16/2021				11/16/2021				11/18/2021				11/19/2021				11/18/2021			
Analyte	**Screening Level[1]**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (ng/L)																					
4:2 Fluorotelomer sulfonate	--	<	0.87	1.7	U	<	0.85	1.7	U	<	0.93	1.9	U	<	0.91	1.8	U	<	0.9	1.8	U
6:2 Fluorotelomer sulfonate	--	26	3.5	4.4		23	3.4	4.3		42	3.7	4.7		<	3.6	4.6	U	8.6	3.6	4.5	
8:2 Fluorotelomer sulfonate	--	<	1.7	2.6	U	<	1.7	2.6	U	<	1.9	2.8	U	<	1.8	2.7	U	1.4	1.8	2.7	J
N-ethyl perfluorooctanesulfonamidoacetic acid	--	<	0.87	2.6	U	<	0.85	2.6	U	2.3	0.93	2.8	J	<	0.91	2.7	U	<	0.9	2.7	U
N-methyl perfluorooctanesulfonamidoacetic acid	--	<	1	1.7	U	<	1	1.7	U	<	1.1	1.9	U	<	1.1	1.8	U	<	1.1	1.8	U
Perfluorobutanesulfonic acid (PFBS)	601	1.7	0.87	1.7		1.6	0.85	1.7	J	1.6	0.93	1.9	J	4.9	0.91	1.8		1.2	0.9	1.8	J
Perfluorobutanoic acid	--	34	3.5	4.4		34	3.4	4.3		12	3.7	4.7		17	3.6	4.6		30	3.6	4.5	
Perfluorodecanesulfonic acid	--	<	0.87	1.7	U	<	0.85	1.7	U	<	0.93	1.9	U	<	0.91	1.8	U	<	0.9	1.8	U
Perfluorodecanoic acid	--	<	0.87	1.7	U	<	0.85	1.7	U	1.9	0.93	1.9		<	0.91	1.8	U	<	0.9	1.8	U
Perfluorododecanoic acid	--	<	0.87	1.7	U	<	0.85	1.7	U	<	0.93	1.9	U	<	0.91	1.8	U	<	0.9	1.8	U
Perfluoroheptanesulfonic acid	--	<	0.87	1.7	U	0.47	0.85	1.7	J	3.2	0.93	1.9		1.4	0.91	1.8	J	<	0.9	1.8	U
Perfluoroheptanoic acid	--	69	0.87	1.7		70	0.85	1.7		51	0.93	1.9		40	0.91	1.8		85	0.9	1.8	
Perfluorohexanesulfonic acid (PFHxS)	39	12	0.87	1.7		12	0.85	1.7		16	0.93	1.9		16	0.91	1.8		2.9	0.9	1.8	
Perfluorohexanoic acid	--	64	0.87	1.7		65	0.85	1.7		29	0.93	1.9		46	0.91	1.8		60	0.9	1.8	
Perfluorononanesulfonic acid	--	<	0.87	1.7	U	<	0.85	1.7	U	<	0.93	1.9	U	<	0.91	1.8	U	<	0.9	1.8	U
Perfluorononanoic acid (PFNA)	6	11	0.87	1.7		11	0.85	1.7		11	0.93	1.9		10	0.91	1.8		150	0.9	1.8	
Perfluorooctanesulfonamide	--	<	0.87	1.7	U	<	0.85	1.7	U	0.81	0.93	1.9	J	<	0.91	1.8	U	<	0.9	1.8	U
Perfluorooctanesulfonic acid (PFOS)	4	6.8	0.87	1.7		6.9	0.85	1.7		85	0.93	1.9		26	0.91	1.8		31	0.9	1.8	
Perfluorooctanoic acid (PFOA)	6	76	0.87	1.7		76	0.85	1.7		89	0.93	1.9		43	0.91	1.8		130	0.9	1.8	
Perfluoropentanesulfonic acid	--	1.2	0.87	1.7	J	1.1	0.85	1.7	J	0.78	0.93	1.9	J	0.66	0.91	1.8	J	<	0.9	1.8	U
Perfluoropentanoic acid	--	86	0.87	1.7		85	0.85	1.7		33	0.93	1.9		56	0.91	1.8		80	0.9	1.8	
Perfluorotetradecanoic acid	--	<	0.87	1.7	U	<	0.85	1.7	U	<	0.93	1.9	U	<	0.91	1.8	U	<	0.9	1.8	U
Perfluorotridecanoic acid	--	<	0.87	1.7	U	<	0.85	1.7	U	<	0.93	1.9	U	<	0.91	1.8	U	<	0.9	1.8	U
Perfluoroundecanoic acid	--	<	0.87	1.7	U	<	0.85	1.7	U	<	0.93	1.9	U	<	0.91	1.8	U	<	0.9	1.8	U

Notes:
1. Assistant Secretary of Defense. July 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. May 2022.

Values exceeding the Screening Level are shaded gray.
< = Analyte not detected above the LOD.
-- = No screening level available.
J = Estimated concentration.
J- = Estimated concentration, biased low.
LOD = Limit of Detection.
LOQ = Limit of Quantitation.
ng/L = Nanogram(s) per liter.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD).
UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

PFAS Results in Groundwater, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	RONAASF-02				RONAASF-03				RONAASF-04				RONAASF-05				RONAASF-06			
	Sample Name	RONAASF-02-GW				RONAASF-03-GW				RONAASF-04-GW				RONAASF-05-GW				RONAASF-06-GW			
	Parent Sample ID																				
	Sample Date	11/18/2021				11/17/2021				11/17/2021				11/17/2021				11/18/2021			
Analyte	**Screening Level[1]**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (ng/L)																					
4:2 Fluorotelomer sulfonate	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	U
6:2 Fluorotelomer sulfonate	--	250	35	43		<	3.6	4.5	U	<	3.5	4.3	U	<	3.6	4.5	U	24	3.5	4.4	J-
8:2 Fluorotelomer sulfonate	--	<	1.7	2.6	U	<	1.8	2.7	U	<	1.7	2.6	U	1.4	1.8	2.7	J	<	1.8	2.6	U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	<	0.87	2.6	U	<	0.9	2.7	U	<	0.86	2.6	U	<	0.9	2.7	U	<	0.88	2.6	U
N-methyl perfluorooctanesulfonamidoacetic acid	--	<	1	1.7	U	<	1.1	1.8	U	<	1	1.7	U	<	1.1	1.8	U	<	1.1	1.8	U
Perfluorobutanesulfonic acid (PFBS)	601	1	0.87	1.7	J	4.8	0.9	1.8		1	0.86	1.7	J	1.1	0.9	1.8	J	1.2	0.88	1.8	J-
Perfluorobutanoic acid	--	58	3.5	4.3		12	3.6	4.5		4.5	3.5	4.3		6.7	3.6	4.5		7.4	3.5	4.4	
Perfluorodecanesulfonic acid	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	U
Perfluorodecanoic acid	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	UJ
Perfluorododecanoic acid	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	UJ
Perfluoroheptanesulfonic acid	--	0.44	0.87	1.7	J	1.1	0.9	1.8	J	<	0.86	1.7	U	<	0.9	1.8	U	0.46	0.88	1.8	J-
Perfluoroheptanoic acid	--	210	0.87	1.7		18	0.9	1.8		13	0.86	1.7		20	0.9	1.8		8.5	0.88	1.8	J-
Perfluorohexanesulfonic acid (PFHxS)	39	20	0.87	1.7		120	0.9	1.8		7	0.86	1.7		11	0.9	1.8		5.7	0.88	1.8	J-
Perfluorohexanoic acid	--	120	0.87	1.7		50	0.9	1.8		5.6	0.86	1.7		11	0.9	1.8		15	0.88	1.8	J-
Perfluorononanesulfonic acid	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	U
Perfluorononanoic acid (PFNA)	6	7.8	0.87	1.7		1.2	0.9	1.8	J	21	0.86	1.7		16	0.9	1.8		3.4	0.88	1.8	
Perfluorooctanesulfonamide	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	U
Perfluorooctanesulfonic acid (PFOS)	4	7.8	0.87	1.7		55	0.9	1.8		8.7	0.86	1.7		21	0.9	1.8		9.8	0.88	1.8	J-
Perfluorooctanoic acid (PFOA)	6	35	0.87	1.7		16	0.9	1.8		16	0.86	1.7		50	0.9	1.8		7.6	0.88	1.8	J-
Perfluoropentanesulfonic acid	--	1.7	0.87	1.7		7	0.9	1.8		<	0.86	1.7	U	0.51	0.9	1.8	J	<	0.88	1.8	U
Perfluoropentanoic acid	--	150	0.87	1.7		25	0.9	1.8		4.6	0.86	1.7		11	0.9	1.8		18	0.88	1.8	
Perfluorotetradecanoic acid	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	UJ
Perfluorotridecanoic acid	--	<	0.87	1.7	U	<	0.9	1.8	U	<	0.86	1.7	U	<	0.9	1.8	U	<	0.88	1.8	U
Perfluoroundecanoic acid	--	<	0.87	1.7	U	<	0.9	1.8	U	0.85	0.86	1.7	J	<	0.9	1.8	U	<	0.88	1.8	U

Notes:

1. Assistant Secretary of Defense. July 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. May 2022.

Values exceeding the Screening Level are shaded gray.

< = Analyte not detected above the LOD.

-- = No screening level available.

J = Estimated concentration.

J- = Estimated concentration, biased low.

LOD = Limit of Detection.

LOQ = Limit of Quantitation.

ng/L = Nanogram(s) per liter.

Qual = Qualifier.

U = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD).

UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

PFAS Results in Surface Soil, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	AOI01-01				AOI01-02				AOI01-03				RONAASF-01				RONAASF-02				RONAASF-02			
	Sample Name	AOI01-01-[0-2]				AOI01-02-SB-[0-2]				AOI01-03-SB-[0-2]				RONAASF-01-SB-[0-2]				RONAASF-02-SB-[0-2]				RONAASF-FD-SB-03			
	Parent Sample ID																					RONAASF-02-SB-[0-2]			
	Sample Date	11/16/2021				11/18/2021				11/19/2021				11/18/2021				11/18/2021				11/18/2021			
	Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2				0-2			
Analyte	**Screening Level[1,2]**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)																									
4:2 Fluorotelomer sulfonate	--	<	1.7	2.1	U	<	1.7	2.1	U	<	1.8	2.3	U	<	1.6	2	U	<	1.6	2	U	<	1.8	2.2	U
6:2 Fluorotelomer sulfonate	--	<	1.7	2.1	U	<	1.7	2.1	U	<	1.8	2.3	U	<	1.6	2	U	<	1.6	2	U	<	1.8	2.2	U
8:2 Fluorotelomer sulfonate	--	<	1.7	3.2	U	<	1.7	3.2	U	<	1.8	3.4	U	4.9	1.6	3		<	1.6	3.1	U	<	1.8	3.3	U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	<	0.43	2.1	U	0.22	0.42	2.1	J	<	0.45	2.3	U	<	0.4	2	U	<	0.41	2	UJ	<	0.44	2.2	UJ
N-methyl perfluorooctanesulfonamidoacetic acid	--	<	0.43	2.1	U	<	0.42	2.1	U	<	0.45	2.3	U	<	0.4	2	U	<	0.41	2	UJ	<	0.44	2.2	UJ
Perfluorobutanesulfonic acid (PFBS)	1900	<	1.7	2.1	U	<	1.7	2.1	U	<	1.8	2.3	U	<	1.6	2	U	<	1.6	2	U	<	1.8	2.2	U
Perfluorobutanoic acid	--	<	1.7	2.1	U	<	1.7	2.1	U	<	1.8	2.3	U	<	1.6	2	U	<	1.6	2	U	<	1.8	2.2	U
Perfluorodecanesulfonic acid	--	<	0.43	0.64	U	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorodecanoic acid	--	2.4	0.43	0.64		0.83	0.42	0.63		0.26	0.45	0.68	J	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorododecanoic acid	--	0.36	0.43	0.64	J	0.43	0.42	0.63	J	0.23	0.45	0.68	J	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluoroheptanesulfonic acid	--	<	0.43	0.64	U	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluoroheptanoic acid	--	0.31	0.43	0.64	J	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorohexanesulfonic acid (PFHxS)	130	<	0.43	0.64	U	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorohexanoic acid	--	<	0.43	0.64	U	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorononanesulfonic acid	--	<	0.43	0.64	U	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorononanoic acid (PFNA)	19	1.6	0.43	0.64		0.22	0.42	0.63	J	<	0.45	0.68	U	<	0.4	0.6	U	0.22	0.41	0.61	J	<	0.44	0.66	U
Perfluorooctanesulfonamide	--	<	0.43	0.64	U	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorooctanesulfonic acid (PFOS)	13	1.6	0.43	0.64		0.35	0.42	0.63	J	0.63	0.68	0.68	J	<	0.4	0.6	U	1.2	0.41	0.61		1.2	0.44	0.66	
Perfluorooctanoic acid (PFOA)	19	0.85	0.43	0.64		0.26	0.42	0.63	J	0.38	0.45	0.68	J	0.22	0.4	0.6	J	0.24	0.41	0.61	J	0.23	0.44	0.66	J
Perfluoropentanesulfonic acid	--	<	0.43	3.2	U	<	0.42	3.2	U	<	0.45	3.4	U	<	0.4	3	U	<	0.41	3.1	U	<	0.44	3.3	U
Perfluoropentanoic acid	--	0.25	0.43	0.64	J	<	0.42	0.63	U	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorotetradecanoic acid	--	<	0.43	0.64	U	0.21	0.42	0.63	J	<	0.45	0.68	U	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluorotridecanoic acid	--	0.38	0.43	0.64	J	0.35	0.42	0.63	J	0.47	0.45	0.68	J	<	0.4	0.6	U	<	0.41	0.61	U	<	0.44	0.66	U
Perfluoroundecanoic acid	--	3.4	0.43	0.64		1.8	0.42	0.63		0.48	0.45	0.68	J	<	0.4	0.6	U	0.34	0.41	0.61	J	0.27	0.44	0.66	J

Notes:
1. The Screening Levels for soil are based on a residential scenario for direct ingestion of contaminated soil.
2. Assistant Secretary of Defense. July 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. May 2022.

Values exceeding the Screening Level are shaded gray.
< = Analyte not detected above the LOD.
-- = No screening level available.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
LOD = Limit of Detection.
LOQ = Limit of Quantitation.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD).
UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

PFAS Results in Surface Soil, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	RONAASF-03				RONAASF-03				RONAASF-04				RONAASF-05				RONAASF-06			
	Sample Name	RONAASF-03-[0-2]				RONAASF-FD-SB-02				RONAASF-04-[0-2]				RONAASF-05-[0-2]				RONAASF-06-[0-2]			
	Parent Sample ID					RONAASF-03-[0-2]															
	Sample Date	11/17/2021				11/17/2021				11/16/2021				11/16/2021				11/17/2021			
	Depth (ft bgs)	0-2				0-2				0-2				0-2				0-2			
Analyte	**Screening Level[1,2]**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)																					
4:2 Fluorotelomer sulfonate	--	<	1.7	2.2	U	<	1.7	2.1	U	<	1.6	2	U	<	1.7	2.1	U	<	1.6	2	U
6:2 Fluorotelomer sulfonate	--	<	1.7	2.2	U	<	1.7	2.1	U	<	1.6	2	U	<	1.7	2.1	U	<	1.6	2	U
8:2 Fluorotelomer sulfonate	--	<	1.7	3.2	U	<	1.7	3.1	U	<	1.6	3	U	<	1.7	3.2	U	<	1.6	3	U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	<	0.43	2.2	U	<	0.41	2.1	UJ	<	0.4	2	UJ	<	0.42	2.1	UJ	<	0.41	2	U
N-methyl perfluorooctanesulfonamidoacetic acid	--	<	0.43	2.2	UJ	<	0.41	2.1	UJ	<	0.4	2	UJ	<	0.42	2.1	UJ	<	0.41	2	U
Perfluorobutanesulfonic acid (PFBS)	1900	<	1.7	2.2	U	<	1.7	2.1	U	<	1.6	2	U	<	1.7	2.1	U	<	1.6	2	U
Perfluorobutanoic acid	--	<	1.7	2.2	U	<	1.7	2.1	U	<	1.6	2	U	<	1.7	2.1	U	<	1.6	2	U
Perfluorodecanesulfonic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluorodecanoic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	0.21	0.41	0.61	J
Perfluorododecanoic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluoroheptanesulfonic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluoroheptanoic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	0.23	0.42	0.63	J	<	0.41	0.61	U
Perfluorohexanesulfonic acid (PFHxS)	130	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluorohexanoic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	0.32	0.42	0.63	J	<	0.41	0.61	U
Perfluorononanesulfonic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluorononanoic acid (PFNA)	19	<	0.43	0.65	U	0.31	0.41	0.62	J	0.31	0.4	0.6	J	0.84	0.42	0.63		<	0.41	0.61	U
Perfluorooctanesulfonamide	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluorooctanesulfonic acid (PFOS)	13	0.41	0.43	0.65	J	0.36	0.41	0.62	J	0.39	0.4	0.6	J	0.53	0.42	0.63	J	0.54	0.41	0.61	J
Perfluorooctanoic acid (PFOA)	19	<	0.43	0.65	U	<	0.41	0.62	U	0.3	0.4	0.6	J	0.51	0.42	0.63	J	<	0.41	0.61	U
Perfluoropentanesulfonic acid	--	<	0.43	3.2	U	<	0.41	3.1	U	<	0.4	3	U	<	0.42	3.2	U	<	0.41	3	U
Perfluoropentanoic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	0.21	0.4	0.6	J	0.43	0.42	0.63	J	<	0.41	0.61	U
Perfluorotetradecanoic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluorotridecanoic acid	--	<	0.43	0.65	U	<	0.41	0.62	U	<	0.4	0.6	U	<	0.42	0.63	U	<	0.41	0.61	U
Perfluoroundecanoic acid	--	0.39	0.43	0.65	J	<	0.41	0.62	U	<	0.4	0.6	U	0.49	0.42	0.63	J	0.25	0.41	0.61	J

Notes:
1. The Screening Levels for soil are based on a residential scenario for direct ingestion of contaminated soil.
2. Assistant Secretary of Defense. July 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. May 2022.
Values exceeding the Screening Level are shaded gray.
< = Analyte not detected above the LOD.
-- = No screening level available.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
LOD = Limit of Detection.
LOQ = Limit of Quantitation.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD).
UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

PFAS Results in Shallow Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	AOI01-01				AOI01-02				AOI01-03				RONAASF-01				RONAASF-02			
	Sample Name	AOI01-01-[14-15]				AOI01-02-SB-[10-15]				AOI01-03-SB-[14-15]				RONAASF-01-SB-[14-15]				RONAASF-02-SB-[14-15]			
	Parent Sample ID																				
	Sample Date	11/16/2021				11/18/2021				11/19/2021				11/18/2021				11/18/2021			
	Depth (ft bgs)	14-15				10-15				14-15				14-15				14-15			
Analyte	**Screening Level[1,2]**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)																					
4:2 Fluorotelomer sulfonate	--	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.6	1.9	U	<	1.6	2	U
6:2 Fluorotelomer sulfonate	--	1.5	1.6	2	J	<	1.6	2	U	<	1.6	2	U	<	1.6	1.9	U	<	1.6	2	U
8:2 Fluorotelomer sulfonate	--	<	1.6	3	U	<	1.6	3	U	<	1.6	3	U	<	1.6	2.9	U	<	1.6	3.1	U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	<	0.4	2	UJ	0.21	0.4	2	J	<	0.4	2	U	0.29	0.39	1.9	J+	<	0.41	2	UJ
N-methyl perfluorooctanesulfonamidoacetic acid	--	<	0.4	2	UJ	<	0.4	2	U	<	0.4	2	U	<	0.39	1.9	UJ	<	0.41	2	UJ
Perfluorobutanesulfonic acid (PFBS)	25000	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.6	1.9	U	<	1.6	2	U
Perfluorobutanoic acid	--	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.6	1.9	U	<	1.6	2	U
Perfluorodecanesulfonic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorodecanoic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorododecanoic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluoroheptanesulfonic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluoroheptanoic acid	--	0.68	0.4	0.61		<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorohexanesulfonic acid (PFHxS)	1600	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorohexanoic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorononanesulfonic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorononanoic acid (PFNA)	250	0.31	0.4	0.61	J	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorooctanesulfonamide	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorooctanesulfonic acid (PFOS)	160	0.67	0.4	0.61		0.23	0.4	0.6	J	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorooctanoic acid (PFOA)	250	1.3	0.4	0.61		<	0.4	0.6	U	<	0.4	0.61	U	0.24	0.39	0.58	J	<	0.41	0.61	U
Perfluoropentanesulfonic acid	--	<	0.4	3	U	<	0.4	3	U	<	0.4	3	U	<	0.39	2.9	U	<	0.41	3.1	U
Perfluoropentanoic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorotetradecanoic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluorotridecanoic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U
Perfluoroundecanoic acid	--	<	0.4	0.61	U	<	0.4	0.6	U	<	0.4	0.61	U	<	0.39	0.58	U	<	0.41	0.61	U

Notes:
1. The Screening Levels for soil are based on a industrial/commercial worker scenario for direct ingestion of contaminated soil.
2. Assistant Secretary of Defense. July 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. May 2022.
Values exceeding the Screening Level are shaded gray.
< = Analyte not detected above the LOD.
-- = No screening level available.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
J+ = Estimated concentration, biased high.
LOD = Limit of Detection.
LOQ = Limit of Quantitation.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted Limit of
UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

PFAS Results in Shallow Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

	Location ID	RONAASF-03				RONAASF-04				RONAASF-05				RONAASF-06			
	Sample Name	RONAASF-03-[14-15]				RONAASF-04-[14-15]				RONAASF-05-[14-15]				RONAASF-06-[14-15]			
	Parent Sample ID																
	Sample Date	11/17/2021				11/17/2021				11/16/2021				11/17/2021			
	Depth (ft bgs)	14-15				14-15				14-15				14-15			
Analyte	**Screening Level[1,2]**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)																	
4:2 Fluorotelomer sulfonate	--	<	1.6	1.9	U	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U
6:2 Fluorotelomer sulfonate	--	<	1.6	1.9	U	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U
8:2 Fluorotelomer sulfonate	--	<	1.6	2.9	U	<	1.6	3	U	<	1.6	3.1	U	<	1.6	3	U
N-ethyl perfluorooctanesulfonamidoacetic acid	--	<	0.39	1.9	U	<	0.4	2	UJ	<	0.41	2	U	<	0.4	2	U
N-methyl perfluorooctanesulfonamidoacetic acid	--	<	0.39	1.9	U	<	0.4	2	UJ	<	0.41	2	U	<	0.4	2	U
Perfluorobutanesulfonic acid (PFBS)	25000	<	1.6	1.9	U	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U
Perfluorobutanoic acid	--	<	1.6	1.9	U	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U
Perfluorodecanesulfonic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorodecanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorododecanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluoroheptanesulfonic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluoroheptanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorohexanesulfonic acid (PFHxS)	1600	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorohexanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorononanesulfonic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorononanoic acid (PFNA)	250	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorooctanesulfonamide	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorooctanesulfonic acid (PFOS)	160	0.39	0.39	0.58	J	<	0.4	0.61	U	0.43	0.41	0.61	J	3.7	0.4	0.59	
Perfluorooctanoic acid (PFOA)	250	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	0.2	0.4	0.59	J
Perfluoropentanesulfonic acid	--	<	0.39	2.9	U	<	0.4	3	U	<	0.41	3.1	U	<	0.4	3	U
Perfluoropentanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	0.2	0.4	0.59	J
Perfluorotetradecanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluorotridecanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U
Perfluoroundecanoic acid	--	<	0.39	0.58	U	<	0.4	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U

Notes:
1. The Screening Levels for soil are based on a industrial/commercial worker scenario for direct ingestion of contaminated soil.
2. Assistant Secretary of Defense. July 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. May 2022.
Values exceeding the Screening Level are shaded gray.
< = Analyte not detected above the LOD.
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LOQ = Limit of Quantitation.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted Limit of
UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

PFAS Results in Deep Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

Location ID	AOI01-01				AOI01-01				AOI01-02				AOI01-03				RONAASF-01			
Sample Name	AOI01-01-[47-48]				RonAASF-FD-SB-01				AOI01-02-SB-[43-44]				AOI01-03-SB-[43-44]				RONAASF-01-SB-[43-44]			
Parent Sample ID					AOI01-01-[47-48]															
Sample Date	11/16/2021				11/16/2021				11/18/2021				11/19/2021				11/18/2021			
Depth (ft bgs)	47-48				47-48				43-44				43-44				43-44			
Analyte	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)																				
4:2 Fluorotelomer sulfonate	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.7	2.1	U
6:2 Fluorotelomer sulfonate	0.68	1.6	2	J	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.7	2.1	U
8:2 Fluorotelomer sulfonate	<	1.6	2.9	U	<	1.6	3.1	U	<	1.6	3.1	U	<	1.6	3	U	<	1.7	3.2	U
N-ethyl perfluorooctanesulfonamidoacetic acid	<	0.39	2	UJ	<	0.41	2	U	<	0.41	2	U	<	0.4	2	UJ	<	0.43	2.1	U
N-methyl perfluorooctanesulfonamidoacetic acid	<	0.39	2	UJ	<	0.41	2	U	<	0.41	2	U	<	0.4	2	UJ	<	0.43	2.1	U
Perfluorobutanesulfonic acid (PFBS)	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.7	2.1	U
Perfluorobutanoic acid	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.6	2	U	<	1.7	2.1	U
Perfluorodecanesulfonic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorodecanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorododecanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluoroheptanesulfonic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluoroheptanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorohexanesulfonic acid (PFHxS)	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorohexanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorononanesulfonic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorononanoic acid (PFNA)	0.31	0.39	0.59	J	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorooctanesulfonamide	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorooctanesulfonic acid (PFOS)	0.43	0.39	0.59	J	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorooctanoic acid (PFOA)	0.66	0.39	0.59		0.3	0.41	0.61	J	<	0.41	0.61	U	<	0.4	0.59	U	0.26	0.43	0.64	J
Perfluoropentanesulfonic acid	<	0.39	2.9	U	<	0.41	3.1	U	<	0.41	3.1	U	<	0.4	3	U	<	0.43	3.2	U
Perfluoropentanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorotetradecanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluorotridecanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U
Perfluoroundecanoic acid	<	0.39	0.59	U	<	0.41	0.61	U	<	0.41	0.61	U	<	0.4	0.59	U	<	0.43	0.64	U

Notes:
1. No Screening Levels were applied due to sample depths.
< = Analyte not detected above the LOD.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
LOD = Limit of Detection.
LOQ = Limit of Quantitation.
Qual = Qualifier.
U = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD).
UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

PFAS Results in Deep Subsurface Soil, Site Inspection Report, Ronkonkoma AASF #1

Location ID	RONAASF-02				RONAASF-03				RONAASF-04				RONAASF-05				RONAASF-06			
Sample Name	RONAASF-02-SB-[39-40]				RONAASF-03-[43-44]				RONAASF-04-[43-44]				RONAASF-05-[43-44]				RONAASF-06-SB-43-44			
Parent Sample ID																				
Sample Date	11/18/2021				11/17/2021				11/17/2021				11/16/2021				11/17/2021			
Depth (ft bgs)	39-40				43-44				43-44				43-44				43-44			
Analyte	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**	**Result**	**LOD**	**LOQ**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)																				
4:2 Fluorotelomer sulfonate	<	1.6	2	U	<	1.5	1.9	U	<	1.6	2	U	<	1.7	2.1	U	<	1.8	2.2	U
6:2 Fluorotelomer sulfonate	<	1.6	2	U	<	1.5	1.9	U	<	1.6	2	U	<	1.7	2.1	U	<	1.8	2.2	U
8:2 Fluorotelomer sulfonate	<	1.6	3	U	<	1.5	2.8	U	<	1.6	2.9	U	<	1.7	3.2	U	<	1.8	3.4	U
N-ethyl perfluorooctanesulfonamidoacetic acid	0.93	0.4	2	J	<	0.38	1.9	U	<	0.39	2	U	<	0.43	2.1	U	<	0.45	2.2	U
N-methyl perfluorooctanesulfonamidoacetic acid	0.79	0.4	2	J	<	0.38	1.9	U	<	0.39	2	U	<	0.43	2.1	U	<	0.45	2.2	U
Perfluorobutanesulfonic acid (PFBS)	<	1.6	2	U	<	1.5	1.9	U	<	1.6	2	U	<	1.7	2.1	U	<	1.8	2.2	U
Perfluorobutanoic acid	<	1.6	2	U	<	1.5	1.9	U	<	1.6	2	U	<	1.7	2.1	U	<	1.8	2.2	U
Perfluorodecanesulfonic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorodecanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorododecanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluoroheptanesulfonic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluoroheptanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorohexanesulfonic acid (PFHxS)	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorohexanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorononanesulfonic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorononanoic acid (PFNA)	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorooctanesulfonamide	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorooctanesulfonic acid (PFOS)	<	0.4	0.6	U	0.32	0.38	0.57	J	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorooctanoic acid (PFOA)	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluoropentanesulfonic acid	<	0.4	3	U	<	0.38	2.8	U	<	0.39	2.9	U	<	0.43	3.2	U	<	0.45	3.4	U
Perfluoropentanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorotetradecanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluorotridecanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U
Perfluoroundecanoic acid	<	0.4	0.6	U	<	0.38	0.57	U	<	0.39	0.59	U	<	0.43	0.64	U	<	0.45	0.67	U

Notes:

1. No Screening Levels were applied due to sample depths.

< = Analyte not detected above the LOD.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
J = Estimated concentration.
LOD = Limit of Detection.
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U = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD).
UJ = The analyte was not detected at a level greater than or equal to the adjusted Limit of Detection (LOD). Associated numerical value is approximate.

General Chemsitry, Site Inspection Report, Ronkonkoma AASF #1

Location ID		AOI01-02			
Sample Name		AOI01-02-SB-[0-2]			
Parent Sample ID					
Sample Date		11/18/2021			
Depth (ft bgs)		0-2			
Analyte	**Unit**	**Result**	**LOD**	**LOQ**	**Qual**
pH (SW9045D)	pH units	6.4	0.01	0.01	
Temperature (SW9045D)	°C	20.2	0.01	0.01	
Total Organic Carbon (SW9060)	mg/kg	23500	560	560	

Notes:
°C = Degrees Celsius.
ft bgs = Feet below ground surface.
LOD = Limit of Detection.
LOQ = Limit of Quantitation.
mg/kg= Milligram(s) per kilogram.
Qual = Qualifier.

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Appendix G

Laboratory Reports

(Provided

Seperately)

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Appendix H

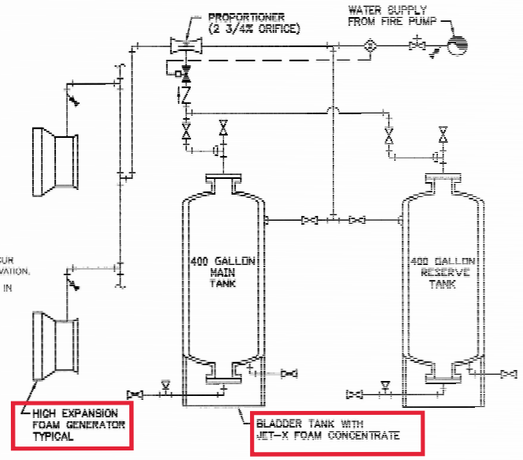
Jet-X™ High Expansion Foam (HEF) System Construction and Repairs Plans

2004 HEF System Installation Plan

2004 High Expansion Foam System Installation

LEGEND:

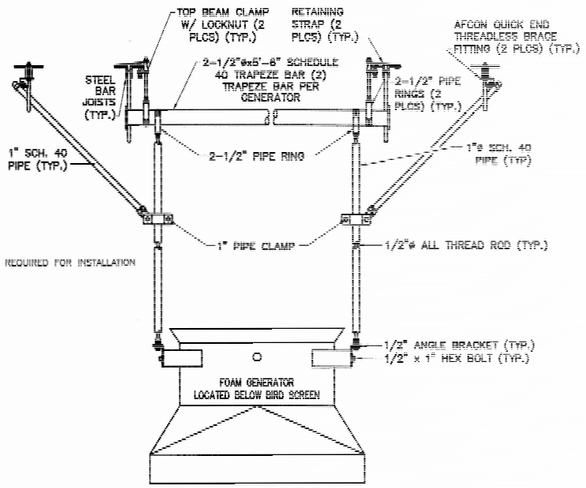
- STRAINER
- CHECK VALVE
- GATE VALVE –N.R.S. (GV)
- OS&Y GATE VALVE (OS&Y)
- BALL VALVE
- CHECK VALVE
- DELUGE VALVE
- PROPORTIONER
- FOAM GENERATOR WITH WALL INTAKE DAMPER



NOTE:

1. FOAM TANK SIZES SHALL BE BASED ON MANUFACTURER REQUIREMENTS.
2. REFER TO PLAN VIEW FOR LAYOUT.
3. FOAM SUPPRESSION SYSTEM ACTIVATION SHALL OCCUR UPON MANUAL ACTIVATION AND/OR AUTOMATIC ACTIVATION.
4. AUTOMATIC ACTIVATION REQUIRES ALARM CONDITION IN BOTH LINEAR HEAT DETECTION ZONES.

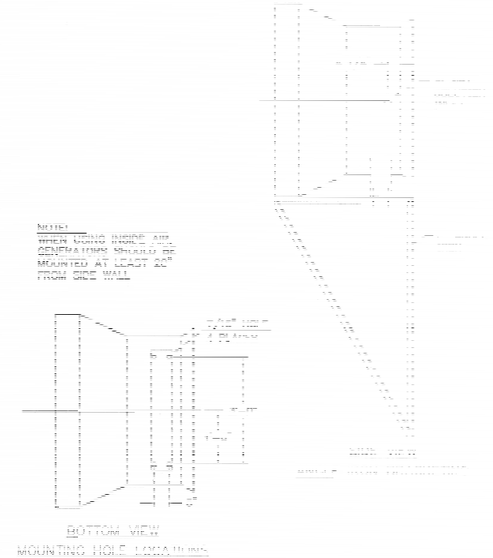
1 FP002 **FOAM SYSTEM EQUIPMENT DETAIL**
SCALE: NTS

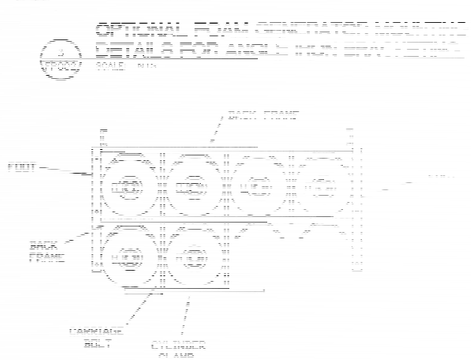


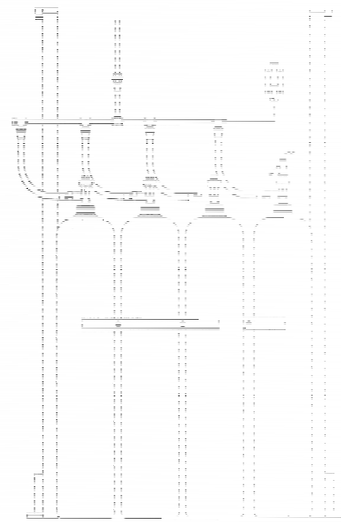
NOTE:

1. REMOVE, MODIFY & REINSTALL BIRD SCREEN AS REQUIRED FOR INSTALLATION OF FOAM GENERATORS

2 FP002 **FOAM GENERATOR MOUNTING DETAIL**
SCALE: NTS

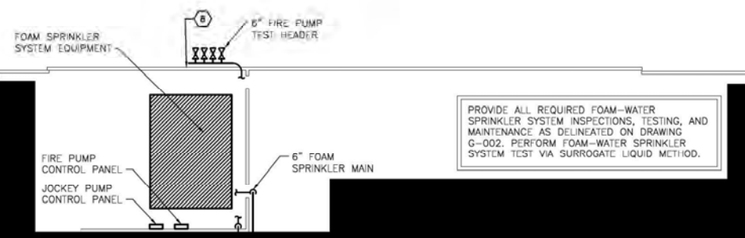






2022 HEF System Repair Diagram

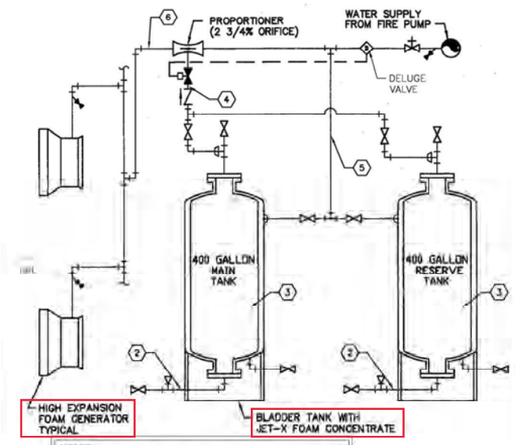
2022 High Expansion Foam System Repair
Images redacted for security reasons.



[redacted]

DRAWING KEYED NOTES:

1. REPLACE 1" CHECK VALVES SERVING FIRE PUMP AND JOCKEY PUMP PRESSURE SWITCH WITH 1" BRONZE CHECK VALVES W/ 3/32" HOLE IN CLAPPER. INSTALL CHECK VALVES TO ALLOW FLOW TOWARDS PUMP CONTROLLERS.
2. REPLACE 1" FOAM TANK DRAIN/FILL VALVE ASSEMBLY AND SIGHT GLASS.
3. REPLACE FOAM BLADDERS AND INSPECT FOAM TANKS. DOCUMENT ANY DEFICIENCIES AND PERFORM MINOR REPAIRS IF REQUIRED. PROVIDE 800 GALLONS OF JET-X HIGH EXPANSION FOAM CONCENTRATE AND FILL STORAGE TANKS AFTER REPAIRS.
4. PROVIDE SURROGATE LIQUID INLET TEST VALVE WITH 3" HOSE CONNECTION ON EXISTING 2" TEE PER 4/SP-101.
5. PROVIDE TEE IN ETR 2" PIPING AND SURROGATE LIQUID OUTLET TEST VALVE WITH 3" HOSE CONNECTION PER 4/SP-101.
6. PROVIDE 6" TEST OUTLET VALVE PER 5/SP-101.
7. REPLACE 10 PRESSURE GAUGES THROUGHOUT FIRE PUMP, JOCKEY PUMP, AND FOAM SYSTEM PIPING.
8. REMOVE EXISTING SIGN AND PROVIDE SIGNAGE FOR FIRE PUMP TEST HEADER.



[redacted]

1 HANGAR PLAN
SCALE: 1/16" = 1'-0"

[redacted]

2 FIRE PUMP SCHEMATIC
SCALE: NO SCALE

3 FOAM TANK SCHEMATIC
SCALE: NO SCALE

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT:
FPM ENGINEERING & GEOLOGY, P.C.

3 INCHES WHEN PLOTTED TO SCALE

ENERGY CODE STATEMENT:
TO THE BEST OF THE REGISTERED DESIGN PROFESSIONAL'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND/OR SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CODE OF NEW YORK STATE.

UNIFORM CODE STATEMENT:
TO THE BEST OF THE REGISTERED DESIGN PROFESSIONAL'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND/OR SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 UNIFORM CODE OF NEW YORK STATE.

CONTRACT: PLUMBING

TITLE: REPAIR FOAM SYSTEM

LOCATION:
ARMY AVIATION SUPPORT FACILITY NO. 1
201 SCHAEFER DRIVE
RONKONKOMA, NY 11779

CLIENT:
NYS DIVISION OF MILITARY AND NAVAL AFFAIRS

MARK	DATE	DESCRIPTION
-	09/30/2022	100% SUBMISSION

PROJECT NUMBER: EE837
DESIGNED BY: FPM
DRAWN BY: JDH
FIELD CHECK: -
APPROVED: CMS

SHEET TITLE: FOAM SPRINKLER PLAN AND DETAILS

DRAWING NUMBER: SP-101

SHEET 3 OF 3