# FINAL
# Site Inspection Report
# Orchard Combat Training Center
# Boise, Idaho

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

May 2023

Prepared for:

Army National Guard Bureau
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Arlington, VA 22204

UNCLASSIFIED

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# Acronyms and Abbreviations

| | |
|---|---|
| % | percent |
| °C | degrees Celsius |
| °F | degrees Fahrenheit |
| µg/kg | micrograms per kilogram |
| AECOM | AECOM Technical Services, Inc. |
| AFFF | aqueous film-forming foam |
| AOI | Area of Interest |
| ARNG | Army National Guard |
| bgs | below ground surface |
| BLM | Bureau of Land Management |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CoC | chain of custody |
| CSM | conceptual site model |
| DA | Department of the Army |
| DoD | Department of Defense |
| DOT | Department of Transportation |
| DPT | direct-push technology |
| DQO | data quality objective |
| DUA | data usability assessment |
| ELAP | Environmental Laboratory Accreditation Program |
| EM | Engineer Manual |
| EMO | Environmental Management Office |
| FedEx | Federal Express |
| FTA | Fire Training Area |
| gpm | gallons per minute |
| GPRS | Ground Penetrating Radar Services, LLC. |
| GPS | global positioning system |
| HA | Health Advisory |
| HDPE | high-density polyethylene |
| HFPO-DA | hexafluoropropylene oxide dimer acid |
| IDARNG | Idaho Army National Guard |
| IDNG | Idaho National Guard |
| IDW | investigation-derived waste |
| IDWR | Idaho Department of Water Resources |
| ITRC | Interstate Technology Regulatory Council |
| LC/MS/MS | liquid chromatography with tandem mass spectrometry |
| MATES | Maneuver Area Training Equipment Site |
| MIL-SPEC | military specification |
| MS | matrix spike |
| MSD | matrix spike duplicate |
| NELAP | National Environmental Laboratory Accreditation Program |
| ng/L | nanograms per liter |
| NOAA | National Oceanic and Atmospheric Administration |

| | |
|---|---|
| OCTC | Orchard Combat Training Center |
| OSD | Office of the Secretary of Defense |
| PA | Preliminary Assessment |
| PFAS | per- and polyfluoroalkyl substances |
| PFBS | perfluorobutanesulfonic acid |
| PFHxS | perfluorohexanesulfonic acid |
| PFNA | perfluorononanoic acid |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |
| PID | photoionization detector |
| PQAPP | Programmatic UFP-QAPP |
| QA | quality assurance |
| QAPP | Quality Assurance Project Plan |
| QC | quality control |
| QSM | Quality Systems Manual |
| RI | Remedial Investigation |
| SI | Site Inspection |
| SL | screening level |
| SOP | standard operating procedure |
| SRTF | Snake River Training Facility |
| TOC | total organic carbon |
| TPP | Technical Project Planning |
| UFP | Uniform Federal Policy |
| US | United States |
| USACE | United States Army Corps of Engineers |
| USCS | Unified Soil Classification System |
| USGS | United States Geological Survey |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |

# Executive Summary

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

The PA identified three Areas of Interest (AOIs) where PFAS-containing materials may have been used, stored, disposed, or released historically (see **Table ES-2** for AOI locations). 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 SLs for relevant compounds. This SI was completed at the Orchard Combat Training Center (OCTC) in Boise, Idaho and determined no further investigation is warranted at AOI 1, AOI 2 or AOI 3, at this time. OCTC will also be referred to as the "facility" throughout this document.

The OCTC is a 143,307-acre training facility located approximately 13 miles south of Boise, Idaho. The OCTC is publicly owned and is used for military training by Idaho ARNG (IDARNG), livestock grazing, and public recreation (Idaho National Guard Environmental Management Office, 2013). The majority of IDARNG training activities are conducted at the facility. About 41,000 acres of the facility are designated as Impact Area, while the remaining approximate 102,000 acres are used for training maneuvers. The training activities are mainly conducted to ensure military readiness.

The PA identified three AOIs for investigation during the SI phase. SI sampling results from the three AOIs were compared to OSD SLs. **Table ES-2** summarizes the SI results for each AOI. Based on the results of this SI, further evaluation under CERCLA is not warranted in a Remedial Investigation for all three AOIs.

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

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

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

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

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

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

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

| AOI | Potential Release Area | Soil – Source Area | Groundwater – Source Area | Groundwater – Facility Boundary | Future Action |
|---|---|---|---|---|---|
| **1** | Range 2 FTA | ◐ | NA | ◐ | No further action |
| **2** | OCTC Fire Station | ◐ | NA | ◐ | No further action |
| **3** | Wastewater Lagoons | ◐ | NA | ◐ | No further action |
| **Production Wells** | SRTF-1 | ○ | Unknown | ◐ | No further action |

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

SRTF = Snake River Training Facility

# 1. Introduction

## 1.1 Project Authorization

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

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

## 1.2 SI Purpose

A PA was performed at OCTC (AECOM Technical Services, Inc. [AECOM], 2020) that identified three Areas of Interest (AOIs) 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 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 screening levels (SLs) for the relevant compounds.

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

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# 2. Facility Background

## 2.1 Facility Location and Description

The OCTC is a 143,307-acre training facility located approximately 13 miles south of Boise, Idaho (**Figure 2-1**). The OCTC is used as a training area by the Idaho ARNG (IDARNG), as authorized under Public Law 103-64 and the 2010 OCTC Memorandum of Understanding between IDARNG and the Bureau of Land Management (BLM) and Idaho Military Division (IDARNG, 2018). The land remains publicly owned, and since 1953, it has been used for military training (by IDARNG), livestock grazing, and public recreation (Idaho National Guard [IDNG] Environmental Management Office [EMO], 2013).

The majority of IDARNG training activities are conducted at the facility. About 41,000 acres of the facility are designated as Impact Area, while the remaining approximate 102,000 acres are used for training maneuvers. The Impact Area is used for functioning ammunition, designated artillery, and mortar firing, and it is off-limits to the public. The training activities are mainly conducted to ensure military readiness.

## 2.2 Facility Environmental Setting

The OCTC is within the Snake River Valley, and the ground surface is characterized by low-rolling hills. The landscape has scarce vegetation, with all plants generally under 3 feet tall and no tree species. The facility is also located entirely within the Morley Nelson Snake River Birds of Prey National Conservation Area. No wetlands or permanent surface water bodies exist at the OCTC (IDNG EMO, 2013). Facility topography is shown on **Figure 2-2**.

### 2.2.1 Geology

The OCTC lies within the western portion of the Snake River Plain, which is a fault-bounded basin filled by volcanic flows and lakebed sediments that compose the Idaho Group (US Geological Survey [USGS], 1992). The Snake River runs through a deep gorge to the south of the OCTC.

The OCTC is almost entirely located within surficial Quaternary basalt deposits of the Snake River Group (**Figure 2-3**). Basalt ridges, buttes, cinder cones, and lava tubes punctuate the low-rolling hills that define the OCTC. Elevations at the facility range from 3,000 to 3,500 feet above mean sea level. The basalt is generally overlain by 0 to 10 feet of alluvium or wind-blown sedimentary deposits. The young basalt deposits of the Snake River Group are generally 500–1,000 feet thick under the facility. Below the Snake River Group lies the Idaho Group of Tertiary to Quaternary age, which is comprised of subaerial and lacustrine sedimentary deposits and basalt deposits (USGS, 1992). Although the Snake River Plain is bounded by faults, there is no evidence of major faulting within the OCTC (Boise State University & IDARNG, 2013).

Soil borings completed during the SI found soils dominated by fine-grained material with varying amounts of coarse-grained material, such as sand and gravel, overlying shallow basaltic bedrock at OCTC. Depth to bedrock ranged from as shallow as approximately 2 feet bgs to beyond 21.5 feet bgs. Borings were completed at depths between 2 and 21.5 feet bgs. These results and facility observations are consistent with the reported depositional environment of the region. Boring logs are presented in **Appendix E**.

### 2.2.2 Hydrogeology

Regionally, the water table can be deeper than 800 feet below ground surface (bgs); however, identified onsite supply wells range in total depths from 557 to 963 feet bgs. In general, regional groundwater flows to the southwest, towards the Snake River.

Wells drilled in the basalt deposits of the Snake River Group have some of the highest yields found in the country. Yields of 2,000 to 3,000 gallons per minute (gpm) are common, and some wells with production as high as 7,000 gpm have been observed. In general, transmissivity of the Snake River Group basalt packages is much higher than the transmissivity of the adjacent alluvial deposits (USGS, 1992).

Water movement in the young basalt aquifer is highly dependent on the heterogeneity of these volcanic deposits. Water flows horizontally through porous and permeable interflow zones in the basalt aquifers. An interflow zone consists of highly fractured vesicular basalt and cinders that compose the top part of one flow and the base of the overlying flow. Horizontal water movement can be several orders of magnitude higher in these zones than in other parts of the basalt aquifer. Water also moves vertically along joints and faults, and the direction is dependent upon the degree of jointing and fracturing in the rock. Layers of dense basalt with extremely low hydraulic conductivity may act as localized confining units in some areas and cause anomalous water levels (USGS, 1992). Localized groundwater flow paths at the OCTC are not well understood; however, groundwater in the Snake River Valley area generally flows south towards the Snake River (USGS, 1996).

The facility draws drinking water primarily from two production wells in the Cantonment area. The Idaho Department of Water Resources (IDWR) well registry lists these two wells at total depths of 755 feet and 753 feet (IDWR, 2019); static water levels for the two wells at the time of drilling were recorded at 491 feet and 479 feet. According to the driller's logs, both of these wells are partially screened in volcanic deposits and in underlying fluvial or lacustrine sediments (IDWR, 2019). Four additional potable water wells are located throughout OCTC, as shown on **Figure 2-3**, that are inferred to be down or cross-gradient of the Cantonment area, at distances ranging from 0.75 to 11.5 miles.

Downgradient of the facility, multiple wells of 'other/unknown' use and one domestic well are located within 6 miles of the facility boundary. Only one well, which is listed as 'other/unknown' use, is located within 1-mile downgradient of the facility boundary. Wells with domestic, public supply, industrial, irrigation, and other/unknown uses are located outside of the facility's northeast boundary, which is upgradient of the groundwater flow direction (**Figure 2-3**).

Depths to water measured in July 2021 during the SI at OCTC ranged from 423.2 to 775 feet bgs. Groundwater elevations and inferred groundwater flow directions from the SI are presented on **Figure 2-4** and indicate the general groundwater flow direction is generally to the west/southwest, which is consistent with prior studies in the region (USGS, 1992 and 1996). However, groundwater in the vicinity of the cantonment appears to flow toward the west/northwest. The inconsistent groundwater flow direction may be attributed to a depression near the cantonment, screening intervals of the wells (i.e., not located within the same water bearing units), or well pumping occurring simultaneous to the gauging event.

### 2.2.3 Hydrology

The OCTC lies within the Snake River watershed, which is broken up into a number of smaller watersheds within the facility boundaries (**Figure 2-5**). The Snake River runs to the south and southwest of the facility; however, the OCTC has a very high rate of infiltration and no major surface water features. A few intermittent streams run for only a few hours four to five times per year during major storm events. Groundwater is generally 300–600 feet bgs or deeper in the

OCTC area. Some surface water is held in playa lake beds in the spring, but the playas are typically dry by May or June (IDNG EMO, 2013).

### 2.2.4 Climate

The OCTC is characterized by a semiarid climate. Mean annual temperatures in the area are approximately 52.3 degrees Fahrenheit (°F), with an average winter low of 33.1° F and an average summer high of 73.6° F (National Oceanic and Atmospheric Administration [NOAA], 2022). The Boise Mountains to the northeast and the Owyhee Mountains to the southwest greatly influence precipitation events on the Snake River Plain. The OCTC is divided in half by the rain shadow of the Owyhee Mountains. As a result, the southern half of the OCTC has historically received annual precipitation of 5-8 inches, while the northern half of OCTC has historically received annual precipitation of 7-12 inches (IDNG EMO, 2013). Due to the climate, land use activities, and scarce vegetation, wind erosion is common in the summer months.

### 2.2.5 Current and Future Land Use

At present, the OCTC operates on a total land area of 143,000 acres. Cantonment and general support facilities for OCTC operations are in the area adjacent to the Maneuver Area Training Equipment Site (MATES) facility. The IDARNG Headquarters is at Gowen Field, which is co-located with the Boise Airport. The mission of the OCTC is to provide training lands and Annual Training facilities primarily to the ARNG and Reserve Forces as well as to other government and civilian organizations when possible (IDNG EMO, 2013).

The OCTC is the primary training area for IDARNG-assigned units, and it is one of the largest heavy force training areas for the National Guard. The Impact Area portion of the facility is closed to the public; however, the remainder of the OCTC is open to the public for grazing, hunting, off-road vehicle activity, and other recreational uses as approved by the BLM (IDNG EMO, 2013). Land use at the OCTC is not expected to change in the foreseeable future.

### 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.

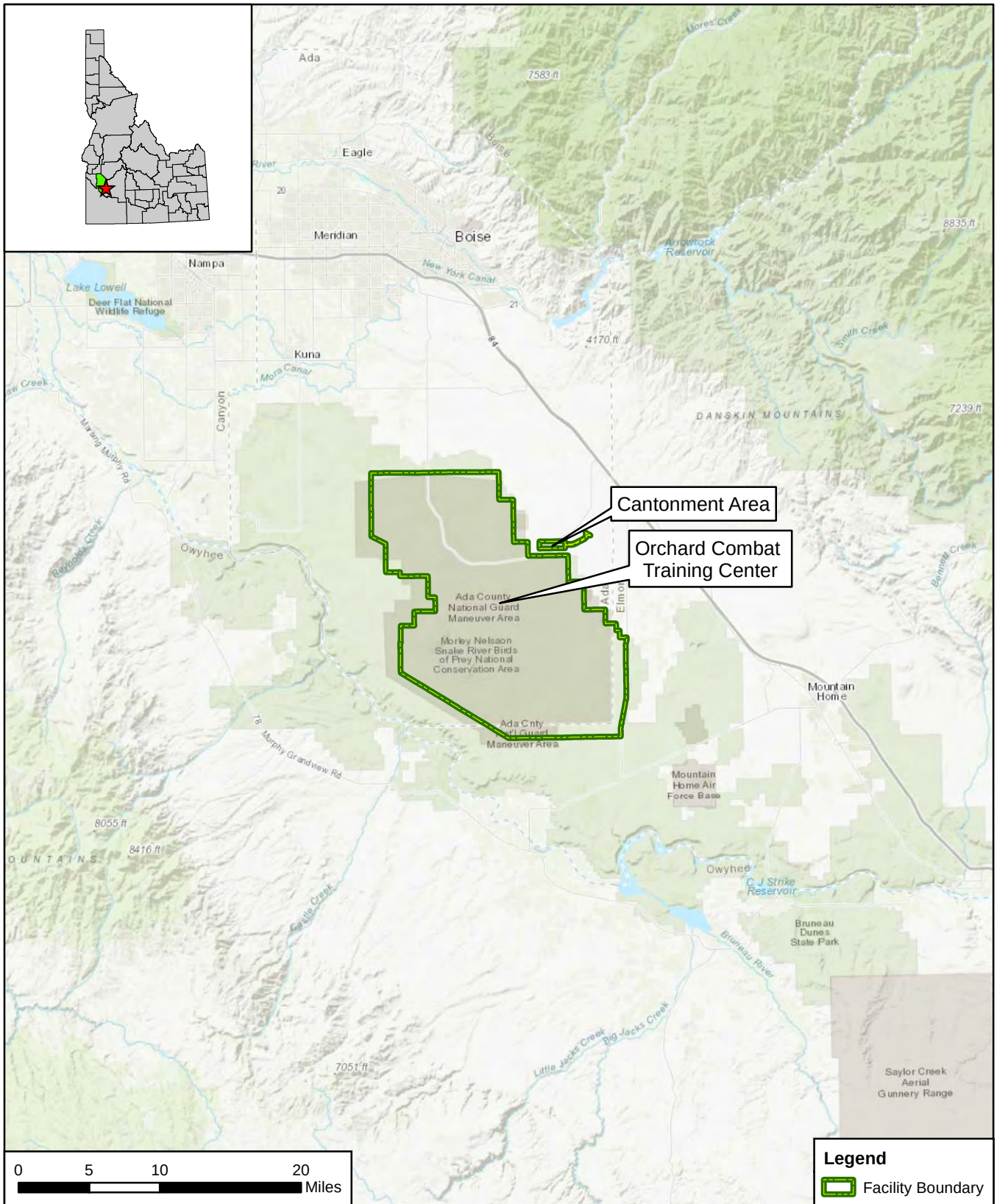
The following insects, snails, birds, and plants are federally endangered, threatened, proposed, and/ or are listed as candidate species in Ada County, Idaho (US Fish and Wildlife Service [USFWS], 2022).

- **Insects:** Monarch butterfly, *Danaus plexippus* (candidate)
- **Snails:** Snake River physa snail, *Physa natricina* (endangered)
- **Birds:** Yellow-billed cuckoo, *Coccyzus americanus (threatened)*
- **Flowering plants:** Slickspot peppergrass, *Lepidium papilliferum* (threatened).

## 2.3 History of PFAS Use

Three potential release areas were identified at OCTC during the PA where AFFF may have been used or released historically (AECOM, 2020). Between 2014 and 2015, the Range 2 Fire Training Area (FTA) was used to practice extinguishing controlled burns with water and AFFF. The OCTC Fire Station houses an AFFF-equipped firetruck and historically stored firefighting backpacks. Nozzle testing and foam proportion testing were also conducted at the OCTC Fire Station

between 2013 and 2017. Sanitary and stormwater sewer systems at the facility discharge to the Wastewater Lagoons. The potential release areas were grouped into three AOIs based on proximity to one another and presumed groundwater flow. A description of each AOI is presented in **Section 3**.

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| SCALE | 1:633,600 | CHK BY | JH | 8/3/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, | | PM | CM | 8/3/2022 |

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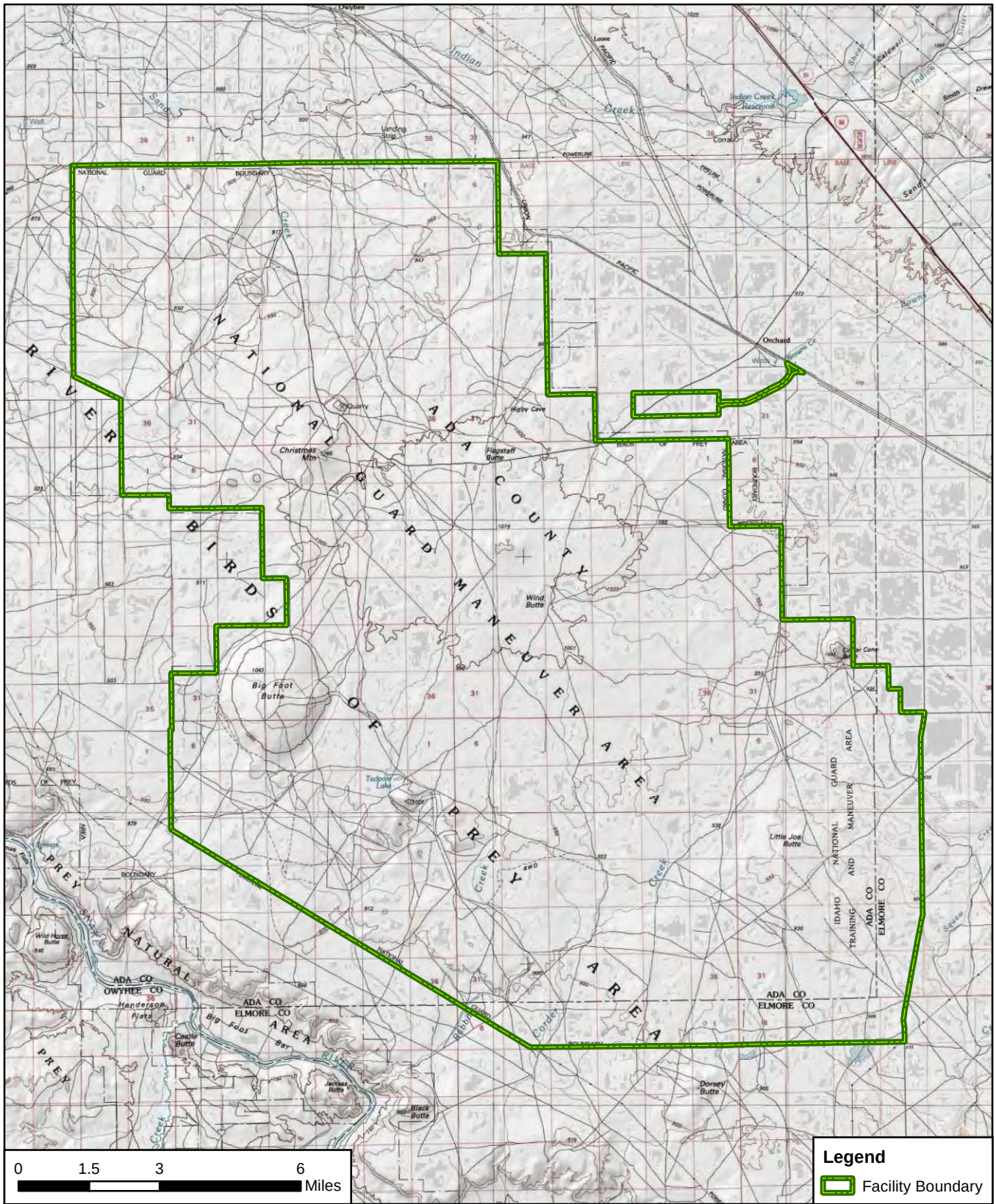
## Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 2-1**

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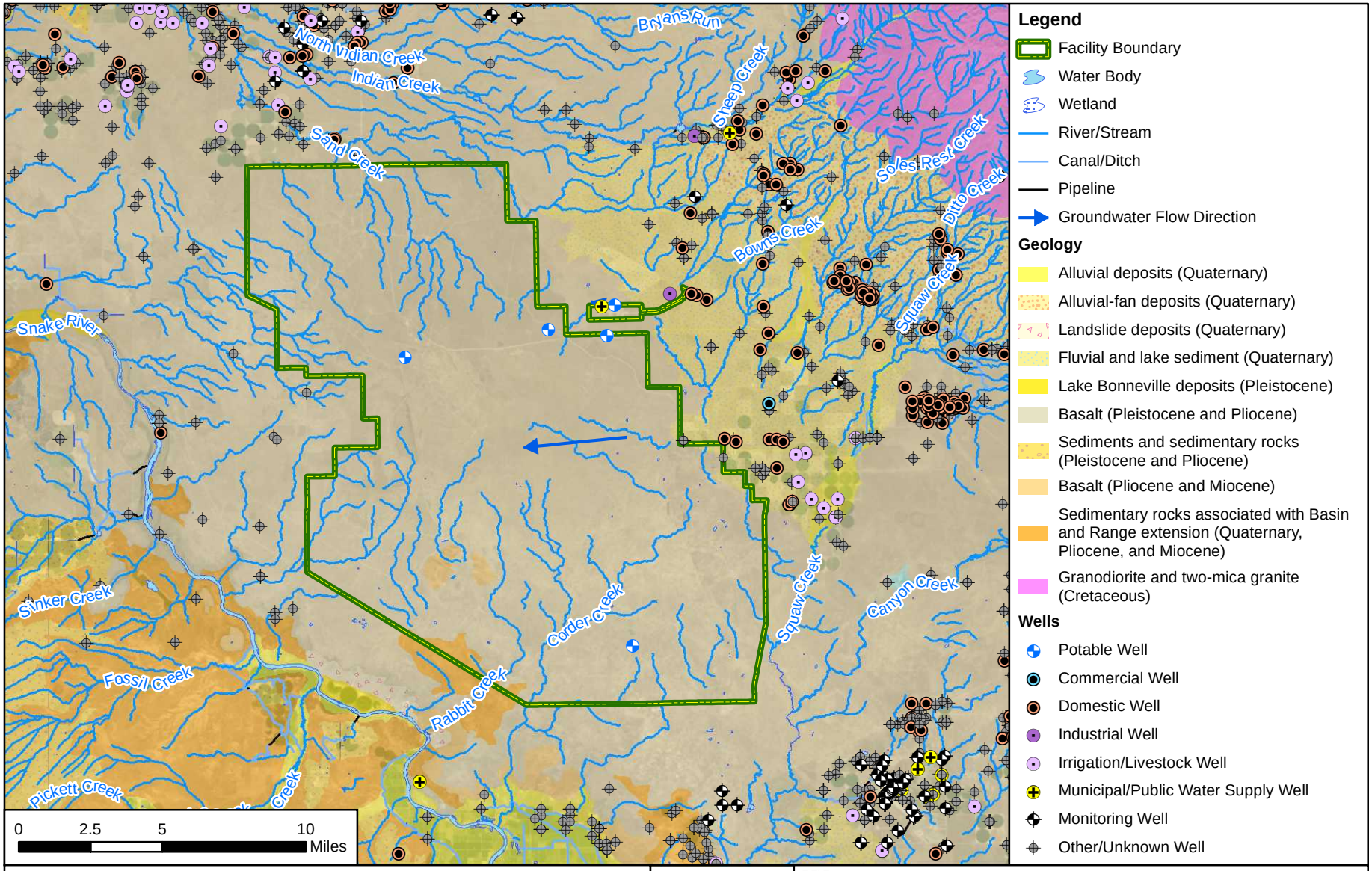
| SCALE | 1:190,080 | CHK BY | JH | 8/3/2022 |
| Base Map: Copyright:© 2013 National Geographic Society, i-cubed | | PM | CM | 8/3/2022 |

# Facility Topography

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 2-2**

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| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 8/3/2022 |

TITLE

# Groundwater Features

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

**Figure 2-3**

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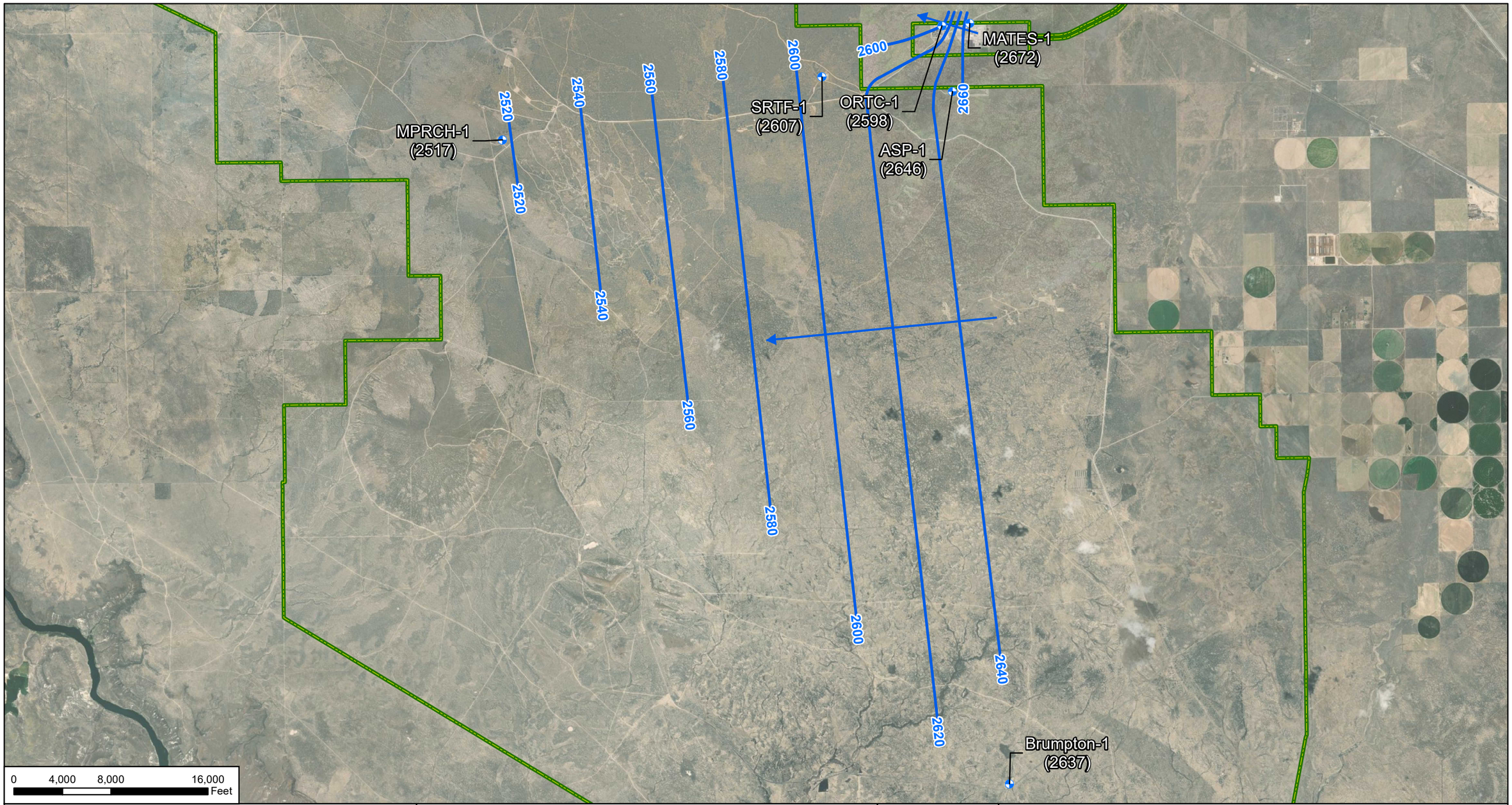


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| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 1/4/2023 |

**Legend**

- Production Well Sample
- Facility Boundary
- Groundwater Elevation Contour
- Groundwater Flow Direction

Groundwater elevations in ft NAVD88.

N

# Groundwater Elevations

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 2-4**

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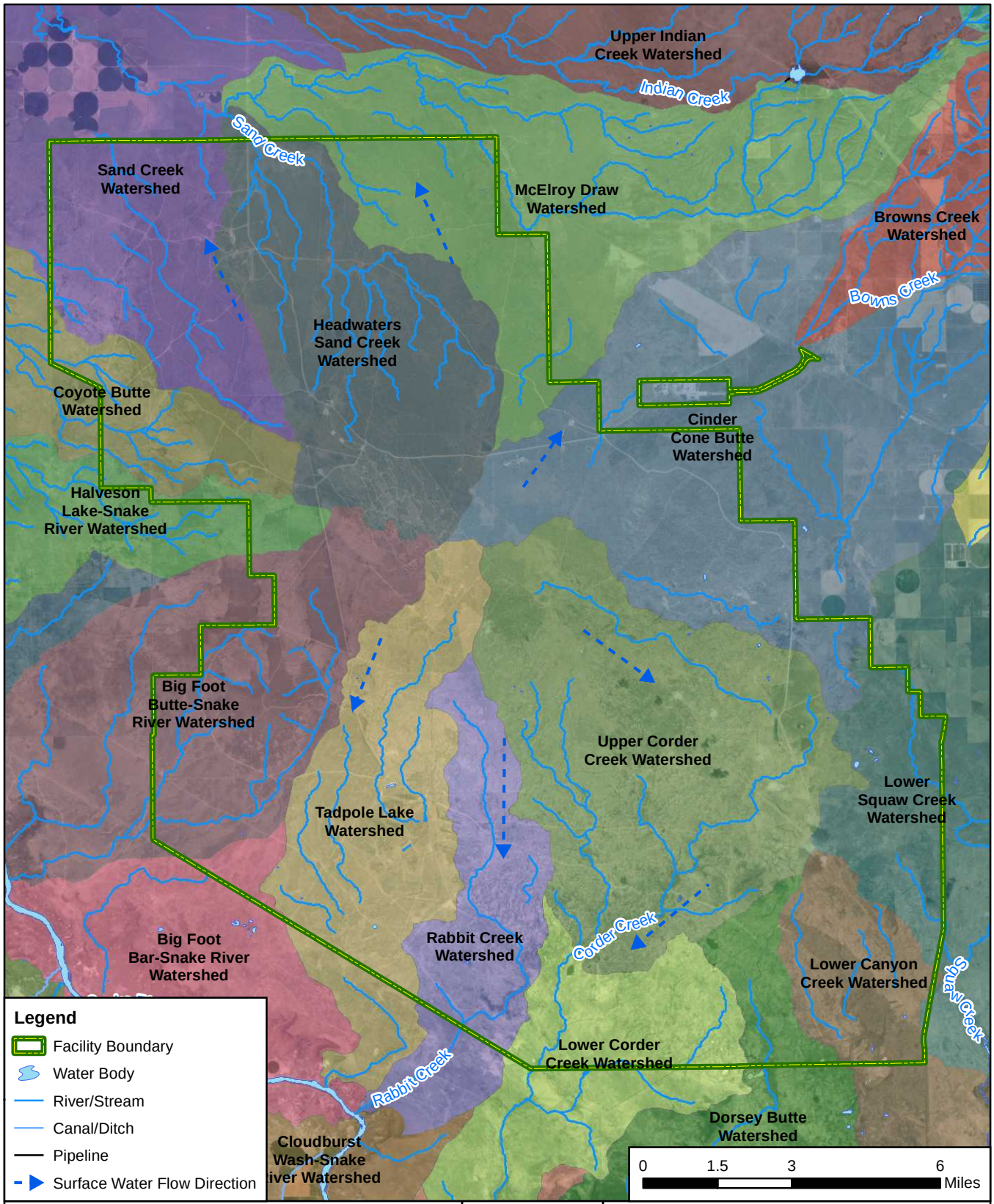


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| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 8/3/2022 |

**Surface Water Features**

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 2-5**

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# 3. Summary of Areas of Interest

The PA evaluated areas where PFAS-containing materials may have been used, stored, disposed, or released historically. Based on the PA findings, three potential release areas were identified at OCTC and grouped into three AOIs (AECOM, 2020). The potential release areas are shown on **Figure 3-1**.

## 3.1 AOI 1 Range 2 FTA

The Range 2 FTA consists of an area used to conduct controlled burns of vehicles. Cars were burned on three to six occasions at this area from 2014 to 2015. Each training session included the use of water to suppress the flames three times, followed by the use of an unknown quantity of 3 percent (%) AFFF foam to suppress the flames one time. The AFFF was allowed to dissipate and infiltrate into the soil at the FTA. During the SI, however, there was a dispute on the location of fire train exercises in this area. Based on discussions with fire station personnel, the general location of the training exercises was determined to be within the parking area for Range 2, approximately 0.25 miles south of the location identified during the PA. The approximate geographic coordinates of the Range 2 FTA, as determined during the PA, are 43°16'25.7" N; 116°09'06.5" W.

## 3.2 AOI 2 OCTC Fire Station

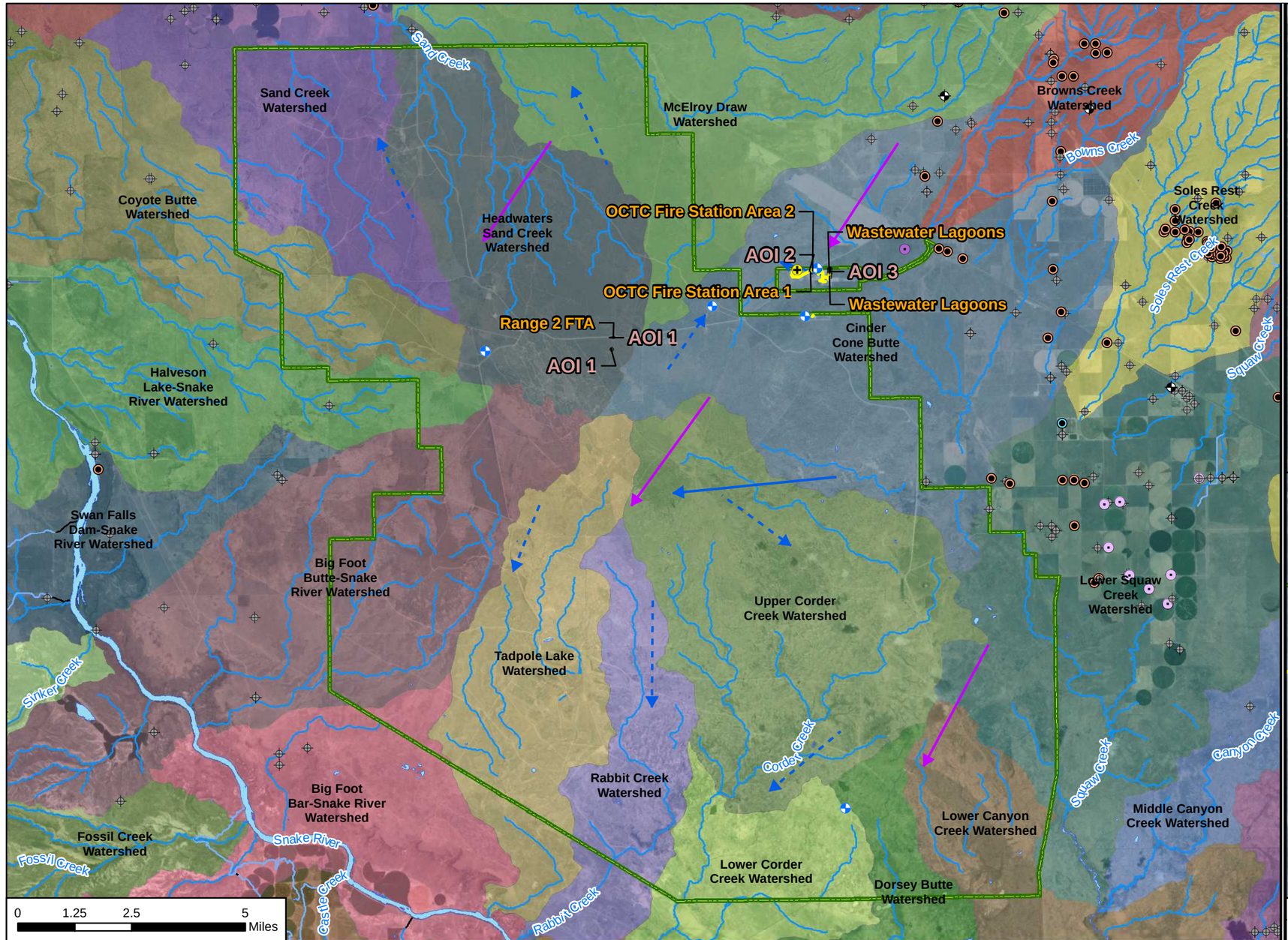
The OCTC Fire Station is located on the western side of the MATES area; the geographic coordinates are 43°17'55.2" N; 116°03'47.0" W. The OCTC Fire Station was constructed between 2012 and 2013, prior to which there was no fire department at the facility. At the time of the PA, about 20-30 gallons of 3% AFFF were stored on one firetruck at the OCTC Fire Station. No leaks or spills occurred from the time the fire department was established in 2013 to present, and the truck has never been used for emergency response. Additionally, four firefighting backpacks were historically stored at the OCTC Fire Station. Each unit included two bottles of 20 fluid ounces of Chemguard 3% AFFF, for a total of 160 fluid ounces of AFFF in bottled storage. These backpack units were issued to troops overseas to extinguish vehicle fires.

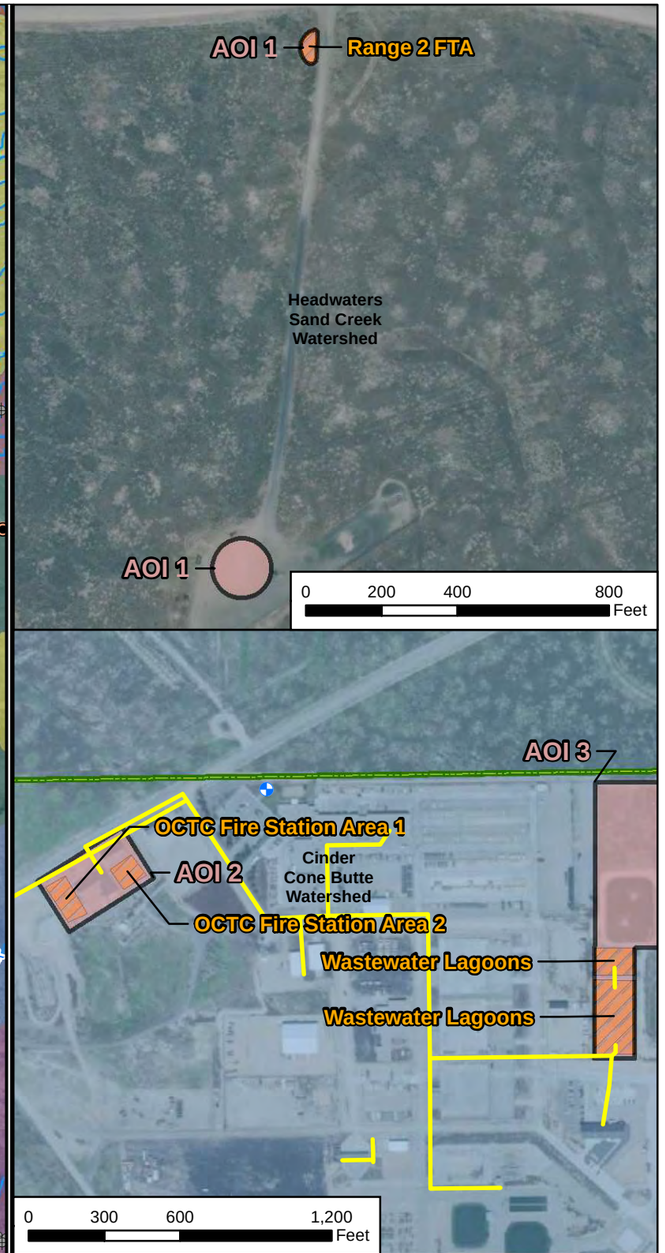
Historically, nozzle testing/foam proportion testing was conducted on more than one occasion outside the OCTC Fire Station, on the bare ground at two locations adjacent to the building, from 2013 to 2017. The amount of foam used for each testing activity is estimated to have covered a 25- by 25-foot area on the ground outside of the station. **Figure 3-1** shows the approximate release areas. The exact volume of foam used during testing is unknown. On the northeast side of the building, foam that hit the ground infiltrated in the immediate vicinity.

On the southwest side of the building, foam would have either infiltrated in the immediate vicinity or entered a grass ditch that runs along Orchard Access Road. Runoff that enters the ditch is directed into a grate that leads to below-grade pipes of the combined sanitary and stormwater sewer system. This system flows to the east into two lined wastewater lagoons, where water is left to evaporate. According to the PA, a system is in place that can direct excess water from the lagoons into a leach field; however, this system has never been used (AECOM, 2020). The use of foam for nozzle testing has ceased, and the fire department currently holds foam only for potential emergency responses.

## 3.3 AOI 3 Wastewater Lagoons

The Wastewater Lagoons are located on the eastern side of the cantonment area; the geographic coordinates are 43°17’51’’ N; 116°03’19.5’’ W. Historical releases of AFFF at the OCTC Fire Station potentially entered the combined sanitary and stormwater sewer system. This system discharges to the Wastewater Lagoons; therefore, there is the potential for AFFF to have entered the lagoons. The ponds are lined, and water has never been discharged from them. Water that enters the south lagoon feeds into the north lagoon, and water is removed from the lagoon system through evaporation only.




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/3/2022 | GIS BY | MS | 8/3/2022 |
| SCALE | 1:7,200 | CHK BY | JH | 8/3/2022 |
| Base Map: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community | | PM | CM | 8/3/2022 |

- Area of Interest
- Potential Release Area
- Water Body
- Wetland
- River/Stream
- Canal/Ditch
- Pipeline
- Combine Sanitary and Stormwater Sewer
- Groundwater Flow Direction
- Surface Water Flow Direction
- Inferred Groundwater Flow Direction
- Potable Well
- Commercial Well
- Domestic Well
- Industrial Well
- Irrigation/Livestock Well
- Municipal/Public Water Supply Well
- Monitoring Well
- Other/Unknown Well

N

# Areas of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 3-1**

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# 4. Project Data Quality Objectives

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

## 4.1 Problem Statement

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

## 4.2 Information Inputs

Primary information inputs included:

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

## 4.3 Study Boundaries

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

## 4.4 Analytical Approach

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

## 4.5 Data Usability Assessment

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

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

# 5. Site Inspection Activities

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

- *Final Site Inspection Programmatic Uniform Federal Policy-Quality Assurance Project Plan (PQAPP)* dated March 2018 (AECOM, 2018a);
- *Final Programmatic Accident Prevention Plan* dated July 2018 (AECOM, 2018b);
- *Final Preliminary Assessment Report, Orchard Combat Training Center, Boise, Idaho* dated February 2020 (AECOM, 2020);
- *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Orchard Combat Training Center, Boise, Idaho* dated May 2021 (AECOM, 2021a); and
- *Final Site Safety and Health Plan, Orchard Combat Training Center* dated July 2021 (AECOM, 2021b).

The SI field activities were conducted from 26 to 30 July 2021 and consisted of utility clearance, direct push boring, soil sample collection, sediment sample collection, pre-existing production well groundwater sample collection, and land surveying. Surveying of the production wells was completed 12 November 2021. Field activities were conducted in accordance with the SI QAPP Addendum (AECOM, 2021a), except as noted in **Section 5.9**.

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

- Twenty-eight (28) soil samples from 15 boring locations;
- Six groundwater samples from six pre-existing production well locations;
- Two sediment samples from two locations; and
- Twenty (20) quality assurance (QA)/quality control (QC) samples.

**Figure 5-1** provides the sample locations for all media across the facility. **Table 5-1** presents the list of samples collected for each media. Field documentation is provided in **Appendix B**. A Log of Daily Notice of Field Activity was completed throughout the SI field activities, which is provided in **Appendix B1**. Sampling forms are provided in **Appendix B2**, a Field Change Request Form is provided in **Appendix B3**, and land survey data are provided in **Appendix B4**, and investigation-derived waste (IDW) polygons are provided in **Appendix B5**. Additionally, a photographic log of field activities is provided in **Appendix C**.

## 5.1 Pre-Investigation Activities

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

### 5.1.1 Technical Project Planning

The US Army Corps of Engineers (USACE) TPP Process, Engineer Manual (EM) 200-1-2 (USACE, 2016) defines four phases to project planning: 1.) defining the project phase; 2.)

determining data needs; 3.) developing data collection strategies; and 4.) finalizing the data collection plan. The process encourages stakeholder involvement in the SI, beginning with defining overall project objectives, including DQOs, and formulating a sampling approach to address the AOIs identified in the PA.

A combined TPP Meeting 1 and 2 was held on 15 March 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, IDARNG, USACE, Idaho Department of Environmental Quality, Air National Guard, and 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 SI QAPP Addendum (AECOM, 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

AECOM's drilling subcontractor, Cascade Technical Services, LLC. placed a ticket with the DIGLINE, Inc. Idaho utility clearance provider to notify them of intrusive work. However, because OCTC is a private facility, the participating DIGLINE, Inc. locators did not clear utilities at the entire facility. Therefore, AECOM contracted Ground Penetrating Radar Services, LLC. (GPRS), a private utility location service, to perform utility clearance. GPRS performed utility clearance of the proposed boring locations on 28 July 2021 with input from the AECOM field team and OCTC facility staff. General locating services and ground-penetrating radar were used to complete the clearance.

### 5.1.3 Source Water and Sampling Equipment Acceptability

PFAS-free ASTM Type II deionized water was purchased from Grainger and sampled on 27 July 2021 to assess usability for decontamination of drilling equipment. Results of the sample collected from the Grainger provided PFAS-free ASTM Type II deionized water (OCTC-DECON-01) confirmed this source to be acceptable for use in this investigation; therefore, it was used throughout the field activities. Specifically, the sample was analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15. The results of the decontamination water sample used during the SI are provided in **Appendix F**. A discussion of the results is presented in the DUA (**Appendix A**).

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

## 5.2 Soil Borings and Soil Sampling

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

In general, three discrete soil samples were collected from the vadose zone for chemical analysis from each soil boring: one surface soil sample (0 to 2 feet bgs), one subsurface soil sample approximately 1 foot above the bedrock surface, and one subsurface soil sample at the mid-point between the surface and the bedrock interface. In borings where bedrock and/or refusal were encountered at 6 feet bgs or shallower, only two soil samples were collected per boring; other borings did not have enough recovery to sample three soil intervals. Consequently, two soil samples were collected at locations AOI1-1, AOI1-3, AOI2-2, AOI3-4, AOI3-5, and AOI3-6. At borings AOI1-2, AOI1-SS01, AOI1-SS02, AOI1-SS04, and AOI1-SS05, refusal was encountered at 2 feet bgs; therefore, only one sample was collected per boring location.

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

Soil borings completed during the SI at OCTC found soils dominated by fine-grained material with varying amounts of coarse-grained material, such as sand and gravel, overlying shallow basaltic bedrock. Depth to bedrock ranged from as shallow as approximately 2 feet bgs to beyond 21.5 feet bgs. Borings were completed at depths between 2 and 21.5 feet bgs. These observations are consistent with the understood depositional environment of the region.

Each soil sample was collected into laboratory-supplied PFAS-free high-density polyethylene (HDPE) bottles and labeled using a PFAS-free marker or pen. Samples were packaged on ice and transported via Federal Express (FedEx) under standard chain of custody (CoC) procedures to the laboratory and analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15, total organic carbon (TOC) (USEPA Method 9060A) and pH (USEPA Method 9045D) in accordance with the SI QAPP Addendum (AECOM, 2021a).

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

DPT borings were subsequently abandoned in accordance with the SI QAPP Addendum (AECOM, 2021a) using bentonite chips at completion of sampling activities. Borings were installed in unpaved areas to avoid disturbing concrete or asphalt surfaces.

## 5.3 Production Well Sampling

During the SI, six onsite production wells were sampled for groundwater. The locations of the wells are shown on **Figure 5-1**, and the screen intervals for the production wells are provided in **Table 5-3**.

Groundwater samples collected from production wells were sampled directly from the spigot. Each sample was collected into laboratory-supplied PFAS-free HDPE bottles and labeled using a PFAS-free marker or pen. 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**) after each grab sample was collected. Additionally, a subsample of each groundwater sample was collected in a separate

container, and a shaker test was completed to identify if there were any foaming. No foaming was noted in any of the groundwater samples. Samples were packaged on ice and transported via FedEx under standard CoC procedures to the laboratory and analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15 in accordance with the SI QAPP Addendum (AECOM, 2021a).

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

## 5.4 Sediment Sampling

Sediment samples were collected from AOI 3 at the Wastewater Lagoons and in accordance with the SI QAPP Addendum (AECOM, 2021a). Dedicated, PFAS-free sediment coring devices were used to collect the sediment samples from the first foot of sediment. The sediment was transferred to a Ziploc® bag, where the sample was homogenized, and stones in excess of 1 centimeter were removed. The sediment sample locations are shown on **Figure 5-1**, and sample depths are provided **Table 5-1**.

Each sample was collected into laboratory-supplied PFAS-free HDPE bottles and labeled using a PFAS-free marker or pen. Samples were packaged on ice and transported via FedEx under standard CoC procedures to the laboratory for analysis by LC/MS/MS compliant with QSM 5.3 Table B-15. Sediment samples were also analyzed for TOC (USEPA Method 9060A) and pH (USEPA Method 9045D), in accordance with the SI QAPP Addendum (AECOM, 2021a).

Field duplicate samples were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. MS/MSDs were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. In instances when non-dedicated sampling equipment was used, equipment reagent blank samples were collected at a rate of 5% and analyzed for the same parameters as the soil samples. A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6°C during shipment.

## 5.5 Synoptic Water Level Measurements

A synoptic groundwater gauging event was performed on 28 July 2021. Groundwater elevation measurements were collected from the six pre-existing production wells. Water level measurements were taken from the northern side of the well casings using a Global Water WL650 Sonic Water Level Meter. A groundwater elevation map is provided in **Figure 2-4**. Groundwater elevation data are provided in **Table 5-3**. Although the inferred groundwater flow directions presented on **Figure 2-4** are generally consistent with those reported in prior regional studies, there are several limitations to be considered. Due to the limited information about construction of the onsite production wells, a sonic water level indicator was used to collect water level measurements. Sonic water level indicators are less precise than probe water level indicators, and the accuracy of the readings depends on the acoustics of the well, which can be affected by anomalies like cracks in well casing, collars, borehole protrusions or irregularities, or other instruments down the well (e.g., pumps and piping). Additionally, given that these are active production wells utilized by the facility, it is unknown if water levels were collected during static conditions or during a drawdown recovery phase.

## 5.6 Surveying

The well casings were surveyed by Idaho-licensed land surveyors on 12 November 2021, following guidelines provided in the SOPs provided in the SI QAPP Addendum (AECOM, 2021a).

Survey data were collected from the casings where the depth to water measurements were recorded and were recorded in the applicable Universal Transverse Mercator zone projection with North American Datum 1983 (horizontal) and North American Vertical Datum 1988 (vertical). The surveyed well data are provided in **Appendix B4**.

## 5.7 Investigation-Derived Waste

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

Soil IDW (i.e., soil cuttings) generated during the SI activities were contained in labeled, 55-gallon Department of Transportation (DOT)-approved steel drums and left onsite on the south side of the Field Maintenance Shop (**Appendix C**). The approximate geographic coordinates of the drums are 43°17'51.96" N; 116°03'44.31" W. The soil IDW was not sampled and assumes the characteristics of the associated soil samples collected from that source location. ARNG will coordinate waste profiling, transportation, and disposal of the solid IDW under a separate contract.

Liquid IDW generated during SI activities (i.e., purge water and decontamination fluids) was contained in labeled, 55-gallon DOT-approved steel drum and left onsite on the north side of the Field Maintenance Shop (**Appendix C**). The liquid IDW was not sampled and assumed the PFAS characteristics of the associated groundwater samples collected from that source location. Containerized liquid IDW will be managed and disposed of by ARNG (either by offsite disposal or onsite disposal with treatment, as appropriate) under a separate contract in accordance with SOP No. 042A (EA, 2021).

Geographic coordinates were collected using a global positioning system (GPS) where the soil IDW was placed. The IDW location is displayed on the figure in **Appendix B5**.

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

## 5.8 Laboratory Analytical Methods

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

## 5.9 Deviations from SI QAPP Addendum

Three deviations from the SI QAPP Addendum were identified during review of the field documentation. The deviation is noted below and is documented in Field Change Request Forms (**Appendix B3**):

- At AOI 1, five soil sample locations (two depth intervals; 0-2 feet bgs and 3-5 feet bgs) were added to the scope of the SI. The additional surface soil samples were located to the clearing south of the planned soil borings. Additional information was provided by the Fire Station personnel during fieldwork regarding the location of the fire training exercises in the area. The surface soil locations were strategically placed based on topography, existing infrastructure, and logistics of the type of fire training that occurred. The locations were determined onsite and were the most probable area where the fire training exercises

occurred in 2014/2015. However, during the SI, early refusal was encountered at four of the five boring locations, and only one soil sample was collected from the four locations.

- Several soil borings did not have enough recovery to sample three soil intervals, as prescribed in the QAPP. Consequently, two soil samples were collected at locations AOI1-1, AOI1-3, AOI2-2, AOI3-4, AOI3-5, and AOI3-6. At boring AOI1-2, refusal was encountered at 2 feet bgs; therefore, only one sample was collected.
- QA/QC volume for pH/TOC analysis was inadvertently not collected for soil sample selected for those analytes.

**Table 5-1**
**Site Inspection Samples by Medium**
**Site Inspection Report, Orchard Combat Training Center, Idaho**

| Sample Identification | Sample Collection Date/Time | Sample Depth (feet bgs) | LC/MS/MS compliant with QSM 5.3 Table B-15 | TOC (USEPA Method 9060A) | pH (USEPA Method 9045D) | Comments |
|---|---|---|---|---|---|---|
| **Soil Samples** | | | | | | |
| AOI1-1-SB-0-2 | 7/29/2021 15:46 | 0 - 2 | x | | | |
| AOI1-1-SB-0-2-DUP | 7/29/2021 15:46 | 0 - 2 | x | | | FD |
| AOI1-1-SB-4-6 | 7/29/2021 15:55 | 4 - 6 | x | | | |
| AOI1-SS01-0-2 | 7/30/2021 10:30 | 0 - 2 | x | | | |
| AOI1-SS01-0-2-DUP | 7/30/2021 10:30 | 0 - 2 | x | | | FD |
| AOI1-2-SB-0-2 | 7/29/2021 15:37 | 0 - 2 | x | | | |
| AOI1-SS02-0-2 | 7/30/2021 10:40 | 0 - 2 | x | | | |
| AOI1-SS02-0-2-MS-MSD | 7/30/2021 10:40 | 0 - 2 | x | | | MS/MSD |
| AOI1-3-SB-0-2 | 7/30/2021 13:48 | 0 - 2 | x | | | |
| AOI1-3-SB-0-2-DUP | 7/30/2021 13:48 | 0 - 2 | x | | | FD |
| AOI1-3-SB-0-2-MS | 7/30/2021 13:48 | 0 - 2 | x | | | MS |
| AOI1-3-SB-0-2-MSD | 7/30/2021 13:48 | 0 - 2 | x | | | MSD |
| AOI1-3-SB-5-7 | 7/30/2021 13:50 | 5 - 7 | x | x | x | |
| AOI1-SS03-0-2 | 7/30/2021 10:50 | 0 - 2 | x | | | |
| AOI1-SS03-3-5 | 7/30/2021 10:45 | 3 - 5 | x | | | |
| AOI1-SS04-0-2 | 7/30/2021 10:56 | 0 - 2 | x | | | |
| AOI1-SS05-0-2 | 7/30/2021 11:03 | 0 - 2 | x | | | |
| AOI1-SS05-0-2-DUP | 7/30/2021 11:03 | 0 - 2 | x | | | FD |
| AOI2-1-0-2 | 7/29/2021 9:30 | 0 - 2 | x | x | x | |
| AOI2-1-13-15 | 7/29/2021 10:00 | 13 - 15 | x | | | |
| AOI2-1-20-21.5 | 7/29/2021 10:10 | 20 - 21.5 | x | | | |
| AOI2-2-0-2 | 7/29/2021 8:52 | 0 - 2 | x | | | |
| AOI2-2-5-6 | 7/29/2021 9:00 | 5 - 6 | x | | | |
| AOI2-3-0-2 | 7/29/2021 11:05 | 0 - 2 | x | | | |
| AOI2-3-0-2-MS | 7/29/2021 11:05 | 0 - 2 | x | | | MS |
| AOI2-3-0-2-MSD | 7/29/2021 11:05 | 0 - 2 | x | | | MSD |
| AOI2-3-13-15 | 7/29/2021 11:30 | 13 - 15 | x | | | |
| AOI2-3-20-21.5 | 7/29/2021 11:40 | 20 - 21.5 | x | | | |
| AOI3-3-SB-0-2 | 7/29/2021 17:01 | 0 - 2 | x | x | x | |
| AOI3-3-SB-6-8 | 7/29/2021 17:15 | 6 - 8 | x | | | |
| AOI3-3-SB-9-11 | 7/29/2021 15:13 | 9 - 11 | x | | | |
| AOI3-4-SB-0-2 | 7/30/2021 9:15 | 0 - 2 | x | | | |
| AOI3-4-SB-5-7 | 7/30/2021 9:30 | 5 - 7 | x | | | |
| AOI3-5-SB-0-2 | 7/30/2021 8:00 | 0 - 2 | x | | | |
| AOI3-5-SB-0-2-DUP | 7/30/2021 8:00 | 0 - 2 | x | | | FD |
| AOI3-5-SB-5.5-6 | 7/30/2021 8:10 | 5.5 - 6 | x | | | |
| AOI3-6-SB-0-2 | 7/29/2021 17:58 | 0 - 2 | x | | | |
| AOI3-6-SB-7.5-9 | 7/29/2021 18:10 | 7.5 - 9 | x | | | |
| **Production Well Samples** | | | | | | |
| SRTF-1-072821 | 7/28/2021 13:50 | NA | x | | | |
| SRTF-1-072821-DUP | 7/28/2021 13:50 | NA | x | | | FD |
| SRTF-1-072821-MS | 7/28/2021 13:50 | NA | x | | | MS |
| SRTF-1-072821-MSD | 7/28/2021 13:50 | NA | x | | | MSD |
| BRUMPTON-1-072821 | 7/28/2021 15:50 | NA | x | | | |

**Table 5-1**
**Site Inspection Samples by Medium**
**Site Inspection Report, Orchard Combat Training Center, Idaho**

| Sample Identification | Sample Collection Date/Time | Sample Depth (feet bgs) | LC/MS/MS compliant with QSM 5.3 Table B-15 | TOC (USEPA Method 9060A) | pH (USEPA Method 9045D) | Comments |
|---|---|---|---|---|---|---|
| ORTC-1-072821 | 7/28/2021 11:00 | NA | x | | | |
| MATES-1-072821 | 7/28/2021 7:25 | NA | x | | | |
| MPRCH-1-072821 | 7/28/2021 14:57 | NA | x | | | |
| ASP-1-072821 | 7/28/2021 12:50 | NA | x | | | |
| **Sediment Samples** | | | | | | |
| AOI3-1-SD-01 | 7/30/2021 13:10 | 0 - 1 | x | | | |
| AOI3-1-SD-01-DUP | 7/30/2021 13:10 | 0 - 1 | x | | | FD |
| AOI3-1-SD-01-MS | 7/30/2021 13:10 | 0 - 1 | x | | | MS |
| AOI3-1-SD-01-MSD | 7/30/2021 13:10 | 0 - 1 | x | | | MSD |
| AOI3-1-SD-02 | 7/30/2021 13:00 | 0 - 1 | x | | | |
| **Quality Control Samples** | | | | | | |
| OCTC-DECON-01 | 7/27/2021 14:12 | NA | x | | | |
| FRB-01-073021 | 7/30/2021 7:55 | NA | x | | | |
| OCTC-ERB-01 | 7/29/2021 10:58 | NA | x | | | DPT shoe |
| OCTC-ERB-02 | 7/29/2021 11:45 | NA | x | | | DPT shoe |
| OCTC-ERB-03-073021 | 7/30/2021 11:05 | NA | x | | | sediment sampler |

**Notes:**
AOI = Area of Interest
ASTM = American Society for Testing and Materials
bgs = below ground surface
DPT = direct push technology
ERB = equipment rinsate blank
FD = field duplicate
FRB = field reagent blank
LC/MS/MS = Liquid Chromatography Mass Spectrometry
MS/MSD = matrix spike/ matrix spike duplicate
QSM = Quality Systems Manual
SB = soil boring
SD = sediment
TOC = total organic carbon
USEPA = United States Environmental Protection Agency

**Table 5-2**
**Soil Boring Depths**
**Site Inspection Report, Orchard Combat Training Center, Idaho**

| Area of Interest | Boring Location | Soil Boring Depth (feet bgs) |
|---|---|---|
| 1 | AOI1-1 | 7 |
| | AOI1-2 | 2 |
| | AOI1-3 | 7 |
| 2 | AOI2-1 | 21.5 |
| | AOI2-2 | 5.5 |
| | AOI2-3 | 21.5 |
| 3 | AOI3-3 | 11 |
| | AOI3-4 | 7.7 |
| | AOI3-5 | 8.5 |
| | AOI3-6 | 9 |

**Notes:**
bgs = below ground surface

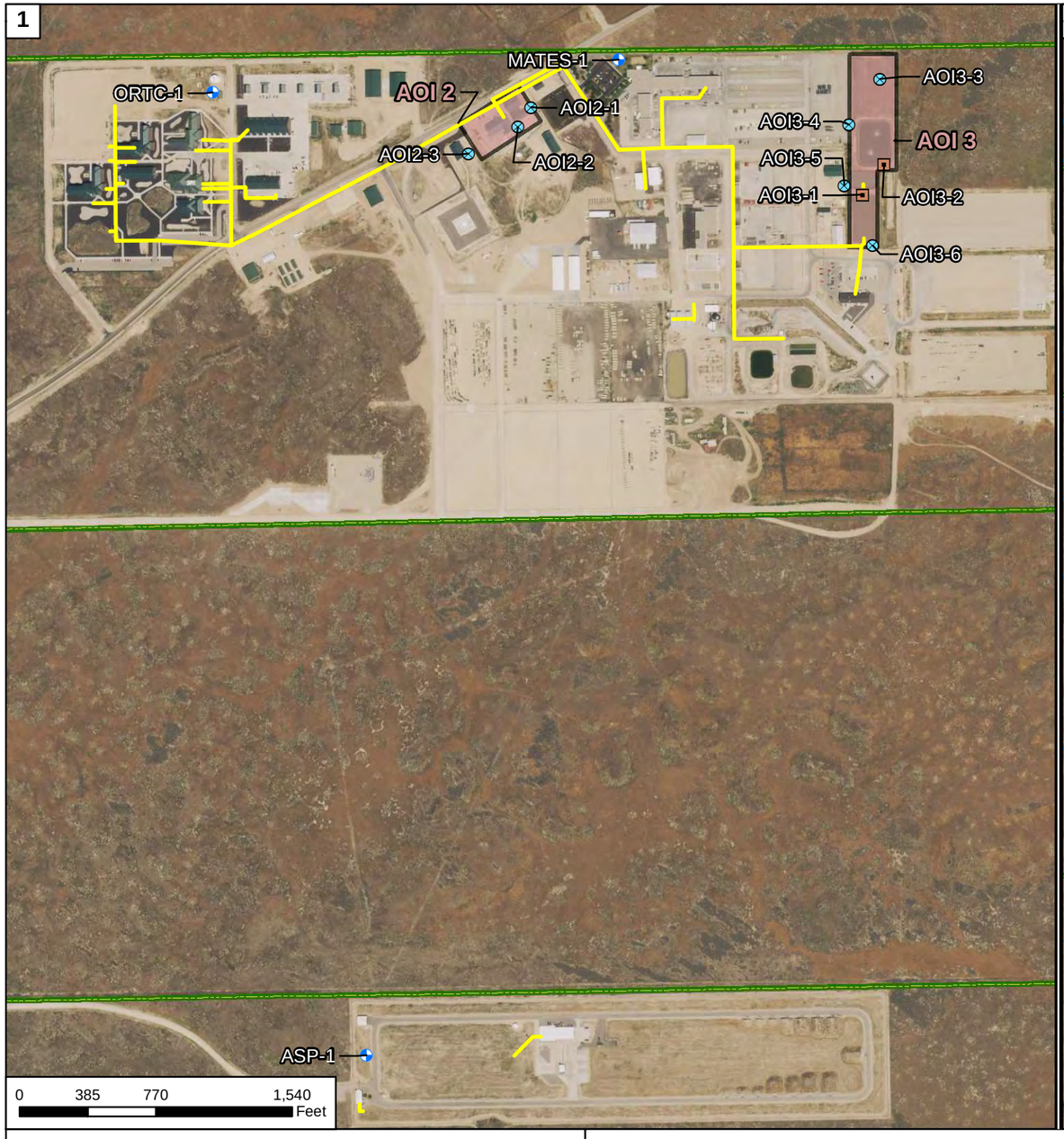
**Table 5-3**
**Production Well Screen Intervals and Groundwater Elevations**
**Site Inspection Report, Orchard Combat Training Center, Idaho**

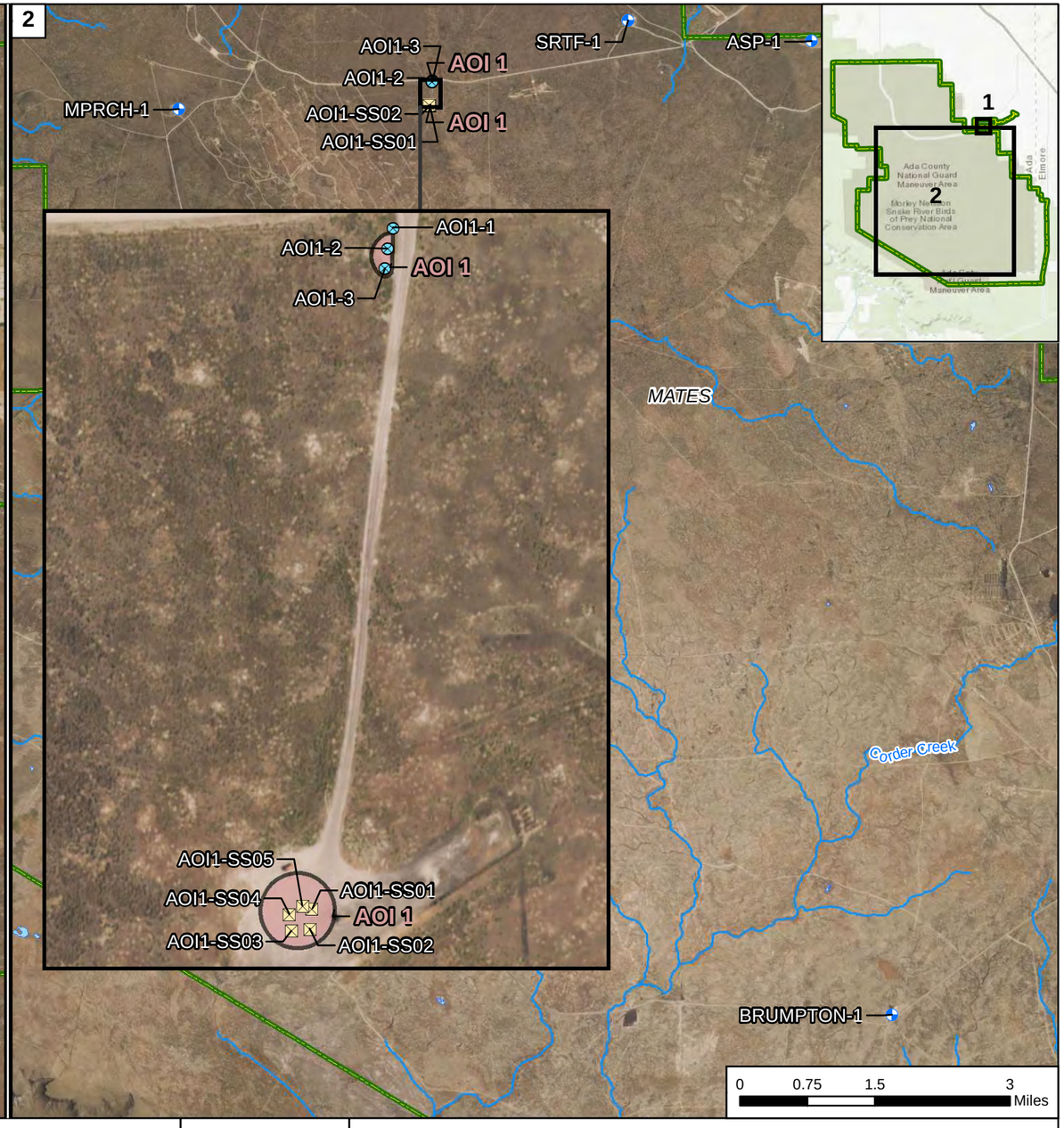
| Well ID | Well Depth (feet bgs) | Well Screen Interval (feet bgs) | Top of Casing Elevation (feet NAVD88) | Ground Surface Elevation (feet NAVD88) | Depth to Water (feet btoc) | Depth to Water (feet bgs) | Groundwater Elevation (feet NAVD88) |
|---|---|---|---|---|---|---|---|
| ORTC-1 | 755 | 735 - 755 | 3148.498 | 3147.182 | 550.8 | 549.5 | 2598 |
| MATES-1 | 680 | Unknown[1] | 3139.562 | 3138.369 | 468 | 467 | 2672 |
| SRTF-1 | 820[2] | 720 - 820 | 3244.017 | 3243.704 | 637.4 | 637.1 | 2607 |
| ASP-1 | 780 | 660 - 680<br>760 - 780 | 3167.918 | 3166.872 | 522.3 | 521.3 | 2646 |
| BRUMPTON-1 | 557 | 487 - 557 | 3061.725 | 3060.413 | 424.5 | 423.2 | 2637 |
| MPRCH-1 | 963 | 851 - 963[3] | 3292.601 | 3291.349 | 776 | 775 | 2517 |

**Notes:**

1. Unknown screen interval. Casing is to 680 feet bgs and total boring depth is to 753 feet bgs.
2. Well depth assumed to be as deep as well screen.
3. Well is an open hole.

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




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:9,240 | CHK BY | CH | 8/17/2022 |
| Base Map: The USDA-FSA Aerial Photography Field office asks to be credited in derived products. | | PM | CM | 8/17/2022 |

- Production Well Sample
- Soil Boring
- Sediment Sample
- Surface Soil Sample
- Area of Interest
- Facility Boundary
- Water Body
- Wetland
- River/Stream
- Canal/Ditch
- Combine Sanitary and Stormwater Sewer

N

# Site Inspection Sample Locations

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 5-1**

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# 6. Site Inspection Results

This section presents the analytical results of the SI. The SLs used in this evaluation are presented in **Section 6.1**. A discussion of the results is provided in **Section 6.3** through **Section 6.6**. **Table 6-2** through **Table 6-6** present results in soil, sediment, or groundwater for the relevant compounds. Tables that contain all results are provided in **Appendix F**, and the laboratory reports are provided in **Appendix G**.

## 6.1 Screening Levels

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

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

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

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

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

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

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

## 6.2 Soil Physicochemical Analyses

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

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

## 6.3 AOI 1

This section presents the analytical results for soil in comparison to SLs for AOI 1: Range 2 FTA. The soil results are summarized on **Table 6-2** through **Table 6-4**. Soil results are presented on **Figure 6-1** through **Figure 6-15**.

### 6.3.1 AOI 1 Soil Analytical Results

**Figure 6-1** through **Figure 6-15** present the ranges of detections in soil. **Table 6-2** through **Table 6-4** summarize the soil results and **Table 6-6** summarizes the sediment results.

Soil was sampled from surface soil (0 to 2 feet bgs) from boring locations AOI1-1 through AOI1-3 and AOI1-SS01 through AOI1-SS05. Soil was also sampled from shallow subsurface soil (between 3 to 7 feet bgs) from AOI1-1, AOI1-3, and AOI1-SS03. Deep subsurface soil was not collected from AOI 1 during the SI.

PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in surface soil at concentrations below their respective SLs. PFOA was detected in two of eight locations, with concentrations of 0.255 J micrograms per kilogram (µg/kg) and 0.166 J µg/kg. PFOS was detected in five of the eight locations, with concentrations ranging from 0.079 J µg/kg to 0.452 J µg/kg. PFHxS was detected in three of the eight locations, with concentrations ranging from 0.043 J µg/kg to 4.82 µg/kg. PFNA was detected in three of the eight locations, with concentrations ranging from 0.025 J µg/kg to 0.040 J µg/kg. PFBS was detected in two of eight locations, with concentrations of 1.65 µg/kg at AOI1-SS04 and 0.037 J µg/kg at AOI1-SS05.

In shallow subsurface soil, PFHxS was detected in one sample below the SL, with a concentration of 0.049 J µg/kg. PFOA, PFOS, PFNA, and PFBS were not detected.

### 6.3.2 AOI 1 Conclusions

Based on the results of the SI, PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in soil below their SLs. Therefore, further evaluation at AOI 1 is not warranted. No groundwater samples were collected from AOI 1 during the SI.

## 6.4 AOI 2

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 2: OCTC Fire Station. The results in soil are summarized on **Table 6-2** through **Table 6-4**. Soil results are presented on **Figure 6-1** through **Figure 6-15**.

### 6.4.1 AOI 2 Soil Analytical Results

**Figure 6-1** through **Figure 6-15** present the ranges of detections in soil. **Table 6-2** through **Table 6-4** summarize the soil results.

Soil was sampled from surface soil (0 to 2 feet bgs) from boring locations AOI2-1 through AOI2-3, shallow subsurface soil (between 5 to 15 feet bgs) from boring locations AOI2-1 through AOI2-3, and deep subsurface soil (20 to 21.5 feet bgs) from boring locations AOI2-1 and AOI2-3.

PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in surface soil, at concentrations below their SLs. PFOA was detected at AOI02-01, with a concentration of 1.63 µg/kg. PFOS was detected at locations AOI2-01 and AOI2-03, with concentrations of 2.79 µg/kg and 0.062 J µg/kg, respectively. PFHxS was detected at AOI02-01, with a concentration of 0.439 J µg/kg. PFNA was detected at AOI02-01, with a concentration of 0.501 J µg/kg. PFBS was detected at AOI02-01, with a concentration of 0.070 J µg/kg. PFOA, PFOS, PFHxS, PFNA, and PFBS were not detected in shallow and deep subsurface soil.

### 6.4.2 AOI 2 Conclusions

Based on the results of the SI, PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in soil at concentrations below their respective SLs. Therefore, further evaluation at AOI 2 is not warranted. No groundwater samples were collected from AOI 2 during the SI.

## 6.5 AOI 3

This section presents the analytical results for soil and sediment in comparison to SLs for AOI 3: Wastewater Lagoons. The results in soil and sediment are summarized on **Table 6-2** through **Table 6-4** and **Table 6-6**. Soil and sediment results are presented on **Figure 6-1** through **Figure 6-15** and **Figure 6-21** through **Figure 6-22.**

### 6.5.1 AOI 3 Soil Analytical Results

**Figure 6-1** through **Figure 6-15** present the ranges of detections in soil. **Table 6-2** through **Table 6-4** summarize the soil results.

Soil was sampled from surface soil (0 to 2 feet bgs) from boring locations AOI3-3 through AOI3-6. Soil was also sampled from shallow subsurface soil (between 5 to 11 feet bgs) from boring locations AOI3-4, AOI3-5, and AOI3-6. Deep subsurface soil was not collected during the SI.

PFOA, PFOS, PFHxS, and PFBS were detected in surface soil, at concentrations below their SLs. PFOA was detected at AOI3-6, with a concentration of 0.109 J µg/kg. PFOS was detected at AOI3-6, with a concentration of 0.330 J µg/kg. PFHxS was detected at locations AOI3-4 and AOI3-6, with concentrations of 0.043 J µg/kg and 0.056 J µg/kg, respectively. PFBS was detected at locations AOI3-5 and AOI3-6, with concentrations of 0.045 J µg/kg and 0.023 J µg/kg, respectively. PFNA was not detected in surface soil.

PFOS, PFHxS, and PFBS were detected in shallow subsurface soil, at concentrations below their SLs. PFOS was detected at AOI3-3, with a concentration of 0.283 J µg/kg. PFHxS was detected

at three of the five locations, with concentrations ranging from 0.117 J µg/kg to 0.204 J µg/kg. PFBS was detected at AOI3-5, with a concentration of 0.067 J µg/kg. PFOA and PFNA were not detected in shallow subsurface soil.

### 6.5.2 AOI 3 Sediment Analytical Results

**Figure 6-21** and **Figure 6-22** present the ranges of detections in sediment. **Table 6-6** summarizes the sediment results.

Sediment was sampled from two locations, AOI3-1-SD-01 and AOI3-1-SD-02. PFOA, PFOS, PFHxS, PFNA, and PFBS were detected at AOI3-1-SD-01, with concentrations ranging from 0.478 J µg/kg to 30.2 J µg/kg. All five compounds were non-detect at AOI3-1-SD-02.

### 6.5.3 AOI 3 Conclusions

Based on the results of the SI, PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in soil at concentrations below their SLs. Therefore, further evaluation at AOI 3 is not warranted. There are no established SLs for sediment; therefore, these results are presented for informational purposes only. No groundwater samples were collected from AOI 3 during the SI.

## 6.6 Production Wells

This section presents the analytical results for groundwater in comparison to SLs for existing production wells across the facility. The results from the July 2021 SI sampling event in groundwater are summarized on **Table 6-5** and are presented on **Figure 6-16** through **Figure 6-20**. IDARNG performed prior sampling of the production wells in September 2018 and August 2020. During these events, the production well samples were analyzed via EPA method 537. PFAS were not detected above the method detection limits in each sample during both prior events. The lab reports for these sampling events are in **Appendix G**.

### 6.6.1 Groundwater Analytical Results

PFOS was the only compound detected during production well sampling. PFOA, PFHxS, PFNA, and PFBS were not detected in any of the six production wells. When only one PFAS is present, a health quotient of 1.0 can be used to calculate the SL for that single compound. Therefore, the applicable SL for PFOS in 40 nanograms per liter (ng/L). PFOS was detected in groundwater, at a concentration below its SL of 40 ng/L at the Snake River Training Facility (SRTF) well, with a concentration of 4.49 ng/L. PFOS was also detected in groundwater at concentration below its SL at the BRUMPTON well, with a concentration of 1.81 J ng/L. PFOS was not detected at the remaining four production wells.

### 6.6.2 Production Wells Conclusions

Based on the results of the SI, PFOS was the only compound detected in groundwater, at a concentration below its SL of 40 ng/L. PFOA, PFHxS, PFNA, and PFBS were not detected in any of the six production wells. Therefore, no further evaluation of the production wells, SRTF or BRUMPTON, is warranted.

**Table 6-2**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil**
**Site Inspection Report, Orchard Combat Training Center**

| Area of Interest | | AOI01 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | AOI1-1-SB-0-2 | | AOI1-1-SB-0-2-DUP | | AOI1-2-SB-0-2 | | AOI1-3-SB-0-2 | | AOI1-3-SB-0-2-DUP | | AOI1-SS01-0-2 | | AOI1-SS01-0-2-DUP | | AOI1-SS02-0-2 | | AOI1-SS03-0-2 | | AOI1-SS04-0-2 | |
| Sample Date | | 07/29/2021 | | 07/29/2021 | | 07/29/2021 | | 07/30/2021 | | 07/30/2021 | | 07/30/2021 | | 07/30/2021 | | 07/30/2021 | | 07/30/2021 | | 07/30/2021 | |
| Depth | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | |
| Analyte | OSD Screening Level [a] | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | | | | | | | | | | | | | | | | | | |
| PFBS | 1900 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 1.65 | |
| PFHxS | 130 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 0.043 | J | ND | U | 4.82 | |
| PFNA | 19 | ND | U | ND | U | ND | U | ND | U | ND | U | 0.040 | J | ND | UJ | 0.037 | J | ND | U | ND | U |
| PFOA | 19 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 0.255 | J |
| PFOS | 13 | ND | U | ND | U | 0.085 | J | ND | U | ND | U | 0.452 | J | 0.079 | J | 0.238 | J | ND | U | 0.087 | J |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

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

Interpreted Qualifiers

J = Estimated concentration

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

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

Notes

ND = Analyte not detected above the LOD. LOD values are presented in Appendix F.

Chemical Abbreviations

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

Acronyms and Abbreviations

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

**Table 6-2**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil**
**Site Inspection Report, Orchard Combat Training Center**

| Area of Interest | | AOI01 | | | | AOI02 | | | | | | AOI03 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | AOI1-SS05-0-2 | | AOI1-SS05-0-2-DUP | | AOI2-1-0-2 | | AOI2-2-0-2 | | AOI2-3-0-2 | | AOI3-3-SB-0-2 | | AOI3-4-SB-0-2 | | AOI3-5-SB-0-2 | | AOI3-5-SB-0-2-DUP | | AOI3-6-SB-0-2 | |
| Sample Date | | 07/30/2021 | | 07/30/2021 | | 07/29/2021 | | 07/29/2021 | | 07/29/2021 | | 07/29/2021 | | 07/30/2021 | | 07/30/2021 | | 07/30/2021 | | 07/29/2021 | |
| Depth | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | | 0-2 ft | |
| Analyte | OSD Screening Level [a] | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | | | | | | | | | | | | | | | | | | |
| PFBS | 1900 | 0.037 | J | ND | UJ | 0.070 | J | ND | U | ND | U | ND | U | ND | U | 0.045 | J | ND | UJ | 0.023 | J |
| PFHxS | 130 | 0.345 | J | 0.111 | J | 0.439 | J | ND | U | ND | U | ND | U | 0.043 | J | ND | U | ND | U | 0.056 | J |
| PFNA | 19 | 0.025 | J | ND | UJ | 0.501 | J | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOA | 19 | 0.166 | J | ND | UJ | 1.63 | | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 0.109 | J |
| PFOS | 13 | 0.237 | J | 0.079 | J | 2.79 | | ND | U | 0.062 | J | ND | U | ND | U | ND | U | ND | U | 0.330 | J |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

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

Interpreted Qualifiers

J = Estimated concentration

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

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

Notes

ND = Analyte not detected above the LOD. LOD values are presented in Appendix F.

Chemical Abbreviations

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

Acronyms and Abbreviations

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

**Table 6-3**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil**
**Site Inspection Report, Orchard Combat Training Center**

| Area of Interest | | AOI01 | | | | | | AOI02 | | | | | | AOI03 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | AOI1-1-SB-4-6 | | AOI1-3-SB-5-7 | | AOI1-SS03-3-5 | | AOI2-1-13-15 | | AOI2-2-5-6 | | AOI2-3-13-15 | | AOI3-3-SB-6-8 | | AOI3-3-SB-9-11 | | AOI3-4-SB-5-7 | | AOI3-5-SB-5.5-6 | |
| Sample Date | | 07/29/2021 | | 07/30/2021 | | 07/30/2021 | | 07/29/2021 | | 07/29/2021 | | 07/29/2021 | | 07/29/2021 | | 07/29/2021 | | 07/30/2021 | | 07/30/2021 | |
| Depth | | 4-6 ft | | 5-7 ft | | 3-5 ft | | 13-15 ft | | 5-6 ft | | 13-15 ft | | 6-8 ft | | 9-11 ft | | 5-7 ft | | 5.5-6 ft | |
| **Analyte** | **OSD Screening Level [a]** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | | | | | | | | | | | | | | | | | | |
| PFBS | 25000 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 0.067 | J |
| PFHxS | 1600 | ND | U | ND | U | 0.049 | J | ND | U | ND | U | ND | U | ND | U | 0.117 | J | ND | U | 0.117 | J |
| PFNA | 250 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOA | 250 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOS | 160 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | 0.283 | J | ND | U | ND | U |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

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

Interpreted Qualifiers

J = Estimated concentration

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

Notes

ND = Analyte not detected above the LOD. LOD values are presented in Appendix F.

Chemical Abbreviations

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

Acronyms and Abbreviations

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

**Table 6-3**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil**
**Site Inspection Report, Orchard Combat Training Center**

| | | | |
|---|---|---|---|
| | **Area of Interest** | AOI03 | |
| | **Sample ID** | AOI3-6-SB-7.5-9 | |
| | **Sample Date** | 07/29/2021 | |
| | **Depth** | 7.5-9 ft | |
| **Analyte** | **OSD Screening Level [a]** | **Result** | **Qual** |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | |
| PFBS | 25000 | ND | U |
| PFHxS | 1600 | 0.204 | J |
| PFNA | 250 | ND | U |
| PFOA | 250 | ND | U |
| PFOS | 160 | ND | U |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

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

Interpreted Qualifiers

J = Estimated concentration

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

Notes

ND = Analyte not detected above the LOD. LOD values are presented in Appendix F.

Chemical Abbreviations

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

Acronyms and Abbreviations

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

**Table 6-4**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Deep Subsurface Soil**
**Site Inspection Report, Orchard Combat Training Center**

| Area of Interest | AOI02 | | | |
|---|---|---|---|---|
| Sample ID | AOI2-1-20-21.5 | | AOI2-3-20-21.5 | |
| Sample Date | 07/29/2021 | | 07/29/2021 | |
| Depth | 20-21.5 ft | | 20-21.5 ft | |
| Analyte | Result | Qual | Result | Qual |
| **Soil, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | |
| PFBS | ND | U | ND | U |
| PFHxS | ND | U | ND | U |
| PFNA | ND | U | ND | U |
| PFOA | ND | U | ND | U |
| PFOS | ND | U | ND | U |

Interpreted Qualifiers

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

Notes

ND = Analyte not detected above the LOD. LOD values are presented in Appendix F.

Chemical Abbreviations

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

Acronyms and Abbreviations

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

**Table 6-5**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Onsite Production Wells**
**Site Inspection Report, Orchard Combat Training Center**

| Area of Interest | | | Sitewide | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | | ASP-1-072821 | | BRUMPTON-1-072821 | | MATES-1-072821 | | MPRCH-1-072821 | | ORTC-1-072821 | | SRTF-1-072821 | | SRTF-1-072821-DUP | |
| Sample Date | | | 07/28/2021 | | 07/28/2021 | | 07/28/2021 | | 07/28/2021 | | 07/28/2021 | | 07/28/2021 | | 07/28/2021 | |
| Analyte | OSD Screening Level [a] | OSD Screening Level [b] | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual | Result | Qual |
| **Water, LCMSMS compliant with QSM 5.3 Table B-15 (ng/l)** | | | | | | | | | | | | | | | | |
| PFBS | 601 | 6,010 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFHxS | 39 | 394 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFNA | 6 | 59 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOA | 6 | 60 | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U | ND | U |
| PFOS | 4 | 40 | ND | U | 1.81 | J | ND | U | ND | U | ND | U | 2.91 | J | 4.49 | |

Grey Fill — Detected concentration exceeded OSD Screening Levels

References

a. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=0.1, May 2022 Groundwater screening levels based on residential scenario for direct ingestion of groundwater. b. Assistant Secretary of Defense, July 2022. Risk Based Screening Levels Calculated for PFOA, PFOS, PFBS, PFHxS, and PFNA in Groundwater or Soil using USEPA's Regional Screening Level Calculator. HQ=1.0, May 2022. Groundwater screening levels based on residential scenario for direct ingestion of groundwater. HQ=1.0 when a single PFAS is present.

Interpreted Qualifiers

J = Estimated concentration

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

Notes

ND = Analyte not detected above the LOD. LOD values are presented in Appendix F.

Chemical Abbreviations

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

Acronyms and Abbreviations

| | |
|---|---|
| DUP | duplicate |
| DL | detection limit |
| HQ | hazard quotient |
| ID | identification |
| LCMSMS | liquid chromatography with tandem mass spectrometry |
| LOD | limit of detection |
| ND | analyte not detected above the LOD. LOD values are presented in Appendix F. |
| OSD | Office of the Secretary of Defense |
| QSM | Quality Systems Manual |
| Qual | interpreted qualifier |
| USEPA | United States Environmental Protection Agency |
| ng/l | nanogram per liter |

**Table 6-6**
**PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Sediment**
**Site Inspection Report, Orchard Combat Training Center**

| Area of Interest | AOI03 | | | | | |
|---|---|---|---|---|---|---|
| Sample ID | AOI3-1-SD-01 | | AOI3-1-SD-01-DUP | | AOI3-1-SD-02 | |
| Sample Date | 07/30/2021 | | 07/30/2021 | | 07/30/2021 | |
| Depth | 0-1 ft | | 0-1 ft | | 0-1 ft | |
| **Analyte** | **Result** | **Qual** | **Result** | **Qual** | **Result** | **Qual** |
| **Sediment, LCMSMS compliant with QSM 5.3 Table B-15 (µg/kg)** | | | | | | |
| PFBS | 1.35 | J | 0.674 | J | ND | U |
| PFHxS | 2.70 | J | 1.38 | J | ND | U |
| PFNA | 1.03 | J | 0.478 | J | ND | U |
| PFOA | 3.06 | J- | 1.42 | J- | ND | U |
| PFOS | 30.2 | J | 15.9 | | ND | U |

Interpreted Qualifiers

J = Estimated concentration

J- = Estimated concentration, biased low

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

Notes

ND = Analyte not detected above the LOD. LOD values are presented in Appendix F.

Chemical Abbreviations

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

Acronyms and Abbreviations

| | |
|---|---|
| AOI | Area of Interest |
| DUP | duplicate |
| DL | detection limit |
| ft | feet |
| ID | identification |
| LCMSMS | liquid chromatography with tandem mass spectrometry |
| LOD | limit of detection |
| ND | analyte not detected above the LOD. LOD values are presented in Appendix F. |
| QSM | Quality Systems Manual |
| Qual | interpreted qualifier |
| SD | sediment |
| µg/kg | micrograms per kilogram |

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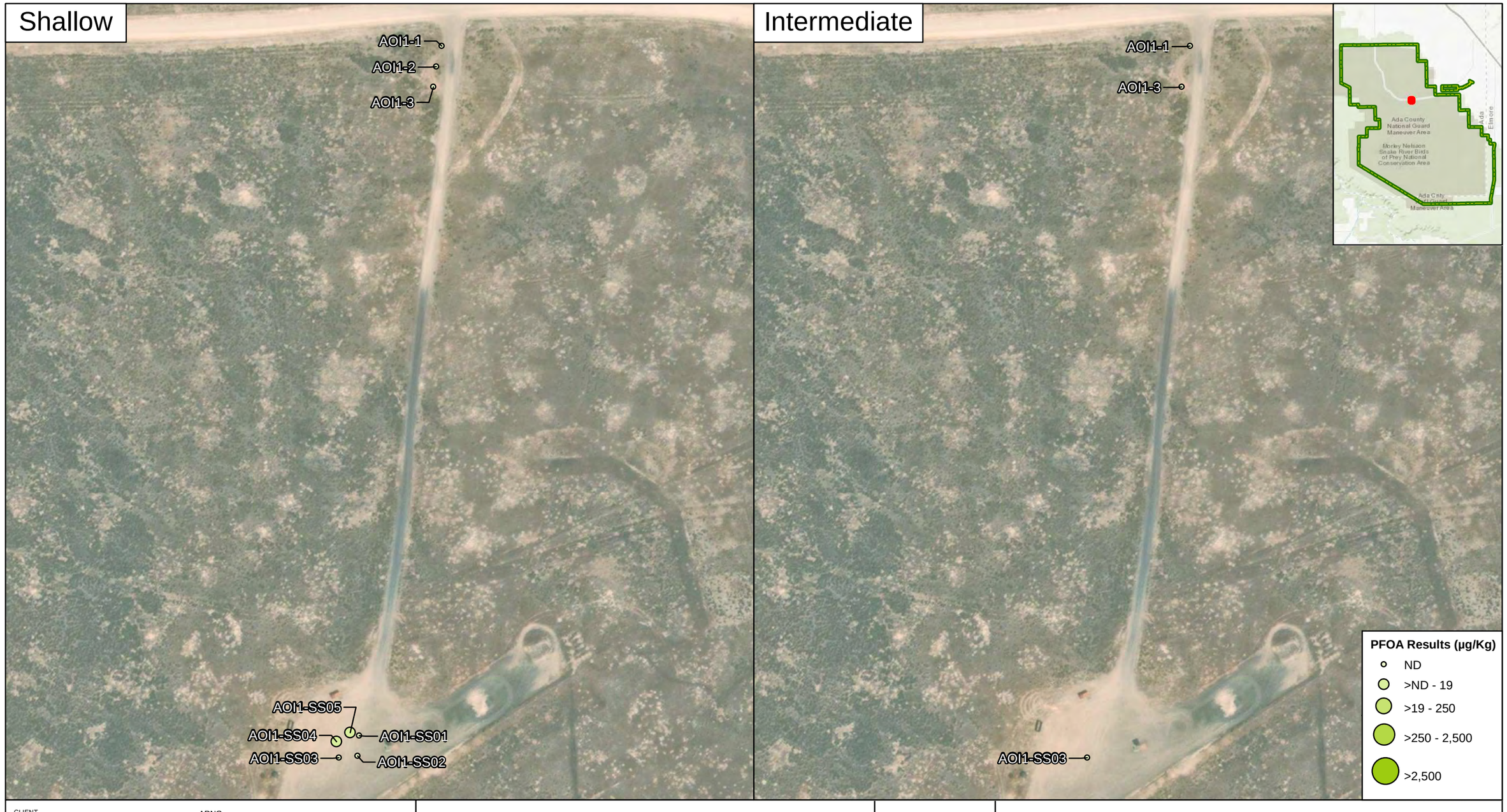



| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

0 100 200 400 Feet

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

N

## PFOA Detections in Soil, AOI 1

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-1**

Shallow

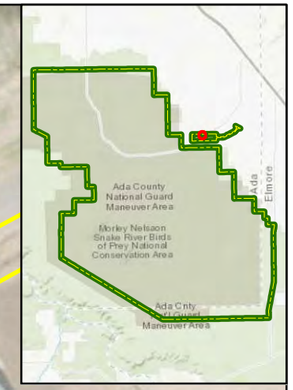
Intermediate

Deep

AOI2-1

AOI2-2

AOI2-3




**PFOA Results (µg/Kg)**

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

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:1,200 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 50 100 200 Feet

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

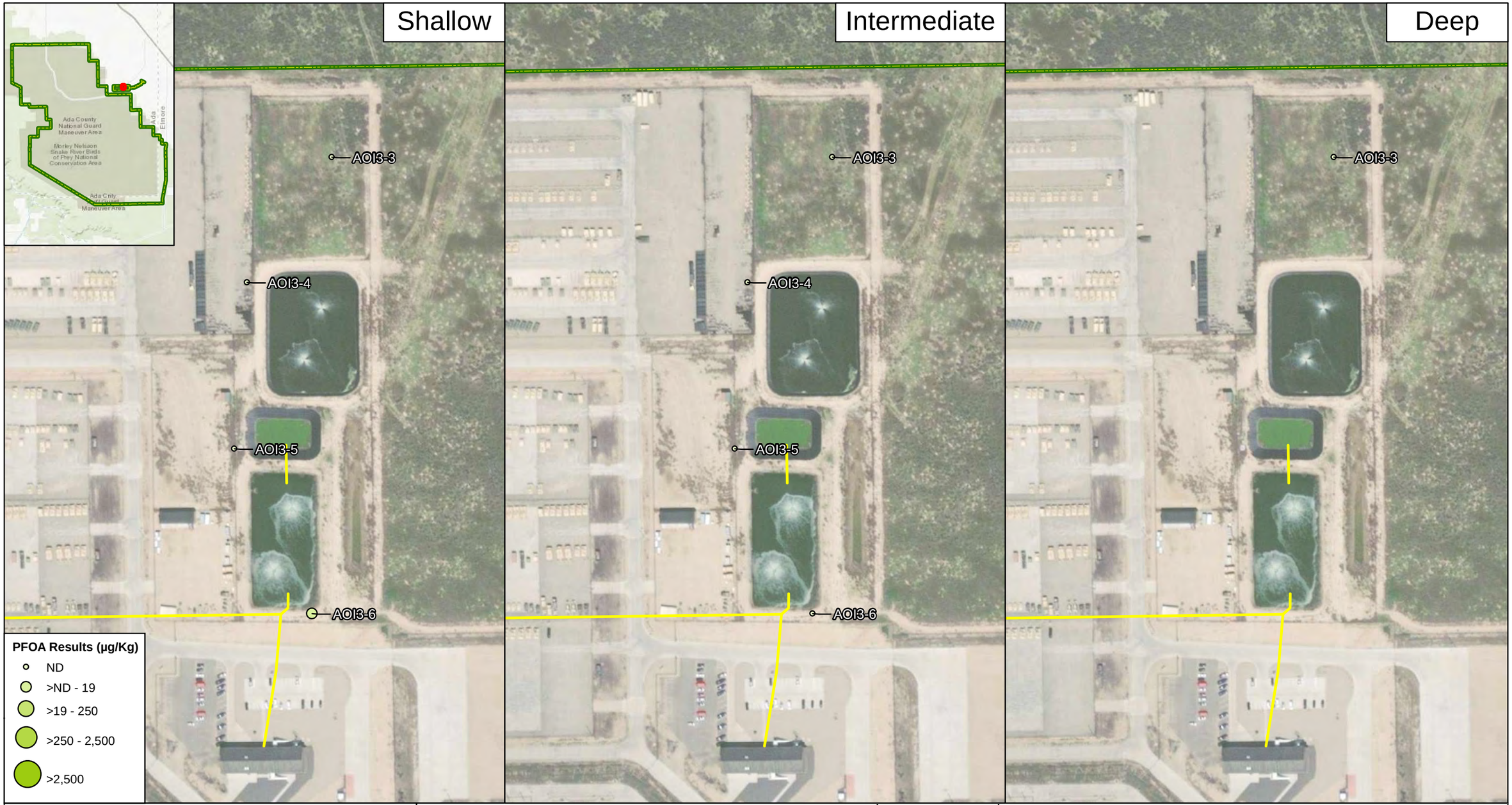
N

# PFOA Detections in Soil, AOI 2

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-2**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 100 200 400 Feet

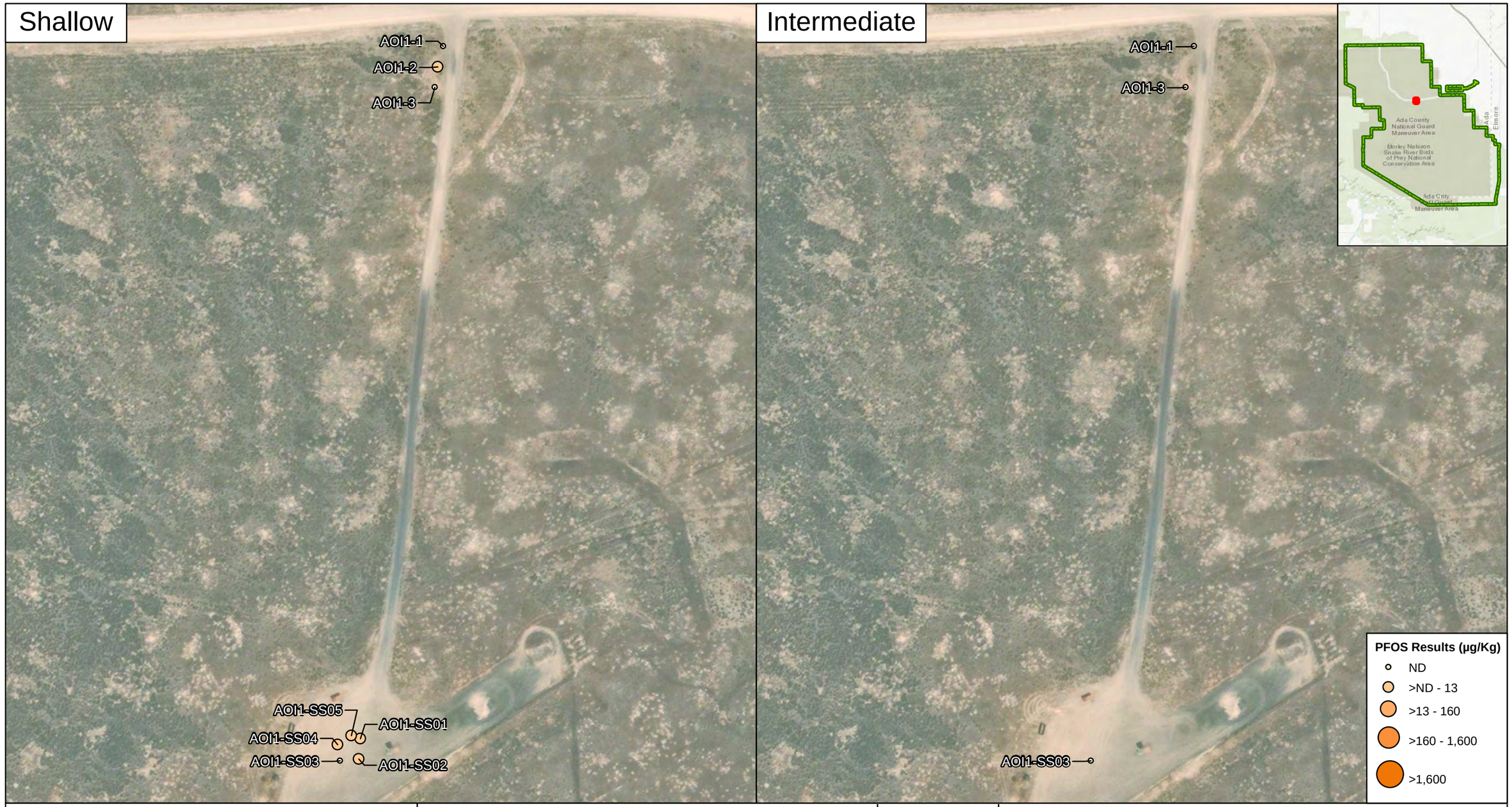
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

## PFOA Detections in Soil, AOI 3

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-3**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

0 100 200 400 Feet

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

N

# PFOS Detections in Soil, AOI 1

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-4**

Shallow

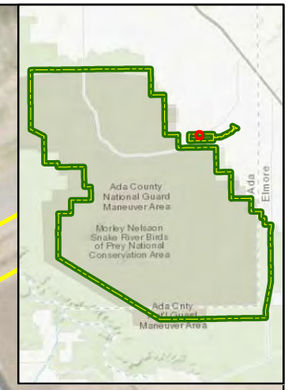
Intermediate

Deep

AOI2-1

AOI2-2

AOI2-3




**PFOS Results (µg/Kg)**

- ND
- >ND - 13
- >13 - 160
- >160 - 1,600
- >1,600

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:1,200 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 50 100 200 Feet

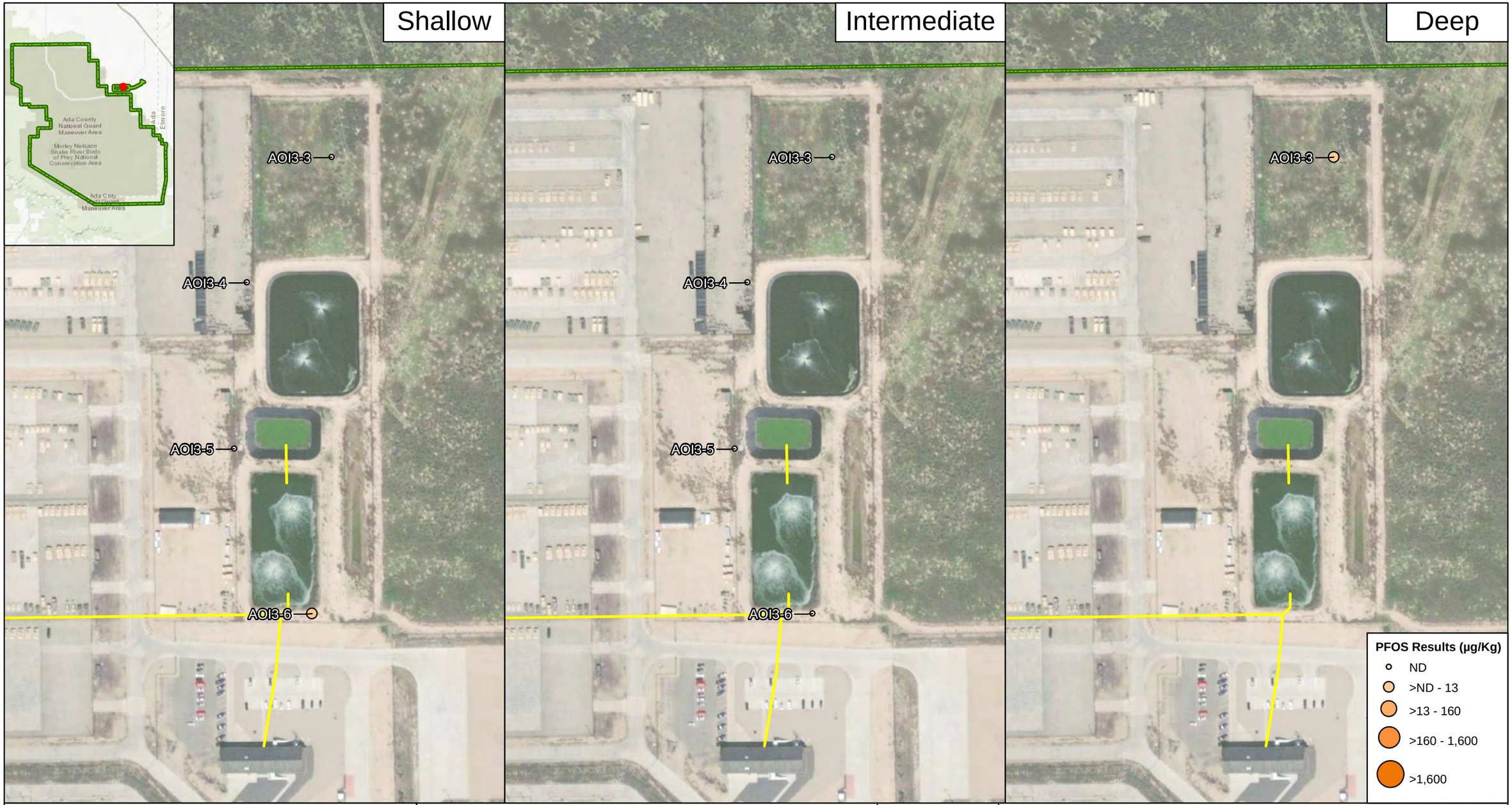
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

# PFOS Detections in Soil, AOI 2

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-5**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 100 200 400 Feet

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

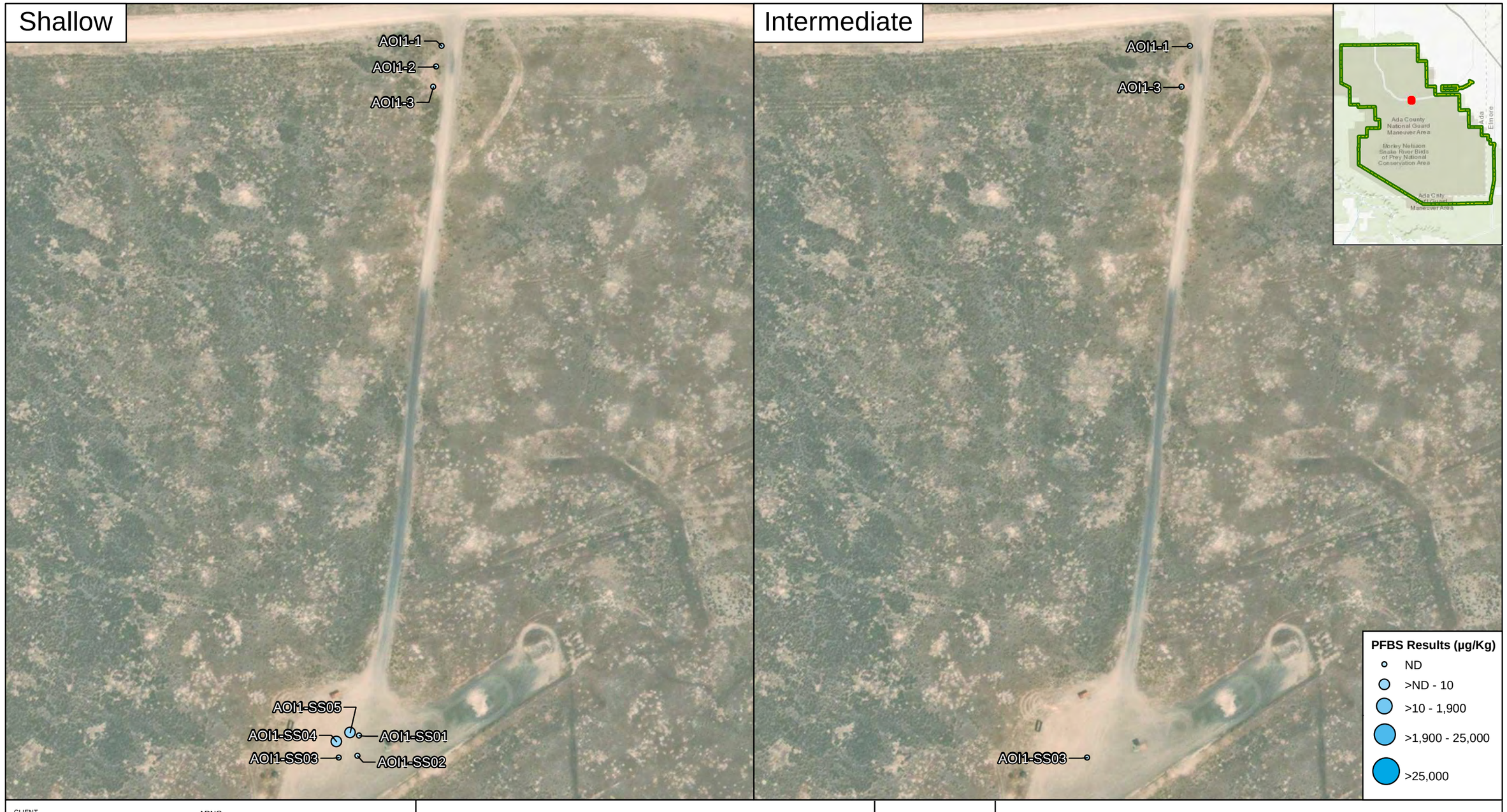
N

# PFOS Detections in Soil, AOI 3

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-6**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

0 100 200 400 Feet

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

N

## PFBS Detections in Soil, AOI 1

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-7**

Shallow

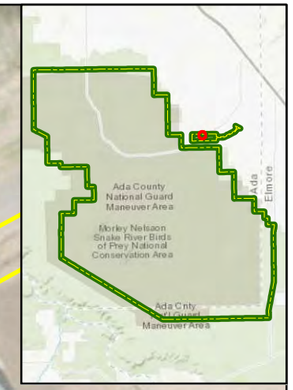
Intermediate

Deep

AOI2-1

AOI2-2

AOI2-3




**PFBS Results (µg/Kg)**

- ND
- >ND - 10
- >10 - 1,900
- >1,900 - 25,000
- >25,000

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:1,200 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 50 100 200 Feet

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

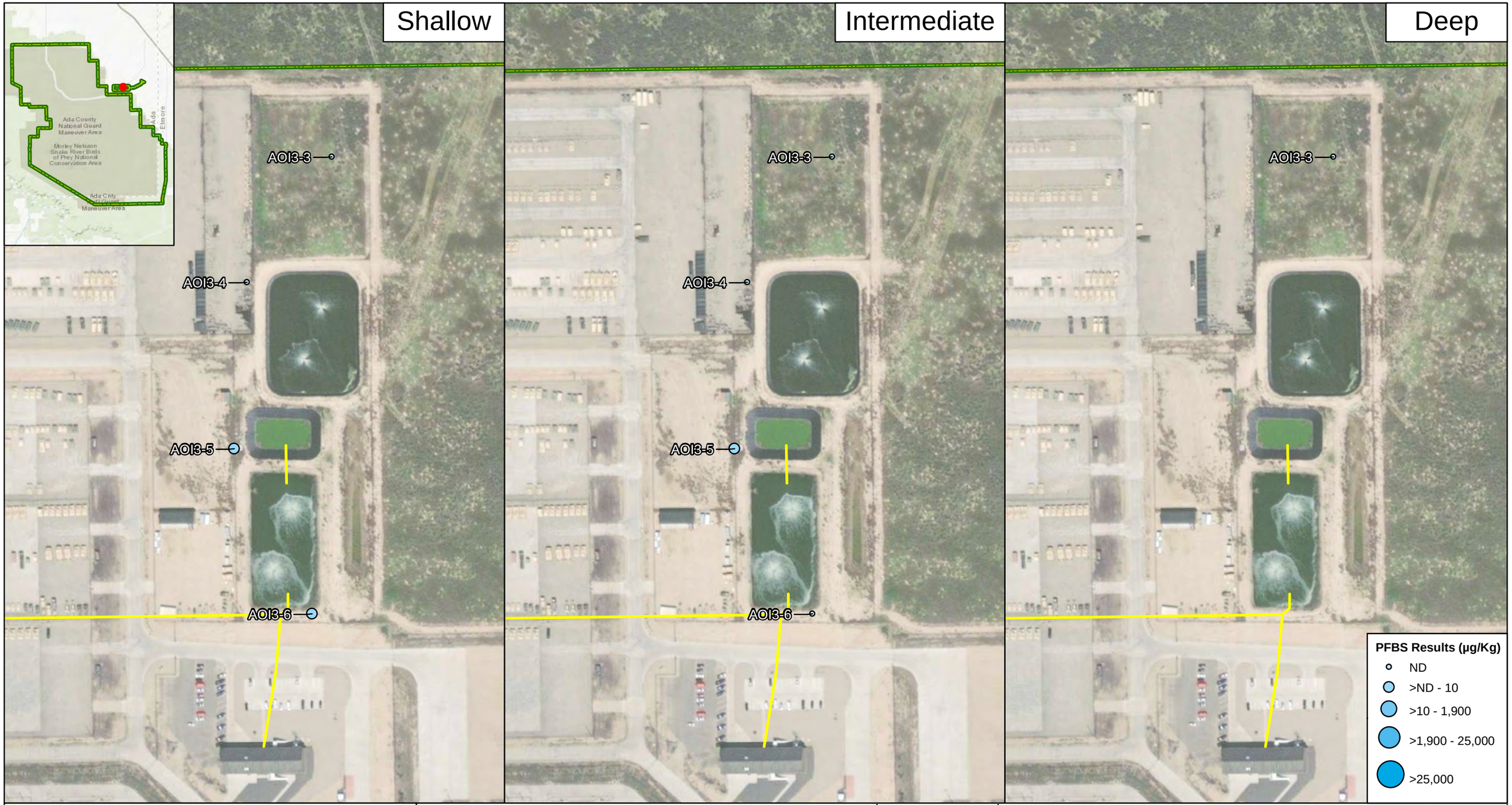
N

# PFBS Detections in Soil, AOI 2

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-8**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,397 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 100 200 400 Feet

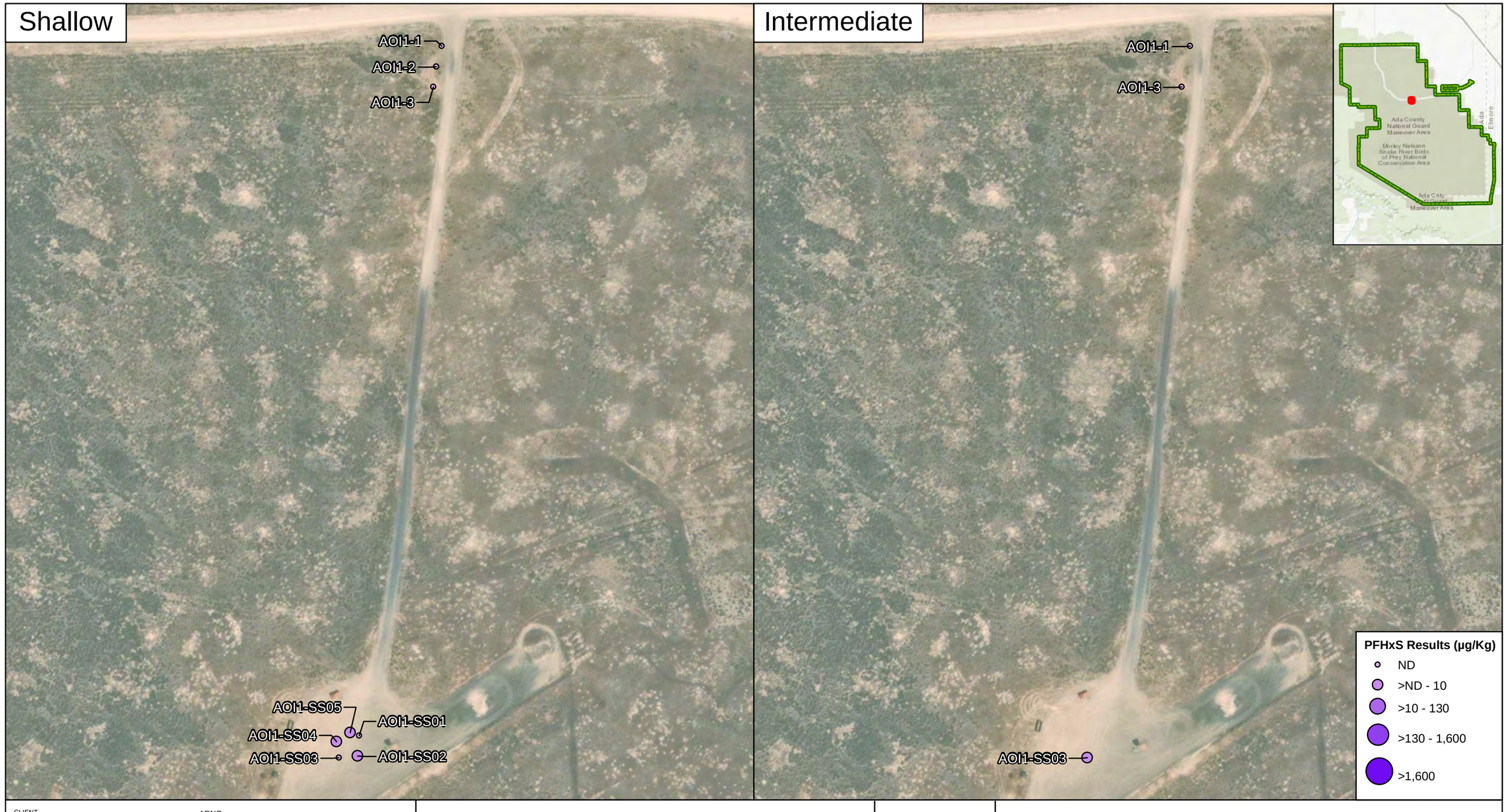
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

# PFBS Detections in Soil, AOI 3

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-9**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

0 100 200 400 Feet

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

N

## PFHxS Detections in Soil, AOI 1

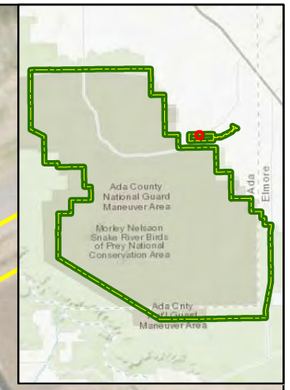
AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-10**

Shallow

Intermediate

Deep




AOI2-1

AOI2-2

AOI2-3

**PFHxS Results (µg/Kg)**

- ND
- >ND - 10
- >10 - 130
- >130 - 1,600
- >1,600

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:1,200 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 50 100 200 Feet

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

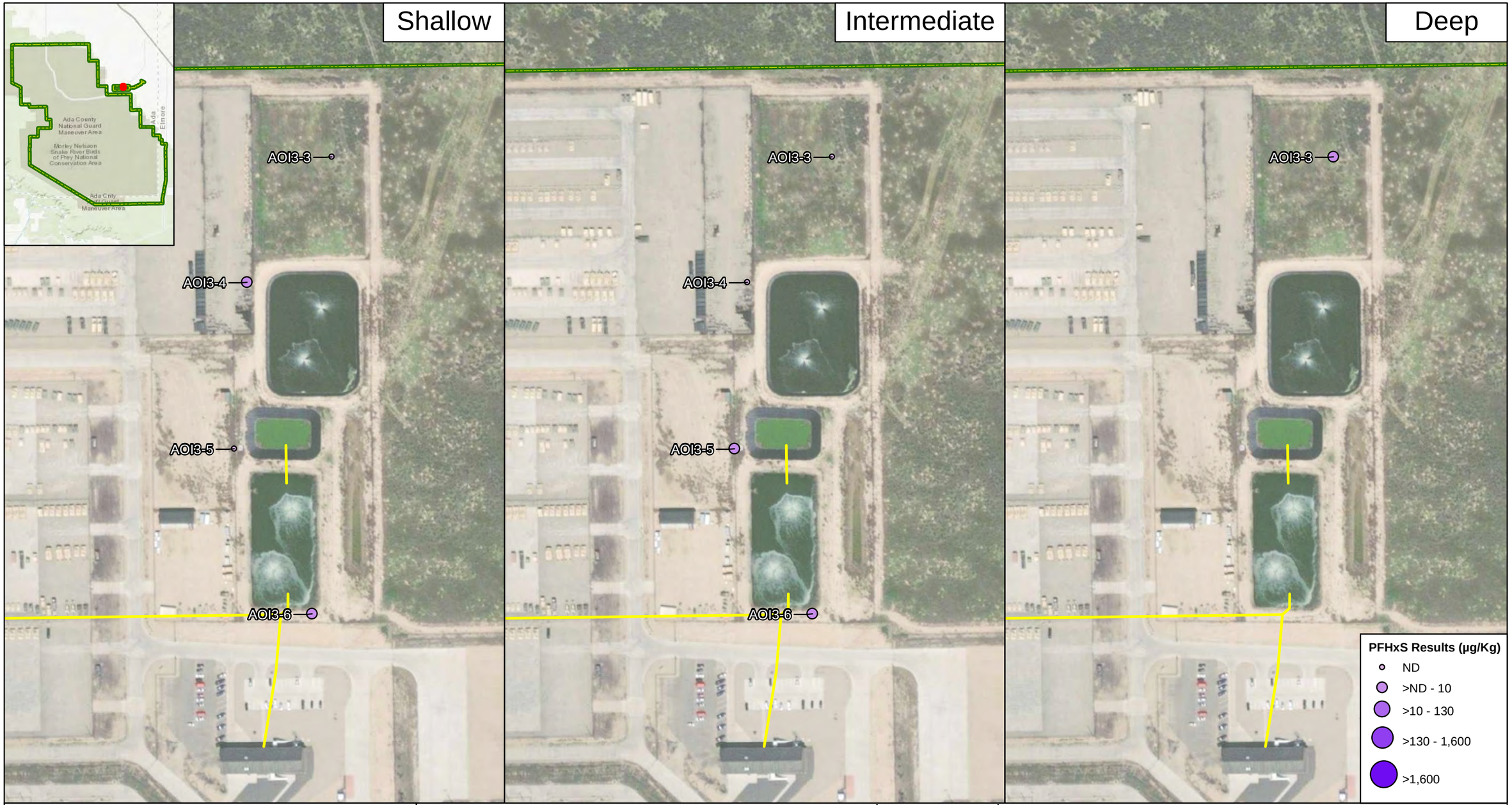
N

## PFHxS Detections in Soil, AOI 2

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-11**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,397 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 100 200 400 Feet

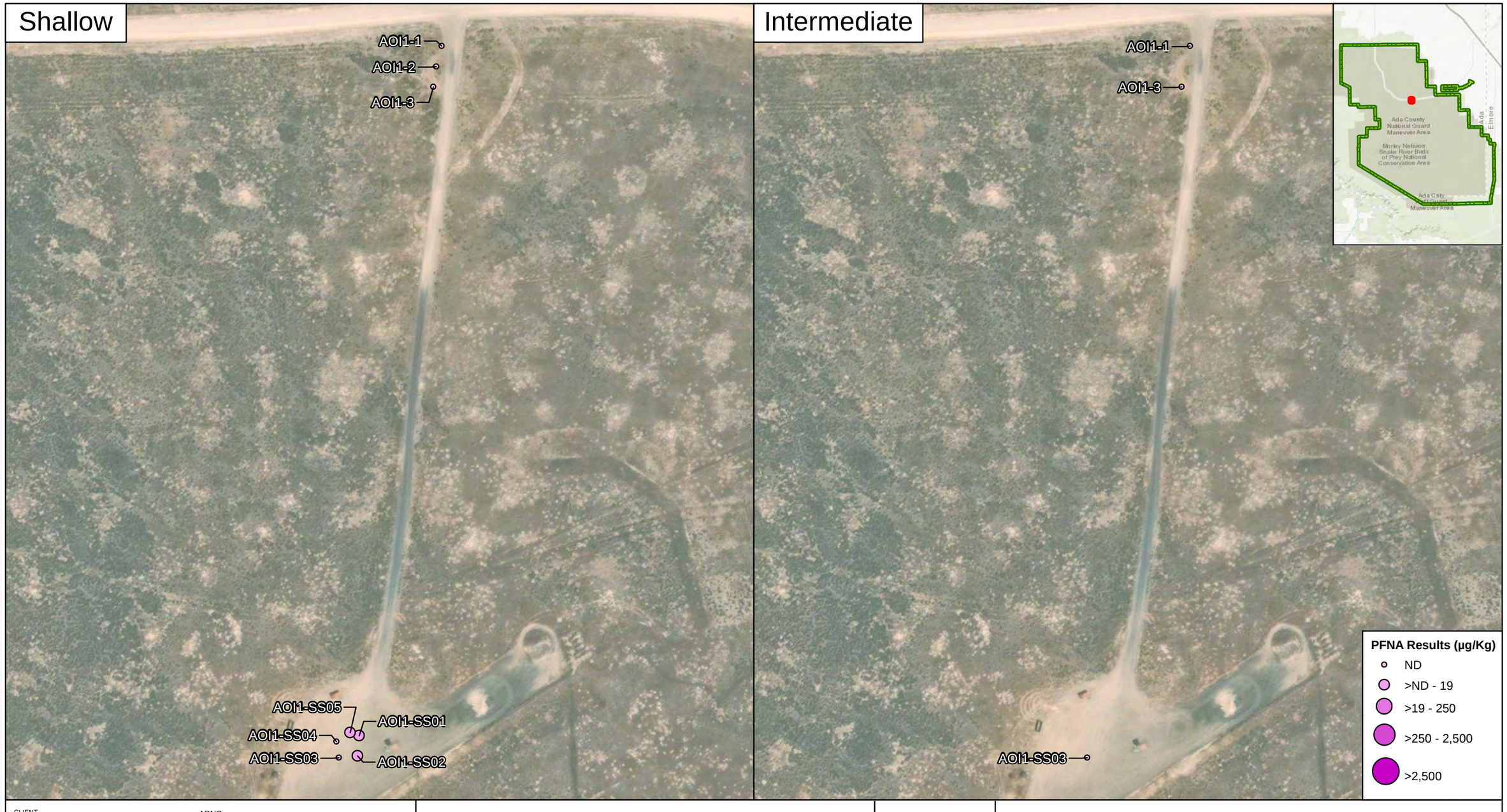
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

## PFHxS Detections in Soil, AOI 3

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-12**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

0 100 200 400 Feet

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

N

## PFNA Detections in Soil, AOI 1

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-13**

Shallow

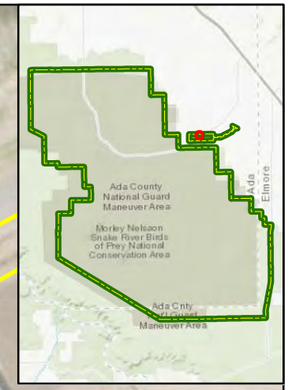
Intermediate

Deep

AOI2-1

AOI2-2

AOI2-3




**PFNA Results (µg/Kg)**

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

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 8/17/2022 | GIS BY | MS | 8/17/2022 |
| SCALE | 1:1,200 | CHK BY | CH | 8/17/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 8/17/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 50 100 200 Feet

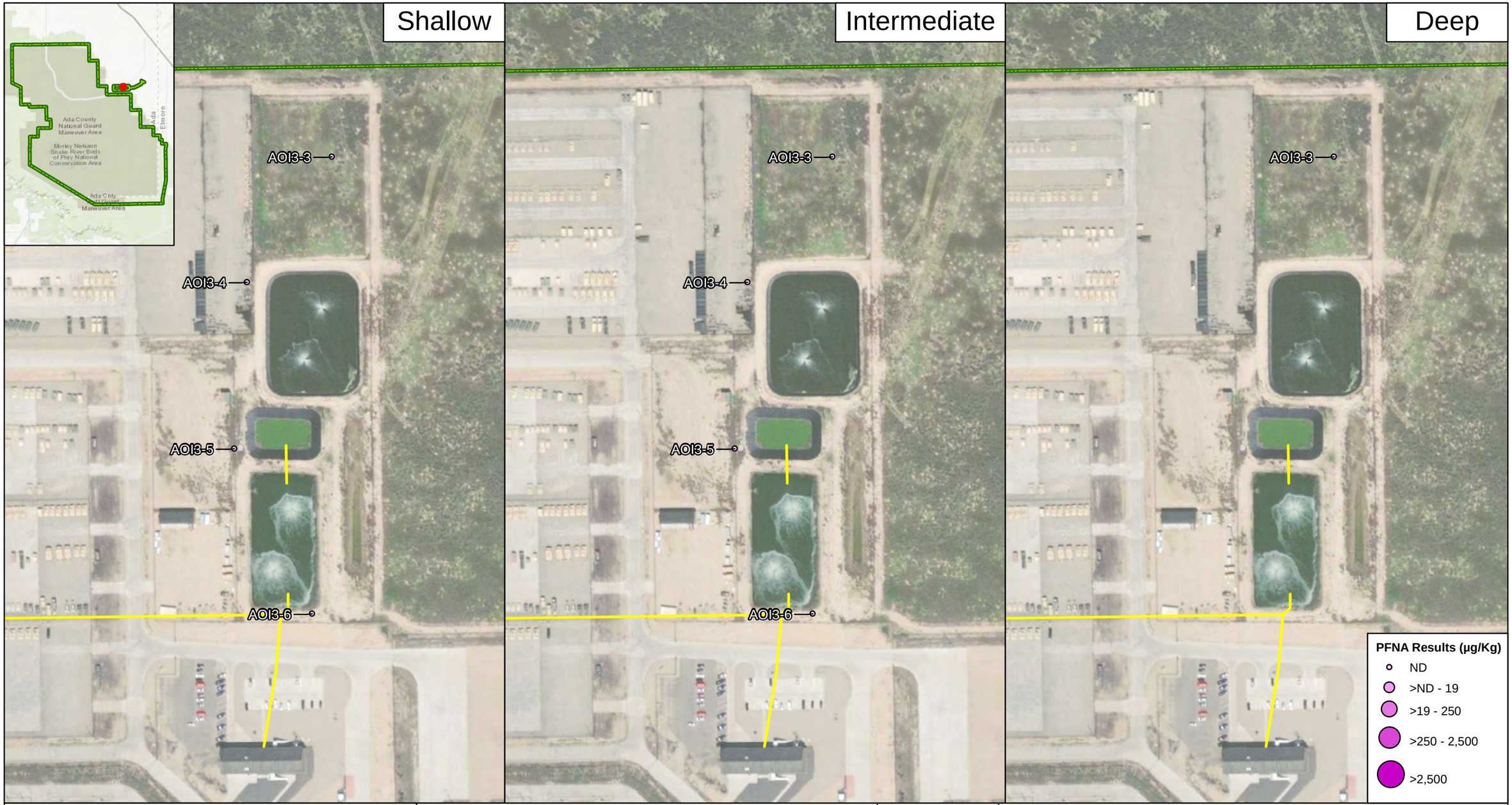
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

N

# PFNA Detections in Soil, AOI 2

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-14**

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|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 10/4/2022 | GIS BY | MS | 10/4/2022 |
| SCALE | 1:2,397 | CHK BY | CH | 10/4/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 10/4/2022 |

**Legend**

Facility Boundary

Combine Sanitary and Stormwater Sewer

0 100 200 400 Feet

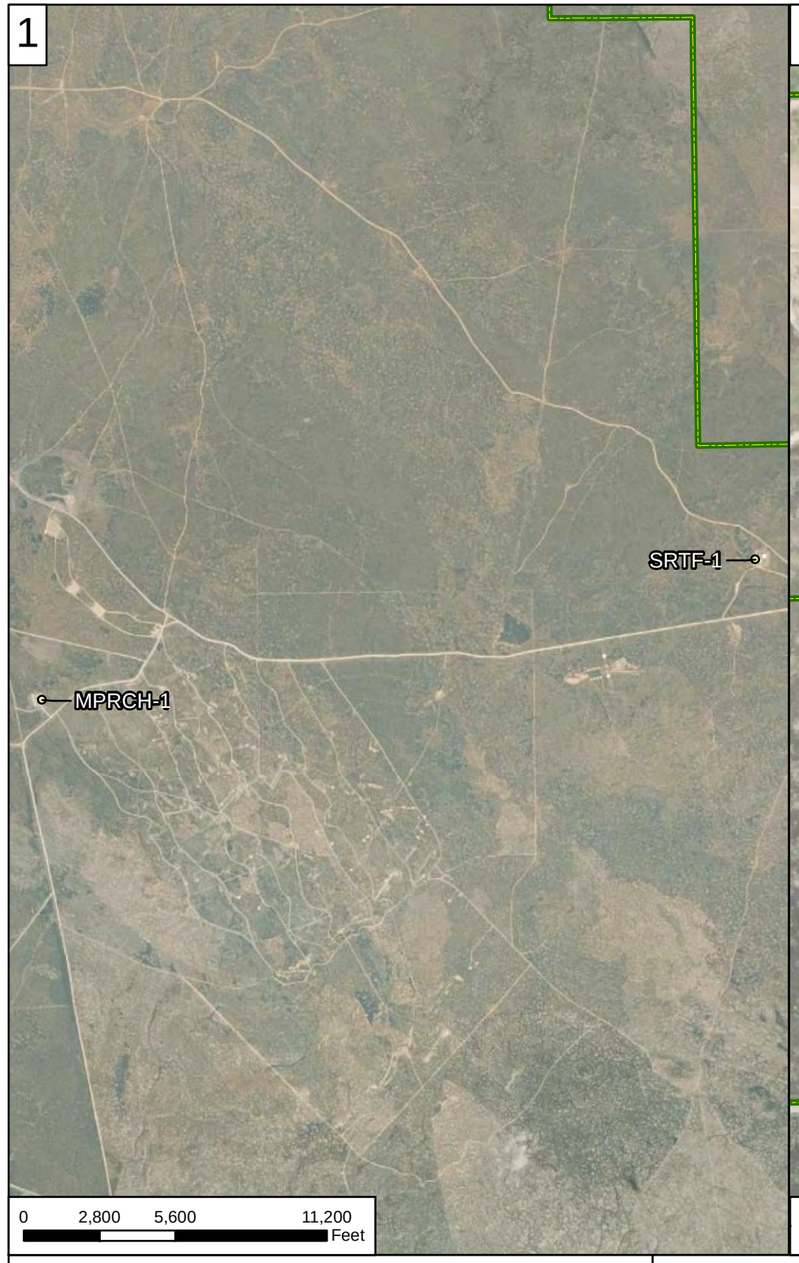
Exceedances of the OSD SL are depicted with a yellow halo.
Depth intervals shown represent respective sampling position within a given soil boring location.

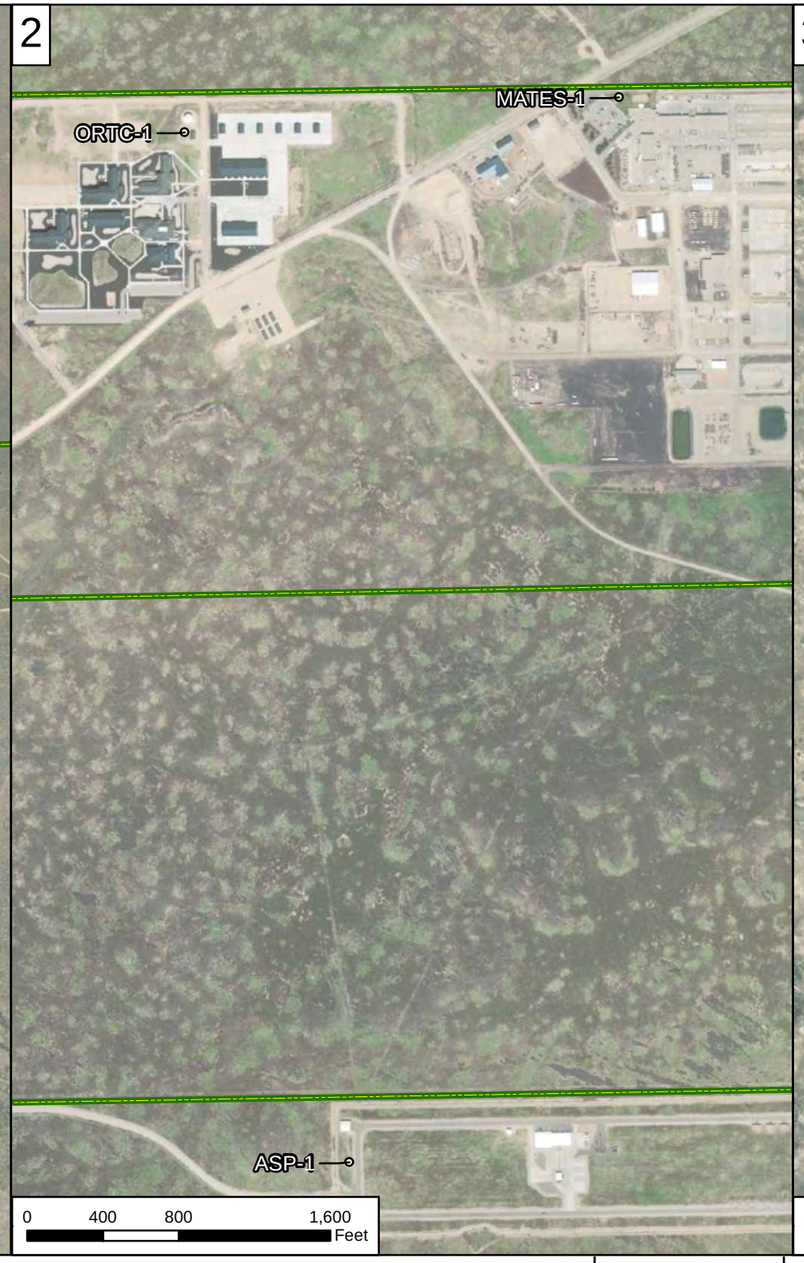
N

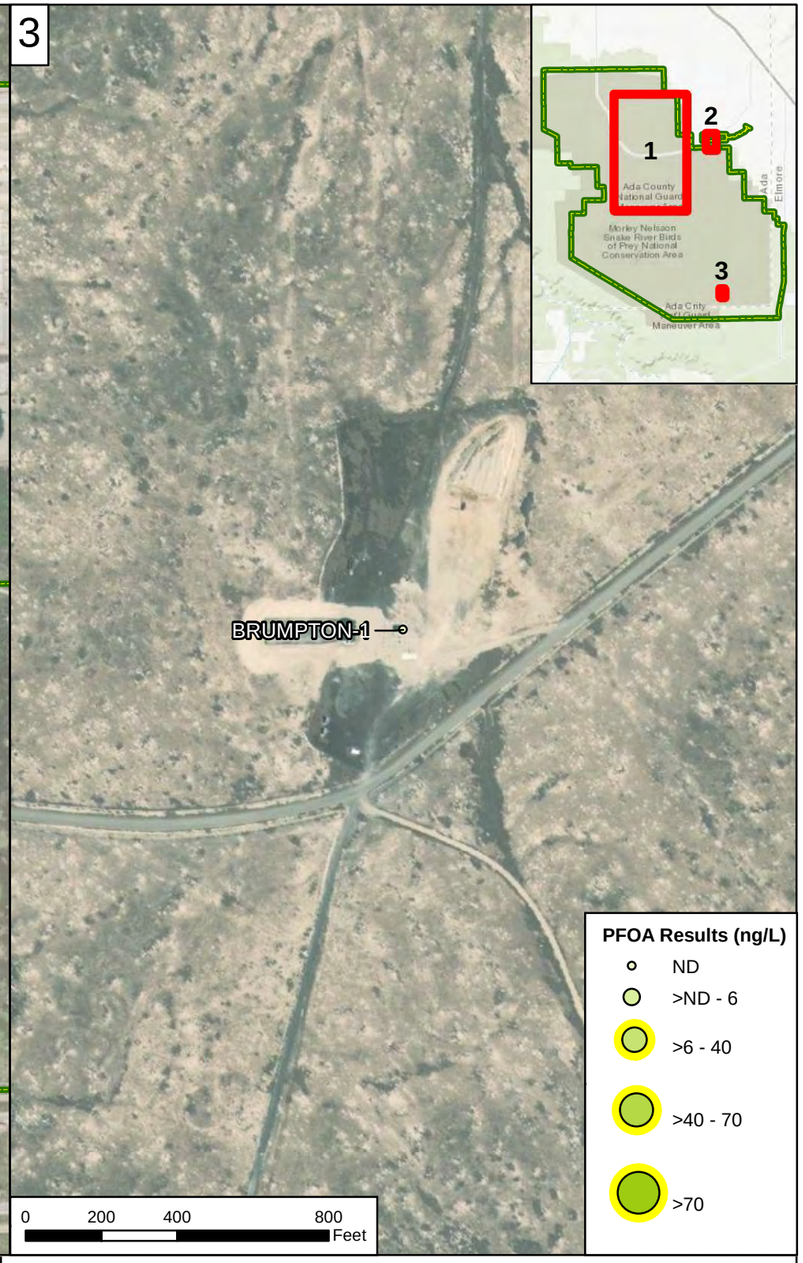
# PFNA Detections in Soil, AOI 3

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-15**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 10/4/2022 | GIS BY | MS | 10/4/2022 |
| SCALE | 1:67,200 | CHK BY | CH | 10/4/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 10/4/2022 |

**Legend**

Facility Boundary

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

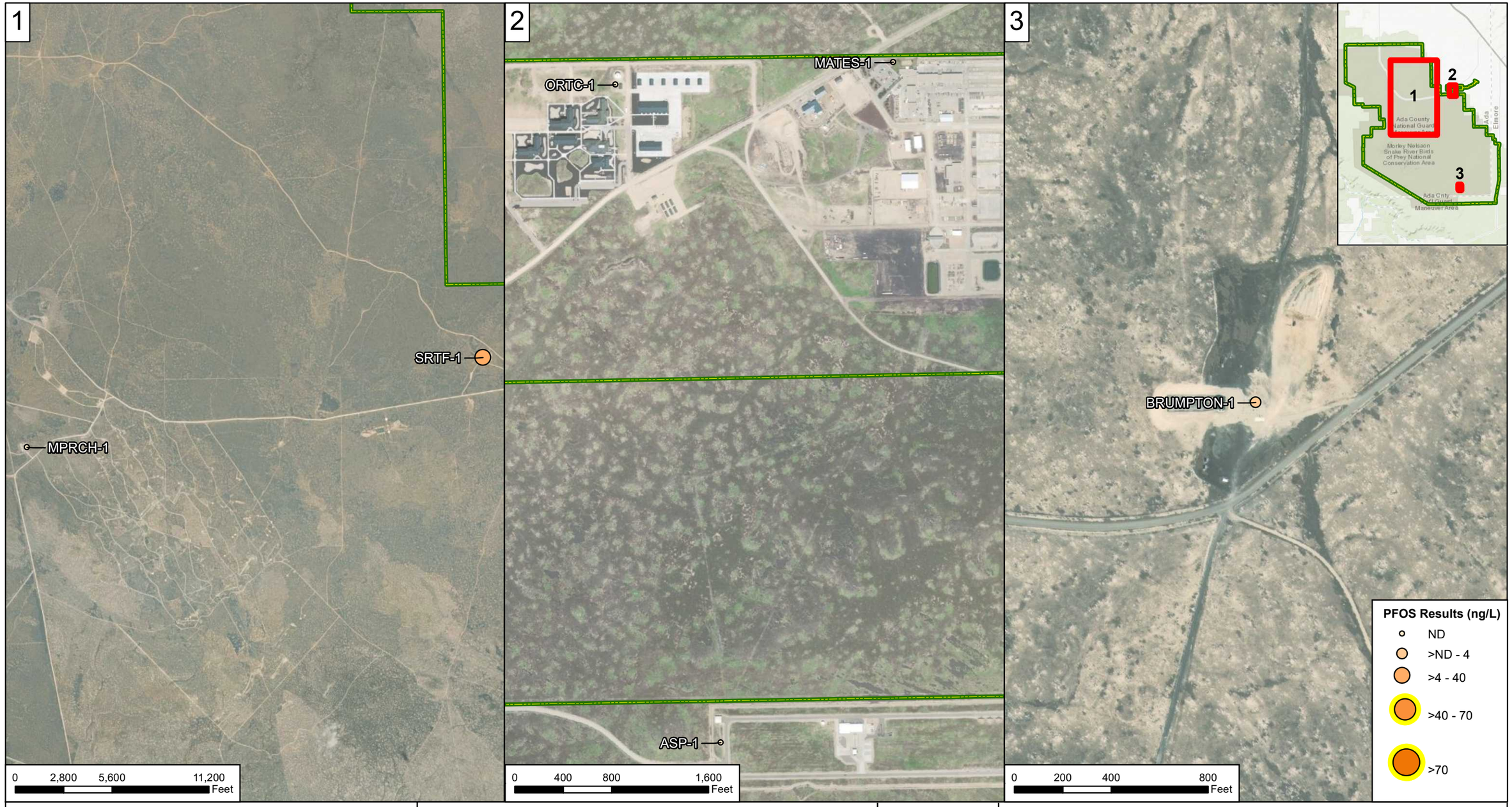
N

# PFOA Detections in Production Wells

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-16**

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|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 12/13/2022 | GIS BY | MS | 12/13/2022 |
| SCALE | 1:67,200 | CHK BY | CH | 12/13/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 12/13/2022 |

**Legend**

Facility Boundary

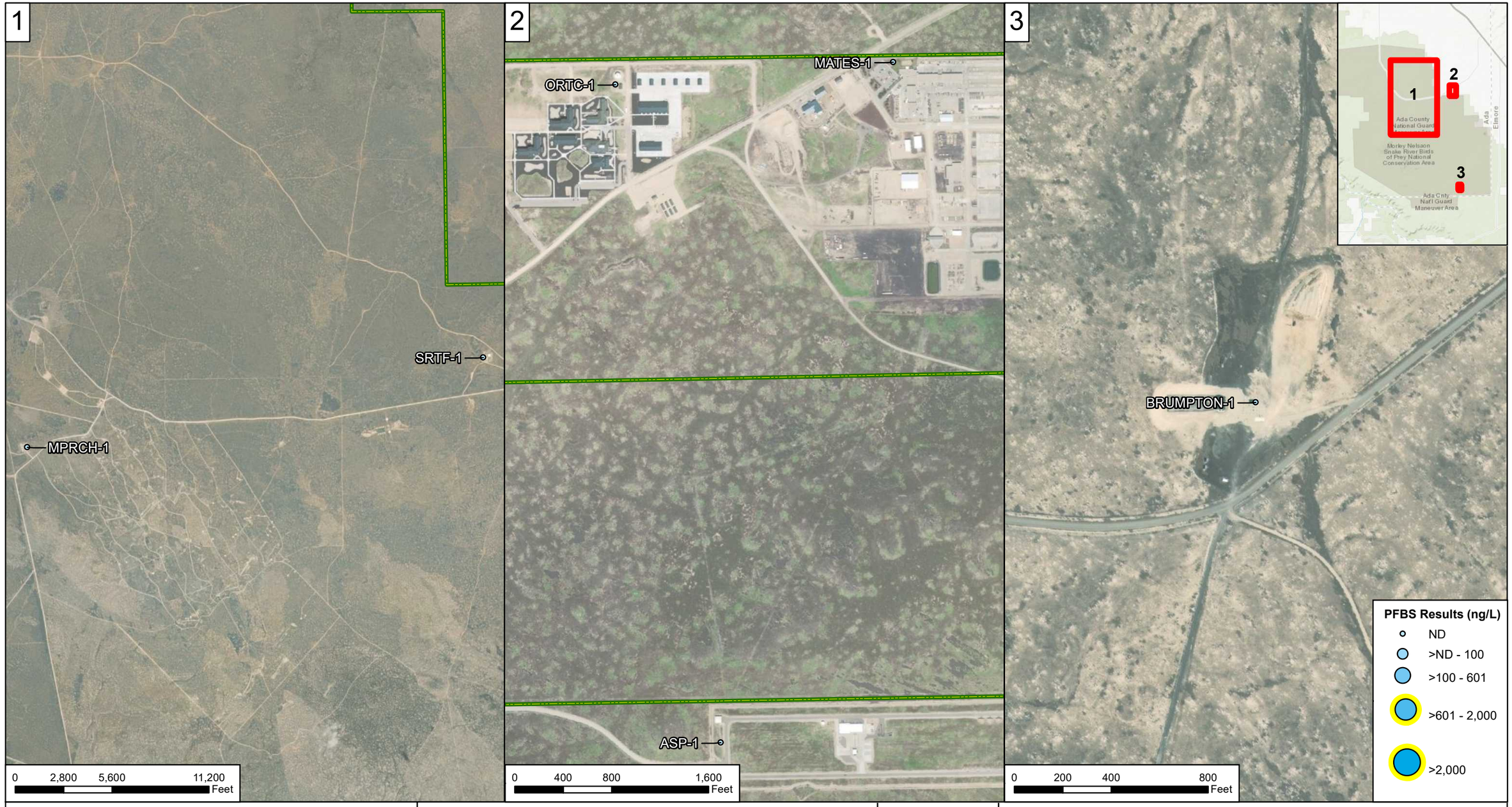
Exceedances of the OSD SL are depicted with a yellow halo.

N

## PFOS Detections in Production Wells

AECOM 12420 Milestone Center Drive Germantown, MD 20876

**Figure 6-17**




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 10/5/2022 | GIS BY | MS | 10/5/2022 |
| SCALE | 1:67,200 | CHK BY | CH | 10/5/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 10/5/2022 |

**Legend**

Facility Boundary

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

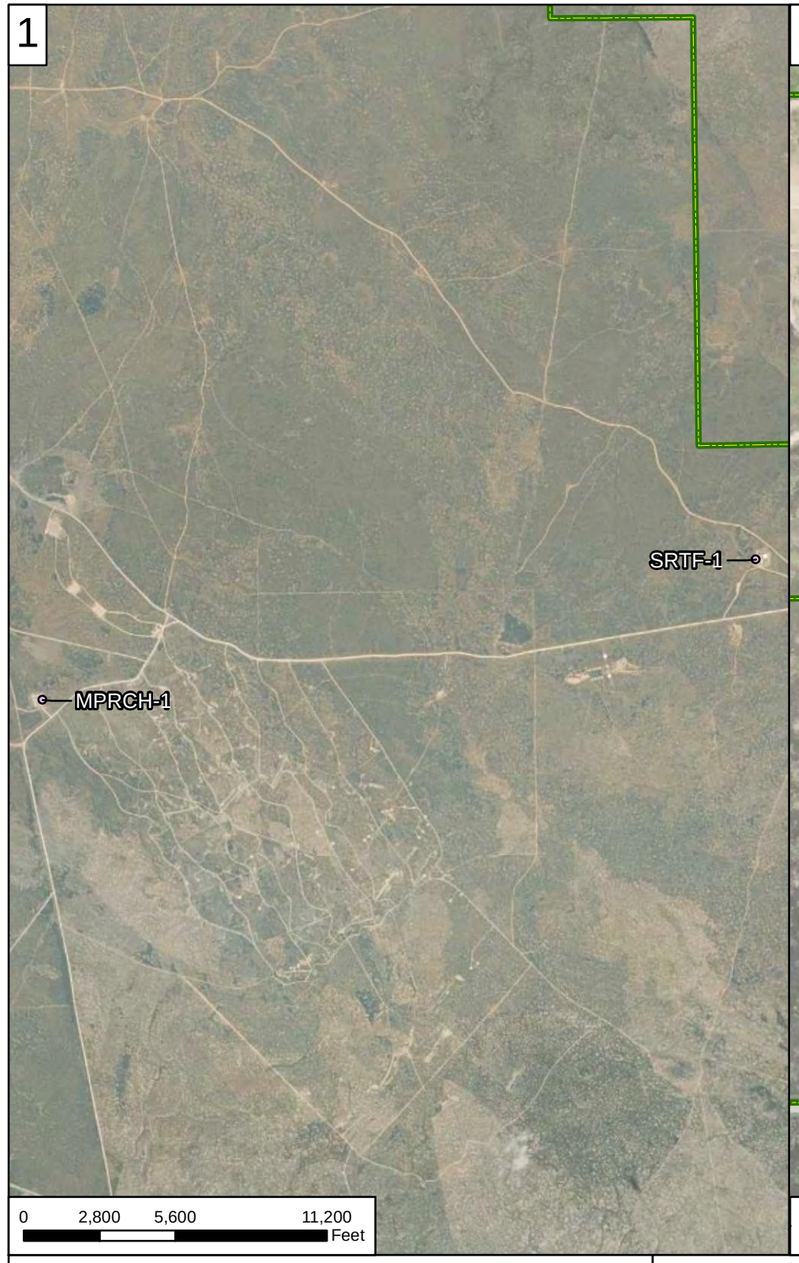
N

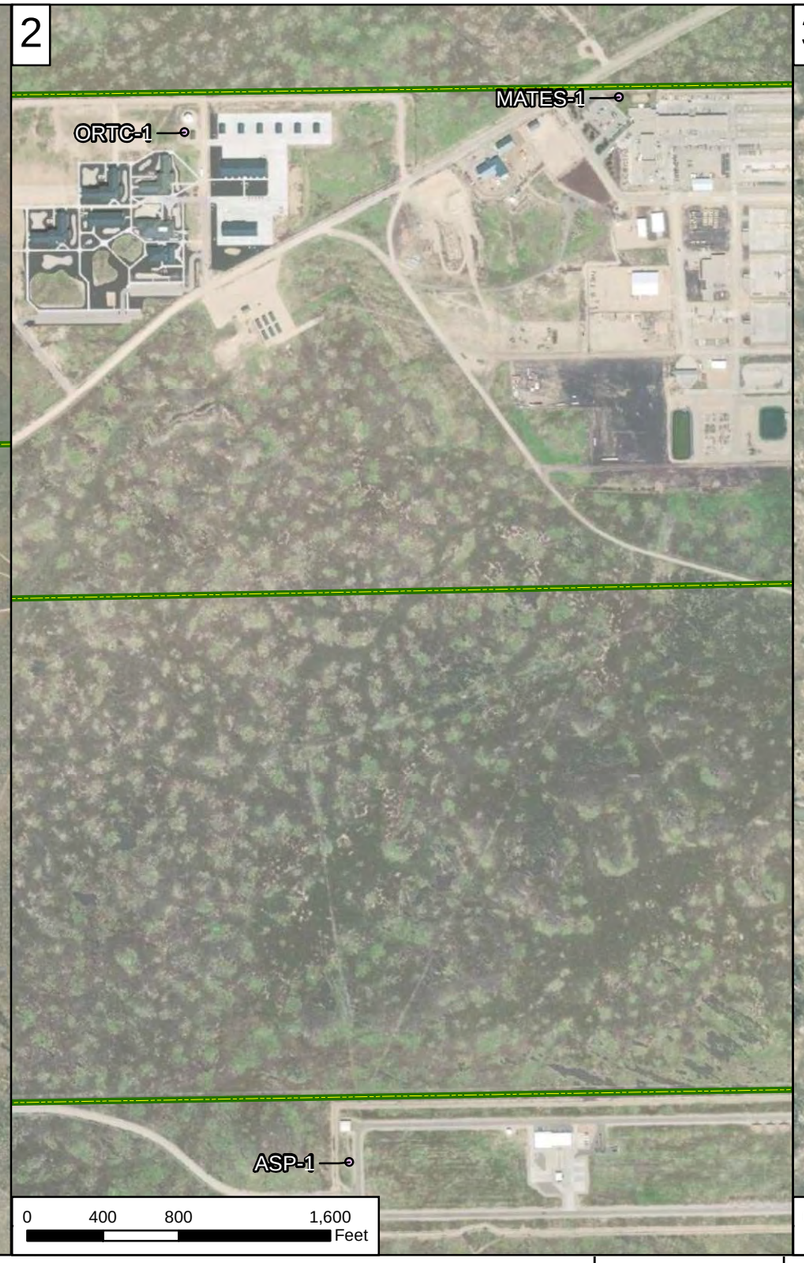
## PFBS Detections in Production Wells

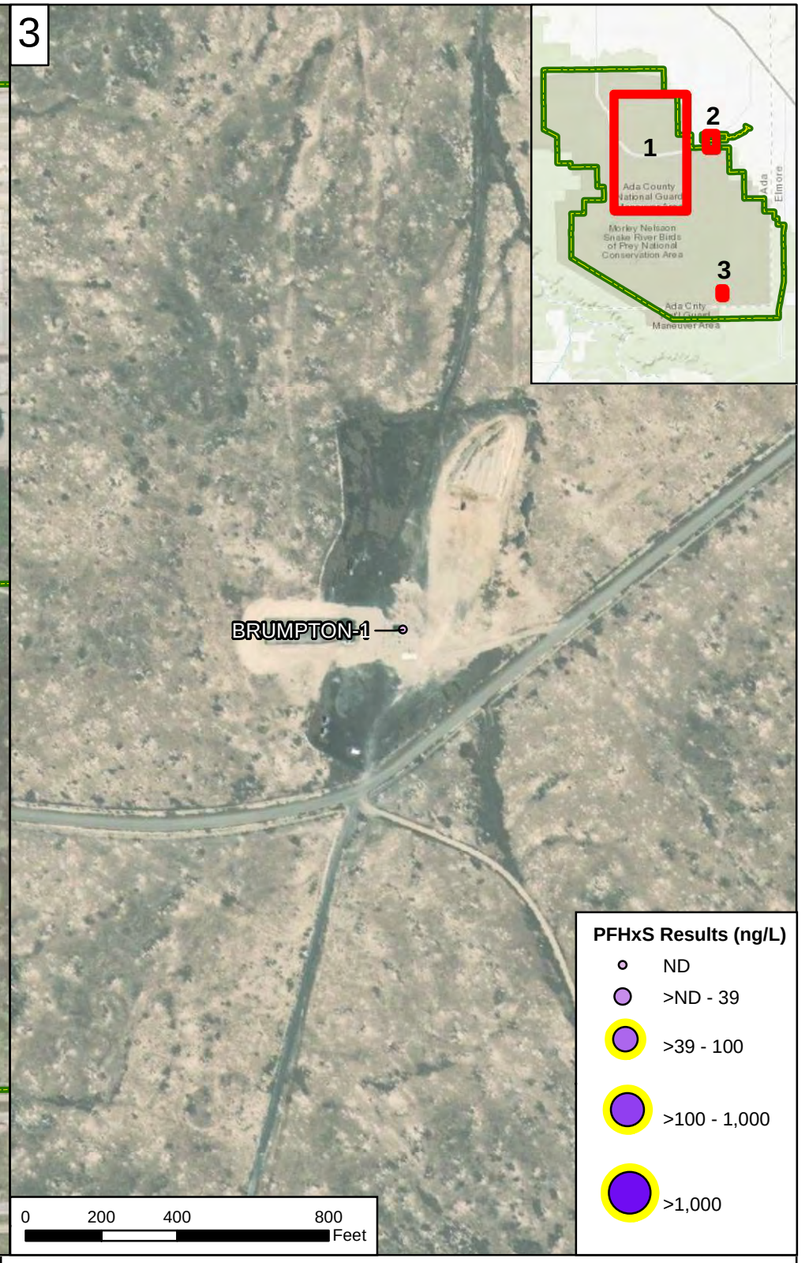
AECOM

12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-18**




**PFHxS Results (ng/L)**

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

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 10/4/2022 | GIS BY | MS | 10/4/2022 |
| SCALE | 1:67,200 | CHK BY | CH | 10/4/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 10/4/2022 |

**Legend**

Facility Boundary

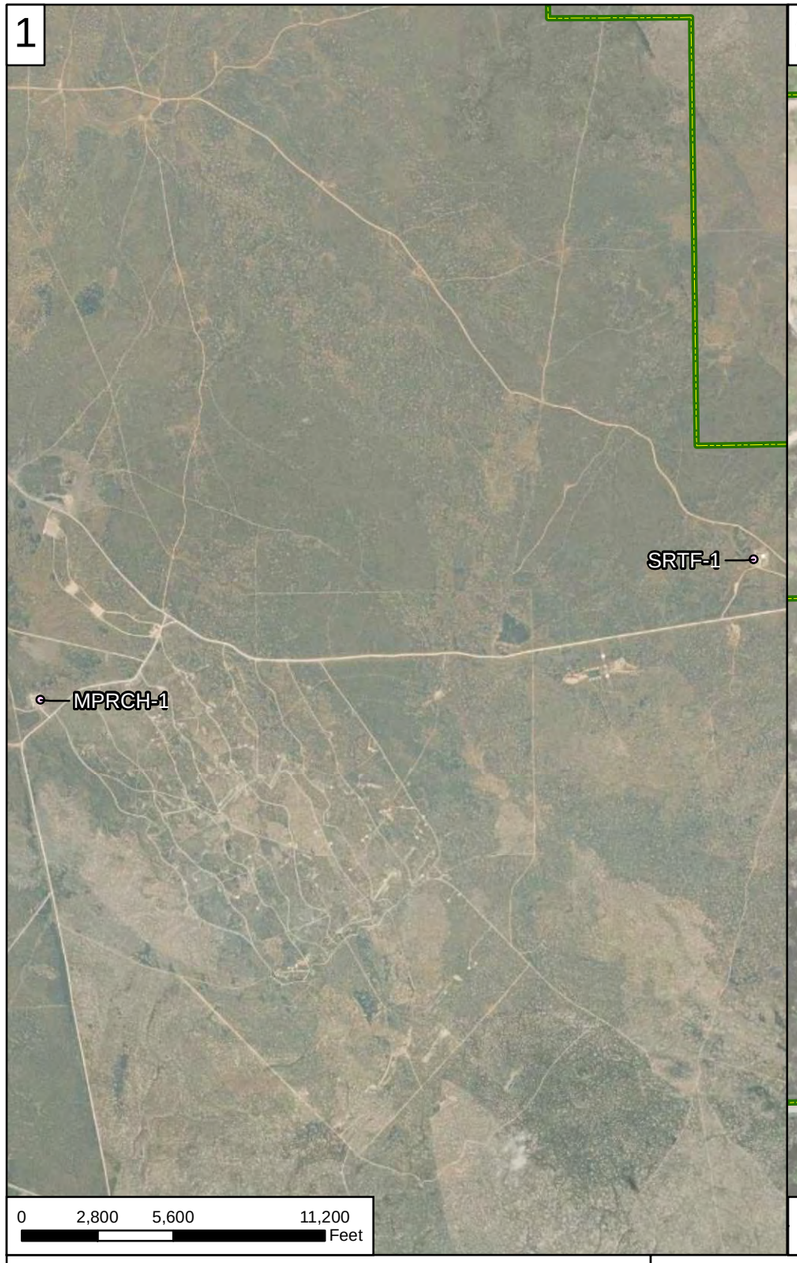
Exceedances of the OSD SL are depicted with a yellow halo.

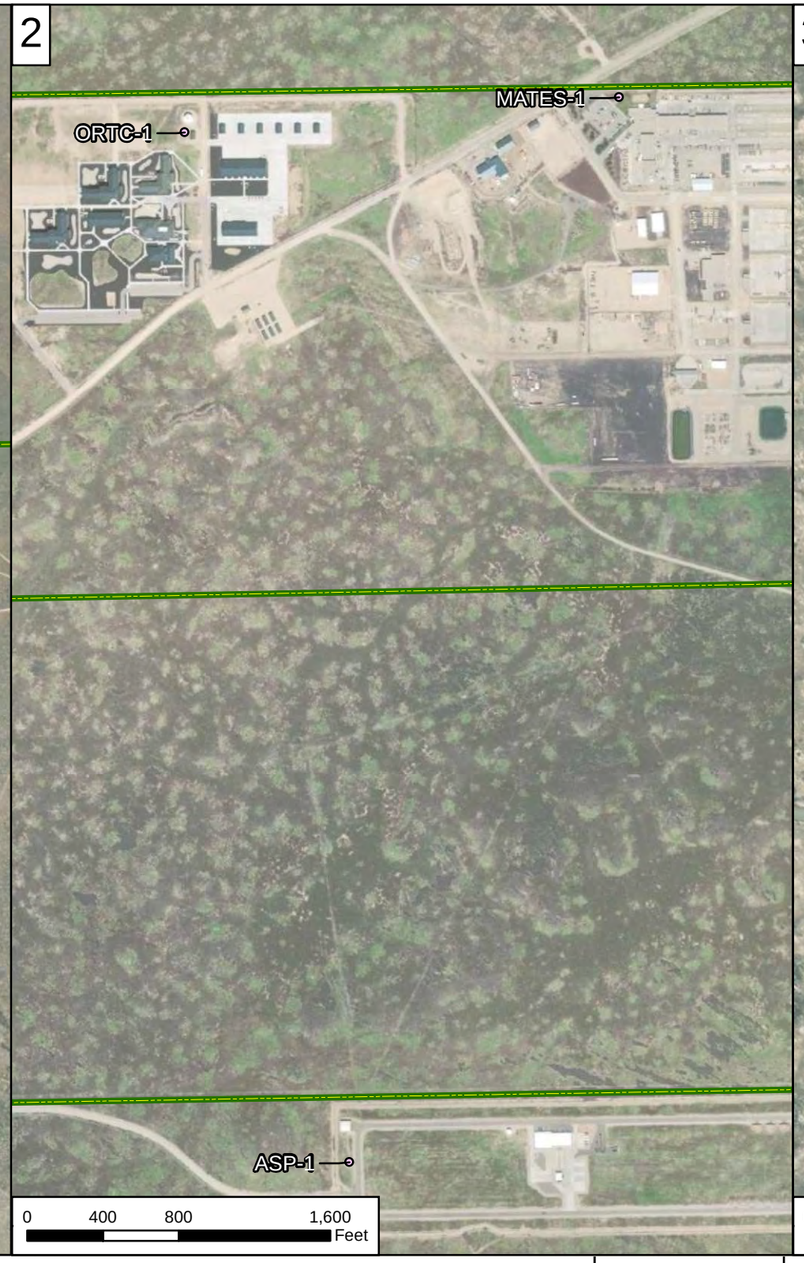
N

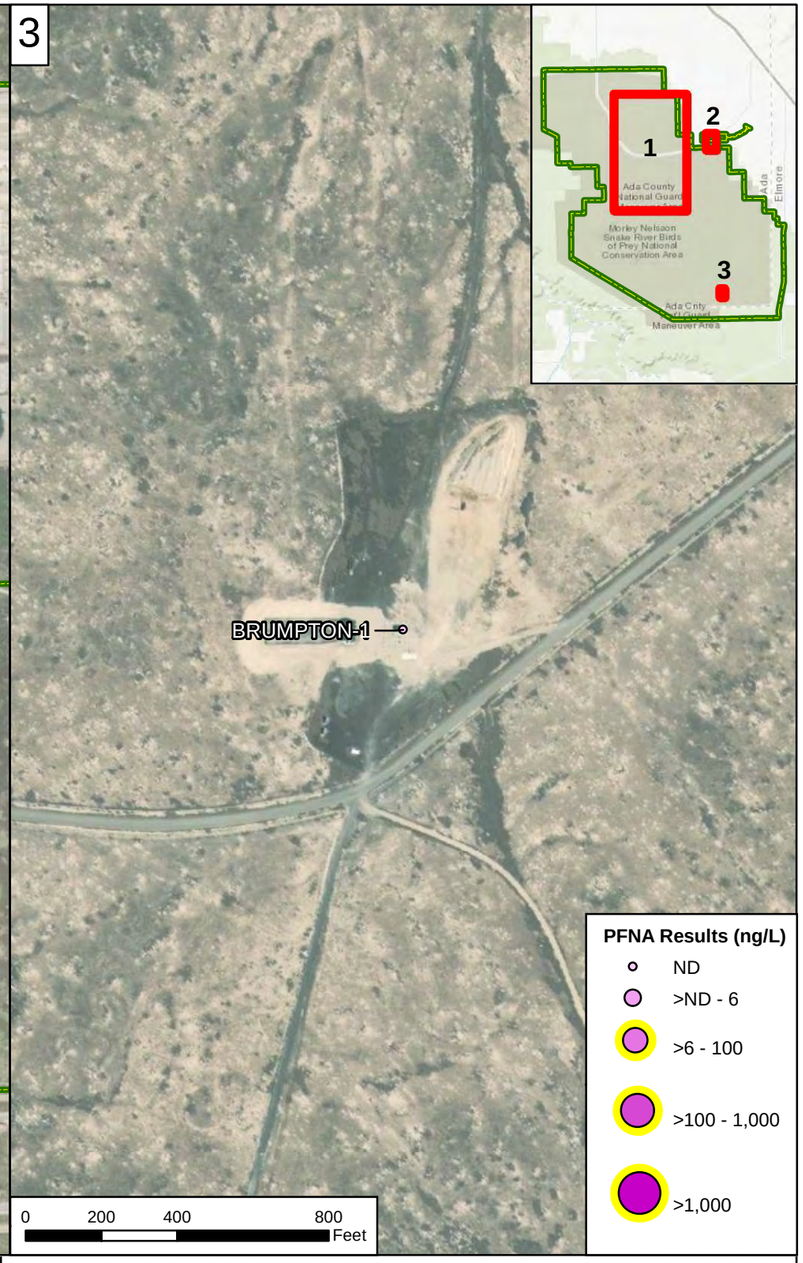
# PFHxS Detections in Production Wells

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-19**

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| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 10/4/2022 | GIS BY | MS | 10/4/2022 |
| SCALE | 1:67,200 | CHK BY | CH | 10/4/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 10/4/2022 |

**Legend**

Facility Boundary

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

N

# PFNA Detections in Production Wells

AECOM

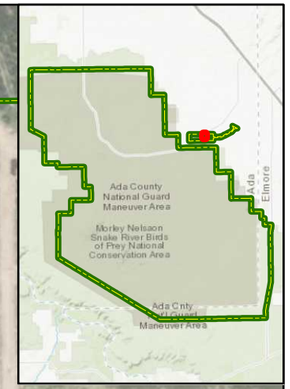
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-20**

PFOA

PFOS

PFBS




AOI3-2

AOI3-1

**PFOA Results (µg/Kg)**
- ND
- >ND - 19
- >19 - 250
- >250 - 2,500
- >2,500

**PFOS Results (µg/Kg)**
- ND
- >ND - 13
- >13 - 160
- >160 - 1,600
- >1,600

**PFBS Results (µg/Kg)**
- ND
- >ND - 10
- >10 - 1,900
- >1,900 - 25,000
- >25,000

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 10/4/2022 | GIS BY | MS | 10/4/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 10/4/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 10/4/2022 |

**Legend**
- Facility Boundary
- Combine Sanitary and Stormwater Sewer

0 100 200 400 Feet

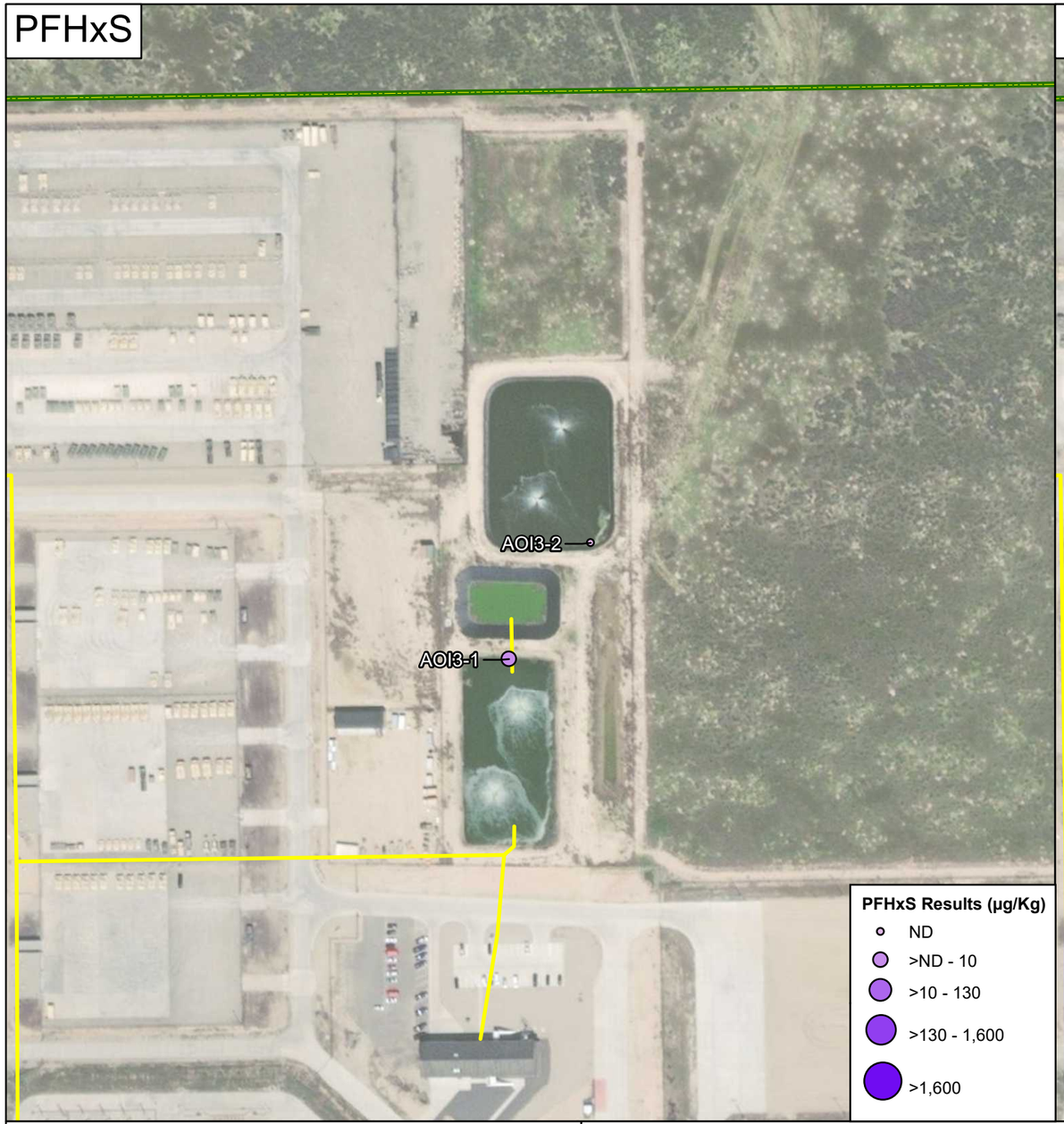
N

# PFOA, PFOS, and PFBS Detections in Sediment

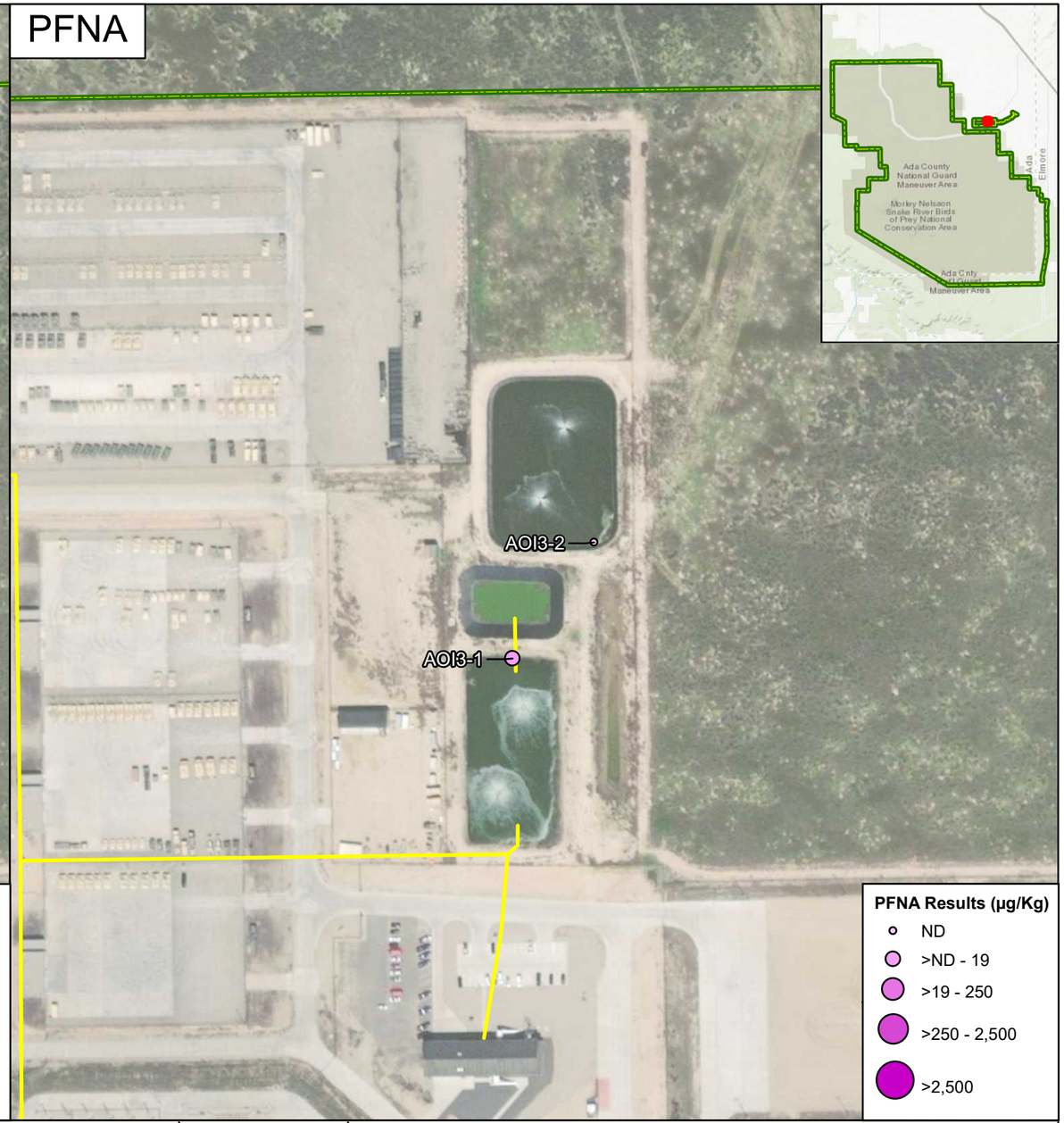
AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-21**

PFHxS




PFNA







**PFHxS Results (µg/Kg)**

- ND
- >ND - 10
- >10 - 130
- >130 - 1,600
- >1,600

**PFNA Results (µg/Kg)**

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

| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Site Inspection at Ochard Combat Training Center, ID | | | |
| REVISED | 10/4/2022 | GIS BY | MS | 10/4/2022 |
| SCALE | 1:2,400 | CHK BY | CH | 10/4/2022 |
| Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri | | PM | CM | 10/4/2022 |

**Legend**

- Facility Boundary
- Combine Sanitary and Stormwater Sewer

0 100 200 400 Feet

N

# PFHxS and PFNA Detections in Sediment

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-22**

# 7. Exposure Pathways

The conceptual site models (CSMs) for each AOI, revised based on the SI findings, are presented on **Figure 7-1** through **Figure 7-3**. Please note that while the CSM discussion assists in determining if a receptor may be impacted, the decision to move from SI to RI or interim action is determined based upon exceedances of the SLs for the relevant compounds and whether the release is more than likely attributable to the DoD. A CSM presents the current understanding of the site conditions with respect to known and suspected sources, potential transport mechanisms and migration pathways, and potentially exposed human receptors. A human exposure pathway is considered potentially complete when the following conditions are present:

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

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

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

## 7.1 Soil Exposure Pathway

The SI results in soil were used to determine whether a potentially complete pathway exists between the source and potential receptors at AOI 1, AOI 2, and AOI 3 based on the aforementioned criteria.

### 7.1.1 AOI 1

Between 2014 and 2015, AFFF may have been released at AOI 1 during fire training activities. AFFF was used to extinguish controlled burns of vehicles three to six times at the Range 2 FTA. During fire training, flames were suppressed with water and 3% AFFF.

PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in surface soil, and PFHxS was detected in subsurface soil at AOI 1. Site workers, construction workers, and trespassers could contact constituents in surface and subsurface soil via incidental ingestion and inhalation of dust. Therefore, the surface and subsurface soil exposure pathway for site workers, future construction workers, and trespassers are potentially complete. The CSM for AOI 1 is presented on **Figure 7-1**.

### 7.1.2 AOI 2

From 2013 to 2017, nozzle testing and foam proportion testing were conducted on the surface soil directly northeast and southwest of and adjacent to the OCTC Fire Station. Additionally, approximately four AFFF-equipped firefighting backpacks and 20 to 30 gallons of 3% AFFF on a firetruck were stored at the OCTC Fire Station at the time of the PA (AECOM, 2020). PFOA, PFOS, and PFBS were detected in surface soil at AOI 2, at concentrations orders of magnitude below the SLs.

PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in surface soil at AOI 2. Site workers, construction workers, and trespassers could contact constituents in surface soil via incidental ingestion and inhalation of dust. Therefore, the surface soil exposure pathway for site workers, future construction workers, and trespassers are potentially complete. The CSM for AOI 2 is presented on **Figure 7-2**.

### 7.1.3 AOI 3

AFFF released at the OCTC Fire Station may have been conveyed to AOI 3 via stormwater and sanitary drains. The lagoons are lined, and water has never been discharged from them, as the wastewater is left to evaporate.

PFOA, PFOS, PFHxS, and PFBS were detected in surface soil whereas PFOS, PFHxS, and PFBS were detected in subsurface soil at AOI 3. PFNA was not detected in soil. Site workers, construction workers, and trespassers could contact constituents in surface and subsurface soil via incidental ingestion and inhalation of dust. Therefore, the surface and subsurface soil exposure pathway for site workers, future construction workers, and trespassers are potentially complete. The CSM for AOI 3 is presented on **Figure 7-3**.

## 7.2 Groundwater Exposure Pathway

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

### 7.2.1 Production Wells

Production wells across the facility were sampled as part of the SI. Data from these wells are used to evaluate groundwater exposure routes at all three AOIs.

PFOS was detected in two of six sampled production wells: BRUMPTON and SRTF. PFOS was detected in groundwater at SRTF, at a concentration below the SL. PFOA, PFHxS, PFNA, and PFBS were not detected in any of the six production wells. The BRUMPTON well is located towards the southern facility boundary and approximately 10 miles south/southwest of the AOIs. The SRTF well is located directly between AOI 1 and AOIs 2 and 3, and it is approximately 2 miles from each AOI. The production wells at the facility are used to supply the facility's drinking water and do not supply off-facility residents. Therefore, the exposure pathway for site workers via ingestion is potentially complete and the pathways for residents, trespassers, and recreational users are incomplete. Depths to water measured in July 2021 during the SI ranged from 423.2 to

775 feet bgs. Therefore, groundwater is too deep to be encountered during construction activities, and the ingestion exposure pathway for construction workers is incomplete. The CSMs for AOI 1, AOI 2, and AOI 3 are presented on **Figure 7-1** through **Figure 7-3**.

## 7.3 Sediment Exposure Pathway

The SI results in surface water and sediment were used to determine whether a potentially complete pathway exists between the source and potential receptors at each AOI based on the aforementioned criteria. At AOIs where surface water and sediment samples were not collected, data from downgradient AOIs or the SI results in soil and groundwater, in combination with knowledge of the fate and transport properties of PFAS, were used to determine whether a potentially complete pathway exists between the source and potential receptors.

### 7.3.1 AOI 1

The closest surface water body is an unnamed stream over 2 miles west/northwest of AOI 1. While PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in soil at AOI 1, it is unlikely that PFAS migrated 2 miles via overland flow. Therefore, the surface water and sediment ingestion exposure pathway for all receptors are considered incomplete. The CSM for AOI 1 is presented on **Figure 7-1.**

### 7.3.2 AOI 2

AFFF released at AOI 2 may have drained into the stormwater and sanitary sewers, which flow into the Wastewater Lagoons. Consequently, surface water and sediment pathways for AOI 2 are evaluated as part of AOI 3. The CSM for AOI 2 is presented on **Figure 7-2**.

### 7.3.3 AOI 3

PFOA, PFOS, PFHxS, PFNA, and PFBS were detected in sediment samples collected from the southern wastewater lagoon at AOI 3. Surface water samples were not collected, but PFAS are water soluble and may have been leached from the sediment into the surface water. Based on the SI results, the ingestion pathway for surface water and sediment is potentially complete for future construction workers and trespassers. The lagoon system drains via evaporation, thus all pathways for off-facility receptors are incomplete. Site workers and trespassers are unlikely to access the Wastewater Lagoons as they are fenced and secured; therefore, the ingestion pathway is considered incomplete. The CSM for AOI 3 is presented on **Figure 7-3**.

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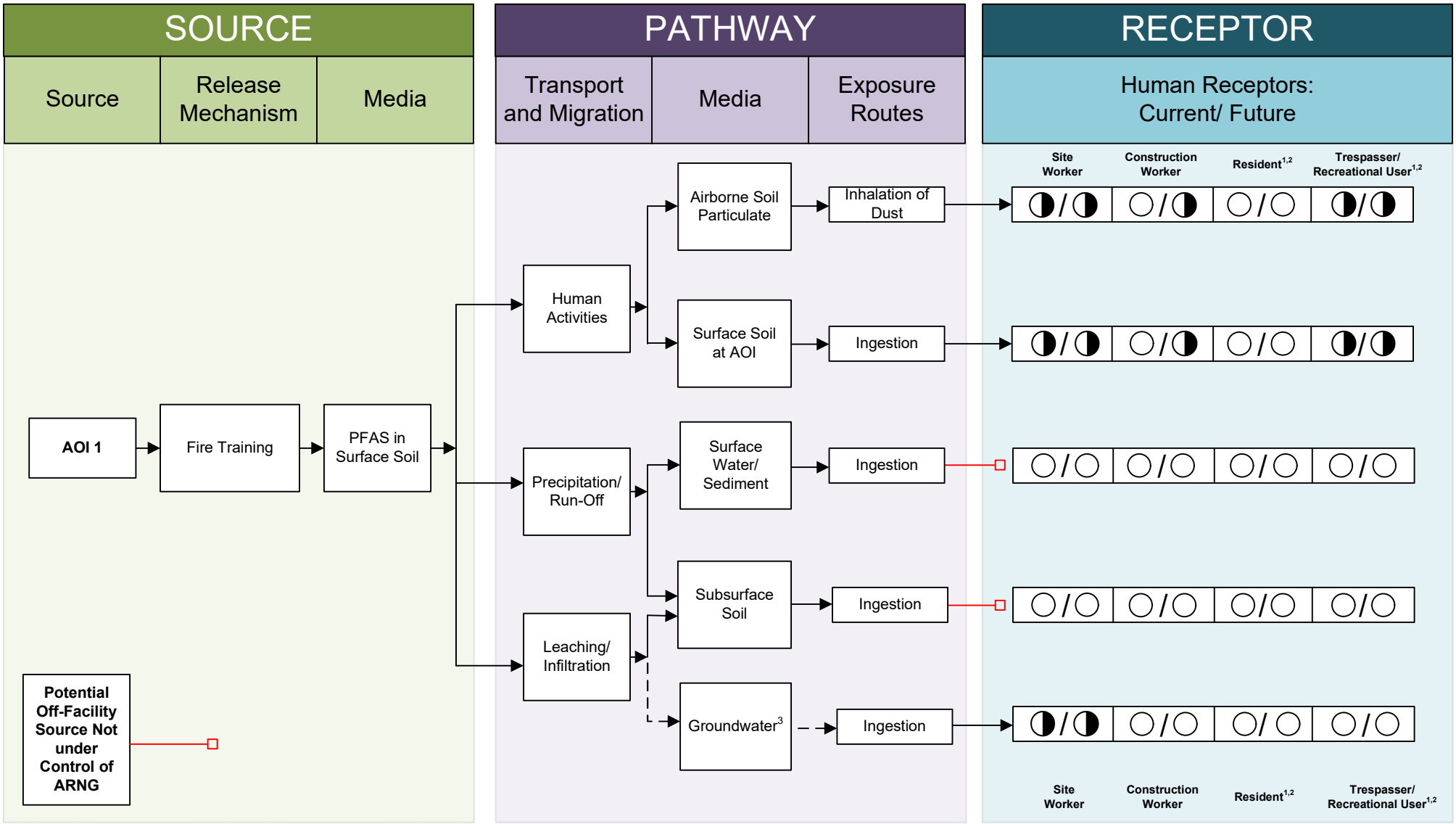


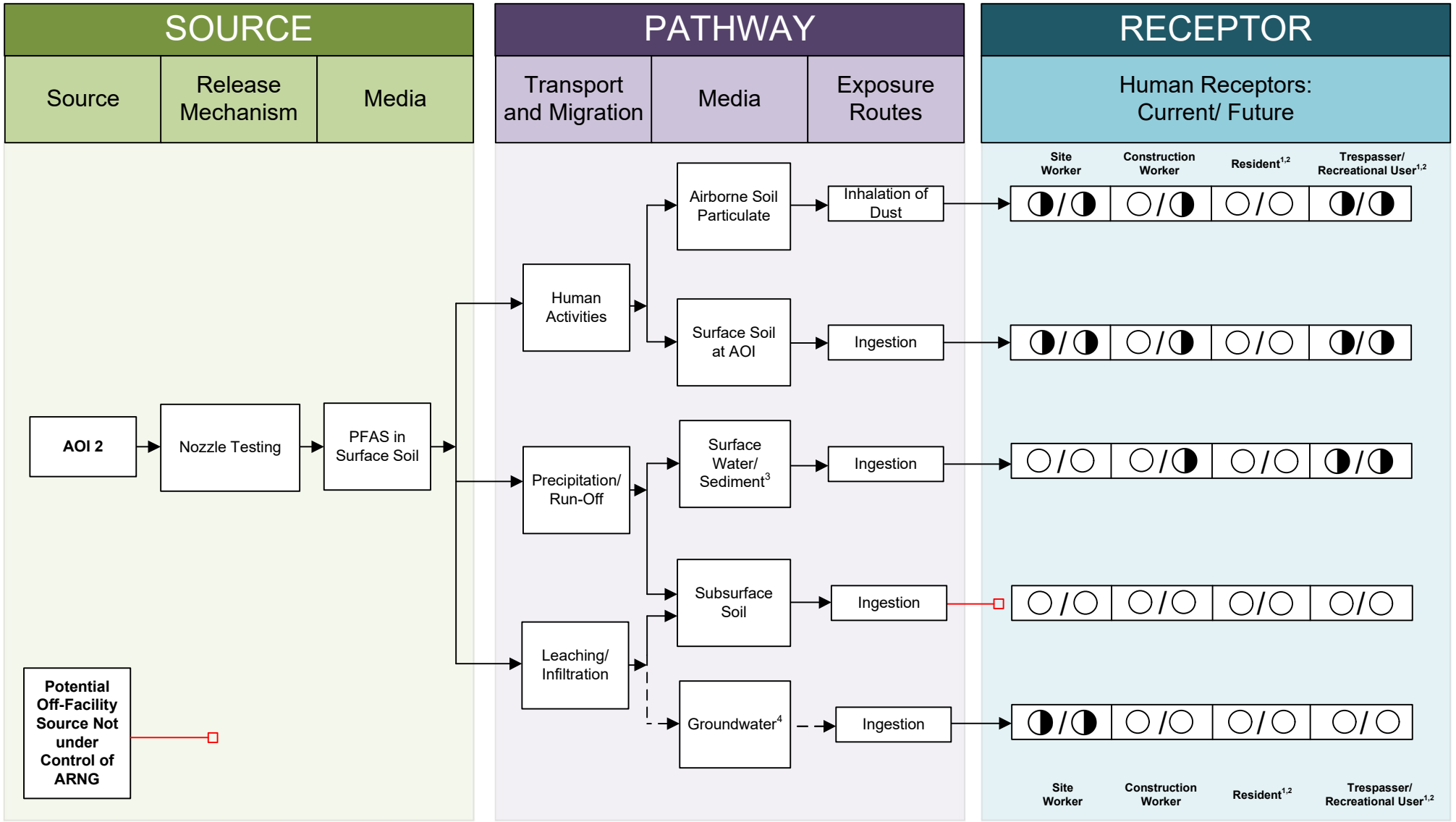

**LEGEND**

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

**NOTES**

1. The resident and recreational users refer to off-site receptors.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. Groundwater pathways are assessed using facility-wide groundwater data.

**Figure 7-1**
Conceptual Site Model, AOI 1
Orchard Combat Training Center, Idaho



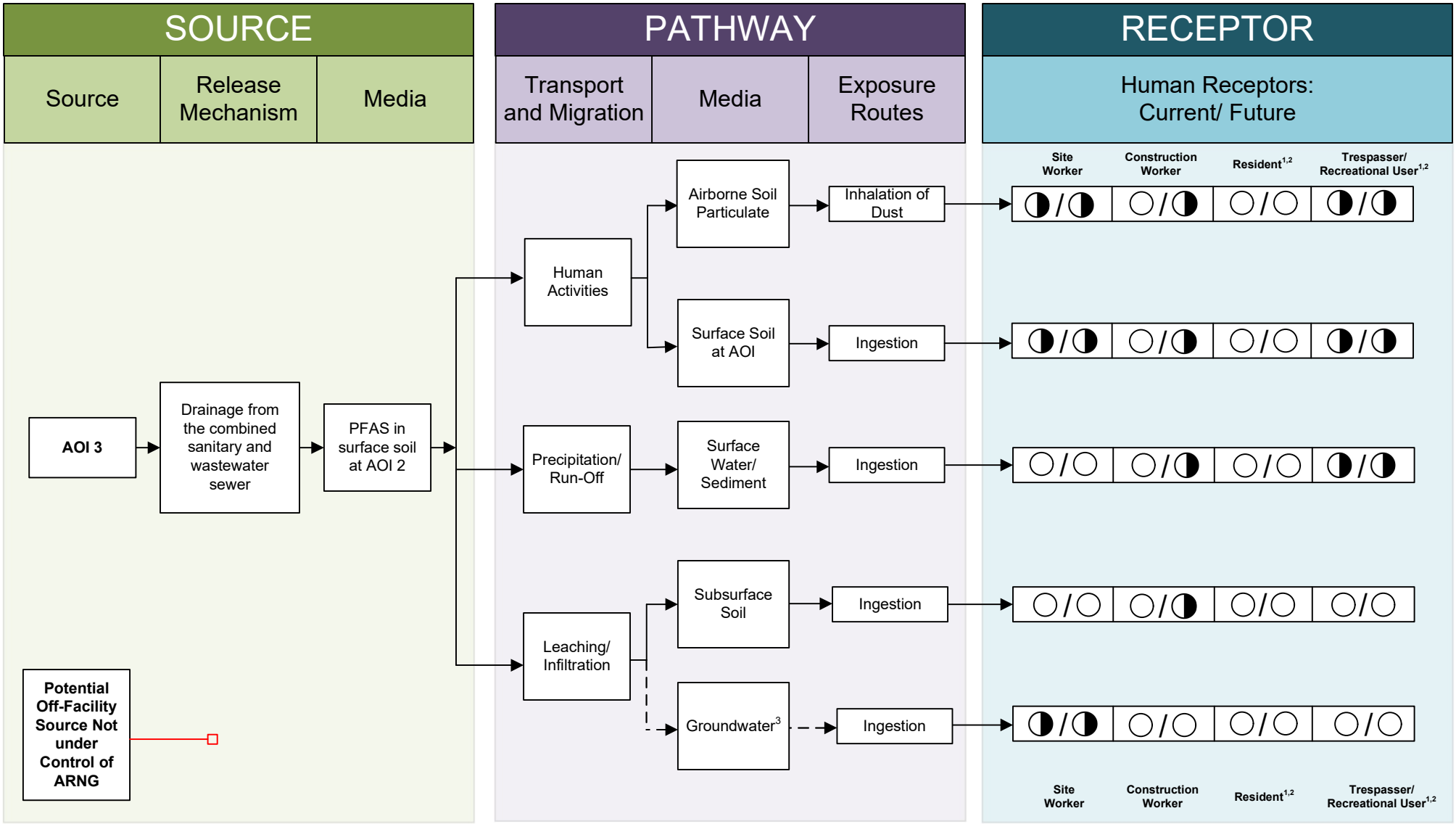

**LEGEND**

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

**NOTES**

1. The resident and recreational users refer to off-site receptors.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. Surface water and sediment pathways evaluated with AOI 3.
4. Groundwater pathways are assessed using facility-wide groundwater data.

**Figure 7-2**
Conceptual Site Model, AOI 2
Orchard Combat Training Center, Idaho




**LEGEND**

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

**NOTES**

1. The resident and recreational users refer to off-site receptors.
2. Inhalation of dust for off-site receptors is likely insignificant.
3. Groundwater pathways are assessed using facility-wide groundwater data.

**Figure 7-3**
Conceptual Site Model, AOI 3
Orchard Combat Training Center, Idaho

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# 8. Summary and Outcome

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

## 8.1 SI Activities

The SI field activities were conducted from 26 to 30 July 2021 and consisted of utility clearance, direct push boring, soil sample collection, sediment sample collection, groundwater sample collection, and land surveying. Field activities were conducted in accordance with the SI QAPP Addendum (AECOM, 2021a), except as previously noted in **Section 5.9**.

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

- Twenty-eight (28) soil samples from 15 boring locations;
- Six groundwater samples from six pre-existing production well locations;
- Two sediment samples from two locations; and
- Twenty (20) 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 AOIs 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 CSMs were refined to assess whether a potentially complete pathway exists between the source and potential receptors for potential exposure at the AOIs, which are described in **Section 7**.

## 8.2 Outcome

Based on the results of this SI, no further evaluation under CERCLA is warranted for each of the three AOIs at this time. Based on the CSMs developed and revised in light of the SI findings, there is potential for exposure to drinking water receptors from production wells from sources on the facility resulting from historical DoD activities. Sample analytical concentrations collected during the SI were compared to the project SLs in soil and groundwater, as described in **Table 6-1**. A summary of the results of the SI data relative to the SLs is as follows:

- At AOI 1:
    - The detected concentrations of PFOA, PFOS, PFHxS, PFNA and PFBS in soil at AOI 1 were below their SLs. Based on the results of the SI, no further evaluation of AOI 1 is warranted.
- At AOI 2:
    - The detected concentrations of PFOA, PFOS, PFHxS, PFNA and PFBS in soil at AOI 2 were below their SLs. Based on the results of the SI, no further evaluation of AOI 2 is warranted.

- At AOI 3:
    - The detected concentrations of PFOA, PFOS, PFHxS, and PFBS in soil at AOI 3 were below their SLs. PFNA was not detected. Based on the results of the SI, no further evaluation of AOI 3 is warranted.
- At Production Wells:
    - PFOS was detected in two of six sampled production wells: the BRUMPTON well and the SRTF well, at concentrations below its SL. PFOA, PFHxS, PFNA, and PFBS were not detected in any of the six production wells. Based on the results of the SI, no further evaluation of the SRTF and BRUMPTON production wells is warranted at this time. However, in accordance with Army guidance, because PFOS was detected in two of the production wells above the method reporting limit, but below the health advisory level, IDARNG will sample the production wells quarterly for one year and once every two years thereafter until the results are below the method reporting limits. This will allow IDARNG to monitor and evaluate any changes in the drinking water pathway at OCTC.

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

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

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

| AOI | Potential Release Area | Soil – Source Area | Groundwater – Source Area | Groundwater – Facility Boundary | Future Action |
|---|---|---|---|---|---|
| **1** | Range 2 FTA | ◐ | NA | ◐ | No further action |
| **2** | OCTC Fire Station | ◐ | NA | ◐ | No further action |
| **3** | Wastewater Lagoons | ◐ | NA | ◐ | No further action |
| **Production Wells** | SRTF-1 | ○ | Unknown | ◐ | No further action |

**Legend:**

● = detected; exceedance of the screening levels

◐ = detected; no exceedance of the screening levels

○ = not detected

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