FINAL
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

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)
ARNG Installations, Nationwide

December 2023

Prepared for:

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UNCLASSIFIED

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
%	Percent
µg/kg	Microgram(s) per kilogram
µg/L	Microgram(s) per liter
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	Aqueous Film-Forming Foam
amsl	Above mean sea level
ANG	Air National Guard
AOI	Area of Interest
ARNG	Army National Guard
ASTM	American Society for Testing and Materials
bgs	Below ground surface
blvd	Boulevard
bmsl	Below mean sea level
btoc	Below top of casing
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
DOE	Department of Energy
DOT	Department of Transportation
DPT	Direct-push technology
DQI	Data quality indicator
DQO	Data quality objective
DUA	Data Usability Assessment
EA	EA Engineering, Science, and Technology, Inc., PBC
EIS	Extraction internal standards
ELAP	Environmental Laboratory Accreditation Program
EM	Engineer Manual
EB	Equipment Blank
EDR™	Environmental Data Resources
EPA	Environmental Protection Agency
FB	Field blank
FedEx	Federal Express
ft	Foot (feet)
ft/ft	foot per foot
FMS	Field Maintenance Shop

GIS	Geographic information system
GPR	Ground-penetrating radar
HAZMAT	Hazardous Material
HDPE	High-density polyethylene
HFPO-DA	Hexafluoropropylene oxide dimer acid
HQ	Hazard Quotient
HSA	Hollow Stem Auger
IDW	Investigation-derived waste
ITRC	Interstate Technology Regulatory Council
LC/MS/MS	Liquid chromatography tandem mass spectrometry
LCS	Laboratory control sample
LCSD	Laboratory control sample duplicate
MS	Matrix spike
MSD	Matrix spike duplicate
NDEP	Nevada Division of Environmental Protection
NELAP	National Environmental Laboratory Accreditation Program
ng/L	Nanogram(s) per liter
No.	Number
NOI	Notice of intent
NVARNG	Nevada Army National Guard
NVDWR	Nevada Division of Water Resources
OSD	Office of the Secretary of Defense
PA	preliminary assessment
PFAS	per- and polyfluoroalkyl substances
PFBA	Perfluorobutanoic acid
PFBS	perfluorobutanesulfonic acid
PFHxA	Perfluorohexanoic Acid
PFTeDA	perfluorotetradecanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFUnA	perfluoroundecanoic acid
PID	photoionization detector
PVC	polyvinyl chloride
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
QSM	Quality Systems Manual

RC	Readiness Center
Rd	Road
RI	Remedial investigation
RPD	Relative percent difference
RTAA	Reno-Tahoe Airport Authority
SI	Site Inspection
SL	Screening level
SWPPP	Storm Water Pollution Prevention Plan
TCRA	Time Critical Removal Action
TMWA	Truckee Meadows Water Authority
TOC	Total organic carbon
TPP	Technical Project Planning
UFP	Uniform Federal Policy
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
W	West
Wood	Wood Environment & Infrastructure Solutions, Inc.
WSP	WSP USA Environment & Infrastructure, Inc.

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EXECUTIVE SUMMARY

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

The PA identified one Area of Interest (AOI) and a second AOI was identified during the SI planning process. The AOIs are where PFAS-containing materials may have been used, stored, disposed, or released historically (see **Table ES-2** for the AOI locations). The objective of the SI was to identify whether there has been a release to the environment from the AOIs and determine whether further investigation is warranted, a removal action is required to address immediate threats, or no further action is required based on a comparison of SI results to SLs for the relevant compounds. This SI was completed at the Reno Army Aviation Support Facility (AASF) in Reno, Nevada and determined further investigation is warranted for AOI 1: Former Firetruck Bay and Rotary Wing Parking Area and no further action is warranted for AOI 2: Stockpiled Soils. The Reno AASF will also be referred to as the “Facility” throughout this document.

The Facility, operated by the Nevada ARNG (NVARNG), encompasses approximately 63 acres in the southwest portion of Washoe County, Nevada, about 13 miles northwest of downtown Reno, and is directly adjacent to Reno-Stead Airport. The Facility and properties immediately surrounding the Reno AASF are owned by the Reno-Tahoe Airport Authority (RTAA), with Army Aviation Drive to the west, and Reno-Stead Airport to the south and east of the Facility. NVARNG rented hangars and operated helicopters from 1972 to 1984 at the former Stead Air Force Base, which is now the Reno-Stead Airport. In 1984, the current Facility was constructed on land leased to the NVARNG by the RTAA and exists and operates as part of the Harry Reid Readiness Training Center. The Facility includes multiple buildings, parking lots, and a Rotary Wing Parking Apron (AECOM, 2020).

The PA identified one AOI for investigation during the SI phase and an additional AOI was added following SI scoping discussions. SI sampling results from the two AOIs were compared to OSD SLs. **Table ES-2** summarizes the SI results for the AOIs. Based on the results of this SI,

[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.

and following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, further evaluation is warranted in a Remedial Investigation (RI) for AOI 1, and no further action is warranted for AOI 2.

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

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

Notes:

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

μg/kg = microgram(s) per kilogram
bgs = below ground surface
ng/L = nanogram(s) per liter

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	Former Firetruck Bay and Rotary Wing Parking Area	◐	●	◐	Proceed to Remedial Investigation
2	Stockpiled Soils	○	◐	◐	No further Action

Legend:

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

1. INTRODUCTION

1.1 PROJECT AUTHORIZATION

The Army National Guard (ARNG) G-9 is the lead agency in performing Preliminary Assessments (PAs) and Site Inspections (SIs) at ARNG facilities nationwide based on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on the six compounds presented in the memorandum regarding Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (Assistant Secretary of Defense, 2022) from the Office of the Secretary of Defense (OSD) dated 6 July 2022. The six compounds listed in the OSD memorandum are referred to as "relevant compounds" throughout this document and include perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA)[1] at ARNG facilities nationwide. The ARNG performed this SI at the Reno Army Aviation Support Facility (AASF) in Reno, Nevada. The Reno AASF is also referred to as the "Facility" throughout this report.

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

1.2 SITE INSPECTION PURPOSE

A PA was performed at the Reno AASF (AECOM Technical Services, Inc. [AECOM] 2020) that identified one Area of Interest (AOI) where PFAS-containing materials may have been used, stored, disposed, or released historically, and a second AOI was identified during the SI planning process. 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 during the SI scoping 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

Reno AASF is located at the Harry Reid Readiness Training Center and occupies approximately 63 acres in the southwest portion of Washoe County, Nevada, about 13 miles northwest of downtown Reno, and is directly adjacent to Reno-Stead Airport (**Figure 2-1**). The Facility and properties immediately surrounding the AASF are owned by the Reno-Tahoe Airport Authority (RTAA), with Army Aviation Drive to the west, and Reno-Stead Airport to the south and east of the Facility.

Nevada Army National Guard (NVARNG) rented hangars and operated helicopters from 1972 to 1984 at the former Stead Air Force Base, which is now the Reno-Stead Airport. In 1984, the current Facility was constructed on land leased to the NVARNG by the RTAA and exists and operates as part of the Harry Reid Readiness Training Center. The Facility includes multiple buildings, parking lots, and a Rotary Wing Parking Apron that are used by NVARNG to store and maintain rotary aircraft, and to train and ensure the readiness of Facility personnel. The area is fenced and has controlled access (AECOM, 2020).

2.2 FACILITY ENVIRONMENTAL SETTING

Reno AASF is located in the southwestern portion of Washoe County, Nevada and is approximately 4,987 feet (ft) above mean sea level (amsl) (**Figure 2-2**). The approximate geographic coordinates for the center of the property are 39°40’22.10” N; 119°53’29.52” W. The majority of the Facility is developed with buildings, concrete, and asphalt features.

The Facility and neighboring City of Reno is located within the Truckee Meadows, which is a basin bounded by the Sierra Nevada on the western edge of the Great Basin. Truckee Meadows covers approximately 94 square miles in western Nevada and is bounded on the west by the Carson Range, on the east by the Virginia Range and Pine Nut Mountains, and on the south by the Steamboat Hills and Peavine Peak (AECOM, 2020).

2.2.1 Geology

Reno AASF is located in the northern portion of the Lemmon Valley. The primary structural indicators in the Lemmon Valley area are north-to-northeast-trending valleys between mountain ranges. A major fault in the area, the Airport fault, divides the valley into two structural areas. The fault also approximates the divide between two hydrologic subareas in the valley: the East Lemmon subarea is in the eastern section of the valley, and the Silver Lake subarea is to the west. The U.S. Geological Survey (USGS) describes the shallow geological deposits of this region as stratified sequences of quaternary alluvium (AECOM, 2020).

This alluvium consists of unconsolidated gravel, sand, silt, and clay deposits. During the SI, unconsolidated sediments at the Facility were dominated by poorly graded and silty sands with interbedded layers of medium plastic fines (silt/clay) and clayey sands. The borings were completed at depths between 45 and 71 ft below ground surface (bgs).

A sample for grain size analysis was collected at one location per AOI, AOI01-04 and AOI02-01 and analyzed via American Society for Testing and Materials (ASTM) Method D-422. The results for AOI 1 indicate that the soil samples are comprised primarily of sand (38.3%) and silt (43%) with clay (16.6%). The results for AOI 2 indicate that the soil samples are comprised primarily of silt (49.5%) and clay (26.5%) with sand (23.9%). These results and Facility observations are consistent with the reported depositional environment of the region. The thickness of the alluvium is generally 200 to 400 ft before bedrock.

2.2.2 Hydrogeology

The Reno AASF is located within the Lemmon Valley Hydrographic Basin made up of two structural areas: the east Lemmon subarea and the Silver Lake subarea. These two hydrographic basins that comprise Lemmon Valley represent two separate groundwater reservoirs. In both basins, groundwater resources exist in fractured consolidated rocks in the uplands adjacent to and at depth beneath valley-fill, and in valley-fill alluvium that partly fills the structural depression underlying Lemmon Valley. The valley-fill alluvium represents the more productive and most important aquifer in both hydrographic basins due to its overall transmissivity, permeability, and extent. The thickness of the alluvial deposits is roughly 200 to 400 ft thick before bedrock is encountered. According to the Nevada Division of Water Resources online database, groundwater flow in the region flows southwest and the groundwater depth is approximately 30 to 50 ft below ground surface (bgs) (**Figure 2-3**). The depth to static groundwater in July 2022 observed during the SI ranged from approximately 41 to 60 ft bgs. Groundwater elevations from the SI are presented on **Figure 2-4**. Groundwater flow across the Facility may differ from the regional groundwater flow (southwest) due to the complex geology. Based on groundwater elevations calculated using depth to groundwater measurements, top of casing field measurements, and survey data collected during the SI, groundwater flow is generally to the north and west-northwest with an approximate gradient of 0.01 foot per foot (ft/ft). Survey deviations that affect top of casing elevation precision are documented in Section 5.8.

Groundwater sources and storage provide between 5 and 15% of the Truckee Meadows Water Authority (TMWA) water supply. TMWA owns 33 production wells that have a combined capacity of 63 million gallons per day. The wells are used for summer peak times and provide off-river reliability. In winter months, the wells are used for recharge as treated water is injected into the subsurface. TMWA operates an aquifer storage and recovery program in Lemmon Valley – Western Part. This project is associated with Nevada State Engineer's Recharge Permit R-15. The recharge permit was issued on 19 November 2008 and allows for the recharge of up to 1,000 acre-feet annually of Truckee River surface water imported to Lemmon Valley from Truckee Meadows. Permit R-15 also provides for four injection/recovery wells in the system located near the former Stead Air Force Base.

As part of the PA, Environmental Data Resources (EDR™) conducted a well search for a 1-mile radius surrounding the Facility. Using additional online resources, such as state and local geographic information system (GIS) databases, wells were researched to a 4-mile radius of the Facility. According to data received from the EDR™ Report for the Facility, three monitoring wells were located on the Facility, and several dozen are located within a 1-mile radius of the Facility. A large number of wells within a one-mile radius in all directions are also identified and classified as either domestic, public water supply, or unspecified wells (**Figure 2-3**), including a recharge/injection well and replacement public supply/recharge well near the western facility boundary and at an interpreted downgradient hydrogeologic location from the AOIs. The recharge/injection well and replacement public supply/recharge well located approximately 0.1-mile west of the Facility are completed to approximate depths of 840 and 600 ft bgs, respectively. The public supply well located approximately 0.3-mile to the north of the Facility is completed to a depth of approximately 647 ft bgs. The public supply well located approximately 0.8-mile to the south of the Facility is completed to a depth of approximately 682 ft bgs. As identified in the PA Report (AECOM, 2020), three monitoring wells located on the Facility were part of a previous RI that concluded in 2018 and were abandoned on 5 September 2018 (AECOM, 2020). The Facility's potable water is supplied by TMWA and Washoe County.

2.2.3 Hydrology

The Reno AASF has an approximate elevation of 5,000 ft amsl. The area is relatively flat, and the immediate vicinity of the Facility and has a shallow slope to the southeast. Surface water runoff from the Facility drains to the west. Stormwater is channeled from the pavement surfaces of the Facility into two underground stormwater interceptors that discharge to open flow channels on the west side of Army Aviation Drive. Other drainage features located on the Facility include open swales, gutters in the parking lot, gutters on the helicopter tarmac on the east side of the AASF and drop inlets. Surface water within the basin in which the Facility is located generally flows in a southern direction towards nearby playas.

Since 1944, surface water from the Truckee River has been imported from the TMWA through a pipeline to serve the former Stead Air Force Base. In the 1960s, importation of Truckee River water into Lemmon Valley was expanded to serve the area of Raleigh Heights in the southern part of the Lemmon Valley. Currently, TMWA continues to import Truckee River water into Lemmon Valley each year, a portion of which serves their customers directly, with the remainder being stored in the groundwater aquifer in Lemmon Valley – Western Part. While the TMWA obtains its water supply from both surface water and groundwater, surface water sources and storage provide between 85 and 95 percent (%) of the TMWA water supply. Surface water is treated at Chalk Bluff and Glendale Treatment Plants before distribution into the system, and the groundwater is pumped from wells throughout the service territory.

The City of Reno operates a wastewater treatment plant in Lemmon Valley – Eastern Part, southeast of the Reno-Stead Airport, near Swan/Lemmon Lake. The Reno-Stead Water Reclamation Facility is located adjacent to the basin boundary with Lemmon Valley – Western Part and treats wastewater received primarily from residential properties, along with some commercial and industrial properties, and the Reno AASF. The plant has a treatment capacity up to 2 million gallons per day, with planned improvements to accommodate up to 4 million gallons per day. Treated effluent is pumped from the treatment plant to various locations for reuse within Lemmon Valley. Reuse of effluent from the Reno-Stead Water Reclamation Facility is authorized by the Nevada State Engineer under Permit 4541S05 and by the Nevada Division of Environmental Protection under Permit NS2008500. Permitted use of the treated effluent includes irrigation of Sierra Sage Golf Course, North Valleys Sports Complex, and Mayors Park. On-site reuse of effluent at the Reno-Stead Water Reclamation Facility is also permitted for landscape irrigation and for an onsite effluent truck fill station for construction water. Delivery of effluent is also permitted to nearby Swan/Lemmon Lake to support wildlife habitat under an agreement with the US Bureau of Land Management. Washoe County also operates a smaller capacity wastewater treatment plant in Lemmon Valley – Eastern Part. The Lemmon Valley Wastewater Reclamation Facility operates at approximately 300,000 gallons per day, and effluent reuse from this facility does not occur. Several times per year, polished effluent is discharged to Lemmon Lake Playa (Swan/Lemmon Lake), where it rapidly evaporates. Surface water features in the region are shown in **Figure 2-5**.

2.2.4 Climate

Reno AASF is situated in western Nevada and in the rain shadow of the Sierra Nevada mountain range. Being in the high desert of the Great Basin, the area experiences large temperature ranges on both a diurnal and annual scale. During the summer, afternoon highs are often above 90 degrees Fahrenheit (°F), but at night, the air mass can cool down to about 50 °F. This area experiences a typical four seasons, though spring and fall can be short, as is common for mid-latitude dry climates. Reno receives an average of 11.12 inches of precipitation per calendar year, which primarily occurs between the months of November and March. The warm half of the year is relatively dry, with a secondary precipitation maximum in May. An average of 23.5 inches of snow falls in Reno annually, also occurring primarily between November and March (AECOM, 2020).

2.2.5 Current and Future Land Use

Presently, the Reno AASF is a fully developed NVARNG military training facility comprised of three large structures, four small structures, a helicopter landing pad, a large, paved parking area west of the armory, and a large gravel lot to the east of the armory building used for equipment parking and storage. Building structures on the Facility include an Armory Building, AASF, Field Maintenance Shop (FMS), Operational Support Airlift, Hazardous Materials Storage Building, Fire Pump House, and Gymnasium. The current land use is listed as General Industrial. Future land use is not anticipated to change (AECOM, 2020). The Facility is within a fenced boundary with limited access. The Facility has an access point from Army Aviation Drive. Each area within the Facility boundary requires an escort and approved Facility access including site-specific badging.

2.2.6 Sensitive Habitat and Threatened/Endangered Species

A wildlife survey has not occurred at the Facility, and the Facility does not have any significant areas of habitat. The following species have not been identified at the Facility but may be present in the surrounding area.

The following species are listed as federally endangered, threatened, proposed, and/or candidate species in Washoe County, Nevada (U.S. Fish and Wildlife Services, 2021):

Birds:

Western, Yellow-Billed Cuckoo, *Coccyzus Americanus Occidentalis* (threatened)

Yellow-Billed Cuckoo, *Coccyzus Americanus* (threatened)

Fishes:

Lahontan Cutthroat Trout, *Oncorhynchus Clarkii Henshawi* (threatened)

Cui-ui, *Chasmistes Cujus* (endangered)

Warner Sucker, *Casostomus Warnernsis* (threatened)

Amphibians:

Sierra Nevada Yellow-Legged Frog, *Rana Sierra* (endangered)

Flowering Plants:

Webber Ivesia, *Ivesia Webberi* (threatened)

Steamboat Buckwheat, *Eriogonum Ovalifolium Var. Williamsiae* (endangered)

Insects:

Carson Wandering Skipper, *Pseudocopaeodes Eunus Obsurus* (endangered)

2.3 HISTORY OF PFAS USE

One AOI, where aqueous film-forming foam (AFFF) may have been used, stored, disposed, or released historically, was identified in the PA (AECOM, 2020) at the Reno AASF. Two AOIs were chosen for the SI based on SI scoping discussions. During the SI scoping discussions, a second AOI was identified (AOI 2 – Stockpiled Soils) which received soils excavated from AOI 1.

The Former Firetruck Bay of the Reno AASF formerly housed a single standard crash fire rescue truck and related equipment until the late 1980s, when the truck was returned or sold due to the lack of trained personnel to operate the truck. Since AFFF use was not recorded on site, it is unclear if AFFF was ever stored on the truck. Presently, the South Hangar is fitted with an AFFF foam deluge fire protection system, which features a fire suppression system throughout the hangar, and a large AFFF storage tank housed where the firetruck formerly sat. There are no drains in the room that houses the AFFF storage tank. All drains within the Facility at the AASF are routed to the local water treatment plant, Reno-Stead Water Reclamation Facility, located approximately 5 miles southeast of the Facility.

Portable Tri-Max™ hand-truck fire extinguishers containing AFFF were previously stored in various places on and near the parking apron from approximately the mid-1990s through the early 2000s. There is no record of these hand-trucks being used in training or emergency situations. The Tri-Max™ units were replaced with two different types of extinguishers, one that contains AFFF, and one that does not contain AFFF. Only one unit containing AFFF exists on base and is located in the C12 hangar immediately adjacent to the Rotary Wing Parking Apron.

The Potential Secondary Source Area, located west of the airfield, contained stockpiled soil excavated from the airfield during apron expansion and resurfacing activities. These excavation activities began in December 2018 and were completed in May 2021. A description of each AOI is presented in **Section 3**.

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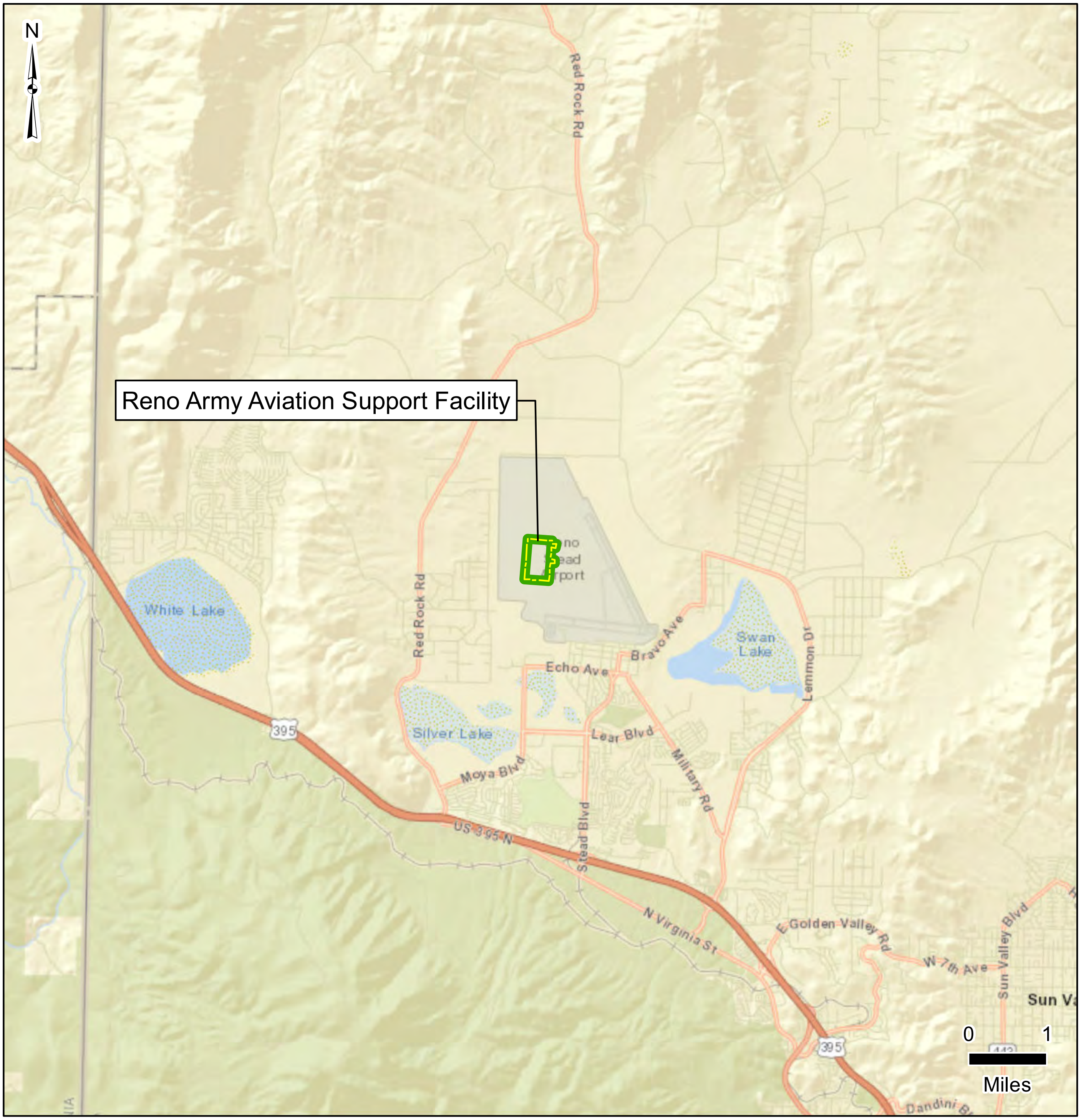
Army National Guard Site Inspections
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

Figure 2-1
Facility Location



Facility Data

Facility Boundary

Data Sources:
ESRI 2020
AECOM 2020

Date:...................May 2023
Prepared By:.............WSP
Prepared For:..........USACE

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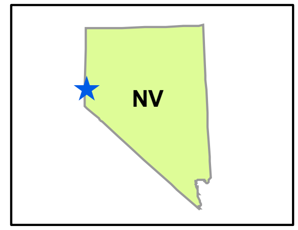
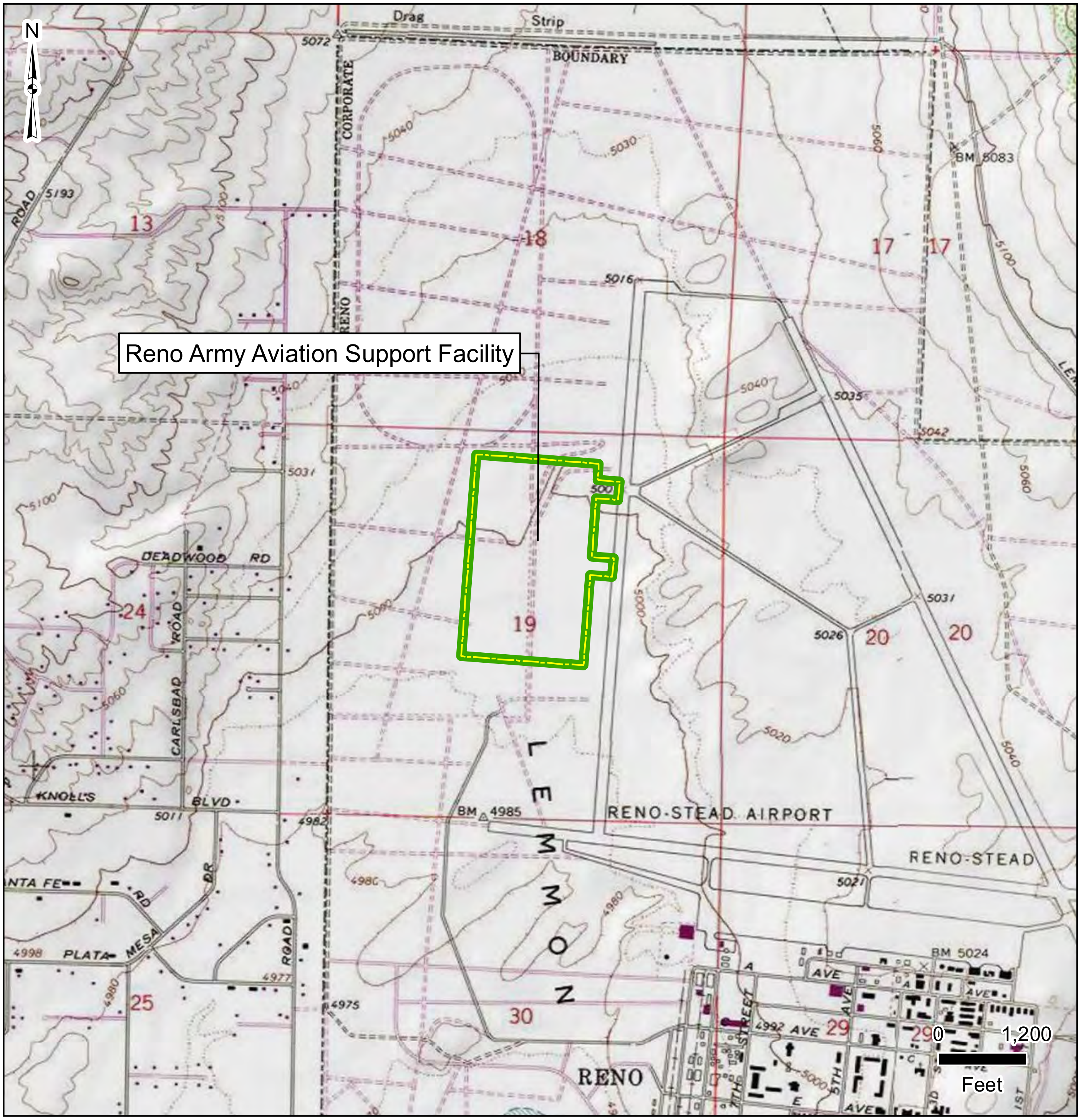
Army National Guard Site Inspections
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

Figure 2-2
Facility Topography





Facility Data

Facility Boundary

Data Sources:
ESRI 2020
AECOM 2020

Date:...................May 2023
Prepared By:..............WSP
Prepared For:..........USACE

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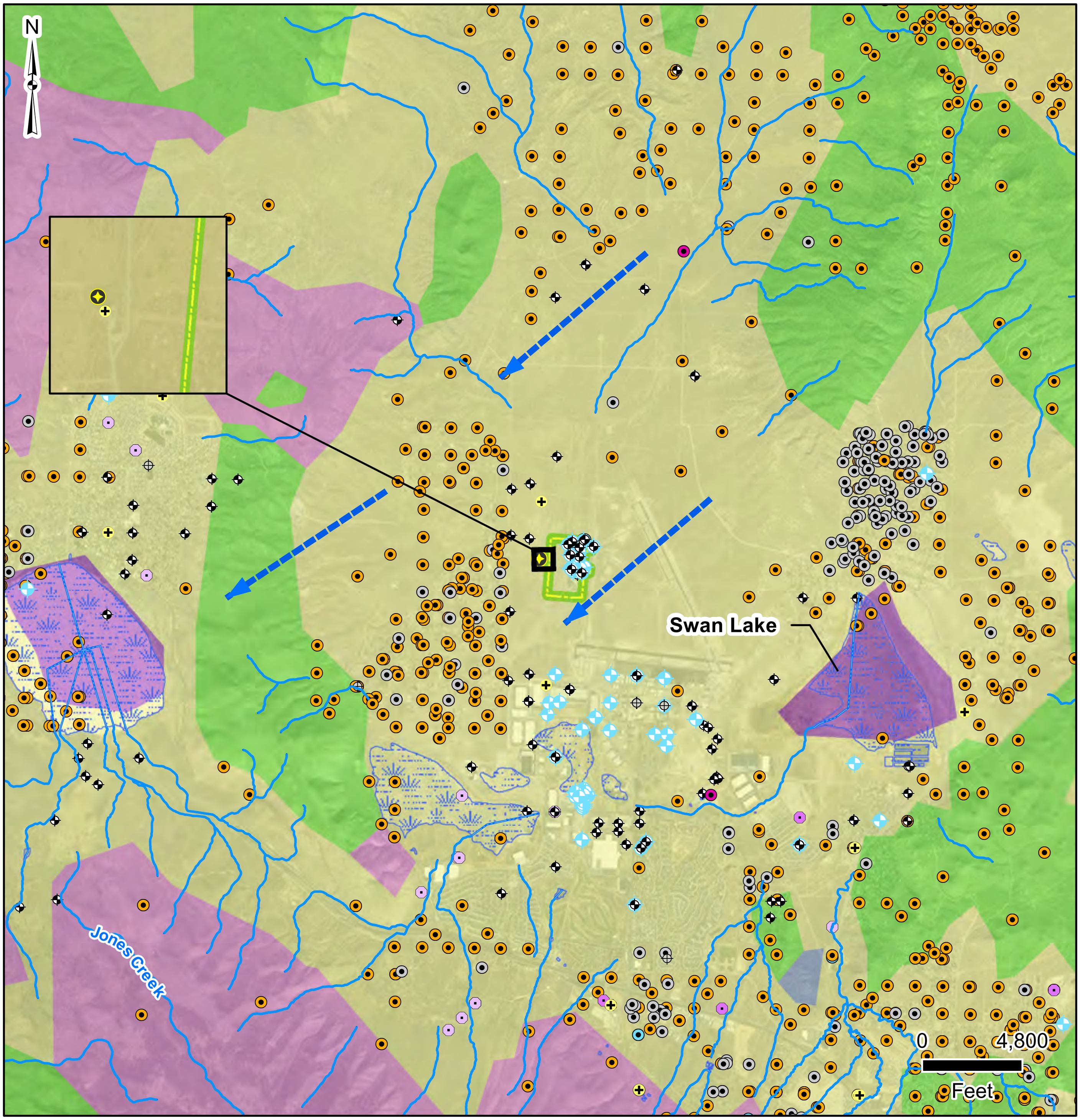
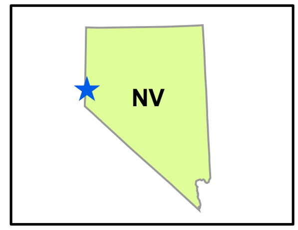
Army National Guard Site Inspections
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

Figure 2-3
Groundwater Features





Facility Data
Facility Boundary

Hydrology/Hydrogeology
Stream/River
Wetland
Inferred Groundwater Flow Direction

Geology
Alluvium
Rhyolite
Basalt
Granodiorite
Playa

Existing Wells
Monitoring Well, Plug or Abandonment
Commercial, Existing
Monitoring Well, Existing
Domestic, Existing
Domestic, Plug or
Irrigation
Industrial, Existing
Public Supply (Municipal) / Recharge Well
Public Supply (Municipal) / Recharge Well, Replacement
Stock
Other

Data Sources:
ESRI 2020
AECOM 2019

Date:........December 2023
Prepared By:.............WSP
Prepared For:.........USACE

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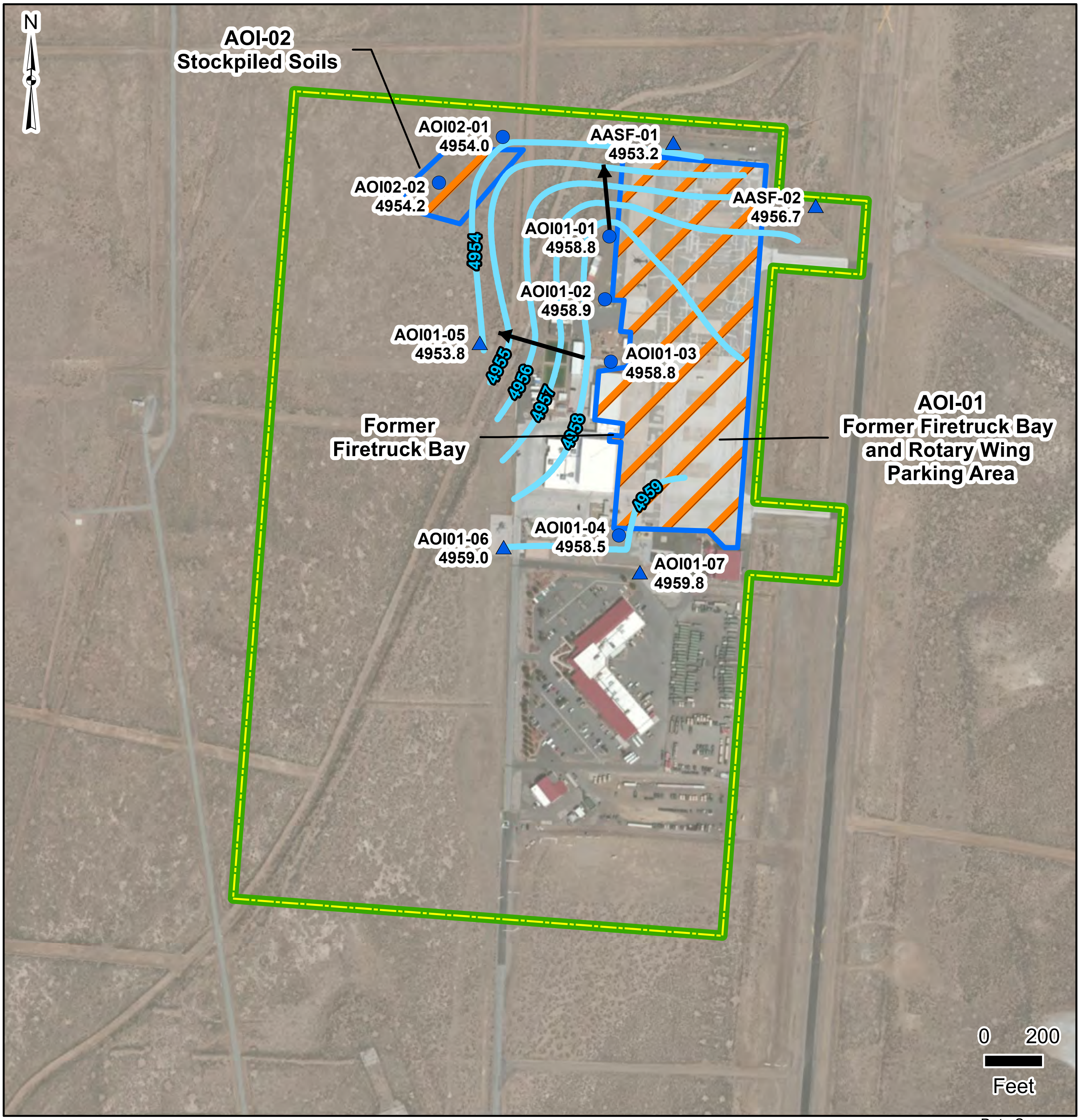
Army National Guard Site Inspections
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

Figure 2-4
Groundwater Elevations, July 2022



Facility Data
- Area of Interest (AOI)
- Potential PFAS Release

Sample Type
- Soil Boring and Temporary Groundwater Well
- Temporary Groundwater Well

Hydrology/Hydrogeology
- Calculated Groundwater Flow Direction
- Groundwater Elevation Contour (1-Foot Interval)

Data Sources:
ESRI 2020
AECOM 2019

Date:.................May 2022
Prepared By:.............WSP
Prepared For:........USACE

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Army National Guard Site Inspections
Site Inspection Report
Reno Army Aviation Support Facility
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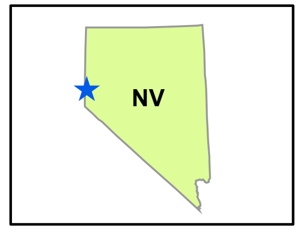
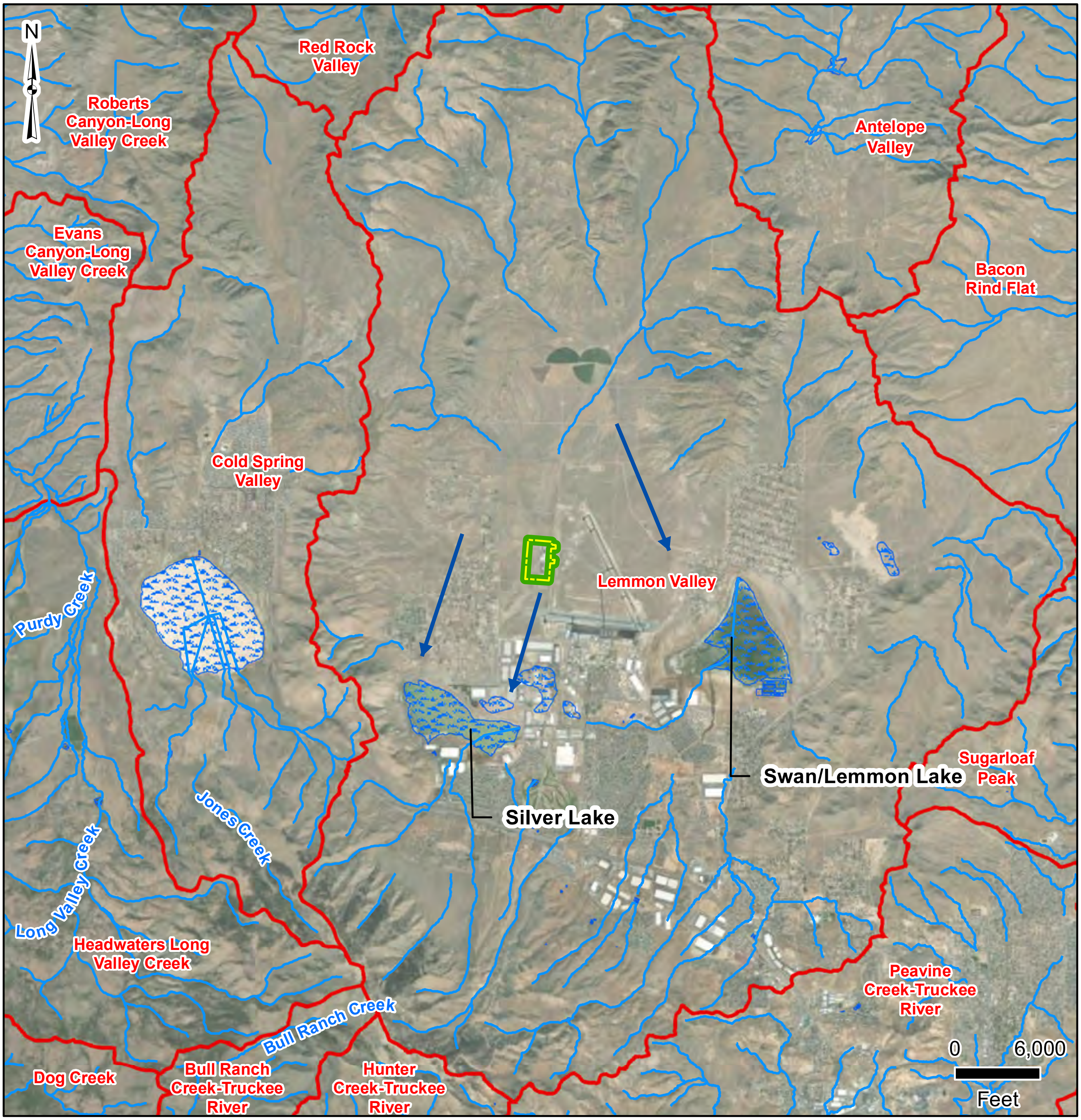
Figure 2-5
Surface Water Features





Facility Data

Facility Boundary

Hydrology/Hydrogeology

River/Stream

Approximate Surface Water Flow Direction

Wetland

Watershed

Data Sources:
ESRI 2020
AECOM 2019

Date:.................May 2023
Prepared By:............WSP
Prepared For:.......USACE

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3. SUMMARY OF AREAS OF INTEREST

The PA evaluated areas where PFAS-containing materials may have been used, stored, disposed, or released historically. Based on the PA findings, one potential release area was identified at the Reno AASF and identified as AOI 1 - Former Firetruck Truck Bay and Rotary Wing Parking Area. A second AOI was identified during the SI planning process (AOI 2 – Stockpiled Soils). AOI 2 is an area that received soils that were excavated from AOI 1. The AOIs are shown on **Figure 3-1**.

3.1 AOI 1 – FORMER FIRETRUCK BAY AND ROTARY WING PARKING AREA

AOI 1 consists of the Former Firetruck Bay and Rotary Wing Parking Area. The South Hangar, located centrally on site, formerly housed a single standard crash fire rescue truck and related equipment until the late 1980s, when the truck was returned or sold due to the lack of trained personnel to operate the truck. Since AFFF use was not recorded on site, it is unclear if AFFF was ever stored on the truck. There are no records of the truck ever being used for fire training or emergency response.

Presently, the South Hangar is fitted with an AFFF foam deluge fire protection system, which features a fire suppression system throughout the hangar, and a large AFFF storage tank housed where the firetruck formerly sat. The large fire suppression tank, according to the label found on said tank, is a model CCS3-704VA tank built in 1990 by Arrow Tank & Engineering Company. The tank is in good condition, has a rubber diaphragm, and shows no signs of past or present leakage. There are no drains in the room that houses the AFFF storage tank; however, drains do exist in the main portion of the South Hangar, which leads to a sand and oil separator on site. All drains within the Facility at the Reno AASF are routed to the local water treatment plant, Reno-Stead Water Reclamation Facility, located approximately 5 miles southeast of the Facility. There are no records or recollection from interviewees of any incident in which the fire suppression system was used or tested.

Portable Tri-Max™ hand-truck fire extinguishers containing AFFF were previously stored in various places on and near the parking apron from approximately the mid-1990s through the early 2000s. These extinguishers were serviced regularly by ABC Fire and turned into the Carson City Warehouse Defense Reutilization and Marketing Office in the early 2000s. There is no record of these hand-trucks being used in training or emergency situations. The Tri-Max™ units were replaced with two different types of extinguishers, one that contains AFFF, and one that does not contain AFFF. Only one unit containing AFFF exists on base and is located in the C12 hangar immediately adjacent to the Rotary Wing Parking Apron. The remaining fire extinguishers, which do not contain AFFF, continue to be moved around various places on the Rotary Wing Parking Apron Area.

3.2 AOI 2 – STOCKPILED SOILS

The Potential Secondary Source Area, located west of the airfield, contained stockpiled soil excavated from the airfield during apron expansion and resurfacing activities. These excavation activities began in December 2018 and were completed in May 2021. Approximately 24 inches of native soil was removed during the apron expansion and backfilled with engineered fill meeting structural requirements of the tarmac. The tarmac footprint was repaved and the native soils, predominately fine-grained materials were relocated to the west and bladed out to a maximum of 4 inches with RTAA approval.

3.3 ADJACENT SOURCES

One potential off-Facility source of PFAS was identified adjacent to the Facility in the PA (AECOM, 2020) and is not under the control of the NVARNG. A description of the off-Facility source is presented below.

Based on historic information, a potential source (fire training area) identified in the PA (AECOM, 2020) is located hydraulically downgradient of the Facility and is not expected to impact PFAS concentrations in the groundwater underlying the Facility. However, potential AFFF use on the Reno-Stead Airport property is unknown and may have included the use of AFFF upgradient of the site.

3.3.1 Reno-Stead Airport

The Reno-Stead Airport began operations in 1942 as the Reno Army Air Base, an air base built by the Army Air Corps and used by the Air Force during World War II. It was renamed “Stead Air National Guard Base” in 1951, and renamed “Stead Air Force Base” the same year. The base was closed in 1966 and transferred to the City of Reno and since then has been operated as the Reno-Stead Airport. The Reno-Stead Airport covers an area of 5,000 acres at an elevation of 5,050 ft amsl with two runways. The Reno-Stead Airport was formerly a military installation until 1966 and is currently owned by the Reno-Tahoe Airport Authority. As a military installation, the Reno-Stead Airport was used primarily for training including survival and flying. The Reno AASF is located within the Reno-Stead Airport boundary (**Figure 3-1**) and the runway is located to the east of the Reno AASF. A fire academy is located at the Reno-Stead Airport where, reportedly, fire training using AFFF has occurred historically and to present. The fire academy is located downgradient of the AASF facility based on historic information collected during the PA. The Reno Fire Department supports the Airport and does not have its own on-site fire support. In addition, the use of AFFF as an emergency response measure at the Reno-Stead Airport is unknown; emergency use and other AFFF uses or releases may have occurred upgradient of the Facility.

No other off-Facility source areas were identified in the PA Report.

Army National Guard Site Inspections
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Reno Army Aviation Support Facility
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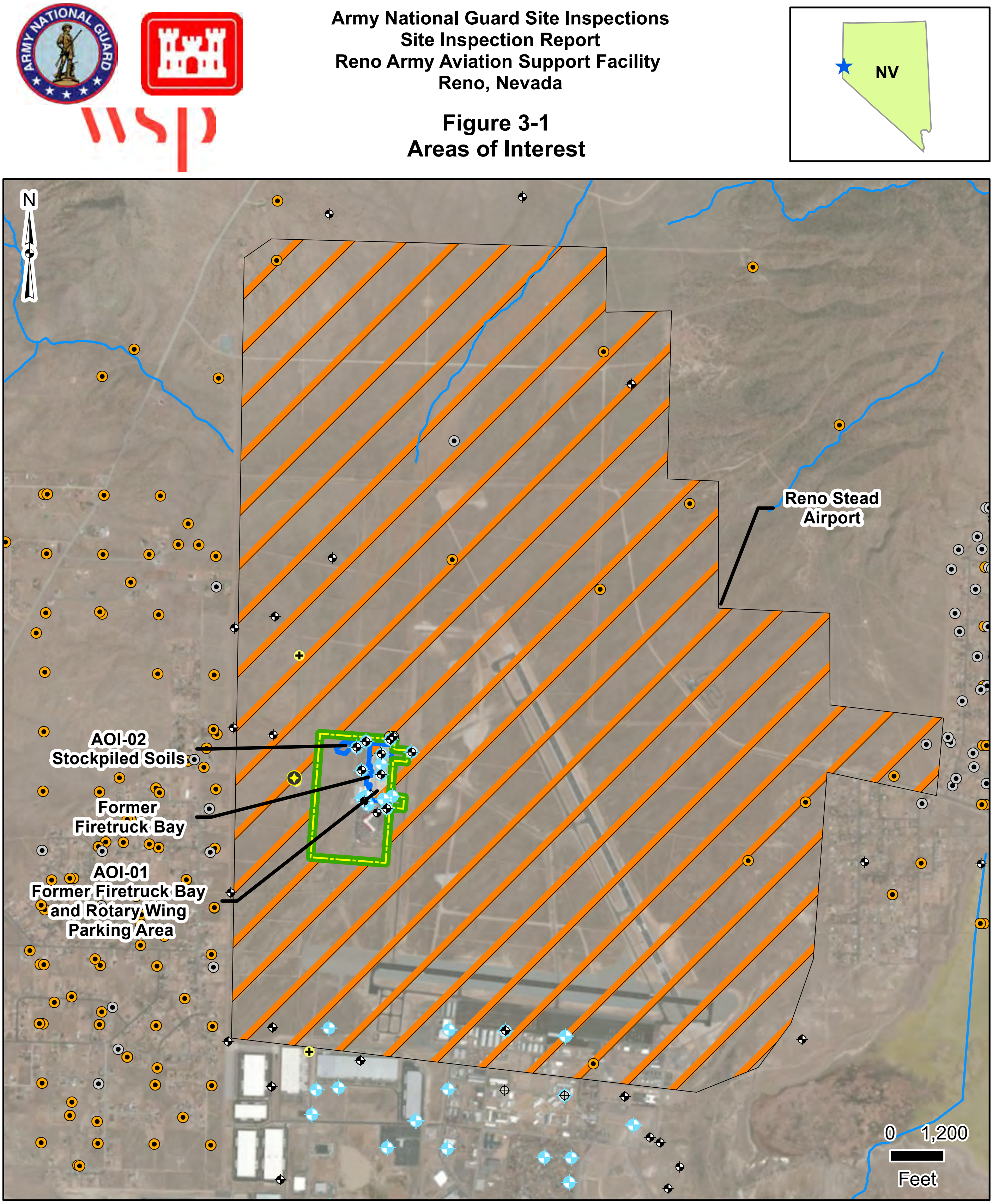
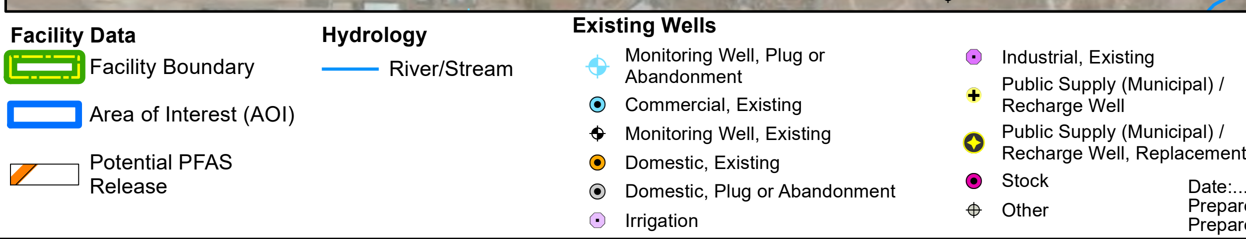
Figure 3-1
Areas of Interest





Data Sources:
ESRI 2020
AECOM 2019

Date:........December 2023
Prepared By:.............WSP
Prepared For:.........USACE

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4. PROJECT DATA QUALITY OBJECTIVES

As identified during the Data Quality Objective (DQO) process and outlined in the SI Uniform Federal Policy (UFP) - QAPP Addendum (EA/Wood, 2022a), the objective of the SI was to identify whether there has been a release to the environment at the two AOIs. 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 the presence or absence of relevant compounds at the sampled AOIs.

4.1 PROBLEM STATEMENT

ARNG will recommend AOIs 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 for the SI include the following:

- The PA Report for the Reno AASF (AECOM, 2020)
- Analytical data from groundwater and soil samples collected as part of this SI in accordance with the site-specific UFP –QAPP Addendum (EA/Wood 2022a)
- 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 horizontally by the property limits of the Facility (**Figure 2-1** and **3-1**). The scope of the SI was bounded vertically by the depth of temporary monitoring wells installed within groundwater, where encountered (maximum depth of 71 ft bgs). 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 earliest available time field resources were available to complete the study.

4.4 ANALYTICAL APPROACH

Samples were analyzed by Eurofins, accredited under the Department of Defense (DoD) Environmental Laboratory Accreditation Program (DoD ELAP; Accreditation Number 1.01) and the National Environmental Laboratory Accreditation Program (NELAP; Certificate Number 021). Data were compared to applicable SLs within this document and decision rules as defined in the UFP-QAPP Addendum (EA/Wood 2022a).

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 UFP-QAPP (EA/Wood, 2022a).

5. SITE INSPECTION ACTIVITIES

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

- *Final Preliminary Assessment Report, Reno Army Aviation Support Facility, Reno, Nevada,* dated August 2020 (AECOM, 2020)
- *Final Programmatic Uniform Federal Policy-Quality Assurance Project Plan, Site Inspections for Per- and Polyfluoroalkyl Substances Impacted Sites, ARNG Installations, Nationwide,* dated December 2020 (EA, 2020)
- *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Reno Army Aviation Support Facility, Nevada,* dated May 2022 (EA/Wood, 2022a)
- *Final Programmatic Accident Prevention Plan, Revision 1,* dated November 2020 (EA, 2020b)
- *Final Accident Prevention Plan/Site Safety and Health Plan, Reno Army Aviation Support Facility, Reno, Nevada,* dated June 2022 (EA/Wood 2022b).

The SI field activities were conducted from 05 to 22 July 2022, and consisted of utility clearance, hand augering to clear utilities and collect surface soil samples, hollow stem auger (HSA) boring advancement and soil sample collection, temporary monitoring well installation, grab groundwater sample collection, and land surveying. Field activities were conducted in accordance with the UFP-QAPP Addendum (EA/Wood, 2022a), except as noted in **Section 5.8**.

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

- Eighteen (18) soil samples from 6 boring locations;
- Eleven (11) grab groundwater samples from 11 temporary well;
- Twenty-one (21) quality assurance (QA)/QC samples.

Figure 5-1 provides the sample locations for all media (soil and groundwater) across the Facility. **Table 5-1** presents the list of samples collected for each medium. Field documentation is provided in **Appendix B**. A log of Daily Notice of Field Activity was completed throughout the SI field activities, which is provided in **Appendix B1**. Sampling forms are provided in **Appendix B2**, land survey data is provided in **Appendix B3,** a Field Change Request Form is provided in **Appendix B4**, and the investigation-derived waste (IDW) placement location is 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 of these activities are presented below.

5.1.1 Technical Project Planning

The U.S. Army Corps of Engineers (USACE) TPP Process, Engineers Manual (EM) 200-1-2 (Department of the Army 2016a) 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 18 January 2022. The combined TPP Meeting 1 and 2 was conducted in general accordance with EM 200-1-2. The stakeholders for this SI included ARNG, NVARNG, Nevada Division of Environmental Protection (NDEP), USACE, 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 UFP-QAPP Addendum (EA/Wood, 2022a).

A TPP Meeting 3 was held after the field event to discuss the results of the SI on 17 August 2023. Meeting minutes for TPP 3 are included in **Appendix D** of this report. The TPP 3 meeting provided an opportunity to discuss results and findings, and future actions, where warranted.

5.1.2 Utility Clearance

WSP USA Environment & Infrastructure, Inc. (WSP), previously doing business as Wood Environment & Infrastructure Solutions, Inc., contacted the Utility Notification Center to notify them of intrusive work at the Facility. WSP contracted Penhall Company (Penhall), a private utility location service, to perform utility clearance and concrete cutting at the Facility. Utility clearance was performed at each of the proposed boring locations on 14 April 2022 with input from the WSP field team. General locating services and ground-penetrating radar (GPR) were used to complete the clearance. Additionally, the first 5 ft of each boring were pre-cleared by WSP or WSP's drilling subcontractor, Yellow Jacket Drilling Services, LLC (Yellow Jacket), using a hand auger prior to the advancement of drilling equipment to verify utility clearance in shallow subsurface where utilities would typically be encountered.

5.1.3 Source Water and PFAS Sampling Equipment Acceptability

The potable water source used for decontamination of drilling equipment was confirmed to meet acceptability criteria, as defined in the UFP-QAPP Addendum, prior to the start of field activities. A sample from an outside spigot (potable water source) at the Reno AASF, was collected on 14 April 2022, prior to mobilization and analyzed for PFAS by LC/MS/MS compliant with QSM 5.3 Table B-15. The potable water source sample was delayed in transit and arrived at the laboratory outside of the specified acceptable temperature. The data was deemed usable by a qualified WSP chemist, and the data validation is included in **Appendix A**.

The results of the sample of the potable water source used for decontamination of drilling equipment during the SI are provided in **Appendix F**. The potable water source was deemed usable. A discussion of the results is presented in the Data Usability Assessment (**Appendix A**).

Materials that were used within the sampling zone were confirmed as acceptable for use in the PFAS sampling environment. The checklist of acceptable materials for use in the PFAS sampling environment was provided in the Standard Operating Procedures appendix to the Programmatic UFP-QAPP (PQAPP) (EA, 2020).

5.2 SOIL BORINGS AND SOIL SAMPLING

Soil samples were collected in July 2022 via HSA drilling methods in accordance with Standard Operating Procedure 025 *Soil Sampling* (EA/Wood, 2022a). A split spoon sampler was used to collect continuous soil cores to the target depth. A hand auger was used to clear the top 5 ft of the boring in compliance with utility clearance procedures. The soil boring locations are shown on **Figure 5-1**, and boring sample depths are provided in **Table 5-1**.

Three (3) discrete soil samples were collected from each of the six (6) specified soil borings (AOI01-01, AOI01-02, AOI01-03, AOI01-04, AOI02-01, and AOI02-02): one sample at the surface (0 to 2 ft bgs) and two subsurface soil samples. The surface soil sample for AOI02-02 was taken from stockpiled soil at a depth of 7 to 8 feet which is considered to be an equivalent depth of 0 to 2 feet below the natural ground surface. All soil sample locations are shown on **Figure 5-1**. Subsurface samples were defined as intermediate and deep samples (EA/Wood, 2022a). Intermediate samples were collected at 14 to 15 ft bgs at AOI01-01, AOI01-03, AOI01-04, and AOI02-01 and at a depth of 22 to 23 ft at AOI02-02 (on stockpiled soils, which is considered to be an equivalent depth of 14 to 15 feet below natural ground surface). Deep samples were collected approximately 1 ft above the groundwater table at AOI01-01, AOI01-02, AOI01-03, AOI01-04, AOI01-05, AOI01-06, AOI01-07, AOI02-01, and AOI02-02. Groundwater during drilling was encountered at depths ranging from approximately 41 to 61 ft bgs. Total boring completion depths, to accommodate temporary well installation, ranged from approximately 45 to 71 ft bgs.

During drilling, soil cores were continuously logged for lithological descriptions by a field geologist using the Unified Soil Classification System. The lithology below the Facility to the depth of the borings consisted predominately of silty and poorly graded sands with interbedded layers of clayey sand, medium plastic fines (clay), and less plastic fines (silt). A photoionization detector (PID) was used to screen the breathing zone during boring activities as a part of personal safety requirements. Observations and measurements were recorded on sampling forms (**Appendix B2**) and in a non-treated field logbook. Depth interval, recovery thickness, PID concentrations, moisture, relative density, Munsell color, and Unified Soil Classification System texture were recorded. The boring logs are provided in **Appendix E**.

Each sample was collected into a laboratory-supplied PFAS-free HDPE bottle 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 (Eurofins) and analyzed for PFAS (LC/MS/MS compliant with QSM Version 5.3 Table B-15), TOC (USEPA Method 9060A), pH (USEPA

Method 9045D), and grain size (ASTM Method D-422) in accordance with the UFP-QAPP Addendum (EA/Wood, 2022a).

Field duplicate samples (**Table 5-1**) were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. Matrix Spike (MS)/ matrix spike duplicates (MSDs) were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. In instances when non-dedicated sampling equipment was used, such as a hand auger for the shallow soil samples, one equipment blank (EB) was collected per day and analyzed for the same parameters as the soil samples. A temperature blank was placed in each cooler for use in confirming that samples were preserved at or below 6 degrees Celsius (°C) during shipment.

5.3 TEMPORARY WELL INSTALLATION AND GROUNDWATER SAMPLING

Temporary wells were installed using a HSA BK-81 system. Temporary well waivers and notice of intent (NOI) to drill the temporary wells were filed with Nevada Division of Water Resources (NVDWR) prior to mobilization. The waivers and NOIs were submitted in person to NVDWR by Yellow Jacket and WSP on 05 July 2022. Once the borehole was advanced to the desired depth, a temporary well was constructed of a 5-ft section of 2-inch Schedule 40 poly-vinyl chloride (PVC) screen with sufficient casing to reach the ground surface. New PVC pipe and screen were used at each location to avoid cross contamination between locations. The screen intervals for the temporary wells are provided in **Table 5-2**.

Groundwater samples were collected, after a period of time following well installation to allow groundwater to infiltrate and recharge the temporary well intervals. After the recharge period, the temporary wells were bailed with a PFAS-free bailer to remove fines. Groundwater samples were collected using a low-flow bladder pump equipped with PFAS-free HDPE tubing. The temporary wells were purged at a rate determined in the field to reduce turbidity and draw down prior to sampling. Water quality parameters (e.g., temperature, specific conductance, pH, dissolved oxygen, and oxidation-reduction potential) were measured using a water quality meter and recorded on the field sampling form (**Appendix B2**) before each sample was collected in a separate container. Shaker tests were inadvertently not performed for groundwater samples. This deviation is described in Section 5.8.

Each sample was collected in 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 (Eurofins) and analyzed for PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 in accordance with the UFP-QAPP Addendum (EA/Wood, 2022a).

Field duplicate samples (**Table 5-1**) 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. Two (2) field blanks (FBs) were collected in accordance with the UFP-QAPP Addendum (EA/Wood, 2022a). In instances when non-dedicated sampling equipment was used, such as a Geotech™ bladder pump, one EB was collected a day and analyzed for the same parameters as the groundwater samples. A temperature blank was placed in each cooler for use in confirming that samples were preserved at or below 6°C during shipment.

Following surveying (described below in **Section 5.5**), the temporary wells were abandoned in accordance with the SI UFP-QAPP Addendum (EA/Wood, 2022a) by removing the PVC and backfilling the hole with bentonite chips to within 20 ft of the ground surface and the remaining depth was abandoned with concrete. The borings were installed in dirt, asphalt, and concrete areas and all boring locations were restored to original condition.

5.4 SYNOPTIC WATER LEVEL MEASUREMENTS

A synoptic groundwater gauging event was performed on 20 July 2022. Groundwater elevation measurements were collected from the newly installed temporary monitoring wells. Water level measurements were taken from the survey mark on the northern side of the well casing. Groundwater elevation data is provided in **Table 5-3**. A groundwater flow contour map is provided as **Figure 2-4**.

5.5 SURVEYING

The ground surface of each borehole was surveyed using a Trimble R10 real-time kinematic differential global positioning system. Positions were collected in the applicable Universal Transverse Mercator zone projection with World Geodetic System 1984 datum (horizontal) and North American Vertical Datum 1988 (vertical). The top of casing could not be accurately surveyed because the casing could not be sufficiently stabilized due to the lack of filter pack within the borehole, therefore distance from the surveyed ground surface elevation to the top of casing was field measured to 0.1 ft to calculate the top of casing elevation. Complete details on deviations from the UFP-QAPP are presented in Section 5.8. Surveying data were collected by Summit Engineering Corps. (Summit) on 19 July 2022 and are provided in **Appendix B3**.

5.6 INVESTIGATION-DERIVED WASTE

As of the date of this report, the disposal of PFAS IDW is not regulated federally. IDW generated during the SI is considered non-hazardous waste and was managed in accordance with the UFP-QAPP Addendum (EA/Wood, 2022a).

Soil IDW was placed in Department of Transportation (DOT)-approved steel drums, labeled, and stored in a designated consolidation area. The soil IDW was not sampled and assumes the characteristics of the associated soil samples collected from that source location.

Liquid IDW generated during SI activities (i.e., purge water, development water, and decontamination fluids) was contained in labeled, 55-gallon DOT-approved steel drums and stored in the same designated consolidation area as the soil IDW drums. The liquid IDW was not sampled and assumes the characteristics of the associated groundwater samples collected from that source location.

The IDW disposal is being managed under a separate contract (EA Engineering, Science, and Technology, Inc., 2021). Specifics on the disposal of liquid IDW will be addressed in an IDW Technical Memorandum.

Geographic coordinates of the approximate center of the IDW consolidation area were surveyed. The IDW consolidation area is displayed on the figure in **Appendix B5**. IDW will remain in this location until it is removed for off-site disposal.

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

5.7 LABORATORY ANALYTICAL METHODS

LC/MS/MS analyzed samples, compliant with QSM Version 5.3 Table B-15, at Eurofins in Lancaster, Pennsylvania, a DoD ELAP and NELAP-certified laboratory.

One soil sample per AOI was also analyzed for TOC using USEPA Method 9060A and pH by USEPA Method 9045D, and grain size using ASTM Method D-422.

5.8 DEVIATIONS FROM SI UFP-QAPP ADDENDUM

Deviations from the UFP-QAPP Addendum (EA/Wood, 2022a) occurred based on conditions encountered during field activities. These deviations were discussed between EA, WSP, ARNG, USACE, and NVARNG. Deviations from the UFP-QAPP Addendum are noted below:

- AOI01-07: This location was added following the Site walk with ARNG and NDEP. A field change request form was submitted and is included in **Appendix B4**. This location was chosen to evaluate the decommissioned leach field that was used historically by the AASF. The leach field was fenced and had limited vehicle access; therefore, the sampling location was placed to the south of the fenced area. The direction of groundwater flow was unknown during the initial Site walk, and the location of AOI01-07 was upgradient of the leach field based on the groundwater elevation measurements collected during the SI.
- Shaker tests were inadvertently not performed on the groundwater samples. The purpose of Shaker tests is to provide the laboratory with advance notice of samples that foam with agitation. The laboratory did not indicate any issue with foaming during the groundwater sample analyses; therefore, data quality was not impacted by the Shaker tests omission.
- The UFP-QAPP specified the well casing was to be surveyed to a vertical accuracy of 0.01 ft. The surveyor attempted to survey the top of casing but was unable to obtain an accurate survey because the well casing could not be sufficiently stabilized due to the lack of filter pack within the borehole. The surveyor attempted to temporarily stabilize the casing but was unsuccessful. The ground surface elevation was surveyed to 0.01 ft. WSP field personnel measured from top of casing down to the surveyors ground surface point to calculate a top of casing elevation at each temporary well. This field measurement was to 0.1 ft; therefore, the corresponding groundwater elevation calculation was also to the nearest 0.1 ft.

Table 5-1. Site Inspection Samples by Medium
Reno AASF, Reno, NV
Site Inspection Report

Sample Identification	Sample Collection Date	Sample Depth (ft bgs)	PFAS (LC/MS/MS compliant with QSM 5.3 Table B-15)	TOC (USEPA Method	pH (USEPA Method 9045D)	Grain Size (ASTM Method D-422)	Comments
Soil Samples							
AOI01-01-SB-1-2	7/15/2022	1-2	X				
AOI01-01-SB-14-15	7/18/2022	14-15	X				
AOI01-01-SB-50-51	7/18/2022	50-51	X				
AOI01-02-SB-1-2	7/15/2022	1-2	X				
AOI01-02-SB-14-15	7/15/2022	14-15	X				
AOI01-02-SB-50-51	7/15/2022	50-51	X				
AOI01-03-SB-1-2	7/14/2022	1-2	X				
AOI01-03-SB-14-15	7/14/2022	14-15	X				
AOI01-03-SB-45-46	7/14/2022	45-46	X				
AOI01-04-SB-0-2	7/7/2022	0-2	X	X	X	X	
AOI01-04-SB-15-16	7/8/2022	15-16	X				
AOI01-04-SB-44-45	7/8/2022	44-45	X				
AOI02-01-SB-0-2	7/12/2022	0-2	X	X	X	X	
AOI02-01-SB-14-15	7/12/2022	14-15	X				
AOI02-01-SB- 55-56	7/13/2022	55-56	X				
AOI02-02-SB-7-8	7/13/2022	7-8	X				
AOI02-02-SB-22-23	7/13/2022	22-23	X				
AOI02-02-SB-63-64	7/13/2022	63-64	X				
FD-01	7/7/2022	0-2	X	X	X	X	Duplicate of AOI01-04-SB-0-2
FD-02	7/15/2022	14-15	X				Duplicate of AOI01-02-SB-14-15
FD-01 MS/MSD	7/13/2022	22-23	X				Duplicate of AOI02-02-SB-22-23
Groundwater Samples							
AOI01-01-GW	7/19/2022	NA	X				MS/MSD
AOI01-02-GW	7/18/2022	NA	X				
AOI01-03-GW	7/15/2022	NA	X				
AOI01-04-GW	7/19/2022	NA	X				
AOI01-05-GW	7/20/2022	NA	X				
AOI01-06-GW	7/21/2022	NA	X				
AOI01-07-GW	7/21/2022	NA	X				
AOI02-01-GW	7/20/2022	NA	X				
AOI02-02-GW	7/20/2022	NA	X				
AASF-01-GW	7/19/2022	NA	X				
AASF-02-GW	7/20/2022	NA	X				
FD-03	7/19/2022	NA	X				Duplicate of AOI01-02-GW

Sample Identification	Sample Collection Date	Sample Depth (ft bgs)	PFAS (LC/MS/MS compliant with QSM 5.3 Table B-15)	TOC (USEPA Method	pH (USEPA Method 9045D)	Grain Size (ASTM Method D-422)	Comments
Blank Samples							
RENO-EB-01	7/7/2022	NA	X				Equipment Blank from Hand Auger
RENO-EB-02	7/8/2022	NA	X				Equipment Blank from Split Spoon Sampler
RENO-EB-03	7/12/2022	NA	X				Equipment Blank from Split Spoon Sampler
RENO-EB-04	7/13/2022	NA	X				Equipment Blank from Split Spoon Sampler
RENO-EB-05	7/14/2022	NA	X				Equipment Blank from Split Spoon Sampler
RENO-EB-06	7/15/2022	NA	X				Equipment Blank from Split Spoon Sampler
RENO-EB-07	7/15/2022	NA	X				Equipment Blank from Groundwater Sampling Pump
RENO-EB-08	7/18/2022	NA	X				Equipment Blank from Split Spoon Sampler
RENO-EB-09	7/18/2022	NA	X				Equipment Blank from Groundwater Sampling Pump
RENO-EB-10	7/19/2022	NA	X				Equipment Blank from Split Spoon Sampler
RENO-EB-11	7/20/2022	NA	X				Equipment Blank from Groundwater Sampling Pump
RENO-EB-12	7/21/2022	NA	X				Equipment Blank from Groundwater Sampling Pump
RENO-PW-01	7/13/2022	NA	X				Equipment Blank from Potable Water Tank
RENO-FB-01[1]	7/13/2022	NA	X				Field Blank
RENO-FB-01[1]	7/21/2022	NA	X				Field Blank

Notes:
[1] – Field blanks were collected on two separate days, but given the same sample identification. The field blank results were reported in separate sample delivery groups. The sample collection date is used to differentiate between the two field blank samples.
ASTM = American Society for Testing and Materials
bgs = below ground surface
EB = equipment rinsate blank
FB = field blank
FD = field duplicate
LC/MS/MS = Liquid Chromatography Mass Spectrometry
MS/MSD = matrix spike/ matrix spike duplicate
PW = potable water
QSM = Quality Systems Manual

Sample Identification	Sample Collection Date	Sample Depth (ft bgs)	PFAS (LC/MS/MS compliant with QSM 5.3 Table B-15)	TOC (USEPA Method	pH (USEPA Method 9045D)	Grain Size (ASTM Method D-422)	Comments
TOC = total organic carbon USEPA = United States Environmental Protection Agency							

Table 5-2. Soil Boring Depths and Temporary Well Screen Intervals
Reno AASF, Reno, NV
Site Inspection Report

Area of Interest	Boring Location	Soil Boring Depth (ft bgs)	Temporary Well Screen Interval [1] (ft bgs)
1	AOI01-01	55	48.5-53.5
	AOI01-02	56.6	49.5-54.5
	AOI01-03	50	44-49
	AOI01-04	50	44-49
	AOI01-05	60	54-59
	AOI01-06	45	39-44
	AOI01-07	45	38.5-43.5
2	AOI02-01	60	54-59
	AOI02-02	71	65-70
Boundary Wells	AASF-01	65	58.8-63.8
	AASF-02	50	44-49

Notes:
[1] Temporary well screen set above total depth to capture groundwater interface
AASF = Army Aviation Support Facility
amsl = Above mean sea level
bgs = below ground surface
btoc = below top of casing
ft = feet
NA = not applicable
NAVD88 = North American Vertical Datum 1988

Table 5-3. Groundwater Elevation
Reno AASF, Reno, NV
Site Inspection Report

Monitoring Well ID	Ground Elevation (ft NAVD88)	Measured Top of Casing Stickup Height (ft)	Top of Casing Elevation[1] (ft NAVD88)	Depth to Water (ft btoc)	Groundwater Elevation (ft NAVD 88)
AOI01-01	5007.41	1.5	5008.9	50.12	4958.8
AOI01-02	5005.75	1.25	5007.0	48.12	4958.9
AOI01-03	5003.49	1.5	5005.0	46.20	4958.8
AOI01-04	5000.20	1.0	5001.2	42.69	4958.5
AOI01-05	5002.91	2.0	5004.9	51.15	4953.8
AOI01-06	4999.80	1.0	5000.8	41.81	4959.0
AOI01-07	4999.60	1.5	5001.1	41.30	4959.8
AOI02-01	5007.00	1.5	5008.5	54.47	4954.0
AOI02-02	5013.84	0.7	5014.5	60.28	4954.2
AASF-01	5007.42	1.5	5008.9	55.70	4953.2
AASF-02	5003.08	1.0	5004.1	47.40	4956.7

Notes:
[1] – Top of Casing Elevation was field measured to 0.1 ft from the surveyed ground surface elevation, therefore the groundwater elevations are reported to the nearest 0.1 ft. See Section 5.8 for complete UFP-QAPP deviation details
AASF – Army Aviation Support Facility
amsl = Above mean sea level
bgs = below ground surface
btoc = below top of casing
Ft = feet
NA = not applicable
NAVD88 = North American Vertical Datum 1988

Army National Guard Site Inspections
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

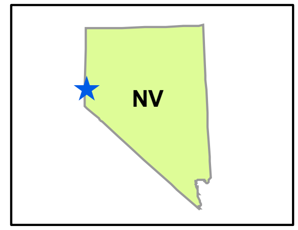
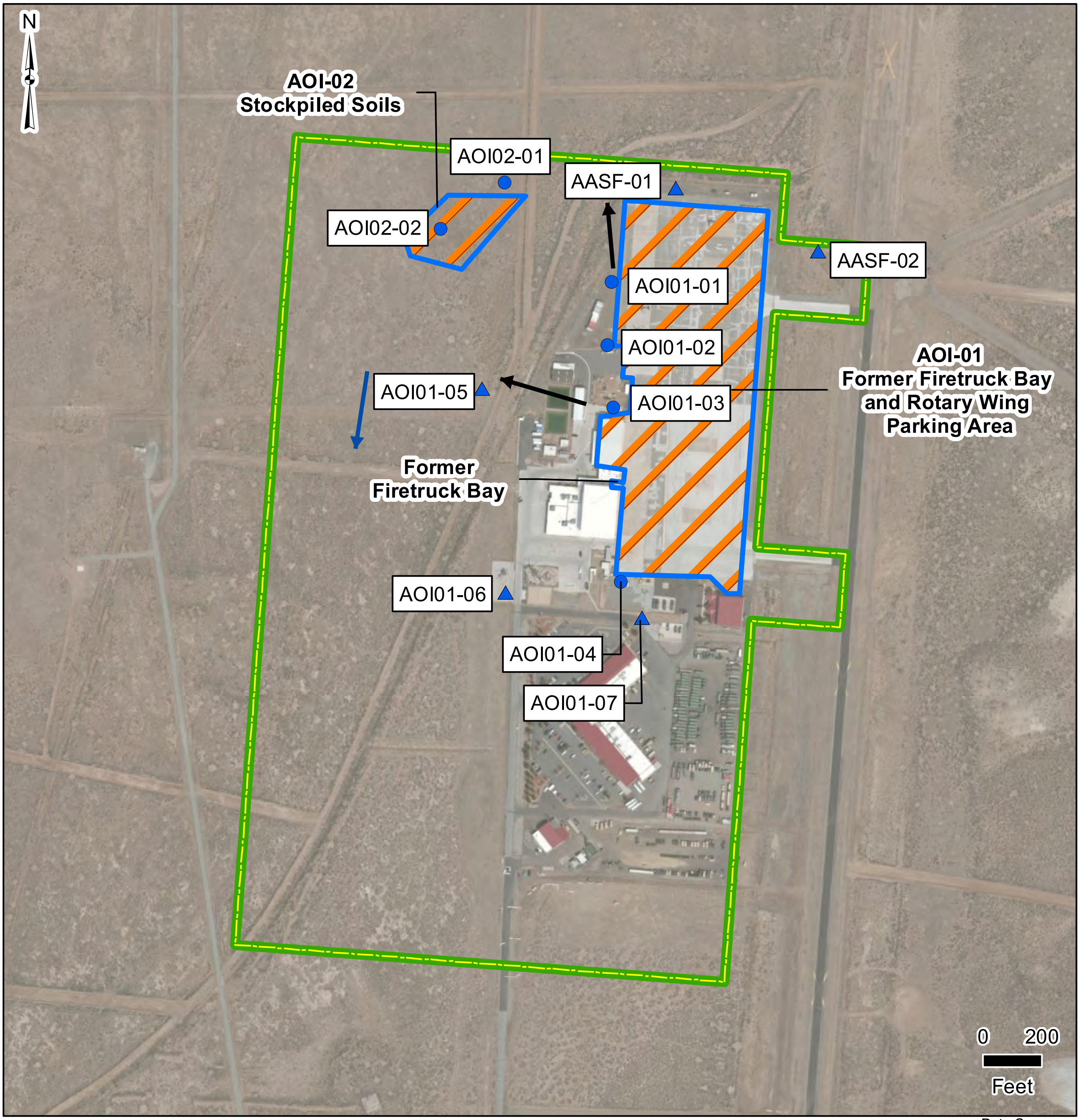


Figure 5-1
Site Inspection Sample Locations



Facility Data
Area of Interest (AOI)
Potential PFAS Release

Sample Type
Soil Boring and Temporary Groundwater Well
Temporary Groundwater Well

Hydrology/Hydrogeology
Inferred Groundwater Flow Direction
Surface Water Flow Direction

Data Sources:
ESRI 2020
AECOM 2019

Date:..................May 2023
Prepared By:.............WSP
Prepared For:........USACE

6. SITE INSPECTION RESULTS

This section presents the analytical results of the SI. The SLs used in this evaluation are presented in **Section 6.1**. A discussion of the results for the AOIs is provided in **Sections 6.3 and 6.4**. **Tables 6-2** through **6-6** present results in soil or groundwater for the relevant compounds. Tables that contain all results are provided in **Appendix F**, and the laboratory reports are provided in **Appendix G**.

6.1 SCREENING LEVELS

The DoD has adopted a policy to retain facilities in the CERCLA process based on risk-based SLs for soil and groundwater, as described in a memorandum from the OSD (Assistant Secretary of Defense, 2022). The ARNG program under which this SI was performed follows this DoD policy. Should the maximum Facility 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**.

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

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

Notes:
1. Assistant Secretary of Defense. July 2022. Risk-Based Screening Levels in Groundwater and Soil using U.S. Environmental Protection Agency's (EPA's) Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. May 2022.
2. Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the 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.

Notes:
µg/kg = microgram(s) per kilogram
ng/L = nanogram(s) per liter

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

6.2 SOIL PHYSICOCHEMICAL ANALYSES

To provide basic soil parameter information, one soil sample per AOI was analyzed for TOC, pH, and grain size, which are important for evaluating transport through the soil medium. **Appendix D** contains the results of the TOC, pH, and grain size 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 PFAS partitioning mechanisms include hydrophobic and lipophobic effects, electrostatic interactions, and interfacial behaviors. At relevant environmental pH values, certain PFAS are present as organic anions, and are therefore relatively mobile in groundwater (Xiao et al., 2015), but tend to associate with the organic carbon fraction that may be present in soil or sediment (Higgins and Luthy 2006; Guelfo and Higgins 2013). When sufficient organic carbon is present, organic carbon normalized distribution coefficients (K_{oc} values) can help in evaluating transport potential, though other geochemical factors (for example, pH and presence of polyvalent cations) may also affect PFAS sorption to solid phases (ITRC, 2018).

6.3 AOI 1

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 1: Former Firetruck Bay and Rotary Wing Parking Area. The soil and groundwater results are summarized in **Tables 6-2** through **6-5**. Soil and groundwater results are presented on **Figures 6-1** through **6-7**.

6.3.1 Soil Analytical Results

Soil samples were collected from four boring locations associated with AOI 1 during the SI (AOI01-01 through AOI01-04). **Figure 6-1** through **Figure 6-5** present the ranges of detections in soil. **Tables 6-2** through **6-4** summarize the soil results.

Surface soil (0 to 2 ft bgs) was sampled from boring locations AOI01-01 through AOI01-04. Soil was sampled from the shallow subsurface soils (14 to 15 ft bgs) and deep subsurface soil intervals (approximately 1 ft above the water table, ranging from 45 to 51 ft bgs) from boring locations AOI01-01 through AOI01-04.

PFOA, PFOS, and PFHxS were detected in surface soil at concentrations below their respective SLs. PFOA was detected at one location (AOI01-04) at a concentration of 0.25 J µg/kg. PFOS was detected at two locations (AOI01-03 and AOI01-04) at concentrations of 11 and 1.3 µg/kg, respectively. PFHxS was detected at two locations (AOI01-03 and AOI01-04) at concentrations of 0.32 J and 0.36 J µg/kg, respectively. PFBS and PFNA were not detected in the surface soil samples.

PFBS, PFOS, and PFHxS were detected in the shallow subsurface soil at concentrations below their respective SLs at one location (AOI01-03) at concentrations of 1.4 J µg/kg, 2.1 J+ µg/kg, and 1.1 µg/kg, respectively. PFOA and PFNA were not detected in the shallow subsurface soil samples at AOI 1.

PFOS was detected in the deep subsurface soil at one location (AOI01-03) with a concentration of 0.76 J+ µg/kg. PFOA, PFBS, PFHxS, and PFNA were not detected in the deep subsurface soil samples at AOI 1.

6.3.2 Groundwater Analytical Results

Groundwater samples were collected from seven temporary wells associated with AOI 1 during the SI (AOI01-01 through AOI01-07). **Figure 6-6** and **6-7** presents the ranges of detections in groundwater. **Table 6-5** summarizes the groundwater results.

PFOA, PFOS, and PFHxS were detected at concentrations exceeding their respective SLs. PFBS and PFNA were detected at concentrations below their respective SLs. A summary of the AOI01 detections of PFOA, PFOS, PFHxS, PFBSs, and PFNA are as follows:

- PFOA was detected at concentrations exceeding the SL at two locations AOI01-03 and AOI01-07 with concentrations of 20 J and 7.8 ng/L, respectively. PFOA was detected at all other AOI 1 locations at concentrations below the SL with concentrations ranging from 0.46 J to 4.3 ng/L.
- PFOS was detected at concentrations exceeding the SL at four locations (AOI01-03, AOI01-04, AOI01-05, and AOI01-06) with concentrations of 67, 10, 6.1, and 10 ng/L, respectively. PFOS was detected at concentrations below the SL at the other locations (AOI01-01, AOI01-02, and AOI01-07) at concentrations ranging from 2.4 to 3.8 J+ ng/L.
- PFHxS was detected at a concentration exceeding the SL at one location (AOI01-03) with a concentration of 54 ng/L. PFHxS was detected at all other locations (AOI01-01, AOI01-02, and AOI01-04 through AOI01-07) at concentrations ranging from 0.93 J to 29 ng/L.
- PFBS was detected at all seven locations (AOI01-01 through AOI01-07) below the SL, at concentrations ranging from 1.9 to 60 ng/L.
- PFNA was detected at three of seven locations (AOI01-03, AOI01-04, and AOI01-06) below the SL, at concentrations ranging from 0.52 J to 3.3 ng/L.

6.3.3 Conclusions

Based on the results of the SI, PFOA, PFBS, PFOS, and PFHxS were detected in soil below their respective SLs. PFNA was not detected in soil at AOI 1. PFOA, PFOS, and PFHxS were detected in groundwater at concentrations above their respective SLs. PFBS and PFNA were detected in groundwater at concentrations below their respective SLs. Based on the exceedances of the SLs in groundwater, further evaluation at AOI 1 is warranted.

6.4 AOI 2

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

6.4.1 Soil Analytical Results

Soil samples were collected from two boring locations associated with AOI 2 during the SI (AOI02-01 and AOI02-02). **Figure 6-1** through **6-5** present the ranges of detections in soil. **Tables 6-2** and **6-4** summarize the soil results.

Surface soil was sampled from both locations (AOI02-01 and AOI02-02) at depths of 0 to 2 and 7 to 8 ft bgs (native soil below stockpiled soil), respectively. Soil was sampled from the shallow subsurface soils at locations AOI02-01 and AOI02-02 at depths of 14 to 15 and 22 to 23 ft bgs, respectively. The deep subsurface soil at AOI02-01 and AOI02-02 was sampled at an interval of approximately 1 foot above the water table which was approximately 55 to 56 and 63 to 64 ft bgs, respectively.

No relevant compounds were detected in soils at AOI 2.

6.4.2 Groundwater Analytical Results

Groundwater samples were collected from two temporary wells associated with AOI 2 during the SI. **Figure 6-6** and **6-7** presents the ranges of detections in groundwater. **Table 6-5** summarizes the groundwater results.

Groundwater was sampled from temporary monitoring wells AOI02-01 and AOI02-02. PFOA, PFBS, PFOS, and PFHxS were detected at concentrations below their respective SLs. PFOA was detected at AOI02-01 and AOI02-02, each with concentrations of 0.51 J ng/L. PFBS was detected at AOI02-01 and AOI02-02 at concentrations of 26 and 10 ng/L, respectively. PFOS was detected at AOI02-01 and AOI02-02 at concentrations of 0.84 J and 2.8 ng/L, respectively. PFHxS was detected at AOI02-01 and AOI02-02 at concentrations of 8.9 and 3.3 ng/L, respectively. PFNA was not detected in the groundwater samples.

6.4.3 Conclusions

Based on the results of the SI, no relevant compounds were detected in soil. PFOA, PFBS, PFOS, and PFHxS were detected in groundwater at concentrations below their respective SLs. There were no exceedances of the SLs in soil or groundwater, and no further evaluation at AOI 2 is warranted.

6.5 BOUNDARY SAMPLE LOCATIONS

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

6.5.1 Boundary Sample Locations – Soil Analytical Results

No soil samples were collected from boundary locations.

6.5.2 Boundary Sample Locations – Groundwater Analytical Results

Groundwater was sampled from two temporary monitoring wells AASF-01 and AASF-02 located at the northern boundary between the Facility and the Reno-Stead Airport. AASF-01 and AASF-02 are located upgradient of AOI 1 based on the regional groundwater flow direction. The July 2022 groundwater elevations depicted radial groundwater flow direction ranging from north to west to northwest (**Figure 2-4**), which places AASF-01 downgradient of AOI 1. PFOA, PFBS, and PFOS were detected at concentrations below their respective SLs. PFOS was detected at both AASF-01 and AASF-02 at concentrations of 0.55 J and 0.8 J ng/L, respectively. PFOA was detected at AASF-02 at a concentration of 0.54 J ng/L. PFBS were detected at AASF-02 at a concentration of 1.7 J ng/L. PFHxS and PFNA were not detected in the boundary groundwater samples.

6.5.3 Conclusions

Based on the results of the SI, PFOA, PFBS, and PFOS were detected in boundary groundwater samples at concentrations below their respective SLs.

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Table 6-2
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil
Site Inspection Report, Reno Army Aviation Support Facility, Nevada

	Area of Interest	AOI 1								AOI 2			
	Location ID	AOI01-01		AOI01-02		AOI01-03		AOI01-04		AOI02-01		AOI02-02	
	Sample Name	AOI01-01-SB-1-2		AOI01-02-SB-1-2		AOI01-03-SB-1-2		AOI01-04-SB-0-2		AOI02-01-SB-0-2		AOI02-02-SB-7-8	
	Parent Sample ID												
	Depth (ft)	1-2		1-2		1-2		0-2		0-2		7-8	
	Sample Date	7/15/2022		7/15/2022		7/14/2022		7/7/2022		7/12/2022		7/13/2022	
Analyte	**OSD Screening Level [1]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Soil, PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)													
PFBS	1,900	ND		ND		ND		ND		ND		ND	
PFHxS	130	ND		ND		0.32	J	0.36	J	ND		ND	
PFNA	19	ND		ND		ND		ND		ND		ND	
PFOS	13	ND		ND		11		1.3		ND		ND	
PFOA	19	ND		ND		ND		0.25	J	ND		ND	

Gray Fill — Detected concentration exceeded OSD Screening Level

References
1. 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.* The screening levels for soil are based on residential scenario for incidental ingestion of contaminated soil.

Interpreted Qualifiers
J = Estimated concentration

Chemical Abbreviations
PFBS Perfluorobutanesulfonic acid
PFHxS Perfluorohexanesulfonic acid
PFNA Perfluorononanoic acid
PFOS Perfluorooctanesulfonic acid
PFOA Perfluorooctanoic acid

Acronyms and Abbreviations
AOI Area of Interest
ft Feet
ND analyte not detected above the LOD (LOD values are prented in Appendix E)
LOD limit of detection
OSD Office of the Secretary of Defense
PFAS per- and polyfluoralkyl substances
QSM Quality Systems Manual
Qual interpreted qualifier
µg/kg micrograms/kilogram

Table 6-3
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil
Site Inspection Report, Reno Army Aviation Support Facility, Nevada

	Area of Interest	AOI 1										AOI 2					
	Location ID	AOI01-01		AOI01-02		AOI01-02		AOI01-03		AOI01-04		AOI02-01		AOI02-02		AOI02-02	
	Sample Name	AOI01-01-SB-14-15		AOI01-02-SB-14-15		RENO-FD-02		AOI01-03-SB-14-15		AOI01-04-SB-14-15		AOI02-01-SB-14-15		AOI02-02-SB-22-23		RENO-FD-01	
	Parent Sample ID					AOI01-02-SB-14-15										AOI02-02-SB-22-23	
	Depth (ft)	14-15		14-15		14-15		14-15		14-15		14-15		22-23		22-23	
	Sample Date	7/18/2022		7/15/2022		7/15/2022		7/14/2022		7/8/2022		7/12/2022		7/13/2022		7/13/2022	
Analyte	**OSD Screening Level [1]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Soil, PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)																	
PFBS	25000	ND		ND		ND		1.4	J	ND		ND		ND		ND	
PFHxS	1600	ND		ND		ND		1.1		ND		ND		ND		ND	
PFNA	250	ND		ND		ND		ND		ND		ND		ND		ND	
PFOS	160	ND		ND		ND		2.1	J+	ND		ND		ND		ND	
PFOA	250	ND		ND		ND		ND		ND		ND		ND		ND	

Gray Fill — Detected concentration exceeded OSD Screening Level

References

1. 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.* The screening levels for soil are based on Industrial/Commercial Composite Worker scenario for incidental ingestion of contaminated soil.

Interpreted Qualifiers

J = Estimated concentration

J+ = Estimated quantity but may bias high

Chemical Abbreviations

PFBS	Perfluorobutanesulfonic acid
PFHxS	Perfluorohexanesulfonic acid
PFNA	Perfluorononanoic acid
PFOS	Perfluorooctanesulfonic acid
PFOA	Perfluorooctanoic acid

Acronyms and Abbreviations

AOI	Area of Interest
ft	Feet
LOD	limit of detection
ND	analyte not detected above the LOD
OSD	Office of the Secretary of Defense
PFAS	per- and polyfluoralkyl substances
QSM	Quality Systems Manual
Qual	interpreted qualifier
µg/kg	micrograms/kilogram

Table 6-4
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Deep Subsurface Soil
Site Inspection Report, Reno Army Aviation Support Facility, Nevada

	Area of Interest	AOI 1								AOI 2			
	Location ID	AOI01-01		AOI01-02		AOI01-03		AOI01-04		AOI02-01		AOI02-02	
	Sample Name	AOI01-01-SB-50-51		AOI01-02-SB-50-51		AOI01-03-SB-45-46		AOI01-04-SB-44-45		AOI02-01-SB-55-56		AOI02-02-SB-63-64	
	Parent Sample ID												
	Depth (ft)	50-51		50-51		45-46		44-45		55-56		63-64	
	Sample Date	7/18/2022		7/15/2022		7/14/2022		7/8/2022		7/13/2022		7/13/2022	
Analyte	**OSD Screening Level**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
Soil, PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)													
PFBS	--	ND		ND		ND		ND		ND		ND	
PFHxS	--	ND		ND		ND		ND		ND		ND	
PFNA	--	ND		ND		ND		ND		ND		ND	
PFOS	--	ND		ND		0.76	J+	ND		ND		ND	
PFOA	--	ND		ND		ND		ND		ND		ND	

Interpreted Qualifiers
J+ = Estimated quantity but may bias high

Chemical Abbreviations
PFHxS Perfluorohexanesulfonic acid
PFNA Perfluorononanoic acid
PFOS Perfluorooctanesulfonic acid
PFOA Perfluorooctanoic acid

Acronyms and Abbreviations
AOI Area of Interest
ft Feet
LOD limit of detection
ND analyte not detected above the LOD
OSD Office of the Secretary of Defense
PFAS per- and polyfluoralkyl substances
QSM Quality Systems Manual
Qual interpreted qualifier
µg/kg micrograms/kilogram

Table 6-5
PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater
Site Inspection Report, Reno Army Aviation Support Facility, Nevada

	Location ID	AOI01-01		AOI01-02		AOI01-02		AOI01-03		AOI01-04		AOI01-05		AOI01-06		AOI01-07		AOI02-01		AOI02-02		AASF-01		AASF-02	
	Sample Name	AOI01-01-GW		AOI01-02-GW		RENO-FD-03		AOI01-03-GW		AOI01-04-GW		AOI01-05-GW		AOI01-06-GW		AOI01-07-GW		AOI02-01-GW		AOI02-02-GW		AASF-01-GW		AASF-02-GW	
	Parent Sample ID					AOI01-02-GW																			
	Sample Date	7/19/2022		7/18/2022		7/18/2022		7/15/2022		7/19/2022		7/20/2022		7/21/2022		7/21/2022		7/20/2022		7/20/2022		7/19/2022		7/20/2022	
Analyte	**OSD Screening Level [1]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (ng/L)																									
PFBS	601	2.2		2.0		1.9		21		60		16		3.6		8.8		26		10		ND		1.7	J
PFHxS	39	4.4		0.93	J	0.98	J	54		29		5.7		3.0		22		8.9		3.3		ND		ND	
PFNA	6	ND		ND		ND		3.3		0.52	J	ND		0.85	J	ND		ND		ND		ND		ND	
PFOS	4	3.1		2.5		2.4		67		10		6.1		10		3.8	J+	0.84	J	2.8		0.55	J	0.80	J
PFOA	6	0.81	J	0.46	J	ND		20		4.3		1.5	J	2.9		7.8		0.51	J	0.51	J	ND		0.54	J

Notes

Grey Fill	Detected concentration exceeded OSD Screening Levels

References

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

Interpreted Qualifiers

J = Estimated concentration

J+ = Estimated concentration, bias high.

Army National Guard Site Inspections
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

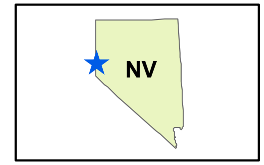
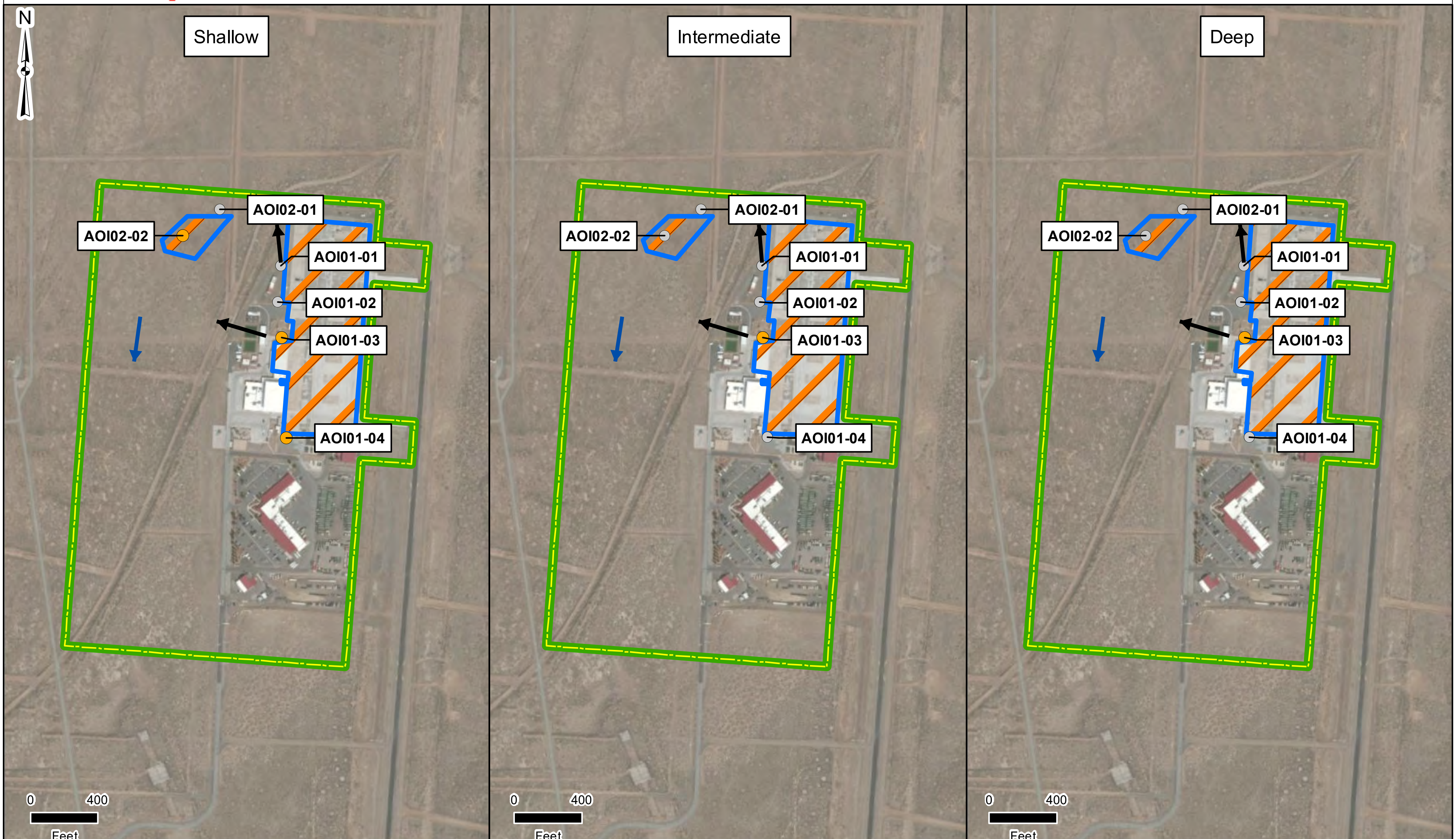


Figure 6-1
PFOS Detections in Soil



Facility Data
Facility Boundary
Area of Interest (AOI)
Potential PFAS Release

Hydrology/Hydrogeology
Inferred Groundwater Flow Direction
Surface Water Flow Direction

PFOS Results (µg/kg)
ND (Non-Detect)
>ND - 13
>13 -160
>160 - 1,600
>1,600

NOTES:
PFOS = perfluorooctanesulfonic acid
ND = Non-Detect
(µg/Kg) = Microgram(s) per Kilogram
Exceedances of The Office of the Secretary of Defense (OSD) Screening Level (SL) are depicted with a yellow halo.

Data Sources:
ESRI 2020
AECOM 2020

Date.......May 2023
Prepared By:........WSP
Prepared For:...USACE

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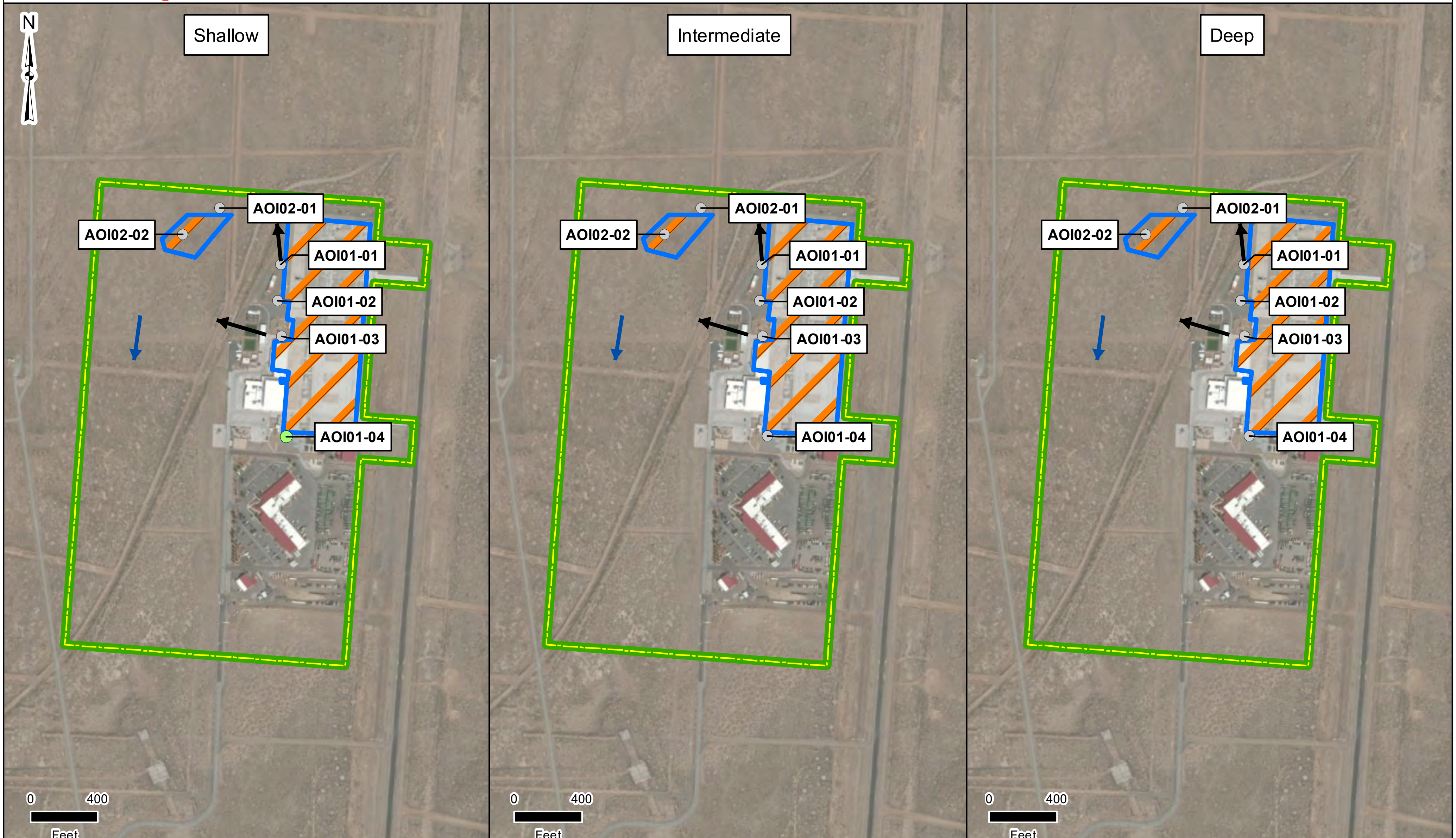
Site Inspection Report
Reno Army Aviation Support Facility
Reno, Nevada

Figure 6-2
PFOA Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest (AOI)
- Potential PFAS Release

Hydrology/Hydrogeology
- Inferred Groundwater Flow Direction
- Surface Water Flow Direction

PFOA Results (µg/kg)
- ND (Non-Detect)
- >ND - 19
- >19 - 250
- >250 - 2,500
- >2,500

NOTES:
PFOA = perfluorooctanoic acid
ND = Non-Detect
(µg/Kg) = Microgram(s) per Kilogram
Exceedances of The Office of the Secretary of Defense (OSD) Screening Level (SL) are depicted with a yellow halo.

Data Sources:
ESRI 2020
AECOM 2020

Date :..............May 2023
Prepared By:............WSP
Prepared For:........USACE

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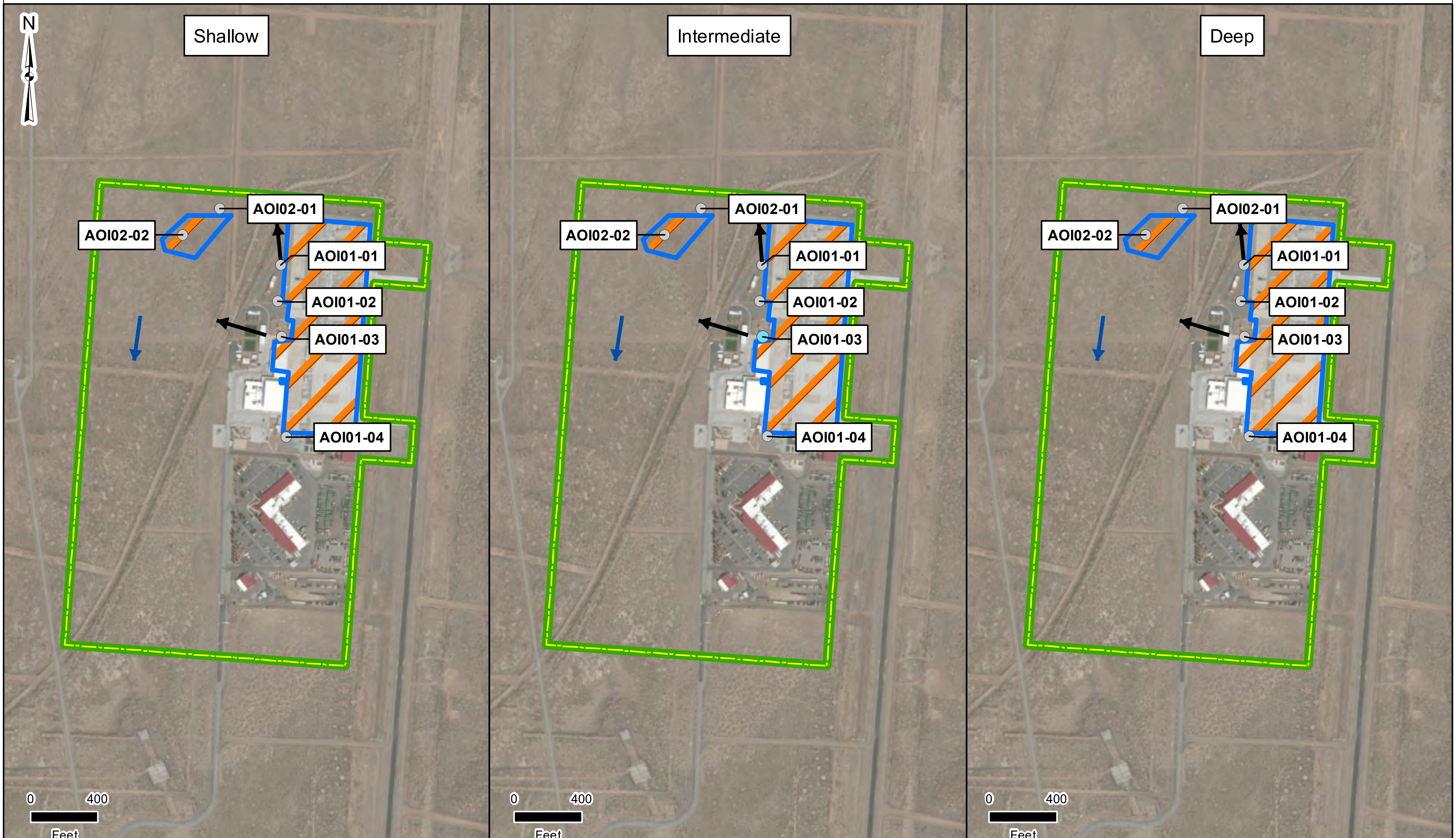
Figure 6-3
PFBS Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest (AOI)
- Potential PFAS Release

Hydrology/Hydrogeology
- Inferred Groundwater Flow Direction
- Surface Water Flow Direction

PFBS Results (µg/kg)
- ND (Non-Detect)
- >ND - 10
- >10 - 1,900
- >1,900 - 25,000
- >25,000

NOTES:
PFBS = perfluorobutanesulfonic acid
ND = Non-Detect
(µg/Kg) = Microgram(s) per Kilogram
Exceedances of The Office of the Secretary of Defense (OSD) Screening Level (SL) are depicted with a yellow halo.

Data Sources:
ESRI 2020
AECOM 2020

Date :...........May 2023
Prepared By:........WSP
Prepared For:....USACE

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Reno Army Aviation Support Facility
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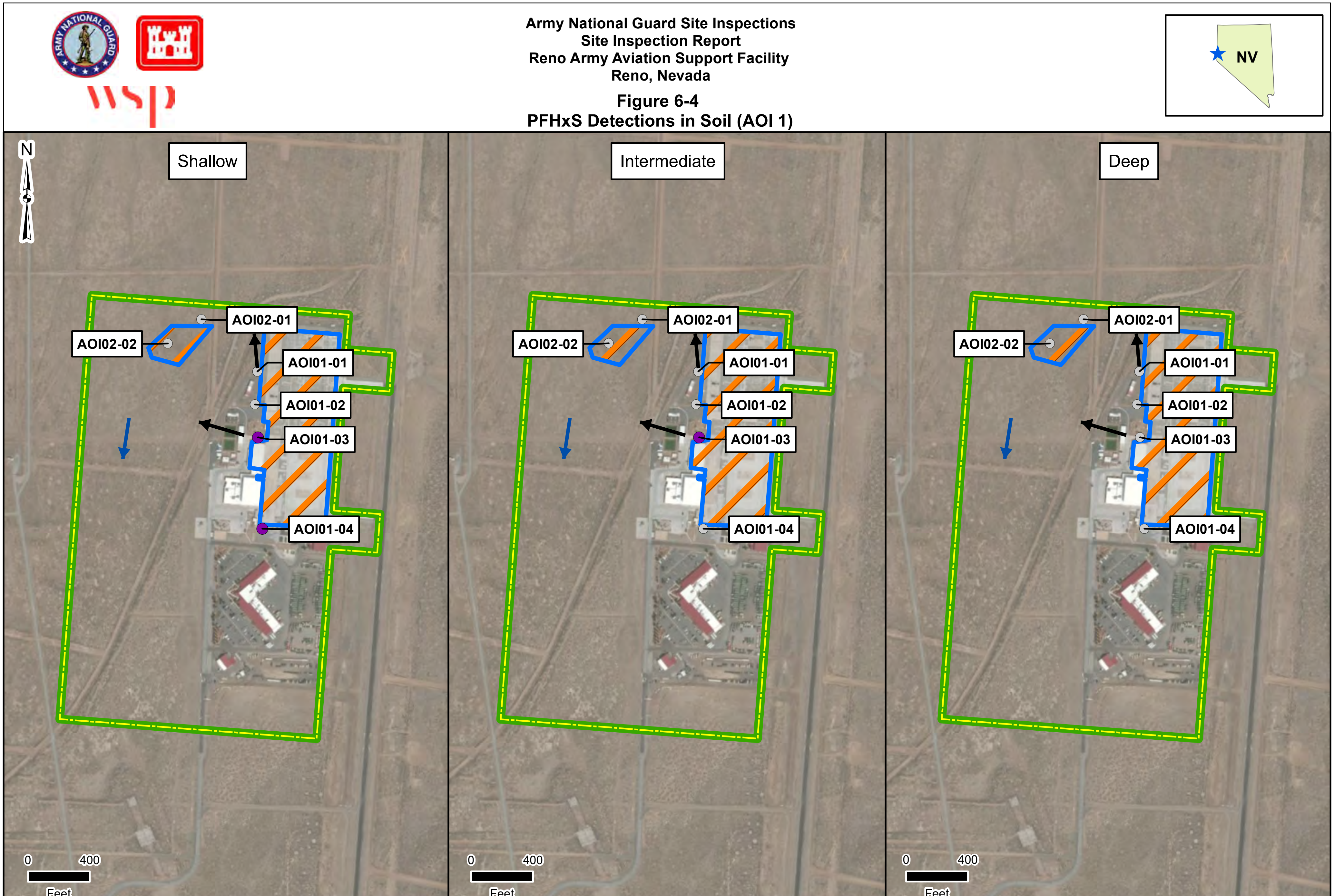
Figure 6-4
PFHxS Detections in Soil (AOI 1)



Facility Data
- Facility Boundary
- Area of Interest (AOI)
- Potential PFAS Release

Hydrology/Hydrogeology
- Surface Water Flow Direction
- Inferred Groundwater Flow Direction

PFHxS Results (µg/kg)
- ND (Non-Detect)
- >ND - 13
- >13 -130
- >130 - 1,300
- >1,300

NOTES:
PFHxS = perfluorohexanesulfonic acid
ND = Non-Detect
(µg/Kg) = Microgram(s) per Kilogram
Exceedances of The Office of the Secretary of Defense (OSD) Screening Level (SL) are depicted with a yellow halo.

Data Sources:
ESRI 2020
AECOM 2020

Date:.....December 2023
Prepared By:...........WSP
Prepared For:......USACE

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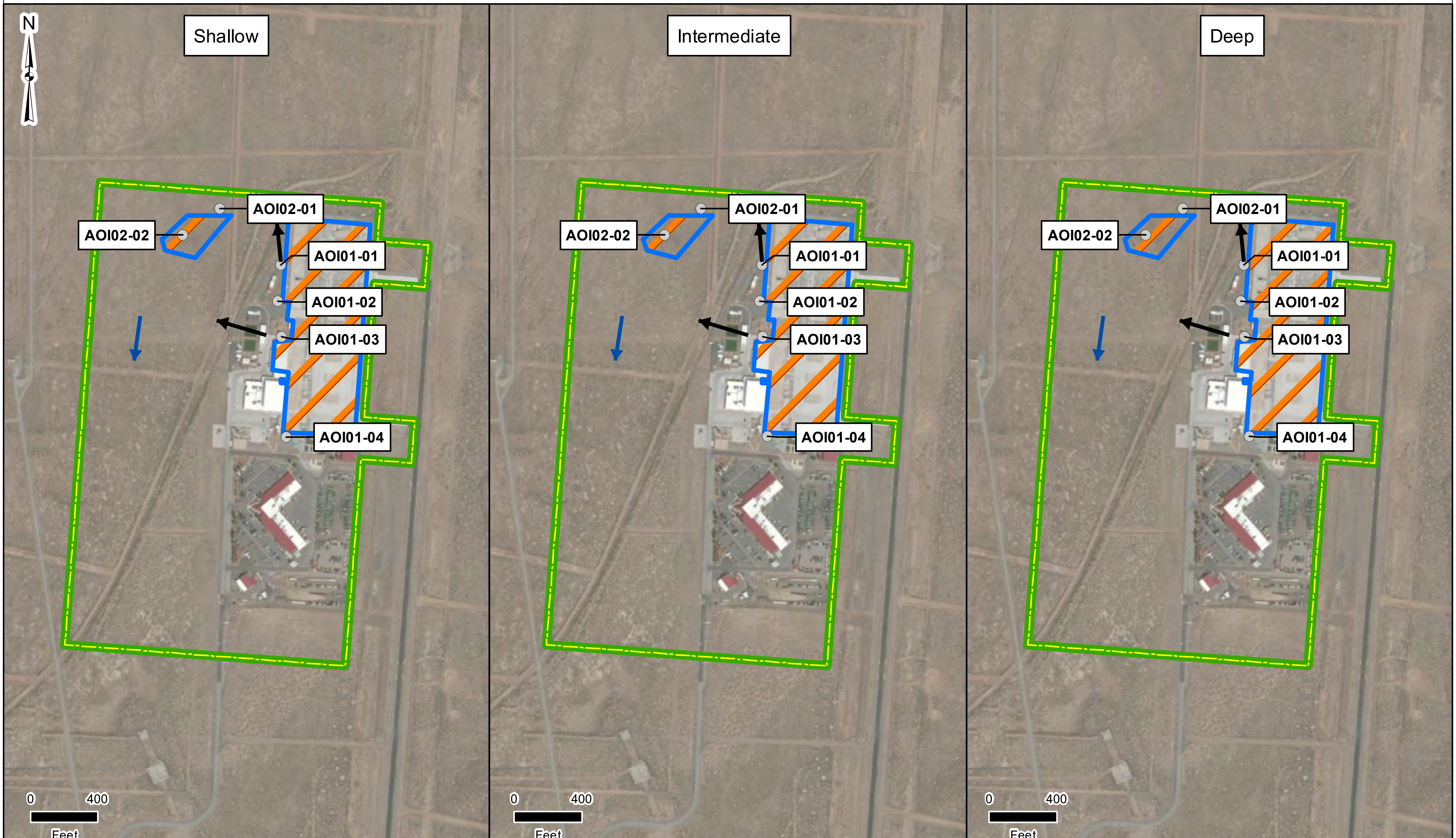
Figure 6-5
PFNA Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest (AOI)
- Potential PFAS Release

Hydrology/Hydrogeology
- Surface Water Flow Direction
- Inferred Groundwater Flow Direction

PFNA Results (µg/kg)
- ND (Non-Detect)
- >ND - 19
- >19 - 250
- >250 - 2,500
- >2,500

NOTES:
PFNA = perfluorononanoic acid
ND = Non-Detect
(µg/Kg) = Microgram(s) per Kilogram
Exceedances of The Office of the Secretary of Defense (OSD) Screening Level (SL) are depicted with a yellow halo.

Data Sources:
ESRI 2020
AECOM 2020

Date :.......May 2023
Prepared By:........WSP
Prepared For:..USACE

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Reno, Nevada

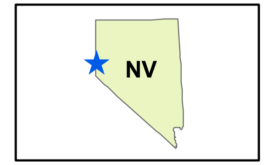
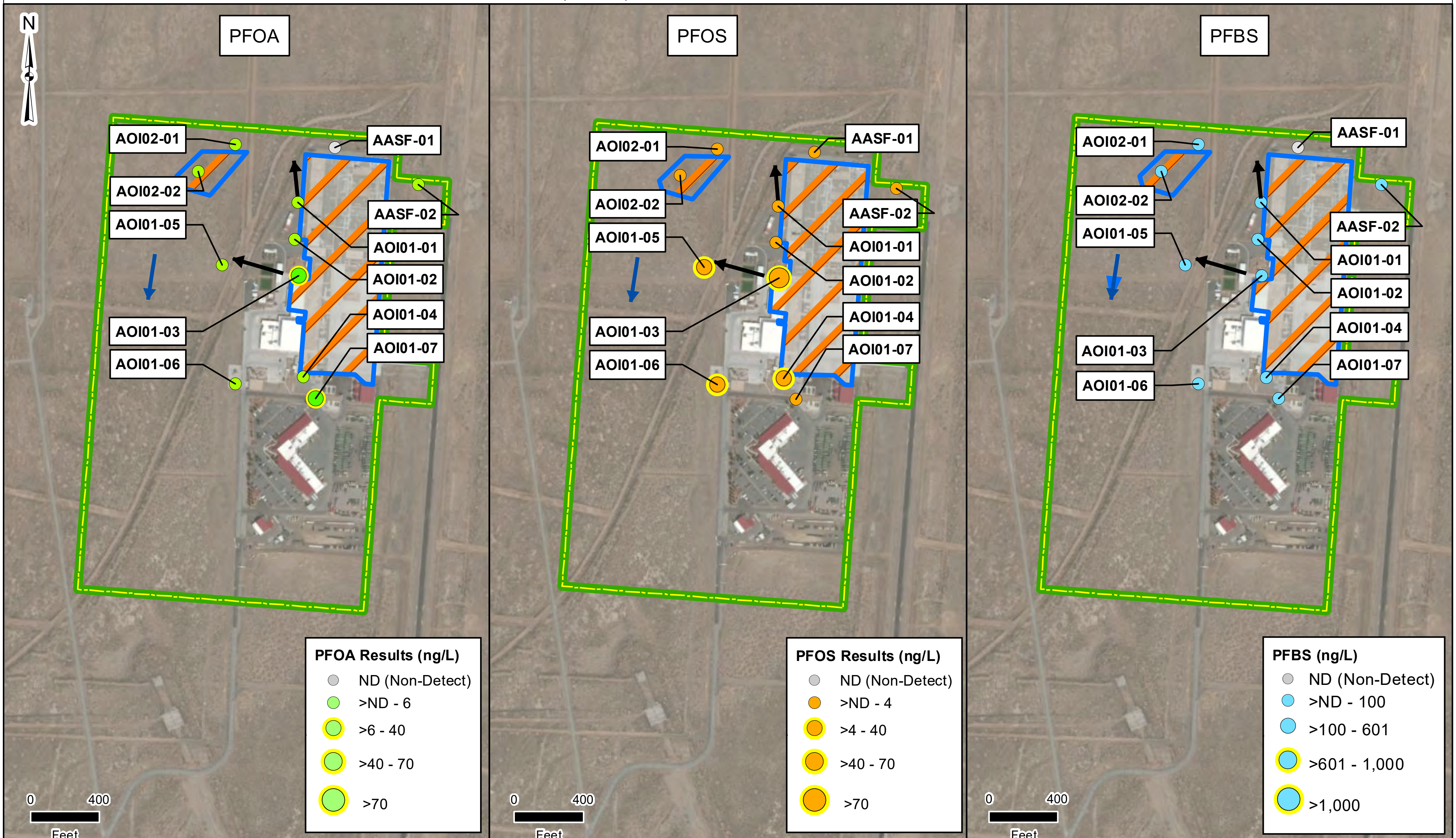


Figure 6-6
PFOA, PFOS, PFBS Detections in Groundwater



Facility Data
Facility Boundary
Area of Interest (AOI)
Potential PFAS Release

Hydrology/Hydrogeology
Inferred Groundwater Flow Direction
Surface Water Flow Direction

NOTES:
PFOS = perfluorooctanesulfonic acid
PFOA = perfluorooctanoic acid
PFBS = perfluorobutanesulfonic acid
ND = non-detect
ng/L = nanogram(s) per liter
Exceedances of The Office of the Secretary of Defense (OSD) Screening Level (SL) are depicted with a yellow halo

Data Sources:
ESRI 2020
AECOM 2020

Date:..........................May 2023
Prepared By:......................WSP
Prepared For:..................USACE

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Site Inspection Report
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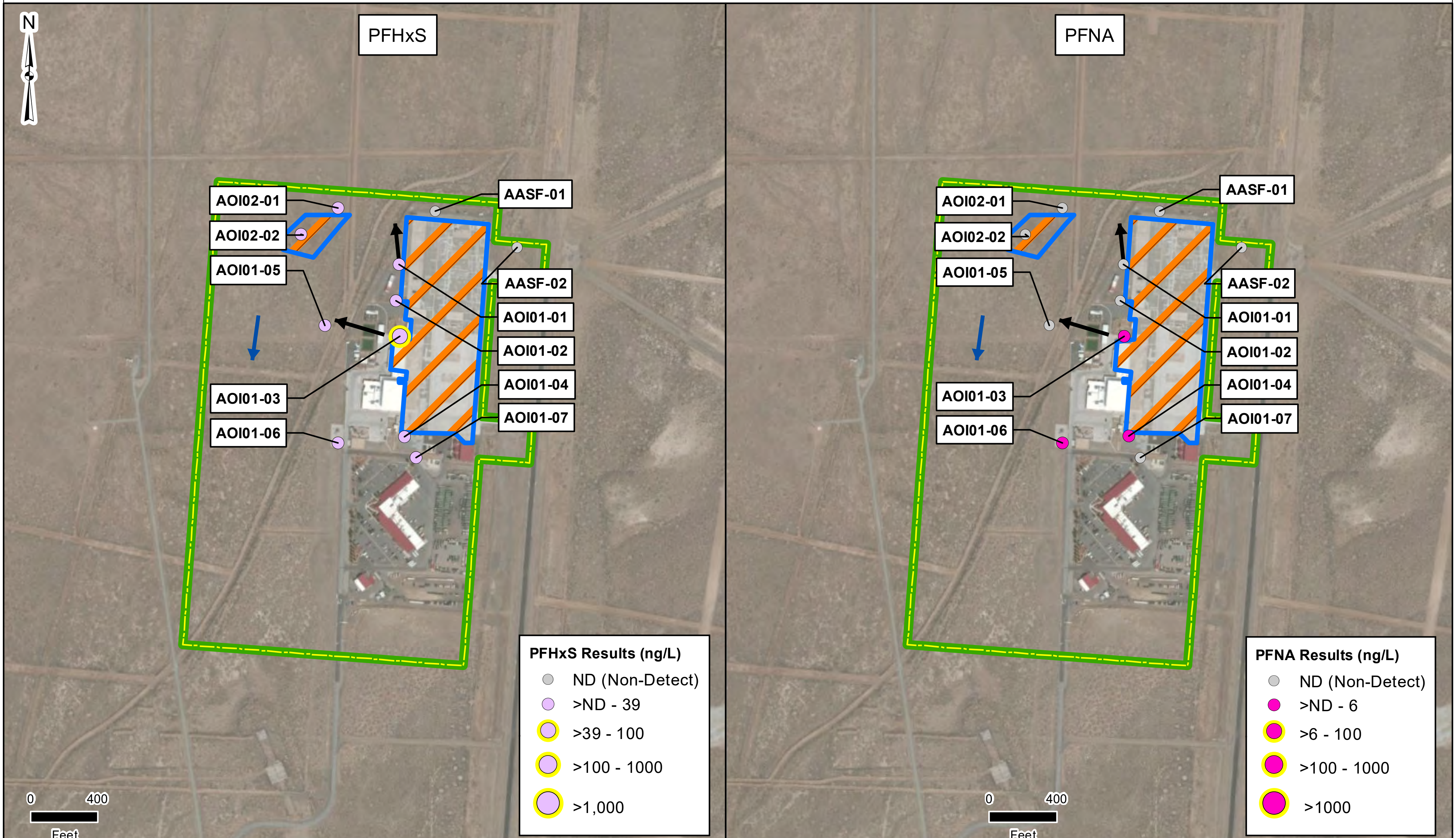
Reno, Nevada

Figure 6-7
PFHxS and PFNA Detections in Groundwater



Facility Data
Facility Boundary
Area of Interest (AOI)
Potential PFAS Release

Hydrology/Hydrogeology
Inferred Groundwater Flow Direction
Surface Water Flow Direction

NOTES:
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
ND = Non-Detect
ng/L = nanogram(s) per liter
Exceedances of The Office of the Secretary of Defense (OSD) Screening Level (SL) are depicted with a yellow halo

Data Sources:
ESRI 2020
AECOM 2020

Date:............May 2023
Prepared By:...........WSP
Prepared For:......USACE

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7. EXPOSURE PATHWAYS

The Conceptual Site Models (CSMs) for the AOIs, revised based on the SI findings, are presented on **Figure 7-1** and **7-2**. 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 Facility 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
5. Potentially exposed populations.

If any of these elements are missing, the pathway is incomplete. The CSM figure uses an empty circle symbol to represent an incomplete exposure pathway. Areas with no identified complete pathway generally warrant no further action. However, the pathway is considered potentially complete if the relevant compounds are detected, in which case the CSM figure uses a half-filled circle symbol to represent a potentially complete exposure pathway. Additionally, a completely filled circle symbol is used to indicate when a potentially complete exposure pathway has detections of the relevant compounds above the SLs. Areas with an identified potentially complete pathway and a complete pathway may warrant further investigation. Although the CSM indicates whether potentially complete exposure pathways may exist, the recommendation for future study in a 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 EPA guidance for risk screening (EPA 2001). Receptors at the Facility include Facility workers (e.g., facility staff and visiting soldiers), construction workers, trespassers, residents outside the Facility boundary, and recreational users outside of the Facility boundary.

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 each AOI based on the aforementioned criteria.

7.1.1 AOI 1

AOI 1 is the Former Firetruck Bay and Rotary Wing Parking Area, where AFFF was historically stored and possibly used. No potential releases or AFFF usage was noted during the PA (AECOM, 2020) at AOI 1.

PFOA, PFBS, and PFOS were detected in the surface soil at AOI 1 at concentrations below their respective SLs. Facility and construction workers and trespassers could contact constituents in surface soil via incidental ingestion and inhalation of dust. Therefore, the surface soil exposure pathway for Facility workers and construction workers are potentially complete. PFBS, PFOS, and PFHxS were detected in the subsurface soil at AOI 1 at concentrations below their respective SLs. Construction workers could contact constituents in subsurface soil during soil disturbing activities via incidental ingestion and inhalation of dust. Therefore, the subsurface soil exposure pathway for construction workers is potentially complete. The CSM for AOI 1 is presented on **Figure 7-1**.

7.1.2 AOI 2

AOI 2 is the stockpiled soils, where excavated soils from the tarmac improvements are stored. No potential releases were noted in this area during the PA (AECOM, 2020) at AOI 2. PFOA, PFBS, PFOS, PFHxS, and PFNA were not detected in the surface or subsurface soils at AOI 2. Therefore, the surface and subsurface soil exposure pathways for Facility and construction workers and trespassers is incomplete. The CSM for AOI 2 is presented on **Figure 7-2**.

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 at each AOI based on the aforementioned criteria.

7.2.1 AOI 1

PFOA, PFOS, and PFHxS were detected above their respective SLs in groundwater samples collected at AOI 1. PFBS and PFNA were detected below their respective SLs in groundwater samples collected at AOI 1. PFOA, PFOS, and PFBS were detected in groundwater at the Facility boundary at AOI 1 but at concentrations below their respective SLs. The Facility is secured therefore, the pathway for ingestion of shallow groundwater by a trespasser is incomplete.

The depth to static groundwater at AOI 1 observed in July 2022 during the SI ranged from approximately 41 to 51 ft bgs, which is below the anticipated limit of construction activities (15 feet bgs). Therefore, the pathway for construction worker exposure to groundwater is incomplete.

Domestic wells were identified within a 2-mile radius potentially downgradient of the Facility (**Figure 2-3**). Drinking water for Reno AASF is supplied by the municipality. Two municipal wells were identified during the PA (AECOM, 2020) approximately 0.1-mile to the west of the Facility. The recharge/injection well and replacement public supply/recharge well are completed at depths of approximately 840 and 600 ft bgs, respectively. According to a TMWA Report on Aquifer Storage and Recovery provided by the ARNG (TMWA, 2020), the recharge/injection well is used for injection of treated surface water into the groundwater aquifer of the Truckee Meadows hydrographic basin as well as for water supply. A replacement public supply/recharge well is also located proximal to the active well. The exposure pathway for ingestion is potentially complete for site workers and off-site residential receptors. The CSM for AOI 1 is presented on **Figure 7-1**.

7.2.2 AOI 2

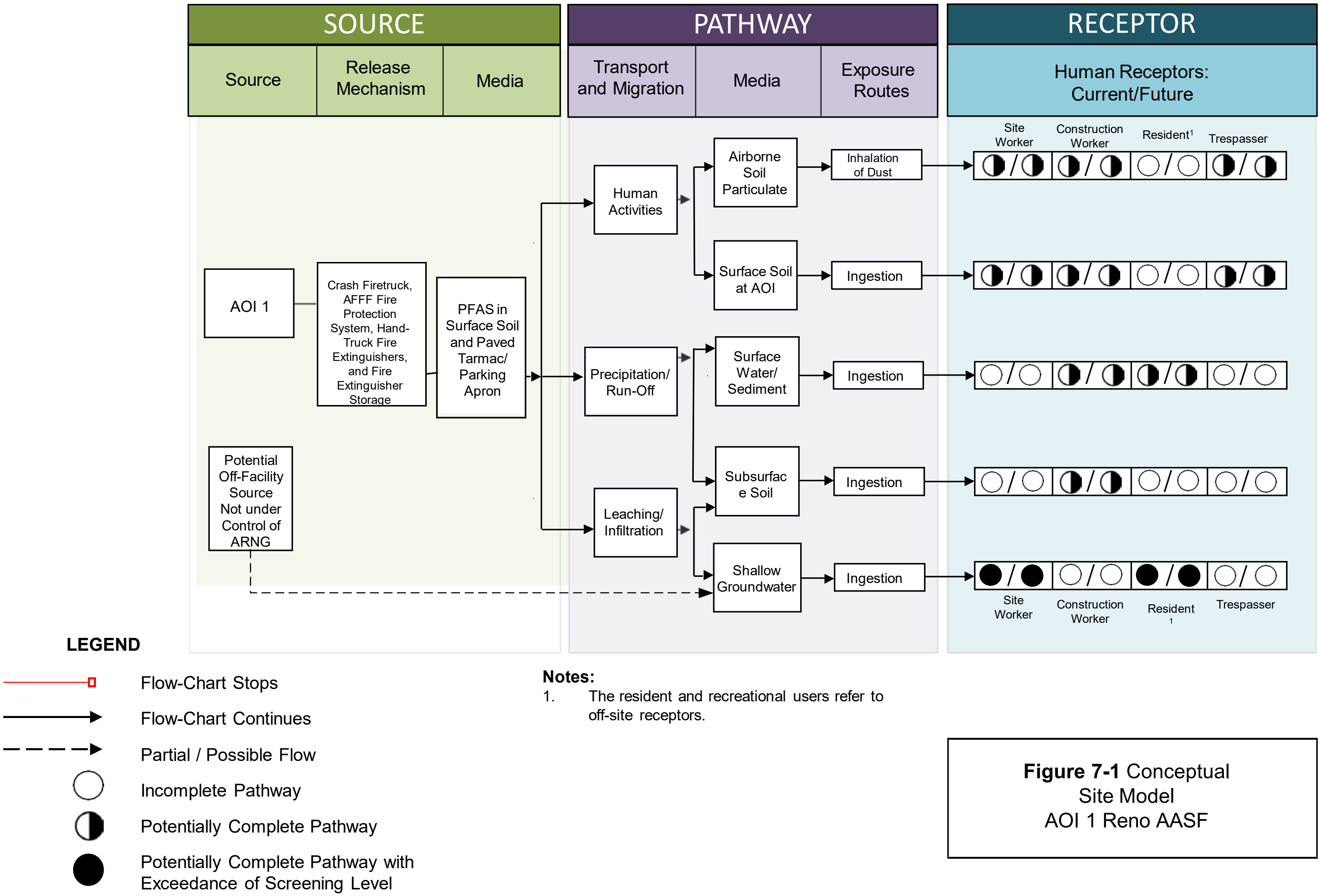
PFOA, PFBS, PFOS, and PFHxS were detected in AOI 2 groundwater below their respective SLs. Depths to water measured at AOI 2 in July 2022 during the SI ranged from approximately 54 to 60 ft bgs, which is below the anticipated limit of construction activities (15 feet bgs). Therefore, the pathway for construction worker exposure to groundwater is incomplete. The Facility is secured; therefore, the pathway for ingestion of shallow groundwater by a trespasser is incomplete. Domestic wells were identified within a 2-mile radius of the Facility (**Figure 2-3**); therefore, the exposure pathway for ingestion is potentially complete for off-site residential receptors. Drinking water for Reno AASF is supplied by the municipality. Two municipal wells were identified during the PA (AECOM, 2020) approximately 0.1-mile to the west of the Facility, the aforementioned TMWA Report (TMWA, 2020) indicates a municipal recharge/injection well and a replacement public supply/recharge well. According to a TMWA Report on Aquifer Storage and Recovery provided by the ARNG (TMWA, 2020), the recharge/injection well is used for injection of treated surface water into the groundwater aquifer of the Truckee Meadows hydrographic basin as well as for water supply. Therefore, the pathway for ingestion of shallow groundwater by a site worker and off-site resident is potentially complete. The CSM for AOI 2 is presented on **Figure 7-2**.

7.3 SURFACE WATER AND SEDIMENT EXPOSURE PATHWAY

According to the Facility Storm Water Pollution Prevention Plan (SWPPP) (Reno-Tahoe Airport Authority. 2020) the Reno-Stead Airport is located within a topographically enclosed hydrographic area and there is no surface water outlet except through evaporation and infiltration. However, the SWPPP also references three primary stormwater discharge points and states that Swan/Lemmon Lake and Silver Lake (**Figure 2-5**) are surface waters that receive stormwater from the Facility. According to the Reno-Stead Airport Master Plan Update (PBSJ. 2010) the eastern most portion of Reno-Stead Airport drains to the southeast of the Airport into Swan/Lemmon Lake, while the majority of the Reno-Stead Airport (including AOI 1 and AOI 2 areas) drains to the south and southwest. The natural drainage ultimately empties into either Silver Lake to the southwest or Swan/Lemmon Lake to the southeast. SI results in soil and groundwater from AOI 1 and AOI 2, 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.

PFAS are water soluble and can migrate readily from soil to surface water via leaching and runoff. PFOA, PFOS, and PFHxS were detected in surface soil at AOI 1. The sediment and surface water exposure pathway via the Facility and Airport stormwater systems, is considered potentially complete for construction workers. The sediment and surface water exposure pathway to site workers is considered incomplete, as no surface water bodies are located on the Facility.

The Facility is secured and fenced, thus the surface water and sediment exposure pathway to trespassers is considered incomplete. Although Silver Lake is located approximately 3 to 4 miles from the Facility, stormwater may eventually enter the Lake; thus, the surface water and sediment exposure pathway for residents is considered potentially complete via incidental ingestion during recreation. No relevant compounds were detected in surface soil at AOI 2, and all pathways for surface water and sediment are considered incomplete for AOI 2.



Notes:

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

Figure 7-1 Conceptual Site Model
AOI 1 Reno AASF

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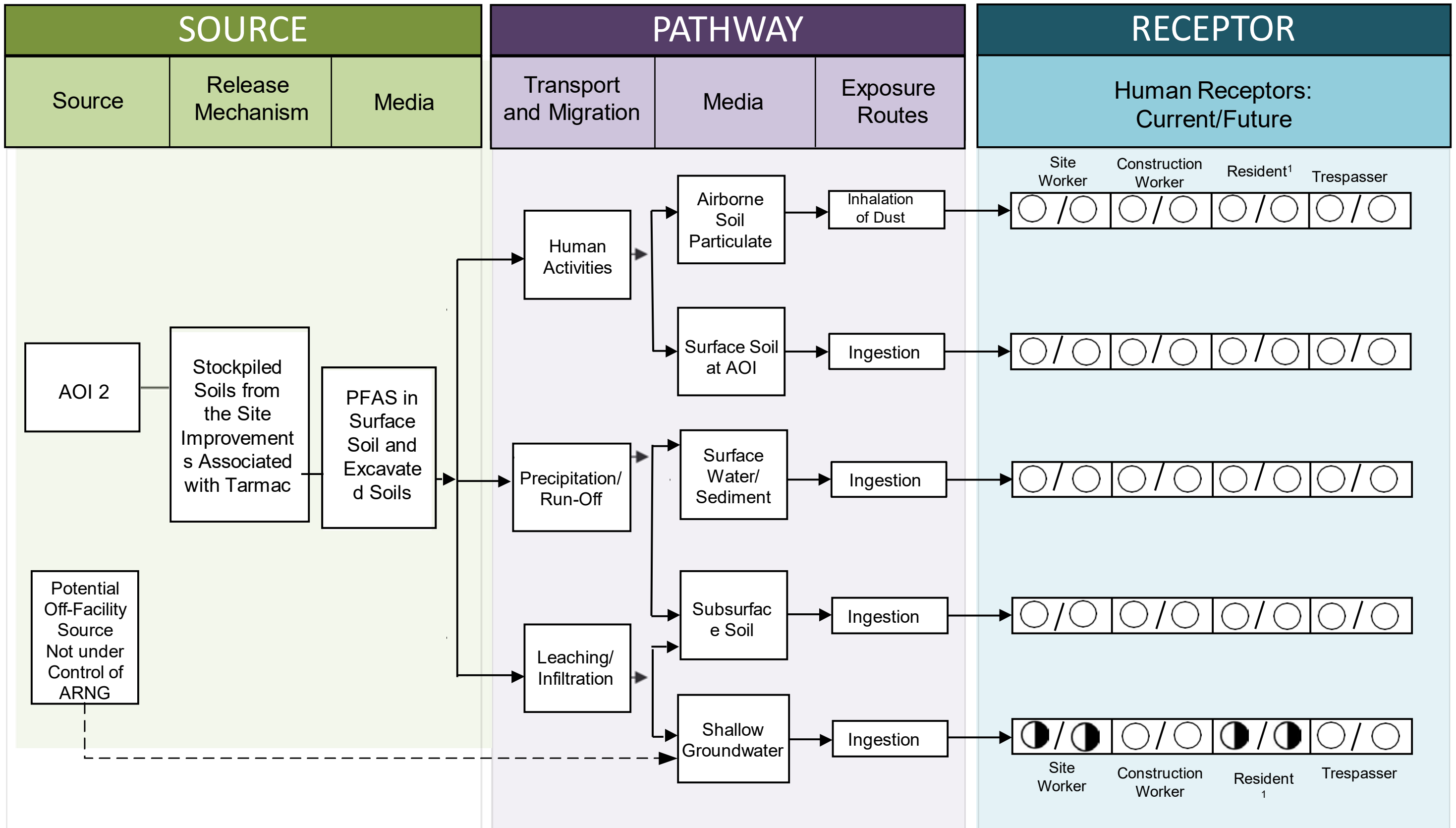

LEGEND

Flow-Chart Stops

Flow-Chart Continues

Partial / Possible Flow

Incomplete Pathway

Potentially Complete Pathway

Potentially Complete Pathway with Exceedance of Screening Level

Notes:

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

Figure 7-2
Conceptual Site Model
AOI 2 Reno AASF

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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 on 14 April 2022 and from 5 to 22 July 2022. The SI field activities included soil and groundwater sampling. Field activities were conducted in accordance with the UFP-QAPP Addendum (EA/Wood, 2022a), except as previously noted in **Section 5.8**.

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

- 18 soil grab samples from 6 boring locations
- 11 grab groundwater samples from 11 temporary well locations
- 21 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, further evaluation under CERCLA is warranted for AOI 1, and no further action is warranted at this time at AOI 2. Based on the CSMs developed and revised based on the SI findings, there is potential for exposure to receptors from AOI 1 and AOI 2 from sources on the Facility resulting from historical DoD activities.

Sample analytical concentrations collected during the SI were compared against the project SLs in soil and groundwater, as described in **Table 6-1**. The following bullets summarize the SI results relative to the SLs:

At AOI 1:

- In the surface soils, PFOS, PFOA, and PFHxS were detected in soil at concentrations less than the respective SLs. PFOS and PFHxS were detected at AOI01-03 and PFOA, PFOS, and PFHxS were detected at AOI01-04. The maximum PFOA concentration in soil was 0.25 J µg/kg. The maximum PFOS concentration in soil was 11 µg/kg. The maximum PFHxS concentration in soil was 0.36 J µg/kg.

- In the subsurface soils, PFBS, PFOS, and PFHxS were detected at AOI01-03 at concentrations below SLs. The maximum PFBS concentration in soil was 1.4 J µg/kg. The maximum PFOS concentration in soil was 2.1 J+ µg/kg. The maximum PFHxS concentration in soil was 1.1 µg/kg.
- In groundwater, PFOA, PFOS, and PFHxS were detected at concentrations exceeding the SLs at AOI01-03. Detections of PFOA in groundwater exceeded SLs at AOI01-07, and PFOS was detected in groundwater at AOI01-04, AOI01-05, and AOI01-06 at concentrations that exceed SLs. The maximum concentrations of PFOA, PFOS, and PFHxS in groundwater were 20 ng/L, 67 ng/L, and 54 ng/L, respectively.
- PFBS and PFNA were detected in groundwater at AOI 1 at concentrations below the SLs.
- PFOA, PFBS, and PFOS were detected in groundwater at AASF-02 at concentrations of 0.54 J ng/L, 1.7 J ng/L, and 0.8 J ng/L, respectively, and PFOS was detected at AASF-01 at a concentration of 0.55 J. Detections of all relevant compounds at AASF-01 and AASF-02 were below their respective SLs.
- Based on the results of the SI, further evaluation of AOI 1 is warranted.

At AOI 2:

- No relevant compounds (PFOA, PFBS, PFOS, PFHxS, and PFNA) were detected at AOI 2 in the surface soils or subsurface soils.
- PFOA, PFBS, PFOS, and PFHxS were detected in groundwater at AOI02-01 and AOI02-02 at concentrations that did not exceed the SLs. The maximum PFOA concentration in groundwater was 0.51 J ng/L. The maximum PFBS concentration in groundwater was 26 ng/L. The maximum PFOS concentration in groundwater was 2.8 ng/L. The maximum PFHxS concentration in groundwater was 8.9 ng/L.
- Based on the results of the SI, no further action is warranted at this time for AOI 2.

Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the 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	Former Firetruck Bay and Rotary Wing Parking Area	◐	●	◐	Proceed to Remedial Investigation
2	Stockpiled Soils	○	◐	◐	No further Action

Legend:

● = Detected; exceedance of screening levels

◐ = Detected; no exceedance of screening levels

○ = Not detected

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