

FINAL Preliminary Assessment Report Camp Adair, Oregon

Perfluorooctane-Sulfonic Acid (PFOS) and Perfluorooctanoic
Acid (PFOA) Impacted Sites
ARNG Installations, Nationwide

March 2019

Prepared for:



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Table of Contents

Executive Summary	1
1. Introduction	5
1.1 Authority and Purpose	5
1.2 Preliminary Assessment Methods	5
1.3 Report Organization	6
1.4 Facility Location and Description	6
1.5 Facility Environmental Setting	7
1.5.1 Geology	8
1.5.2 Hydrogeology	8
1.5.3 Hydrology	9
1.5.4 Climate	10
1.5.5 Current and Future Land Use	10
2. Fire Training Areas	14
3. Non-Fire Training Areas	15
3.1 Prescribed Burns	15
4. Emergency Response Areas	17
5. Adjacent Sources	18
6. Conceptual Site Model	19
6.1 AOI 1 Controlled Burn Tree	19
7. Conclusions	23
7.1 Findings	23
7.2 Uncertainty	23
7.3 Potential Future Actions	24
8. References	26

Tables

Table 7-1: AOIs at Camp Adair

Table 7-2: Uncertainties

Table 7-3: PA Findings Summary

Figures

Figure ES-1	Summary of Findings
Figure ES-2	Conceptual Site Model
Figure 1-1	Facility Location
Figure 1-2	Groundwater Features
Figure 1-3	Surface Water Features
Figure 3-1	Non-Fire Fire Training Area
Figure 6-1	Area of Interest
Figure 6-2	Conceptual Site Model - AOI 1 Controlled Burn Tree
Figure 7-1	Summary of Findings

Appendices

Appendix A	Data Resources
Appendix B	Preliminary Assessment Documentation
	B.1 Interview Records
	B.2 Visual Site Inspection Checklists
	B.3 Conceptual Site Model Information
Appendix C	Photographic Log

Acronyms and Abbreviations

°F	degrees Fahrenheit
AAFS	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
amsl	above mean sea level
AOI	area of interest
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
DEQ	(Oregon) Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EFU	Exclusive Farm Use
FTA	fire training area
HUC	Hydrologic Unit Code
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish & Wildlife
ODPSST	Oregon Department of Public Safety Standards and Training
OMD	Oregon Military Department
ORARNG	Oregon Army National Guard
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PILs	Pollutant Initiation Levels
SI	Site Inspection
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

Executive Summary

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division, Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide*. The ARNG is assessing potential effects on human health related to processes at facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily in the form of aqueous film forming foam (AFFF) released during firefighting activities or training, although other PFAS sources are possible.

AECOM completed a PA for PFAS at Camp Adair in Corvallis, Oregon, to assess potential PFAS release areas and exposure pathways to receptors. Camp Adair has operated at the Corvallis location since 1950 under a license agreement with the USACE. Military training operations are conducted on-Post that involves military personnel, vehicles, and rotary-winged aircraft. The mission of Camp Adair is to provide training facilities and terrain for military soldiers and other military organizations (OMD, 2011). The facility is developed with live firing ranges in the southeastern portion. The remaining areas of the facility are primarily undeveloped vegetated land used for land navigation training. The facility is used by both military and non-military personnel for training operations.

The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases
- Conducted a 1-day site visit on 12 September 2018
- Interviewed current and retired Camp Adair (and other Oregon Military Department [OMD] facilities) personnel during the site visit including:
 - OMD Environmental Manager
 - OMD Natural Resources Conservation Manager
 - OMD Wildland Fire Manager
 - OMD Camp Rilea Training Site Manager (former State Aviation Officer)
 - OMD Camp Adair Fire Ranger
 - OMD Real Estate/Property Manager
- Completed visual site inspections of the facility and documented with photographs
- Developed a conceptual site model (CSM) to outline the potential release, pathway, and receptors of PFAS for Camp Adair

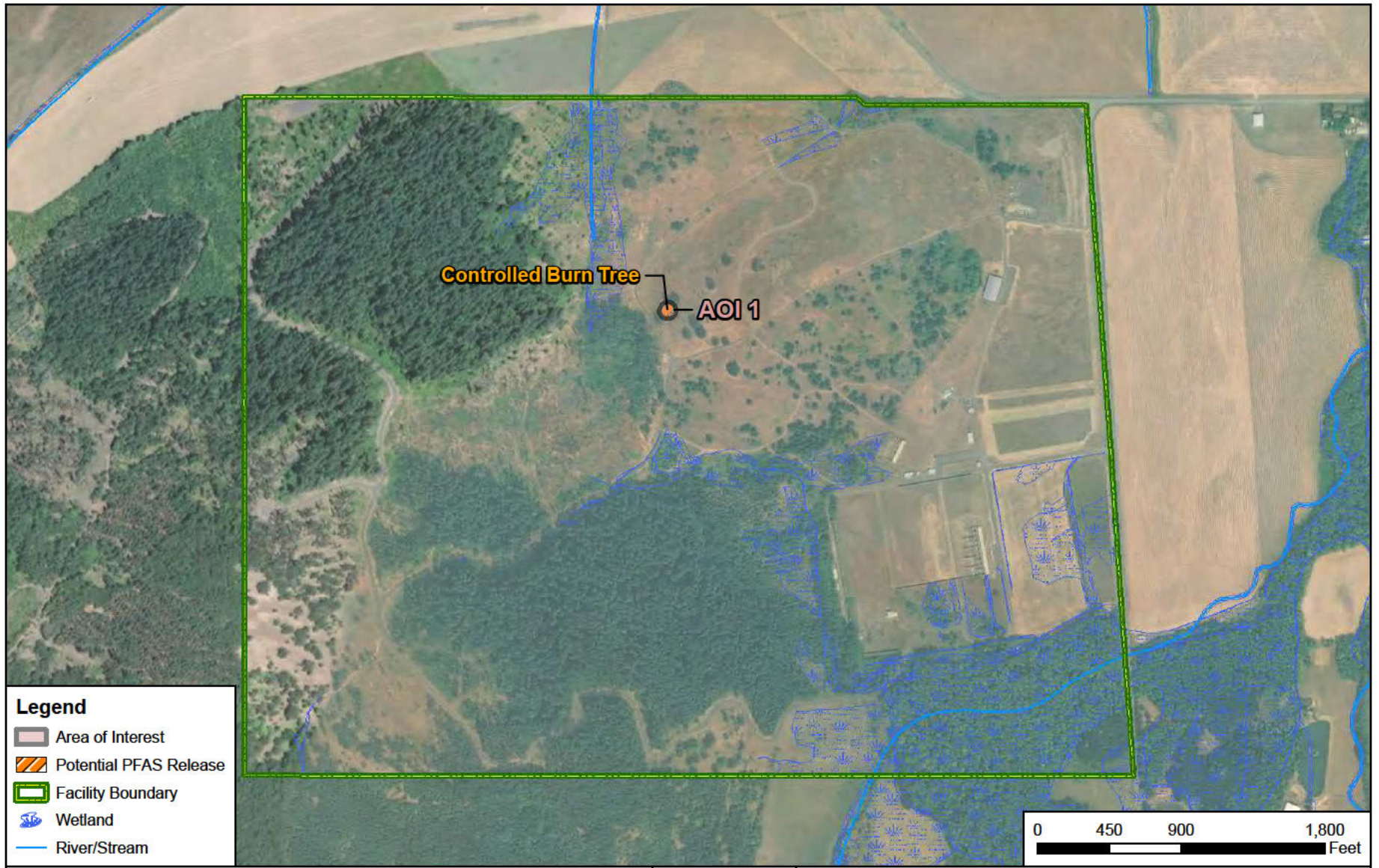
One Area of Interest (AOI) related to potential PFAS releases was identified at Camp Adair during the PA. The AOI is shown on **Figure ES-1** and described below.

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Controlled Burn Tree	ORARNG	2011

Based on the documented use of AFFF releases at this AOI, there is potential for exposure to PFAS contamination in surface soil to site workers, construction workers, and trespassers via ingestion and inhalation, in addition to subsurface soil to site and construction workers via

ingestion. Drinking water is supplied by the Luckiamute River Water System from underground wells, located between the cities of Buena Vista and Independence, by approximately 5 and 10 miles to the northeast, respectively (OMD, 2011; LDWC, 2017). No water wells are located on-Post or in the immediate vicinity (OWRD, 2018). Therefore, the groundwater exposure pathway via ingestion is incomplete for site and construction workers, trespassers, and residents. The CSM for Camp Adair is shown on **Figure ES-2**.

No off-Post sources were identified in the local area surrounding Camp Adair; therefore, no complete exposure pathways exist for PFAS contamination in groundwater from with potential off-Post sources.



Legend	
	Area of Interest
	Potential PFAS Release
	Facility Boundary
	Wetland
	River/Stream

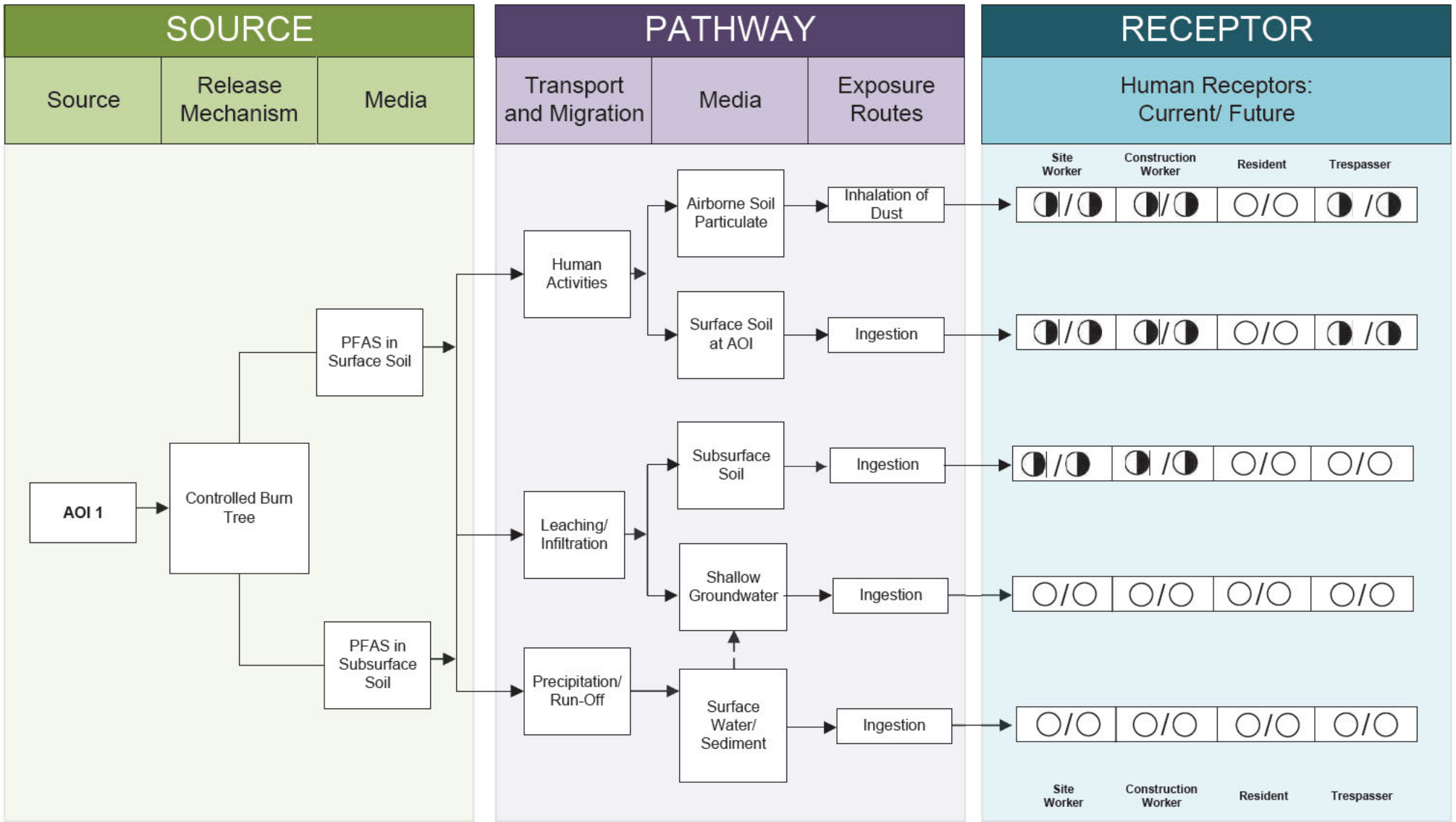


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PROJECT	Preliminary Assessment for PFAS at Camp Adair Corvallis, OR			
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SCALE	1:10,800	CHK BY	MB	3/8/2019
Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community	PM	RG		3/8/2019



TITLE	Summary of Findings	
AECOM	12420 Milestone Center Drive Germantown, MD 20876	Figure ES-1

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LEGEND

- □ Flow-Chart Stops
- > Flow-Chart Continues
- - -> Partial / Possible Flow
- Incomplete Pathway
- ◐ Potentially Complete Pathway
- Complete Pathway

Figure ES-2
Conceptual Site Model
Camp Adair

1. Introduction

1.1 Authority and Purpose

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division, Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide* under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017, and Modification 01 issued 30 September 2017. The ARNG is assessing potential effects on human health related to processes at their facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily releases of aqueous film forming foam (AFFF), although other sources of PFAS are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of these PFAS compounds in the environment will vary. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued Drinking Water Health Advisories for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. In the absence of federal maximum contaminant levels, some states have adopted their own drinking water standards for PFAS. The Oregon Department of Environmental Quality (DEQ) has set Pollutant Initiation Levels (PILs) for PFAS/PFOA, which are not water quality standards (DEQ, 2017). According to OAR 340-045-0100, only facilities that operate under National Pollution Discharge Elimination System and Water Pollution Control Facility permits in Oregon are required to analyze effluent for PFAS/PFOA and report concentrations that exceed the PILs.

This report presents findings of a PA for PFAS at Camp Adair in Corvallis, Oregon, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300), and USACE requirements and guidance.

This PA documents the known fire training areas (FTAs) as well as additional locations where PFAS may have been released into the environment at Camp Adair. The term PFAS will be used throughout this report to encompass all PFAS chemicals being evaluated, including PFOS and PFOA, which are key components of AFFF.

1.2 Preliminary Assessment Methods

The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases
- Conducted a 1-day site visit on 12 September 2018
- Interviewed current and retired Camp Adair (and other Oregon Military Department [OMD] facilities) personnel during the site visit including:
 - OMD Environmental Manager
 - OMD Natural Resources Conservation Manager

- OMD Wildland Fire Manager
- OMD Camp Rilea Training Site Manager (former State Aviation Officer)
- OMD Camp Adair Fire Ranger
- OMD Real Estate/Property Manager
- Completed visual site inspections of the facility and documented with photographs
- Developed a conceptual site model (CSM) to outline the potential release, pathway, and receptors of PFAS for Camp Adair

1.3 Report Organization

This report has been prepared in accordance with the USEPA *Guidance for Performing Preliminary Assessments under CERCLA* (USEPA, 1991). The report sections and descriptions of each are:

- **Section 1 – Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA.
- **Section 2 – Fire Training Areas:** describes the FTAs at the facility identified during the site visit.
- **Section 3 – Non-Fire Training Areas:** describes other locations of potential PFAS releases at the facility identified during the site visit.
- **Section 4 – Emergency Response Areas:** describes areas of potential PFAS release at the facility, specifically in response to emergency situations.
- **Section 5 – Adjacent Off-Site Sources:** describes sources of potential PFAS release adjacent to the facility that are not under the control of ARNG.
- **Section 6 – Conceptual Site Model:** describes the pathways of potential PFAS transport and receptors at each area of interest (AOI).
- **Section 7 – Conclusions:** summarizes the data findings and presents the conclusions of the PA.
- **Section 8 – References:** provides the references used to develop this document.
- **Appendix A – Data Resources**
- **Appendix B – Preliminary Assessment Documentation**
- **Appendix C – Photographic Log**

1.4 Facility Location and Description

Camp Adair is in Corvallis, Benton County, approximately 9 miles to the northwest of the City of Corvallis. The facility is located approximately 2 miles to the west of Highway 99 (South Pacific Highway W) (**Figure 1-1**). The facility is occupied and operated by the Oregon Army National Guard (ORARNG) as a military training center, encompassing 527 acres. The mission of Camp Adair is to provide training facilities and terrain for military soldiers and other military organizations (OMD, 2011). Annual firefighting training occurs at the facility for both military and non-military personnel, including local law enforcement agencies, fire departments, and the Oregon Department of Fish & Wildlife (ODFW). The facility consists of the cantonment and live fire rifle range training areas (primarily in the eastern portion) and undeveloped vegetated land (primarily in the western portion). The Oregon Department of Public Safety Standards and Training (ODPSST) operate at the facility with live fire small arms at the firing range for law

enforcement training (OMD, 2011). The southwestern and southeastern portions of the facility are used for rotary-winged aircraft operations training.

The former 57,000-acre Camp Adair/Adair Air Force Station was used by the US Army for troops training during World War II from 1942 to 1946, the U.S. Navy in 1945, and the U.S. Air Force in the 1960s. This former property encompassed 60 square miles (6 miles wide and 10 miles long) and was developed with over 1,700 buildings, extending to the City of Adair Village located approximately 3 miles to the southeast of the present-day Camp Adair facility. The majority of the Camp Adair/Adair Air Force Station was declared surplus after the war and sold or transferred to various government and non-government entities between 1944 and 1946. Military use of the Camp Adair/Adair Air Force Station ended in 1970 and additional land was sold to various government and non-government entities (OMD, 2011; TriEco, 2016).

The present-day Camp Adair (527 acers) property is owned by the federal government, administered by the USACE, licensing use to the OMD since the 1950s. The ODPSSST operate at the facility under a separate USACE license (OMD, 2011). The Oregon Army National Guard (ORANG) took over the current property boundary for facility operations in the late 1960s. On-Post operations conducted by the ORARNG at Camp Adair have involved both military and non-military training operations. Operations include military personnel training of weaponry (small arms firing range), infantry field exercises (land navigation), equipment, and rotary-winged aircraft landings. Training can involve blank ammunition, pyrotechnics, and smoke. Non-military operations include use of the firing ranges by ODPSSST civilian law enforcement (not controlled by OMD). Additionally, civilian high school groups and local college Reserve Officers Training Corps groups train on the ropes courses (OMD, 2011). Annual prescribed burns are conducted on-Post by OMD Fire Rangers that is primarily water-based, with exception of a single use of AFFF during an OMD-facilitated controlled burn in 2011. The prescribed burns are conducted with OMD Fire Rangers, local fire departments, and ODFW.

Prior to the military's use of Camp Adair in the early 1940s, the property was primarily undeveloped and agricultural land. Native Americans historically inhabited the land and by 1846, the land was acquired by a homesteader for agricultural use. Based on review of historical aerial photographs, development of Camp Adair appears to date back to at least 1944 with limited changes to the facility configuration observed during the site visit, with exception of road development in the eastern and western portions (by at least 2005 and 2010, respectively) (OMD, 2018b).

Based on review of historical aerial photographs, development of the facility is visible by 1955 with a road transecting from northeast to southwest and the firing ranges in the southeastern portion. Facility structures in the southeastern corner and additional roads appear by 1976 through 1994. The facility appears to be in the similar configuration as observed during the site visit. (EDR, 2018a; Google Earth, 2018).

1.5 Facility Environmental Setting

Camp Adair is in the Pacific Border Province, Pacific Mountain Systems (NPS, 2018; USDA, 2018a). The facility is bordered by agricultural land around all four borders, in addition to forest to the west. Wetlands, streams, and rivers are interspersed surrounding the facility. The Willamette River is located approximately 5 miles to the east, flowing from south to the north. Camp Adair is located in a fairly rural area of the Willamette Valley, with some residential properties located to the south of the facility.

Topography at Camp Adair varies throughout from flat in the eastern portion to rolling hills in the western portion. Elevation ranges from approximately 230 feet to 740 feet. From the west/central to the east/central boundaries, elevation ranges from approximately 660 to 230 feet above mean sea level (amsl). From the south/central to north/central boundaries, elevation

ranges from approximately 430 to 270 feet amsl. Three hills are present at Camp Adair, contributing to the higher elevations: Oak Hill in the north/central portion, Smith Hill along the western boundary, and Hill 655T along the southwestern boundary. Slopes generally range from 0 to 12%, with Smith Hill and Hill 655T exhibiting over 20% slopes (OMD, 2011; Google, 2018).

1.5.1 Geology

Camp Adair is in a geologic area characterized as two distinct features. The western portion of the facility is underlain by Siletz River Volcanics and related rocks. The eastern portion of the facility is underlain by Lacustrine and fluvial sedimentary rocks. The Siletz is characterized by aphanitic to porphyritic massive lava flows and sills of alkali basalt. The upper part of the sequence contains interbeds of basaltic siltstone and sandstone with rocks of marine origin. The Lacustrine is characterized by unconsolidated to semi-consolidated lacustrine clay, silt, sand, and gravel, including mudflow and fluvial deposits and layers of peat (USGS, 2018a). Unconsolidated deposits have a maximum thickness of approximately 125 feet locally (Gonther, 1983).

In Polk and Benton counties, geologic units include consolidated rocks consisting of basalt, marine siltstone, sandstone, shale, and tuff; the consolidated deposits consist of clay, silt, sand, and gravel (Gonther, 1983).

1.5.2 Hydrogeology

Soils beneath Camp Adair are characterized as 12 different mapping units that are collectively highly variable with complex patterns. The soils range from silt loams to silty clay loams which all have low permeability. The Waldo, Amity, concord, Dayton, and Witham soil series are poorly drained while the remaining soil series are well drained. The soil series include the following (OMD, 2011; USDA, 2018b).

- Silt loams – Amity, Concord, Dayton, and Woodburn soil series
- Silty clay loams – Dixonville, Jory, McAlpin, Waldo, and Witham soil series
- Complex – Jory-Nekia, Price-MacDunn-Ritner, and Witzel-Ritner soil series

The Jory-Nekia complex comprises 28% of the total acreage of soils beneath Camp Adair, followed by Witzel-Ritner complex (21%), and Dayton silt loam (12%). The remaining soil series comprise less than 10% of the total acreage of soils beneath Camp Adair (OMD, 2011).

Camp Adair is in the west/central portion of the Willamette Valley. A limited water-supplying aquifer is located beneath the facility (and the surrounding region) (OMD, 2011). Drinking water in this region is primarily obtained from groundwater; however, water bearing units in this region supply small quantities of waters to wells. Groundwater is typically supplied from sand and gravel aquifers beneath the Willamette River floodplain (to the east of Camp Adair). Saturated sands and gravel in unconsolidated deposits are the most productive water-bearing geologic units in the region (Gonther, 1983).

Camp Adair is situated above the Willamette lowland basin-fill aquifers, characterized as unconsolidated sand and gravel aquifers at or near the land surface. The principal aquifer system of this region is identified as the Puget-Willamette Trough Regional Aquifer System composed of unconsolidated-deposit and Miocene basaltic-rock aquifers. Deposits are thicker in the northern portion of the Willamette Valley, gradually thinning from 800 feet in the Portland area (60 miles to the northeast of Camp Adair) to 200 feet in the Salem area (18 miles to the northeast of Camp Adair). In the western portion of the aquifer system, Miocene basaltic-rock aquifers are the most productive. In Benton County, depth to water is reported in the range of 10

to 35 feet below ground surface (bgs) with well yields ranging from less than 500 to 1,000 gallons per minute (USGS, 1994; USGS, 2018b; USGS, 2018c).

Regionally, recharge occurs from precipitation and varies greatly. Variation is a result of the permeability of surface deposits and percolation rates of underlying soils. Groundwater recharge also occurs along streams and is also possible in areas located within several hundred feet of the Willamette River. Annual recharge is estimated at two to five inches in the volcanic formations (and older alluviums) and 8 to 15 inches for younger alluviums. No younger alluviums are present beneath Camp Adair; therefore, recharge of groundwater is within 2 to 5 inches (Gonther, 1983; OMD, 2011).

No groundwater wells are present at Camp Adair. The nearest private drinking water wells are located off-Post approximately 0.25 miles (#50381) and 0.5 miles (#50378) south of Camp Adair. (**Figure 1-2**). The wells were drilled in 1997 with a reported depth to groundwater of 45 and 126 feet bgs, respectively (OWRD, 2018). According to a 1983 study of the Dallas-Monmouth area (between 8 and 13 miles to the north of Camp Adair in Polk County but also including the northern portion of Benton County), a total of 12 observation wells were measured by the Oregon Water Resources Department (OWRD) in the 1960s and 1970s. Groundwater occurs in rocks under unconfined, confined, and perched conditions. The study indicated that groundwater recharge balances with groundwater discharge and changes in groundwater storage occurs according to the season. Groundwater is supplied from sand gravel in older alluvium. Depth to groundwater in the observation wells were reported to range from 5 to 15 feet bgs. Groundwater in the region is used for irrigation, public drinking water, domestic/stock, and industrial purposes. The majority of these uses are supplied from groundwater in unconsolidated deposits, given that consolidated rocks do not produce a substantial amount of water (Gonther, 1983).

The nearest groundwater well to Camp Adair with reported data is a United States Geological Survey (USGS) monitoring well located approximately 7 miles to the northeast of the facility (Site No. POLK0053369). Depth to groundwater measured between 2012 and 2018 ranged from 0.01 to 13.9 feet bgs, averaging 7.4 feet bgs. This well was drilled to 58 feet bgs and the geographic coordinates are: 44°48'7.27"N and 123° 8'27.60"W (USGS, 2018c).

Drinking water is supplied to Camp Adair by the Luckiamute River Water System (OMD, 2011). Four underground wells, supply drinking water to the Luckiamute River Water System, located between the cities of Buena Vista and Independence (LDWC, 2017). Both cities are northeast of Camp Adair (by approximately 5 and 10 miles, respectively). No groundwater drinking water source areas are located in the immediate vicinity of Camp Adair (DEQ, 2018a). No water walls are located on-Post or in the immediate vicinity (OWRD, 2018).

1.5.3 Hydrology

Camp Adair is within the Berry Creek and Upper Soak Creek subwatersheds (Hydrologic Unit Code [HUC] 12), which is within the Luckiamute watershed (HUC 10) of the Upper Willamette subbasin HUC 8) of the Willamette River basin (HUC 6). The northern portion of the facility is located within the Berry Creek subwatershed (HUC 12) and the southern portion of the facility is located within the Upper Soak Creek subwatershed (HUC 12) (**Figure 1-3**) (DEQ, 2018b).

Surface waterbodies at the facility consist of a single seasonal unnamed creek flowing from Smith Hill in the western portion of the property in a southwest to northeast direction, exiting along the eastern property boundary. The creek continues to flow northeasterly towards Berry Creek, ultimately discharging into the Willamette River located approximately 6 miles to the east. Flood plains or 100-year floodplains are not located within the property boundary of Camp Adair. Wetlands are located in the southeastern corner of the property boundary. A narrow

riverine wetland is in the north/central portion of the property, extending off-Post to the north (OMD, 2011; USFWS, 2018).

Surface stormwater runoff from paved areas of the facility (only in the central/eastern portion) enter stormwater junction points, discharging offsite. Stormwater runoff in the remaining unpaved areas infiltrate the ground or enter ephemeral drainage streams and wetlands (OMD 2011). Surface water runoff at Camp Adair would occur during heavy precipitation events where precipitation exceeds the infiltration rate of the soil.

1.5.4 Climate

Camp Adair is in the west/central portion of the Willamette Valley, where the climate is considered to be relatively mild throughout the majority of the year. Winters are cool and wet and summers are warm and dry. Approximately 50% of the annual precipitation in the Willamette Valley occurs during the winter months from October through March, coinciding with cooler temperatures. Elevation and temperature are the driving factors determining precipitation in the Willamette Valley. An average of up to 51 inches of rainfall can occur in the Willamette Valley. Annual precipitation in the form of snow recorded during the 1981 to 2010 period totaled 3.1 inches, averaging 0.26 inches from December through March (NOAA, 2018).

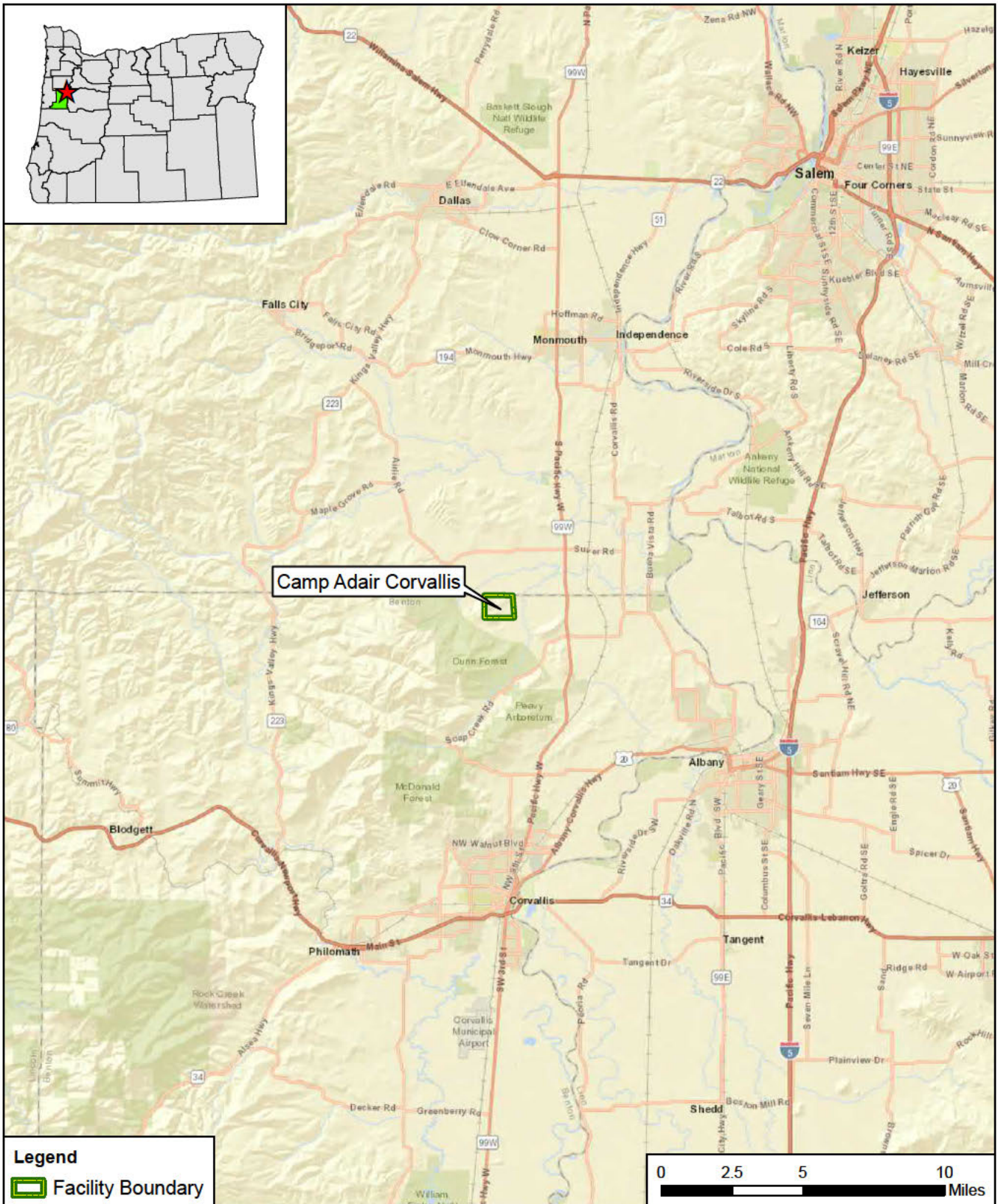
The nearest weather station with recorded historical data is located approximately 6 miles to the southeast of Camp Adair, at the Corvallis Oregon State University Station (Station ID USC00351862). Annual precipitation recorded during the 1981 to 2010 period at this weather station totaled approximately 43 inches, averaging approximately 3.5 inches monthly (*Summary of Monthly Normals 1981-2010*). Annual temperature recorded during the 1981 to 2010 period averaged 52.5 degrees Fahrenheit (°F), with the average ranging from 40 to 67 °F monthly.

1.5.5 Current and Future Land Use

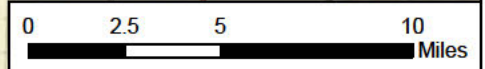
Camp Adair is comprised of a cantonment area, live fire small arms ranges, and a ropes course. Several buildings are located in the cantonment area for office, work shop, and warehousing purposes. Paved roads are located in the eastern portion. These developed areas are limited to 55 acres in the eastern portion of the facility. The remaining 472 acres of Camp Adair are undeveloped vegetated land, including wetlands, and unpaved roads for land navigation training (OMD, 2011). Access to the facility is controlled. Land use to the north, east, and south is a mixture of residential and agriculture with interspersed wetlands.

Camp Adair is zoned by Benton County as Open Space. The facility is along the northern boundary of Benton County, adjacent to Polk County. Land to the east and southeast is zoned Exclusive Farm Use (EFU). Land to the south, southwest, and west is zoned Forest Conservation (Benton, 2018). Land to the north of the facility is zoned by Polk County as EFU (Polk, 2018). The Luckiamute watershed consists primarily of agricultural and forested land (DEQ, 2006a). Based on review of historical Google Earth aerial imagery and the Benton and Polk County zoning maps, it's likely that surrounding land uses in the future will remain the same.

The nearest urban areas are Adair Village and Corvallis, approximately 3 and 8 miles to the southeast and south of Camp Adair, respectively. According to the 2017 US Census, the estimated populations of Adair Village and Corvallis were 859 and 57,961, respectively. Based on the population estimates, the population of Adair Village and Corvallis has only increased by 15 and 1,000 since 2010, respectively (Census, 2018).



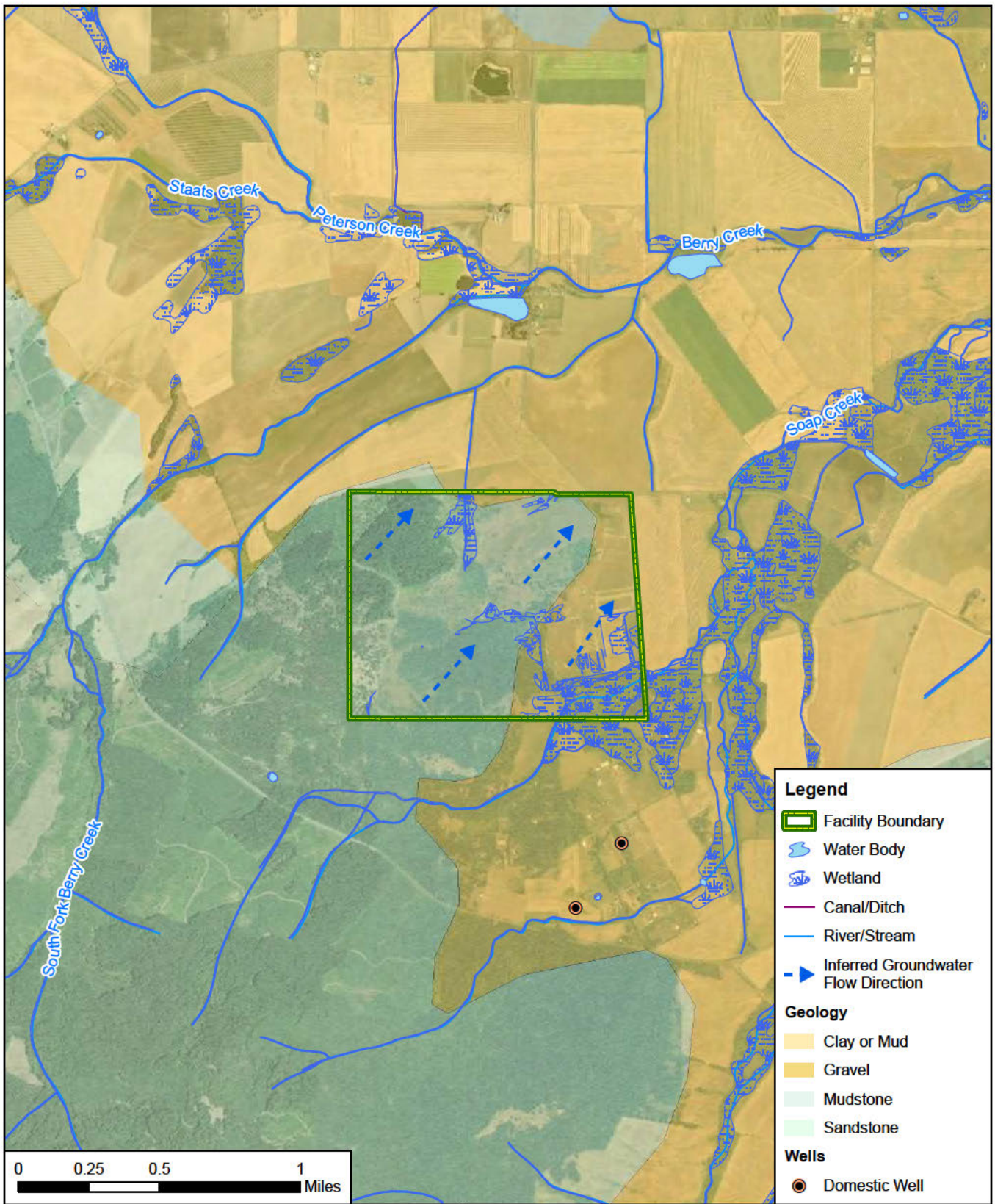
Legend
 Facility Boundary



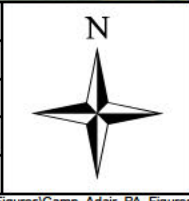
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SCALE	1:316,800	CHK BY	MB	9/26/2018
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, Incent P Corp., NRCAN, Esri Japan, METI,	PM	RG	9/26/2018	



Facility Location	
AECOM 12420 Milestone Center Drive Germantown, MD 20876	Figure 1-1

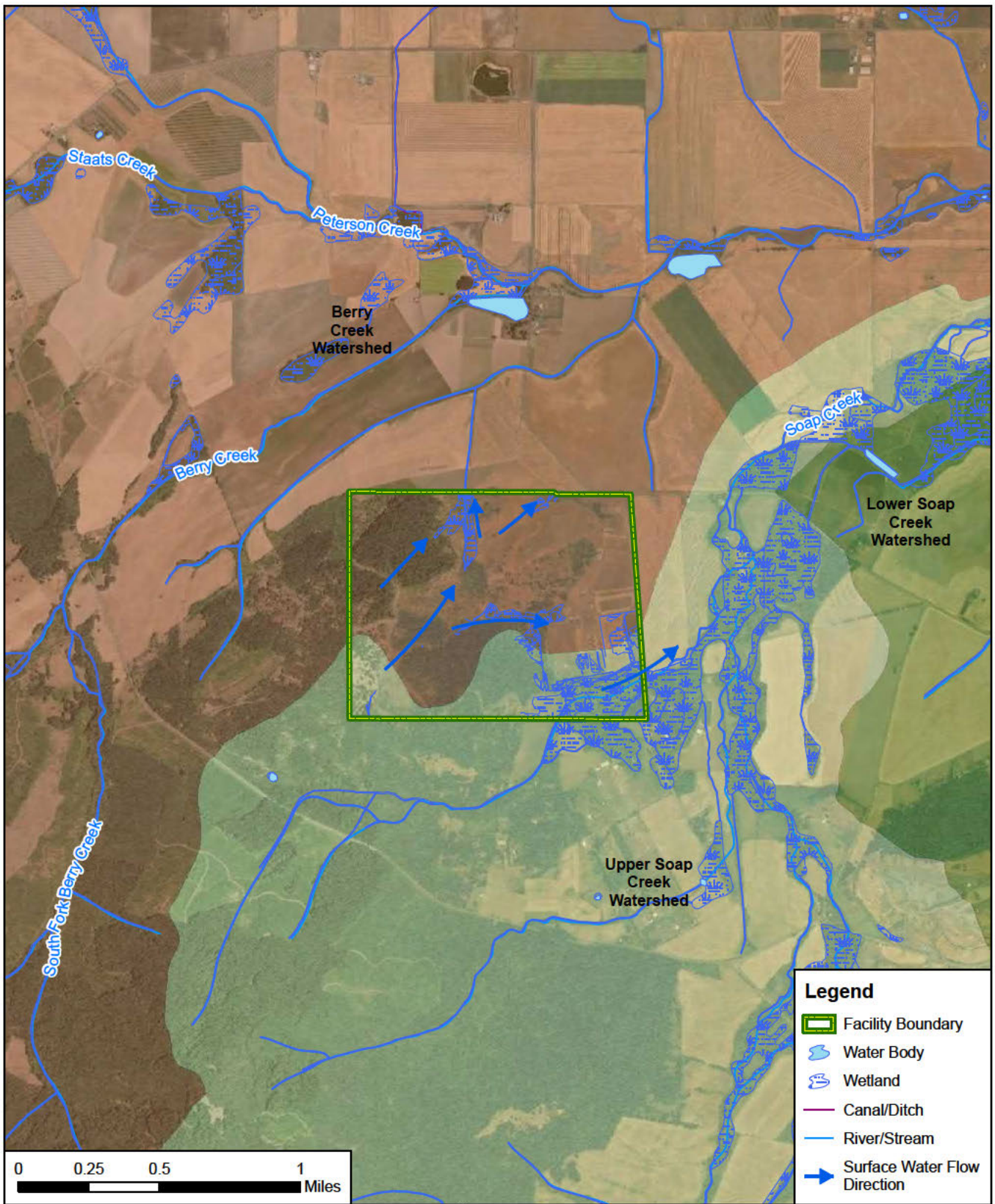


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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	9/26/2018



Groundwater Features	
AECOM 12420 Milestone Center Drive Germantown, MD 20876	Figure 1-2

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Surface Water Features	
AECOM 12420 Milestone Center Drive Germantown, MD 20876	Figure 1-3

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2. Fire Training Areas

No FTAs were identified during the PA. The OMD Fire Ranger indicated off-Post fire training occurs at the Salem Army Aviation Support Facility (AASF) #1, located adjacent to McNary Air Field (located approximately 18 miles to the northeast of Camp Adair). This off-Post FTA is addressed further in the PA for the Salem AASF #1 facility. Interview records appear in **Appendix B**.

3. Non-Fire Training Areas

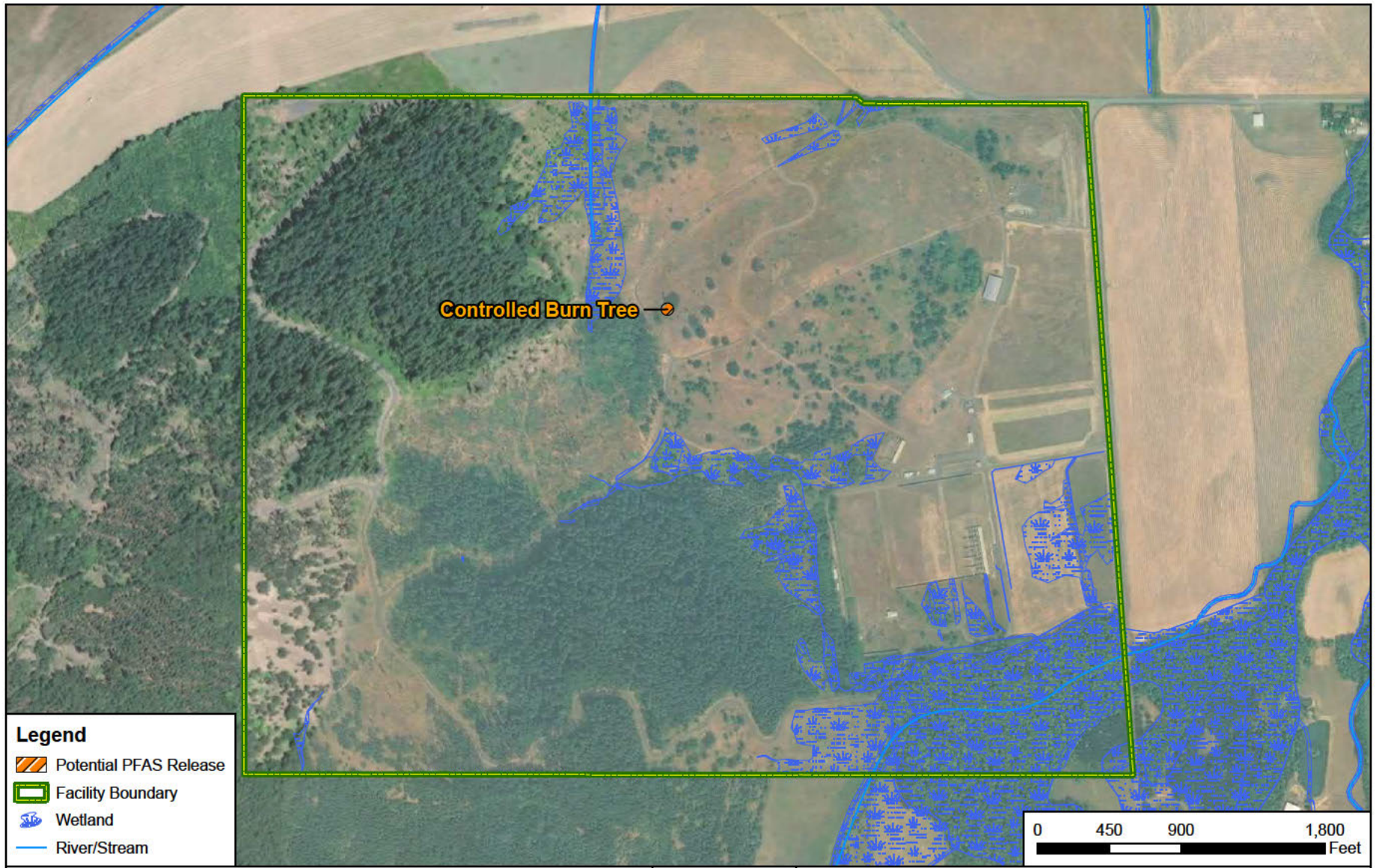
Based on interviews conducted with facility personnel and historical research, one non-FTA was identified at Camp Adair during the PA. A description of the non-FTA is described below and shown in **Figure 3-1**. Interview records appear in **Appendix B**. Photographs appear in **Appendix C**.

3.1 Prescribed Burns

The Camp Adair Integrated Natural Resources Management Plan (OMD, 2011) establishes a goal to prevent and suppress wildfires to maintain ecosystem biodiversity and functionality. ORARNG pursues that goal through the use of prescribed burns as a habitat management tool in accordance with the Fire Management Plan. Prescribed burns are conducted in the western portion of the facility and are extinguished with water only.

The Oregon Department of Forestry (ODF) conducted a prescribed burn on-Post for the OMD in 2011 on 11 acres of land along the eastern boundary of the facility for purposes of removing non-native vegetation. All prescribed burns on-Post are conducted in accordance with the Integrated Fire Management Plan and coordinated with Benton County, DEQ, ODF, and other appropriate agencies (OMD, 2011). According to interviewed facility personnel, no AFFF was used during the prescribed burns.

A controlled burn was initiated by OMD personnel in 2011 in the north/central portion of the facility and one larger tree was still burning by the end of the exercise. OMD fire rangers doused the burning tree and the immediate surrounding vegetation with less than one gallon of AFFF to extinguish the fire. This area of the facility is identified as AOI 1, Controlled Burn Tree. The geographic coordinates are: 44°43'0.09"N and 123°16'14.81"W. The type and concentration of the AFFF applied is unknown.



Legend

- Potential PFAS Release
- Facility Boundary
- Wetland
- River/Stream



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Camp Adair Corvallis, OR			
REVISED	3/8/2019	GIS BY	MS	3/8/2019
SCALE	1:10,800	CHK BY	MB	3/8/2019
Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community	PM	RG		3/8/2019



TITLE	
Non-Fire Training Area	
AECOM	12420 Milestone Center Drive Germantown, MD 20876
Figure 3-1	

C:\Projects\ENV\GEARS\GEOMAEs 2012 Unrestricted\Fort Meade\GIS Data Management\GIS\MXDs\Chisholm_6th\March2019\Fig_3-1_Camp_Adair_Non-Fire_Training_Area.mxd

4. Emergency Response Areas

Based on interviews conducted with facility personnel, no emergency response action areas using AFFF has occurred at Camp Adair. Rotary-winged aircraft operations training are conducted at Camp Adair throughout the year. Landing areas are primarily in the southwestern and southeastern (adjacent to the firing range) portions of the facility. According to the Site Training Manager, no rotary-winged or other aircraft crashes have been reported. Coordination of firefighting support via water trucks is made with the City of Corvallis Fire Department but there has been no need for responses as of the date of the PA interviews (**Appendix B**).

5. Adjacent Sources

No potential off-Post sources of PFAS contamination were identified during the PA. Interview records appear in **Appendix B**. Based on interviews conducted with facility personnel and review of DEQ's *Facility Profiler Lite* and *Environmental Cleanup Site Information* databases, and EPA's *National Priority List and Superfund Alternative Approach Sites* database, there were no historic or currently active private or municipal wastewater treatment plants, historic or currently active electrical maintenance or chrome plating shops, or Superfund Sites located in the vicinity of Camp Adair (DEQ, 2018c, 2018d; EPA, 2018).

6. Conceptual Site Model

Based on the PA findings from interviews conducted with facility personnel, on-Post observations made during the site visit, and online research, one release area was identified as an AOI at Camp Adair. The AOI location is shown on **Figure 6-1**. The following section describes the CSM components and the specific CSM developed for the AOI. A CSM identifies three components necessary for potentially complete exposure pathways related to a site: (1) source, (2) pathway, and (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

In general, the potential PFAS exposure pathways are ingestion. Dermal contact is not considered to be a potential exposure pathway as studies have shown very limited absorption of PFAS through the skin (National Ground Water Association [NGWA], 2018). Receptors for Camp Adair include site workers, construction workers, and trespassers. The CSM for the AOI indicate which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1 Controlled Burn Tree

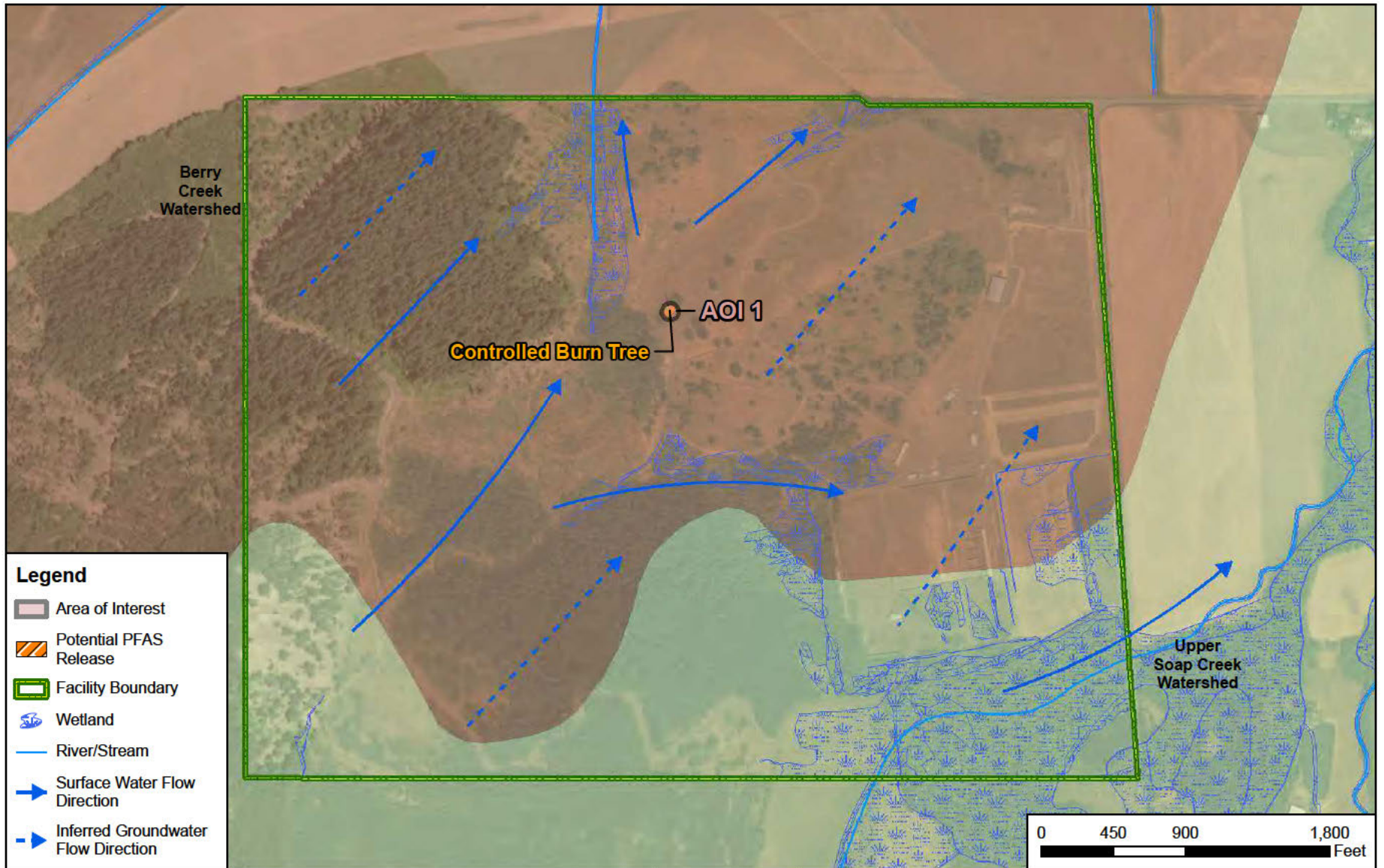
AOI 1 has been identified as the Controlled Burn Tree. Releases of PFAS to soil by the OMD occurred at AOI 1 in 2011. The OMD conducted a controlled burn in the north/central portion of the facility. One larger tree remained burning at the end of the day's exercise, and OMD fire rangers doused the burning tree and the immediate surrounding vegetation with less than one gallon of AFFF to extinguish the fire. The use of AFFF occurred only once in 2011, the exact date is unknown. The type and concentration of AFFF used was not known.

Because PFAS releases to surface soil have occurred, it is possible that PFAS migrated from the surface soil at AOI 1 to subsurface soil and groundwater via leaching. Based on visual observations conducted during the site visit and online research, no surface water features flow through AOI 1 or the immediate surrounding area (upgradient or downgradient) of AOI 1 (DEQ, 2018a; Google Earth, 2018). Precipitation infiltrating AOI 1 may cause the migration of PFAS from surface and subsurface soil to groundwater, which is estimated to be in the range of 5 to 15 feet bgs in the area of Camp Adair (Gonther, 1983; OMD, 2011).

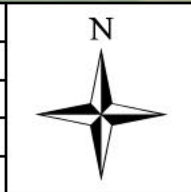
Groundwater flow follows the natural topographical gradient. Around AOI 1, subsurface flow is to the north/northeast (OMD, 2011). Topography at Camp Adair varies throughout the property from flat in the eastern portion to rolling hills in the western portion. Elevation ranges from approximately 230 feet to 740 feet (OMD, 2011). From the west/central to the east/central boundaries, elevation ranges from approximately 660 to 230 feet amsl. From the south/central to north/central boundaries, elevation ranges from approximately 430 to 270 feet amsl (Google, 2018). A narrow riverine wetland is located in the north/central portion of the property approximately 700 feet northwest of AOI 1, extending off-Post to the north. An on-post seasonal unnamed creek flows from Smith Hill in the western portion of the property in a southwest to northeast direction, exiting along the eastern property boundary. The creek continues to flow northeasterly towards Berry Creek, ultimately discharging into the Willamette River located approximately 6 miles to the east. Flood plains or 100-year floodplains are not located within the property boundary of Camp Adair. Wetlands are located in the southeastern corner of the property boundary (OMD, 2011; USFWS, 2018).

Drinking water is supplied by the Luckiamute River Water System (OMD, 2011) from underground wells, located between the cities of Buena Vista and Independence (LDWC, 2017), by approximately 5 and 10 miles northeast, respectively and no water walls are located on-Post or in the immediate vicinity (OWRD, 2018). Therefore, the groundwater exposure pathway via ingestion is incomplete for site and construction workers, trespassers, and residents. Ground-disturbing activities to surface and subsurface soil at AOI 1 could result in site worker,

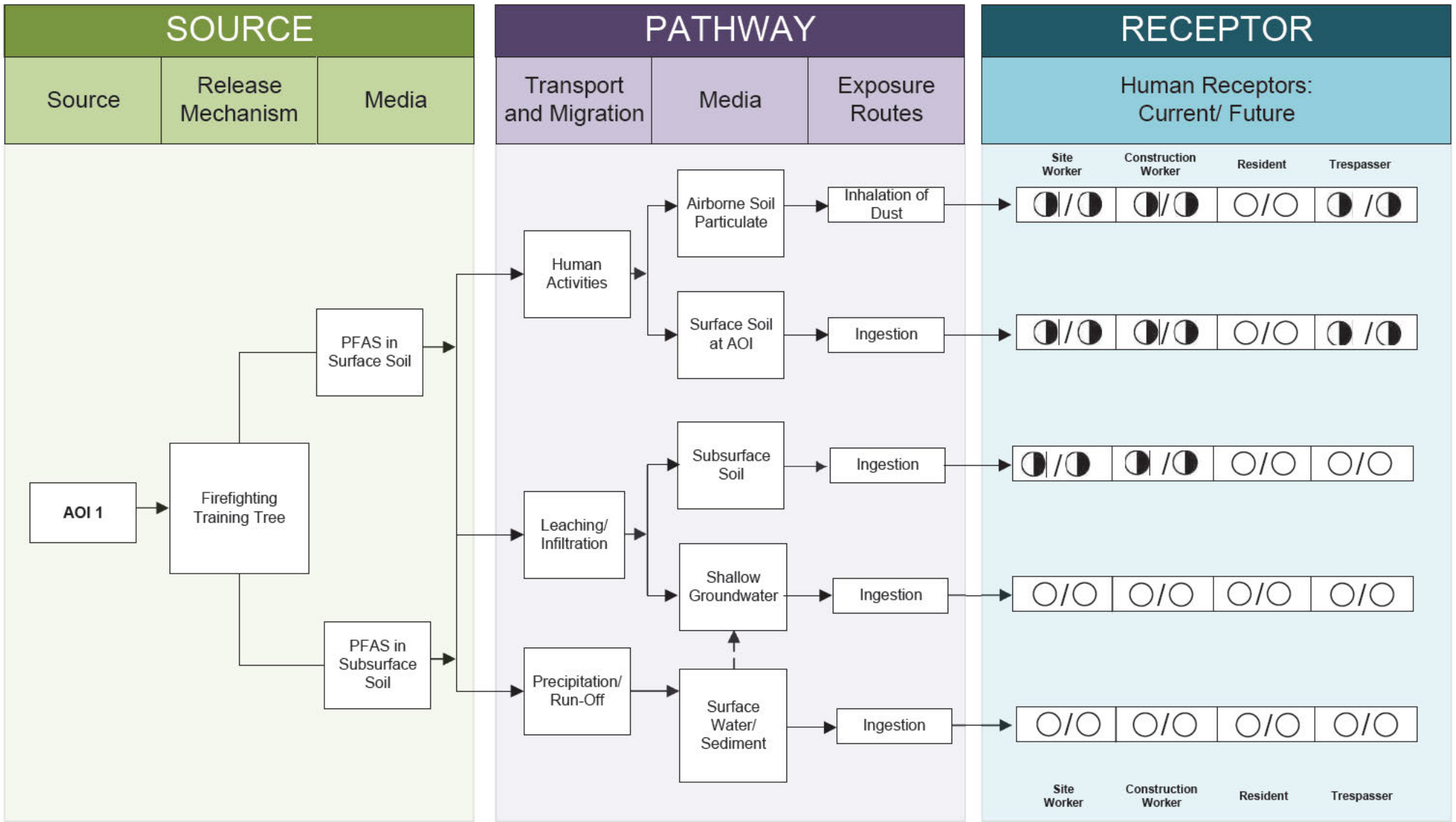
construction worker, and trespasser exposure to potential PFAS contamination via inhalation of dust particles or ingestion of surface soil. Therefore, the exposure pathway for ingestion of soil is potentially complete for these receptors. The CSM for AOI 1 is shown on **Figure 6-2**.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Camp Adair Corvallis, OR			
REVISED	3/8/2019	GIS BY	MS	3/8/2019
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Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community	PM	RG		3/8/2019



TITLE	Area of Interest	
AECOM	12420 Milestone Center Drive Germantown, MD 20876	Figure 6-1



LEGEND







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

Figure 6-2
 Conceptual Site Model - AOI 1 Controlled Burn Tree
 Camp Adair

7. Conclusions

This report presents a summary of available information gathered during the PA on the use and storage of AFFF and other PFAS-related activities at Camp Adair. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

The single AOI related to potential PFAS release were identified at Camp Adair (**Table 7-1**) during the PA through interviews with facility personnel (**Figure 7-1**).

Table 7-1: AOIs at Camp Adair

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Controlled Burn Tree	ORARNG	2011

Based on documented AFFF releases at this AOI, there is potential for exposure to PFAS contamination in surface soil to site workers, construction workers, and trespassers via ingestion and inhalation and in subsurface soil to site and construction workers via ingestion. Based on evaluation of the environmental setting from various reviewed sources, there is no potential exposure to PFAS contamination in groundwater to residents via ingestion.

No additional areas of Camp Adair were determined to have suspected releases of PFAS from historic or present-day operations.

No off-Post PFAS sources were identified in the area surrounding Camp Adair; therefore, no complete exposure pathways exist for PFAS contamination in groundwater in association with potential off-Post sources.

7.2 Uncertainty

A number of information sources were investigated during this PA to determine the potential for PFAS-containing materials to have been present, used, or released at the facility. Historically, documentation of PFAS use was not required because PFAS were considered benign. Therefore, records were not typically kept by the facility or available during the PA on the use of PFAS in training, firefighting, or other non-traditional activities, or on its disposition.

The conclusions of this PA are predominantly based on the information provided during interviews with personnel who had direct knowledge of PFAS use at the facility. Sometimes the provided information was vague or conflicted with other sources. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS was first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, volume of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

To minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, retired and current personnel were interviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected. **Table 7-2** summarizes the uncertainties associated with the PA.

Table 7-2: Uncertainties

Area of Interest	Source of Uncertainty
AOI 1	<p>Less than one gallon of AFFF was used during the controlled burn; however, the type and concentration of AFFF was not known.</p> <p>The direction of groundwater flow identified in this report is inferred based on the evaluated topographic gradient; groundwater flow at the facility can only be known through onsite measurements.</p>

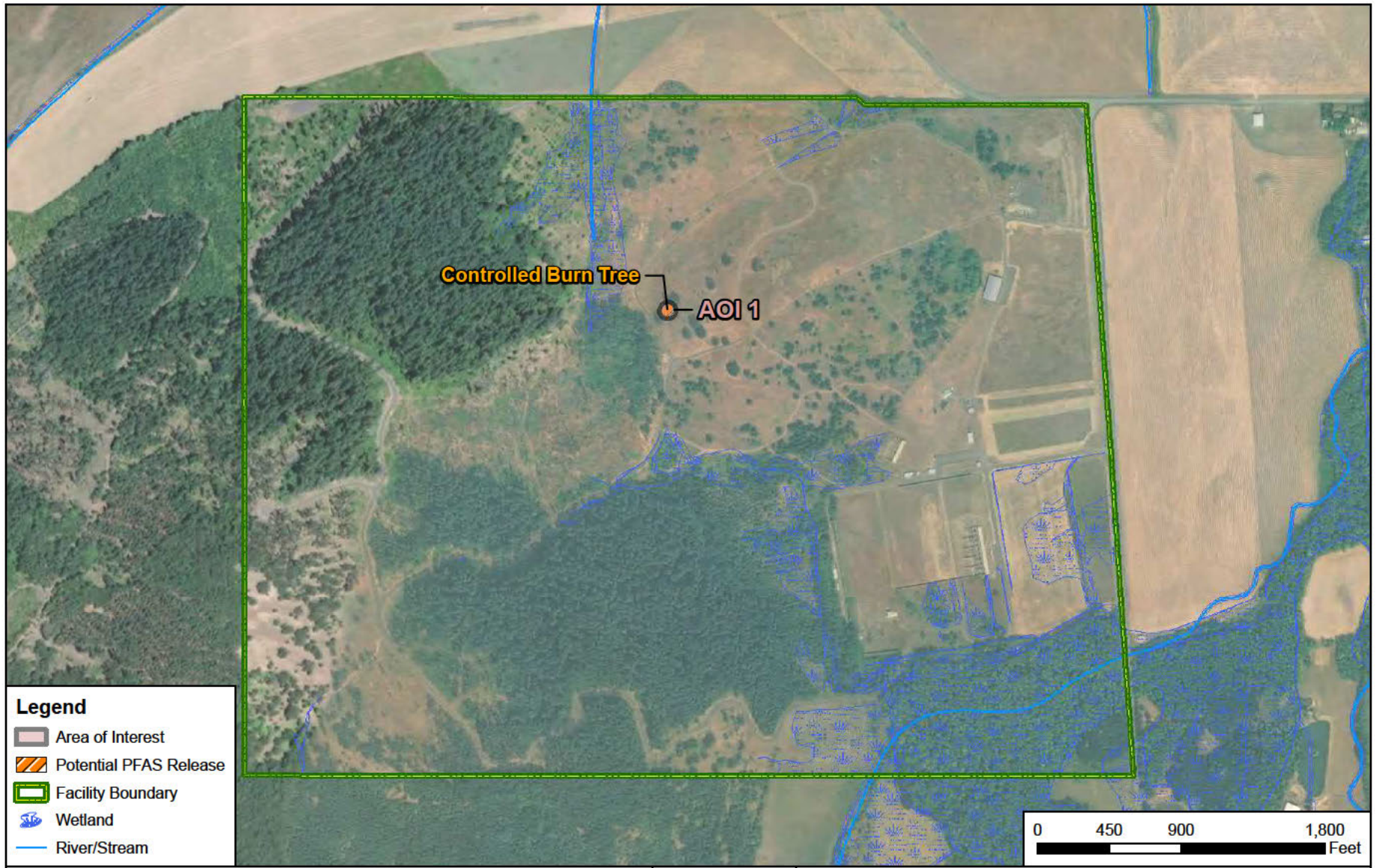
7.3 Potential Future Actions

Interviews and records (covering the 1930s to present) indicate that current or former ARNG activities may have resulted in potential PFAS releases at the single AOI identified during the PA. Based on the CSM developed for the AOI, there is the potential for receptors to be exposed to PFAS contamination in soil and groundwater at this AOI. **Table 7-3** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo a Site Inspection (SI).

ARNG evaluates the need for an SI at Camp Adair based on the presence of a PFAS release, possible receptors, and the migration potential of PFAS contamination to receptors.

Table 7-3 PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 Controlled Burn Tree	44°43'0.09"N; 123°16'14.81"W	During a 2011 controlled burn, AFFF (less than one gallon) was used to douse a burning tree. No information was available on the type and concentration of AFFF used during the controlled burn.	Proceed to an SI, focus on soil and groundwater



Legend	
	Area of Interest
	Potential PFAS Release
	Facility Boundary
	Wetland
	River/Stream



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REVISED	3/8/2019	GIS BY	MS	3/8/2019
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Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community	PM	RG		3/8/2019



TITLE	Summary of Findings	
AECOM	12420 Milestone Center Drive Germantown, MD 20876	Figure 7-1

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Appendix A

Data Resources

Appendix B

Preliminary Assessment Documentation

Appendix B.1

Interview Records

PA Interview Questionnaire - Environmental Manager

Facility: Camp Adair
 Interviewer: [Redacted]
 Date/Time: 9-12-18

Interviewee: <u>[Redacted]</u> Title: <u>ENV. Manager</u> Phone Number: _____ Email: _____	Can your name/role be used in the PA Report? <u>Y</u> or N Can you recommend anyone we can interview? Y or N <u>multiple-listed throughout questionnaires</u>
1. Roles or activities with the Facility/years working at the Facility. <p style="text-align: center;"><u>oversees environmental management of OMD facilities, since 2003</u></p>	
2. Where can I find previous facility ownership information? <p style="text-align: center;"><u>Historical reports provided by OMD and leases</u></p>	
3. What can you tell us about the history of PFAS including aqueous film forming foam (AFFF) at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map. <ul style="list-style-type: none"> Maintenance Fire Training Areas Firefighting (Active Fire) Crash Fire Suppression Systems (Hangers/Dining Facilities) Fire Protection at Fueling Stations Non-Technical/Recreational/ Pest Management Metals Plating Facility Waterproofing Uniforms (Laundry Facilities) Other <p style="text-align: right; margin-right: 100px;"><u>none</u></p>	
4. Fill out CSM Information worksheet with the Environmental Manager. <input checked="" type="checkbox"/>	
5. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing the AFFF/suppression system? Do you have "As Built" drawings for the buildings? <p style="text-align: center;"><u>none aware of</u></p>	

PA Interview Questionnaire - Environmental Manager

Facility: Camp Adair
Interviewer: [REDACTED]
Date/Time: 9.12.18 J

6. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam? If retrofitted, when was that done?

None aware of

7. How is AFFF procured? Do you have an inventory/procurement system that tracks use?

purchased from manufacturer (if used)
(Dan Cleveland to provide invoices if available)

8. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)? Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?

unknown

9. Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material?

unknown

10. How many FTAs are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them?

None aware of

PA Interview Questionnaire - Environmental Manager

Facility: Camp Adair
Interviewer: [REDACTED]
Date/Time: 9/2/18

11. When a release of AFFF occurs during a fire training exercise, now and in the past, how is the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

Not applicable to site

12. Can you recall specific times when city, county, and/or state personnel came on-post for training? If so, please state which state/county agency or military entity? Do you have any records, including photographs to share with us?

None aware of

13. Did military routinely or occasionally fire train off-post? List the units that you can recall used/trained at various areas.

None aware of

14. Did individual units come with their own safety personnel, did they also bring their own AFFF? Was training with AFFF part of these exercises? How were emergencies handled under these circumstances?

None aware of

15. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?

None aware of

PA Interview Questionnaire - Environmental Manager

Facility: CAMP ADAR
Interviewer: [REDACTED]
Date/Time: 9.12.18

16. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?

None aware of
no runway(s) on site

17. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?

unaware of practices

18. Are there mutual aid/use agreements between county, city, and local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement?

City of Carvalls would respond to structural fires

19. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste treatment plants, and AFFF ponds)?

unaware of practices

20. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?

unaware of practices

PA Interview Questionnaire - Environmental Manager

Facility: Camp Adair
Interviewer: [REDACTED]
Date/Time: 9-12-18 U

21. Are there past studies you are aware of with environmental information on plants/animals/groundwater/soil types, etc., such as Integrated Cultural Resources Management Plans or Integrated Natural Resources Management Plans?

↙
available and provided
by AMD

22. What other records might be helpful to us (environmental compliance, investigation records, admin record) and where can we find them?

can provide all that is available
but likely limited information
to provide

23. Do you have or did you have a chrome plating shop on base? What were/are the years of operation of that chrome plating shop?

NO, never

24. Do you know whether the shop has/had a foam blanket mist suppression system or used a fume hood for emissions control? If foam blanket mist suppression was used, where was the foam stored, mixed, applied, etc.?

N/A

25. How is off-spec AFFF disposed (used for training, turned in, or given to a local Fire Station)? If applicable, do you know the name of the vendor that removes off-spec AFFF? Do you have copies of the manifest or B/L?

if onsite, then given to fire
station

PA Interview Questionnaire - Environmental Manager

Facility: Camp Adair
Interviewer: [Redacted]
Date/Time: 9.12.18

26. Do you recommend anyone else we can interview? If so, do you have contact information for them?

[Redacted]

PA Interview Questionnaire – Fire Station

Facility: Camp Adair
 Interviewer: [Redacted]
 Date/Time: 9-12-18

<p>Interviewee: <u>[Redacted]</u> Title: <u>Fire Ranger</u> Phone Number: _____ Email: _____</p>	<p>Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or <u>N</u> _____</p>
<p>1. Roles or activities with the Facility/years working at the Facility.</p> <p><u>Fire Ranger since 2011</u></p>	
<p>2. What can you tell us about the history of AFFF at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.</p> <p><u>Maintenance (e.g., ramp washing)</u> <u>Fire Training Areas</u> – <u>no AFFF PFAS-containing onsite</u> Firefighting (Active Fire) Crash Fire Suppression Systems (Hangers/Dining Facilities) Fire Protection at Fueling Stations Non-Technical/Recreational/ Pest Management</p>	
<p>3. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing at the AFFF/suppression systems?</p> <p><u>None</u></p>	
<p>4. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?</p> <p><u>None</u></p>	
<p>5. How is AFFF procured? Do you have an inventory/procurement system that tracks use?</p> <p><u>If it were purchased, then through manufacturer.</u></p>	

PA Interview Questionnaire – Fire Station

Facility: Camp Adair
Interviewer: [REDACTED]
Date/Time: 9-12-18

6. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)?
Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?

unknown

7. Is AFFF formulated on base? If so, where is the solution mixed, contained, transferred, etc.?

No

8. Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material?

Not on site

9. How is the AFFF transferred to emergency response vehicles, suppression systems, flightline extinguishers? Is/was there a specified area on the facility where vehicles are filled with AFFF and does this area have secondary containment in case of spills? How and where are vehicles storing AFFF cleaned/decontaminated?

unknown. If in vehicle, it would already be inside tank

10. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located?

unknown
current fire truck has ^{no} AFFF stored
parked outside warehouse

11. Any vehicles have a history of leaking AFFF? Do you/did you test the vehicles spray patterns to make sure equipment is working properly? How often are/were these spray tests performed and can you provide the locations of these tests, now and in the past?

No, none aware of

PA Interview Questionnaire – Fire Station

Facility: Camp Adair
Interviewer: [REDACTED]
Date/Time: 9-12-18

12. How many FTAs are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them?

outside agencies come to site for wildland fire training to patrol fire lines, no AFFF used (only water based). throughout property, difficult to locate areas on map.

13. What types of fuels/flammables were used at the FTAs?

unknown

14. What was the frequency of AFFF use at each location? When a release of AFFF occurs during a fire training exercise, now and in the past, how is/was the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

No AFFF used on site

15. Are there mutual aid/use agreements between county, city, local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement? Can you recall specific times when city, county, state personnel came on-post for training? If so, please state which state/county agency, military entity? Do you have any records, including photographs to share with us?

City of Carrolls responds to structural fires only.

16. Did individual units come on-post with their own safety personnel, did they also bring their own AFFF? Was training with AFFF part of these exercises? How were emergencies handled under these circumstances?

See response to # 12.
No AFFF used.

PA Interview Questionnaire – Fire Station

Facility: Camp Adair
Interviewer: [REDACTED]
Date/Time: 9-12-18

17. Did military routinely or occasionally fire train off-post? List units that you can recall used/trained at various areas.

unaware of events

18. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?

NO CRASH SITES KNOWN OF

19. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?

None aware of
NO AFFF used

20. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?

NO AFFF used

21. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds)?

No

PA Interview Questionnaire – Fire Station

Facility: Camp Adair
Interview: [REDACTED]
Date/Time: 9-12-18

22. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?

None aware of

23. How is off-spec AFFF disposed (used for training, turned in, or given to a local Fire Station)? If applicable, do you know the name of the vendor that removes off-spec AFFF? Do you have copies of the manifest or B/L?

unknown

24. Do you recommend anyone else we can interview? If so, do you have contact information for them?

NO

PA Interview Questionnaire - Other

Facility: Camp Adair
 Interviewer: [REDACTED]
 Date/Time: 9-12-18

Interviewee: <u>[REDACTED]</u>	Can your name/role be used in the PA Report? Y or <input checked="" type="radio"/> N
Title: <u>Cultural Resources Mgr</u>	Can you recommend anyone we can interview?
Phone Number: _____	Y or N <u>[REDACTED]</u>
Email: <u>[REDACTED]</u>	
Roles or activities with the Facility/Years working at the Facility:	
<u>Cultural Resources Manager with OMD</u>	
<u>- researches cultural resources and habitats at OMD facilities and draft cultural reports.</u>	
PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builds), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?	
<u>one time AFFF use on a tree in the northwest portion of the facility in 2011, less than one gallon (even smaller). Tree set on fire for fire training and AFFF used to quickly extinguish.</u>	Known Uses
	<input checked="" type="radio"/> Use
	Procurement
	Disposition
	Storage (Mixed)
	Storage (Solution)
	Inventory, Off-Spec
	Containment
	SOP on Filling
	Leaking Vehicles
<u>No other AFFF use known onsite (historically or currently).</u>	Nozzle and Suppression System Testing
	Dining Facilities
	Vehicle Washing
	Ramp Washing
<u>ROTC cadet training onsite. Annual fire training onsite with outside fire agencies (OR Dept Fish + Wildlife and local fire dept agencies).</u>	Fuel Spill Washing and Fueling Stations
	Chrome Plating or Waterproofing

PA Interview Questionnaire - Other

Facility: Camp Adair
 Interviewer: [REDACTED]
 Date/Time:

Interviewee: [REDACTED] Title: <u>Real Estate / Property Mgr</u> Phone Number: [REDACTED] Email: [REDACTED]	Can your name/role be used in the PA Report? Y or <u>N</u> Can you recommend anyone we can interview? Y or <u>N</u>
--	---

Roles or activities with the Facility/Years working at the Facility:

Manager of real estate and property transactions for OND

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as built), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

<u>OND operates Camp Adair under a license from US. Department of Army, administered by the U.S. Army Corps of Engineers. DR Army National Guard took over property boundary in late 1960s.</u>	Known Uses
	Use
	Procurement
	Disposition
	Storage (Mixed)
	Storage (Solution)
	Inventory, Off-Spec
<u>No information provided (or known) about AFFF use.</u>	Containment
	SOP on Filling
	Leaking Vehicles
	Nozzle and Suppression System Testing
	Dining Facilities
	Vehicle Washing
	Ramp Washing
	Fuel Spill Washing and Fueling Stations
	Chrome Plating or Waterproofing

PA Interview Questionnaire - Other

Facility: Camp Adair
 Interviewer: [Redacted]
 Date/Time: 9-20-18

Interviewee: [Redacted]
 Title: Training Site Mgr
 Phone Number: _____
 Email: _____

Can your name/role be used in the PA Report? Y or N
 Can you recommend anyone we can interview?
 Y or N _____

Roles or activities with the Facility/Years working at the Facility:

currently the Training Site Manager stationed at Camp Aitea overseeing troop/helicopter training operations. Formerly the state Aviation Officer flying the helicopters for fire fighting training at various OMD facilities, from 1998 to 2014 (based at Salem AAFB #1)

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builds), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

Troop training operations onsite with helicopter practice landings. A "confined Area operations" located in central/western and southeast area of property for training from 1970s to early 2000s. NO use of fire water buckets or AFFF.	Known Uses
	Use
	Procurement
	Disposition
	Storage (Mixed)
	Storage (Solution)
	Inventory, Off-Spec
	Containment
	SOP on Filling
	Leaking Vehicles
	Nozzle and Suppression System Testing
	Dining Facilities
	Vehicle Washing
	Ramp Washing
Fuel Spill Washing and Fueling Stations	
Chrome Plating or Waterproofing	

PA Interview Questionnaire - Other

Facility: Camp Adair
 Interviewer: [REDACTED]
 Date/Time: 19.20.18

Interviewer: <u>[REDACTED]</u> Title: <u>Wildland Fire Mngr</u> Phone Number: <u>[REDACTED]</u> Email: <u>[REDACTED]</u>	Can your name/role be used in the PA Report? Y or <input checked="" type="radio"/> N Can you recommend anyone we can interview? Y or <input checked="" type="radio"/> N <u>@nafl.mil</u>
Roles or activities with the Facility/Years working at the Facility: <u>Oversees wildland fire management of</u> <u>camp facilities and training operations</u> <u>with various agencies.</u>	
PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builds), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?	
- one time prescribed burn set on a tree in 2012 or 2013 using an unknown quantity / concentration of AFFF.	Known Uses <input checked="" type="radio"/> Use <input type="radio"/> Procurement <input type="radio"/> Disposition <input type="radio"/> Storage (Mixed) <input type="radio"/> Storage (Solution) <input type="radio"/> Inventory, Off-Spec <input type="radio"/> Containment <input type="radio"/> SOP on Filling <input type="radio"/> Leaking Vehicles <input type="radio"/> Nozzle and Suppression System Testing <input type="radio"/> Dining Facilities <input type="radio"/> Vehicle Washing <input type="radio"/> Ramp Washing <input type="radio"/> Fuel Spill Washing and Fueling Stations <input type="radio"/> Chrome Plating or Waterproofing
- one fire truck onsite but no AFFF used - historically, camp purchased AFFF in 2010 - Fire truck contents is PPLUS CHEK - Prescribed fires annually - up to 5x per year	 Storage (Mixed) Storage (Solution) Inventory, Off-Spec Containment SOP on Filling Leaking Vehicles Nozzle and Suppression System Testing Dining Facilities Vehicle Washing Ramp Washing Fuel Spill Washing and Fueling Stations Chrome Plating or Waterproofing
- septic system onsite - AFFF manually added to fire truck for use in the 2012 or 2013 application on the prescribed burn tree.	 Dining Facilities Vehicle Washing Ramp Washing Fuel Spill Washing and Fueling Stations Chrome Plating or Waterproofing

Appendix B.2

Visual Site Inspection Checklists

Visual Survey Inspection Log

Recorded by [redacted]
ARNG Contact [redacted]
Date: 9-12-18

Source/Release Information

Site Name / Area Name / Unique ID: Camp Adair
Site / Area Acreage: 527
Historic Site Use (Brief Description): Military training (Air Force and Army)
with live firing ranges
Current Site Use (Brief Description):

- 1. Was AFFF used (or spilled) at the site/area? Y N
1a. If yes, document how AFFF was used and usage time (e.g., fire fighting training 2001 to 2014):
Fire training on a tree one time in 2011
- 2. Has usage been documented? Y N
2a. If yes, keep a record (place electronic files on a disk):
- 3. What types of businesses are located near the site? Industrial / Commercial / Plating / Waterproofing / Residential
3a. Indicate what businesses are located near the site:
Agriculture
- 4. Is this site located at an airport/highline? Y N
4a. If yes, provide a description of the airport/highline tenants:

Other Significant Site Features:

- 1. Does the facility have a fire suppression system? Y N
1a. If yes, indicate which type of AFFF has been used:
1b. If yes, describe maintenance schedule/leaks:
1c. If yes, how often is the AFFF replaced:
1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?

Transport / Pathway Information

Migration Potential:

- 1. Does site/area drainage flow off installation? Y N
1a. If so, note observation and location:
Streams in eastern portion of site (NE-SW)
- 2. Is there channelized flow within the site/area? Y N
2a. If so, please note observation and location:
- 3. Are monitoring or drinking water wells located near the site? Y N
3a. If so, please note the location:
- 4. Are surface water intakes located near the site? Y N
4a. If so, please note the location:

Significant Topographical Features:

- 1. Has the infrastructure changed at the site/area? Y N
1a. If so, please describe change (ex. Structures no longer exist):
- 2. Is the site/area vegetated? Y N
2a. If not vegetated, briefly describe the site/area composition:
- 3. Does the site or area exhibit evidence of erosion? Y N
3a. If yes, describe the location and extent of the erosion:
potentially in fire ranges
- 4. Does the site/area exhibit any areas of ponding or standing water? Y N
4a. If yes, describe the location and extent of the ponding:
westwards in northern and southeast area of property

Visual Survey Inspection Log

Receptor Information

1. Is access to the site restricted? Y N
 1a. If so, please note to what extent:
fenced/locked to military personnel only
2. Who can access the site? Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological
 2a. Circle all that apply, note any not covered above:

3. Are residential areas located near the site? Y N
 3a. If so, please note the location/distance:
< 1,000 ft to the south
4. Are any schools/day care centers located near the site? Y N
 4a. If so, please note the location/distance/type:

5. Are any wetlands located near the site? Y N
 5a. If so, please note the location/distance/type:
southeastern corner

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description
AO1001	1/1/2018	Building 500, on flightline, looking south, NE Corner Fire Suppression System

Appendix B.3

Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Camp Adair

Why has this location been identified as a site?

potential (historical) AFFF use in fire training

Are there any other activities nearby that could also impact this location?

none likely

Training Events

Have any training events with AFFF occurred at this site? yes, approx. 2011

If so, how often? one time

How much material was used? Is it documented? possibly less than one gallon of AFFF extinguishing a tree set on fire for training

Identify Potential Pathways: Do we have enough information to fully understand over land surface water flow, groundwater flow, and geological formations on and around the facility? Any direct pathways to larger water bodies?

Surface Water:

Surface water flow direction? north-east

Average rainfall? approx. 3.5 inches / month (NOAA 1981-2010)

Any flooding during rainy season? potentially after dry seasons

Direct or indirect pathway to ditches?

Direct or indirect pathway to larger bodies of water? ~~no direct or indirect~~ wetlands / stream at site. Flowing off

Does surface water pond any place on site? potentially in low lying areas

Any impoundment areas or retention ponds? none

Any NPDES location points near the site? unknown

How does surface water drain on and around the flight line? NA - no flight line

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? northeast

Depth to groundwater? 5-15ft (wells in surrounding area)

Uses (agricultural, drinking water, irrigation)? entirely all purposes

Any groundwater treatment systems? no

Any groundwater monitoring well locations near the site? no

Is groundwater used for drinking water? no wells on site

Are there drinking water supply wells on installation? no

Do they serve off-post populations? no

Are there off-post drinking water wells downgradient potentially residential (private)

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? no

If so, do we understand the process and which water is/was treated at the plant? na

Do we understand the fate of sludge waste? na

Is surface water from potential contaminated sites treated? no

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go?

No

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after use? Where does the rinse water flow after cleaning nozzles?

No

3. Other?

Identify Potential Receptors:

Site Worker

Construction Worker

Recreational User

Residential

Child

Preliminary Assessment – Conceptual Site Model Information

Ecological

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)?

agricultural land, undeveloped, and residential

Documentation



Ask for Engineering drawings (if applicable).

Has there been a reconstruction or changes to the drainage system? When did that occur?

Appendix C

Photographic Log

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Camp Adair	Corvallis, Oregon
<p>Photograph No. 1</p> <p>Description:</p> <p>View looking northeast at Area of Interest (AOI) 1 (firefighting training tree) in the north/central portion of the facility..</p>	 <p>09/12/2018 10:11</p>	
<p>Photograph No. 2</p> <p>Description:</p> <p>View looking east at AOI 1 (firefighting training tree) in the north/central portion of the facility..</p>	 <p>09/12/2018 10:15</p>	

APPENDIX C – Photographic Log

**Army National Guard, Preliminary
Assessment for PFAS**

Camp Adair

Corvallis, Oregon

Photograph No. 3

Description:

View looking south in the northeastern portion of the facility in the cantonment area. View of an Oregon Military Department firefighting truck parked outside the warehouse building.

