FINAL
Preliminary Assessment Report
Tempe Readiness Center
City of Tempe, Arizona

Perfluorooctanesulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA) Impacted Sites
ARNG Installations, Nationwide

September 2020

Prepared for:

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

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AMA	Active Management Area
AOI	Area of Interest
ARNG	Army National Guard
ASU	Arizona State University
AZ	Arizona
AZARNG	Airzona Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EDR™	Environmental Data Resources, Inc.™
FTA	fire training area
gpm	gallons per minute
IBW	Indian Bend Wash
NGWA	National Ground Water Association
NIBW	North Indian Bend Wash
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
RC	Readiness Center
SI	Site Inspection
SIBW	South Indian Bend Wash
SRVB	Salt River Valley Hydrologic Basin
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
VSI	visual site inspection

Executive Summary

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG), 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 sources of per- and poly-fluoroalkyl substances (PFAS) and their effects on human health. PFAS are most commonly used as aqueous film forming foam (AFFF) released as part of firefighting activities, fire training, and equipment testing or maintenance. Other sources of PFAS include, for example, metal plating and uniform weatherproofing. This PA also evaluates suspected PFAS sources with a 1-mile radius of the Tempe Readiness Center (RC) that are not under the control of ARNG.

AECOM completed a PA for PFAS at the Tempe RC in Tempe, Arizona (AZ) to identify areas of known or suspected releases known as Areas of Interest (AOIs). The current Tempe RC is constructed on a parcel of land owned by the state of Arizona and leased to the Arizona ARNG (AZARNG). The PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases
- Conducted a site visit on 27 November 2018
- Interviewed current Tempe RC AZARNG personnel during the site visit and AZARNG environmental managers and operations staff
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs

Two areas (former truck bay and former wash area) have been identified as No Suspected Release (**Figure ES-1**). From 1966 to 1998, the city of Tempe Fire Station #1 operated at the site. Based on historical photos the city of Tempe Fire Station #1 had three fire trucks: one ladder and two fire engines. The site was purchased from the city of Tempe by the State of Arizona in October 2005 for use as an AZARNG Readiness Center. Visual inspections of the truck bay and wash area associated with the city of Tempe Fire Station #1 were conducted during the 26 November 2018 site visit. AZARNG personnel did not have knowledge of AFFF storage or use during Fire Station #1's occupation at the site. Additionally, prior storage and use of AFFF could not be verified by the city of Tempe Fire Department. However, AZARNG personnel have confirmed that the Tempe RC has not operated a fire station, did not conduct fire training and has not managed AFFF. Based upon available information, no AOIs were identified during the PA. Evidence does not indicate that current or former ARNG activities contributed PFAS contamination to soil, groundwater, surface water, or sediment at the site or adjacent areas. Tempe RC will not move forward in the CERCLA process.

Identified areas were investigated based upon former use of the property as a fire station by the City of Tempe from 1966 to 1998. AZARNG began operation of the property in 2005 and has not managed AFFF.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Tempe Readiness Center, AZ			
REVISED	9/11/2020	GIS BY	MS	9/11/2020
SCALE	1:1,200	CHK BY	BM	9/11/2020
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	9/11/2020

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Summary of Findings

AECOM
12420 Milestone Center Drive
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Figure 7-1

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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) G9, 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 W912DY-09-D-0061 / DA01 Task Order W912DR17F0192, issued 11 August 2017. The ARNG is assessing suspected impacted facilities and potential effects on human health related to processes at facilities that may have used per- and poly-fluoroalkyl substances (PFAS). PFAS is most commonly used as aqueous film forming foam (AFFF) released as part of firefighting activities, fire training, and equipment testing or maintenance. Other sources of PFAS include, for example, metal plating and uniform weatherproofing. This PA also evaluates suspected PFAS sources within a 1-mile radius of the Tempe Readiness Center (RC) that are not under the control of ARNG.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. 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 the absence of federal standards, some states have adopted their own standards; however, the state of Arizona does not currently have promulgated standards for PFAS.

This report presents the findings of the PA for PFAS at the current Tempe RC, Arizona (AZ) (also referred to as “the site”), 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 locations where PFAS may have been released into the environment at the Tempe RC. The term PFAS used in this PA refers to the entire suite of per- and polyfluoralkyl substances, including PFOS and PFOA. PFOS and PFOA are the primary components of AFFF, which may have been present at the Tempe RC. If a known or suspected release of AFFF or other PFAS-containing material has occurred, that location is designated as an AOI. The process for conducting the PA is discussed in the next section.

1.2 Preliminary Assessment Methods

The following tasks were performed as part of this PA:

- Reviewed data resources to obtain information relevant to suspected PFAS releases
- Reviewed Pre-Interview Forms
- Conducted a site visit on 27 November 2018
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs

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 site location, environmental setting, and methods used to complete the PA
- **Section 2** – **Fire Training Areas:** describes the FTAs at the site identified during the site visit
- **Section 3** – **Non-Fire Training Areas:** describes other locations of suspected PFAS releases at the site identified during the site visit
- **Section 4** – **Emergency Response Areas:** describes areas of suspected PFAS release at the site, specifically in response to emergency situations
- **Section 5** – **Adjacent Sources:** describes sources of suspected PFAS release adjacent to the site that are not under the control of ARNG
- **Section 6** – **Preliminary Conceptual Site Model:** describes the pathways of PFAS transport and receptors for the AOIs and the site
- **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 Site Location and Description

The Tempe RC is located off East University Drive (which parallels Red Mountain Freeway), approximately 9 miles east-southeast of Phoenix, in Maricopa County, Tempe, AZ, (**Figure 1-1**). The site is situated on a 2.34-acre (101,974 square foot) lot (Maricopa County Assessor's Office, 2019) and consists of one 16,132 square-foot building (building M7100). The city of Tempe operated a fire station at the site from 1966 to 1998. The property remained under city of Tempe ownership until the site was purchased by the State of Arizona in October 2005 for use as an AZARNG Readiness Center. Based on aerial imagery provided in the Environmental Data Resources, Inc.™ (EDR™) Report (**Appendix A**), the surrounding properties were predominately rural and residential until approximately 1964. Currently, the area surrounding the Tempe RC is primarily commercial, with multi-family housing to the south and southeast.

1.5 Site Environmental Setting

Tempe RC is located in the western portion of the East Salt River Valley Sub-Basin of the Salt River Valley Hydrologic Basin (SRVB). The Salt River Valley is also known as the Phoenix Active Management Area (AMA) or Phoenix Basin. The Phoenix Basin is located in the Basin and Range Province, which includes the southern and western portions of Arizona. The Basin and Range Province is characterized by elongated mountain ranges following a northwest to southeast trend and is separated by broad alluvial valleys. Mountains in this province consist of tilted blocks of Precambrian, Mesozoic, and Cenozoic rocks bounded by faults (GEC-SA&B, 2005).

1.5.1 Geology

The present-day basin and range physiography formed as a result of a period of high-angle block faulting that occurred mostly between 15 and 8 million years ago (Brown & Pool, 1989). Alluvial soils that fill the Phoenix Basin in the vicinity of the Tempe RC are divided into three units: the upper alluvial unit, primarily composed of coarse-grained deposits of sand, gravel, and cobbles; the middle fine-grained unit, primarily composed of silts, sands, and gravels; and the lower alluvial unit, primarily composed of clays, silts, sands, gravels, and evaporite deposits. These alluvial deposits are often over 1,500 feet thick and as thick as 11,000 feet (GEC-SA&B, 2005). Geologic units are depicted on **Figure 1-2**.

1.5.2 Hydrogeology

Bedrock in Maricopa County does not constitute a source of groundwater. Deep water levels coupled with high evaporation rates suggest that water is unlikely in bedrock (Brooks, 1988). The primary source of groundwater in the Phoenix Basin is typically derived from the aforementioned alluvial deposits and is usually unconfined. The upper and middle units have experienced significant dewatering. The upper part of the lower unit is fully saturated in most of the basin (Brown & Pool, 1989). Groundwater in the area surrounding the Tempe RC is typically encountered at approximately 90 feet below land surface. Groundwater flow in the area of the Phoenix Basin is generally westerly; however, pumping associated with agricultural areas and mountains may change the natural flow of groundwater (GEC-SA&B, 2005). Groundwater features including wells are shown in **Figure 1-2**. An exempt well is defined as having a pump with a maximum capacity of no more than 35 gallons per minute (gpm). Most exempt wells are used for residential and non-irrigation purposes, noncommercial irrigation of less than two acres of land, and watering stock. A non-exempt well has a pump capacity exceeding 35 gpm. This type of well is primarily used for irrigation or industrial purposes. Wells designated as “other” include geotechnical, mineral exploration, and cathodic protection wells.

In 2018, the city of Tempe used twelve of its groundwater wells to supplement supplies of Central Arizona Project (CAP) water and Salt River Project (SRP) water. This supply made up 79.8% of water used in the city of Tempe in 2018. A discussion of CAP and SRP water sources are discussed below in **Section 1.5.3**. (city of Tempe, 2018)

1.5.3 Hydrology

The Salt River is the principal drainage feature of the Phoenix Basin and is the nearest surface water body to the site, located approximately 0.5 miles north of the Tempe RC. The portion of the salt river located north of the Tempe RC is referred to as Tempe Town Lake, a man-made reservoir that transforms a section of the typically-dry Salt River Bed into a 224-acre lake. To accommodate the river when it flows, Tempe Town lake utilizes hydraulically-operated steel gates that allow water to pass through the system unimpeded (Arizona State University, 2018). The steel gate dams are used for flood control and can withstand the impact of a 100-year flood event. Water in Tempe Town Lake is replenished via reclaimed water, water exchanges, recharge, and recovery system installed in the reservoir (Tempe.gov, 2020). The city of Tempe provides water to its customers from two surface water sources: CAP Water and SRP water (city of Tempe, 2018).

Starting from Lake Havasu, Colorado River water is delivered through the CAP canal system to central Arizona, including the Phoenix and Tucson areas. CAP water is used for both potable municipal use as well as groundwater recharge. This supply made up 8.4% of the water used in the city of Tempe in 2018 (city of Tempe, 2018).

Surface water collected from the SRP is collected from the Salt River and Verde River watersheds and stored in six SRP reservoirs and diverted into SRP canals at the Granite Reef Dam in Mesa,

Arizona. SRP also relies on groundwater wells to supplement surface water in the canal system. Allocation of SRP water varies depending on the amount of runoff from the watershed and the amount of water available in storage in SRP reservoirs. This supply made up 79.8% of water used in the city of Tempe in 2018 (city of Tempe, 2018).

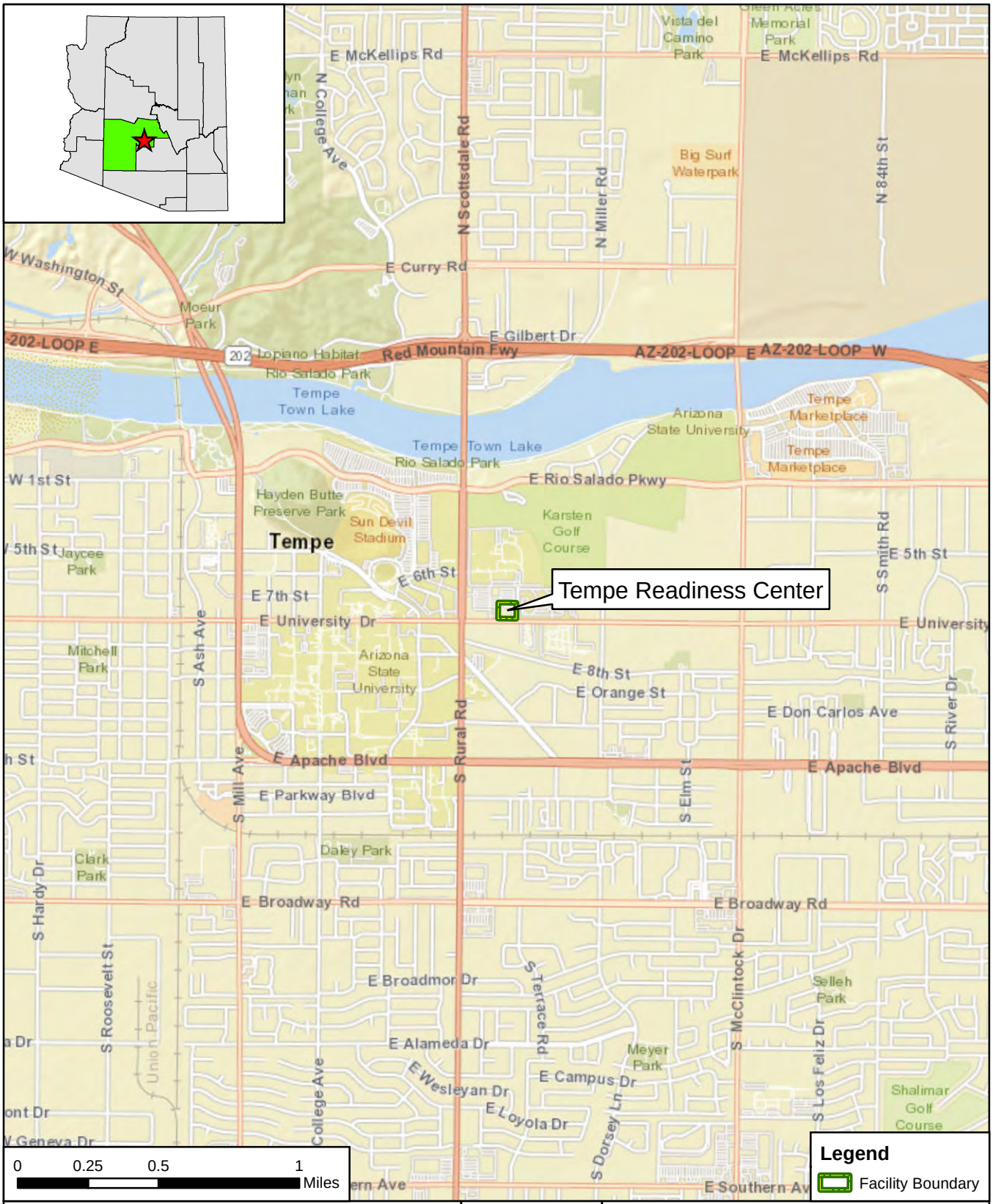
There are no surface water features at the Tempe RC. Surface water drainage is toward a storm drain located north of the Armory building and directed by a storm water swale. Surface water features surrounding the site are shown in **Figure 1-3**.

1.5.4 Climate

Arizona's climate is characterized as arid and semi-arid, with annual precipitation ranging from 3 inches in the southwest at Yuma to around 40 inches in the White Mountains in east central Arizona (Arizona State Climate Office, 2019). There are two separate rainfall seasons. The first occurs during winter months, from November through March, when the area is subject to storms from the Pacific Ocean. The second occurs during July and August, when Arizona is subject to thunderstorms whose moisture supply originates in the Gulf of Mexico, in the Pacific Ocean off the west coast of Mexico, and the Gulf of California. Although these are classified as rainy seasons, there can be periods of a month or more in any season when no precipitation occurs. Light snow occurs in the higher mountains surrounding the Salt River Valley. Snowfall within the Salt River Valley, although rare, can occur (Arizona State Climate Office, 2019).

1.5.5 Current and Future Land Use

The site was purchased from the city of Tempe by the State of Arizona in October 2005 for use as an AZARNG Readiness Center. The property is developed with a one 16,132 square-foot building (building M7100). As described in **Section 1.4**, land surrounding the site is used for commercial purposes, multi-family apartment buildings to the south and southeast. The Tempe RC is anticipated to continue to be used as a military light industrial complex.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Tempe Readiness Center, AZ			
REVISED	3/21/2019	GIS BY	GC	3/21/2019
SCALE	1:31,680	CHK BY	BM	3/21/2019
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI,		PM	RG	3/21/2019

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Facility Location

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Figure 1-1

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Exempt wells are typically used for potable purposes. Non-exempt wells typically provide higher volumes of water for irrigation or other purposes.

Wells designated as "other" include geotechnical, mineral exploration, and cathodic protection wells.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Tempe Readiness Center, AZ			
REVISED	1/23/2020	GIS BY	GC	1/23/2020
SCALE	1:15,600	CHK BY	BM	1/23/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	1/23/2020

Groundwater Features

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Figure 1-2

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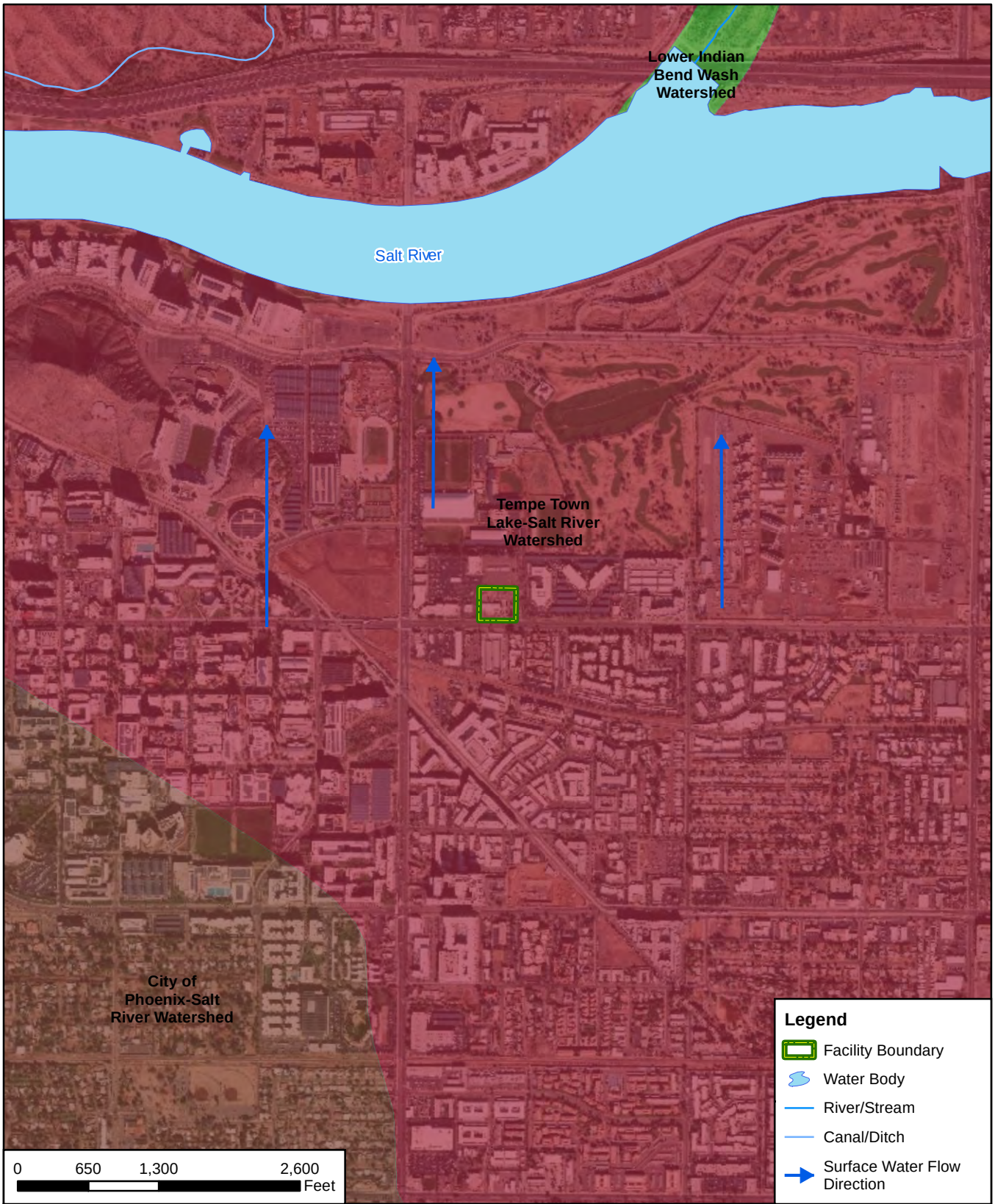

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Tempe Readiness Center, AZ			
REVISED	11/14/2019	GIS BY	GC	11/14/2019
SCALE	1:15,600	CHK BY	BM	11/14/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	11/14/2019

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

The city of Tempe Fire Station #1 operated at the site from 1966 until 1998. Historical information regarding the city of Tempe's use of the property was not available. AZARNG did not conduct fire training at this site. The facility is a muster and classroom training area, with some light vehicle and maintenance. ABC fire extinguishers were observed during the PA site visit. Based on the AZARNG operations at the facility, there is no reason to suspect that AFFF extinguishers were ever present at the facility. AZARNG has not managed AFFF at the site. However, it is possible that the city of Tempe managed AFFF during their operation of Fire Station #1 from 1966 to 1998. Pre-interview questionnaire forms and visual inspection documentation gathered during this PA are provided in **Appendix B.**

3. Non-Fire Training Areas

Non-FTAs were investigated as part of the PA. Based on the city of Tempe Fire Department's use of Fire Station #1 from 1966 to 1998, the Maintenance Bay and The Fire Tower and Concrete Wash Pad were investigated during this PA. AZARNG has not managed AFFF at the site. However, it is possible that the city of Tempe did during their operation of Fire Station #1 from 1966 to 1998. A description of each non-FTA is presented below, and the non-FTAs are shown on **Figure 3-1,** with photographs appearing in **Appendix C**.

3.1 Building M7100

The Maintenance Bay is located at the western most portion of the Tempe RC Building M7100. The geographical coordinates are 33°25'20.9"N; 111°55'26.1"W. It is suspected that firetrucks belonging to the city of Tempe Fire Station #1 would have been stored in this area. A floor drain is located approximately 15 feet north of the bay entrance; however, the outfall location is unknown. It can be assumed that any material released during the city of Tempe's tenure at the site would have been transported offsite via the sanitary sewer or storm sewer before discharging. It is possible AFFF had been stored in the former truck bay during its use by the city of Tempe Fire Department; however, prior use or storage of AFFF at the Tempe RC could not be verified.

3.2 Buildings M7109 and M7117

The Fire Tower Building M7109) is located on the side of the Tempe RC Building M7100. The geographical coordinates are 33°25'21.2"N; 111°55'25.4"W. The Concrete Drainage Pad (M7117) is located north of the fire tower and measures approximately 5 feet wide by 75 feet long. A storm drain is located at the north end of the Concrete Drainage Pad. The outfall location for the storm drain was not identified during the PA site visit. The geographical coordinates of the Concrete Drainage Pad are 33°25'21.4"N; 111°55'25.6"W.

The Concrete Drainage Pad is believed to have been used by the city of Tempe Fire Department for washing firetrucks. Additionally, this area also contains a fire hose lift used to drain fluids from hoses prior to storage. It is unknown if any hoses with AFFF were rinsed and drained in this area during the city of Tempe's tenure at the site. Historical information regarding the city of Tempe's use of the property was not available. Any material released would have been transported to the storm sewer system and was not discharged into open drainage onsite. AZARNG has not managed AFFF at the site..

Identified areas were investigated based upon former use of the property as a fire station by the City of Tempe from 1966 to 1998. AZARNG began operation of the property in 2005 and has not managed AFFF.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Tempe Readiness Center, AZ			
REVISED	9/11/2020	GIS BY	MS	9/11/2020
SCALE	1:1,200	CHK BY	BM	9/11/2020
Base Map: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	9/11/2020

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Non-Fire Training Areas

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Figure 3-1

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4. Emergency Response Areas

No emergency response areas were identified within the current Tempe RC based on information provided in Environmental Baseline Survey (dated 8 March 2005), the EDR™ Report, dated 21 November 2018 or during the PA site visit, conducted on 27 November 2018.

5. Adjacent Sources

Adjoining land uses to the Tempe RC are primarily commercial. Following a review of the EDR™ report provided in **Appendix A**, as well as public records, the Indian Bend Wash (IBW) Area, Campus Cleaners, and ASU No.1 and ASU No. 2 were reviewed for suspected off-site contamination of PFAS. Based on information provided in the EDR™ report as well as physical locations of the suspected adjacent sources, the Indian Bend Wash Area, Campus Cleaners, and ASU No.1 and ASU No. 2 are not considered to be suspected off-site source of PFAS impacts to the Tempe RC.

5.1 Indian Bend Wash Area

The IBW Area covers about 13 square miles in Scottsdale and the city of Tempe, Arizona. Up until the 1970s, before current environmental regulations existed, industrial solvents containing volatile organic compounds (VOCs) were typically disposed of directly into the ground or in drywells (United States Environemntal Protection Agency, 2018). Beginning in the 1970s, many municipalities in the city of Phoenix metropolitan area required that stormwater on newly developed commercial or industrial properties be retained or disposed of on property. One common method to dispose of stormwater was using drywells, which are typically 4- to 6-inch diameter shafts that are drilled 20 to 80 feet or more below ground surface (GEC-SA&B, 2005).

These disposal practices, along with other releases, resulted in present soil and groundwater contamination in the IBW Area. The EPA divided the IBW into two areas known as the North IBW (NIBW) and South IBW (SIBW). The Tempe RC is located within the boundary of the SIBW area, which includes approximately 3 square miles of the city of Tempe. Land in the SIBW area is developed for residential, commercial, and industrial uses including circuit and electronic manufacturing, plastics manufacturing, dry cleaning, metal electroplating and finishing, auto service, landfills, and quarries, which have operated since the 1950s. While many of these operations have discontinued, they include the use and disposal of organic solvents, which have led to soil and groundwater contamination (USACE, 2016).

In 1993, the EPA determined a soil vapor extraction system would be the appropriate remediation technique to address contaminated soil, and monitored natural attenuation was the selected remedy for contaminated groundwater in the SIBW. In 2013, an in-situ chemical oxidation using permanganate was applied to hasten groundwater cleanup. During the 2016 annual sampling event, drinking water standards were attained for the first time in all monitoring wells sampled in the SIBW (USEPA, 2018)

In November 2017, the EPA sampled for PFAS all the NIBW extraction wells leading to treatment plants serving public water supply. No PFAS were identified in any of the Scottsdale wells sampled (USEPA, 2018). A review of public documents could not confirm that PFAS were sampled for in the SIBW Area.

Historical manufacturing of plastics and metal electroplating in the SIBW could be a source of off-site contamination. Although VOCs sampled in the SIBW were reported below drinking water standards in 2016, sampling for PFAS constituents in the SIBW has not been performed. Until PFAS sampling is conducted, the IBW is not a suspected source of PFAS impacts at the Tempe RC at this time.

5.2 Campus Cleaners

According to the EDR™ report, a former dry-cleaning business formerly known as Campus Cleaners, Dry Clean All, and Mom's Campus Cleaners was located approximately 0.1 miles southwest of the Tempe RC. This property is currently operating as the Taco Shack Restaurant (Maps, 2019). Regional groundwater flow in the Phoenix Basin indicates the Campus Cleaners property is downgradient of the Tempe RC. Based on its location, the Campus Cleaners property does not have the potential to impact the Tempe RC and is therefore not a suspected source of PFAS.

5.3 ASU No.1 and No.2

Closed solid waste facilities ASU No.1 and ASU No.2 are listed in the EDR™ report as 0.48 miles northwest and 0.45 miles northwest of the Tempe RC, respectively. Based on the distances of the two closed solid waste facilities and their position downgradient of the Tempe RC, these facilities are not suspected to be a source of PFAS potentially impacting the Tempe RC.

6. Conceptual Site Model

A conceptual site model includes three components necessary for potentially complete exposure pathways related to a site: (1) source, (2) pathway, and (3) receptor. No known releases of PFAS have been identified at the Tempe RC. In addition, exposure pathways to potential receptors are incomplete due to city-provided services (water, sewer, etc.).

7. Conclusions

This PA report presents a summary of information on known or suspected management of AFFF and releases of PFAS at the Tempe RC. The findings presented below are based on a site visit, and a records search presented in **Appendix A** and **Appendix B**.

7.1 Findings

No PFAS releases relating to current or historical activities at Tempe RC were identified during this PA. However, the city of Tempe operated a fire station at the property prior to AZARNG ownership. No information was available regarding the operational history of the site prior to 2005. These findings are depicted on **Figure 7-1**. **Table 7-1** summarizes these areas and presents the rationale why they are not considered to be viable sources of PFAS:

Table 7-1: Suspected Release Areas

Suspected Release Area	Used by	Rationale	Determination
Building M7100	city of Tempe Fire Department	The city of Tempe Fire Department may have managed AFFF in the Maintenance Bay. However, AZARNG performed light vehicle repairs and storage in the Maintenance Bay. AZARNG did not manage AFFF at the Tempe RC.	No known or suspected PFAS release
Buildings M7109 and M7117	city of Tempe Fire Department	The city of Tempe Fire Department may have washed, rinsed or drained firefighting equipment containing AFFF in these areas. AZARNG does not use these areas and did not manage AFFF at the Tempe RC.	No known or suspected PFAS release

7.2 Uncertainties

A number of information sources were evaluated during this PA to determine the likelihood for PFAS-containing materials to have been present, used, or released at the site. Historically, documentation of PFAS use was not required because PFAS were considered benign. Therefore, records were not typically kept by the site 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 in the EDR™ report (**Appendix A**), a review of available historical documents, and information and photos gathered during the PA site visit. AZARNG did not perform fire training activities or manage AFFF at the Tempe RC. The city of Tempe operated a fire station at the site from 1966 to 1998. However, historical information regarding the city of Tempe's use of the property was not available. Therefore, gathered information has a degree of uncertainty due to the absence of written documentation, the lack of personnel with direct knowledge due to staffing changes, and the time passed since PFAS was first used (1969 to present). Inaccuracies may arise in suspected PFAS release locations. There is also a possibility the PA has missed a source of PFAS, as limited information was available regarding historical property use and the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, and suspected source areas were visually inspected.

Table 7-2 summarizes the uncertainties associated with the PA:

Table 7-2: Uncertainties within the PA

Area Evaluated	Source of Uncertainty
Building M7100	The city of Tempe operated a fire station at the site from 1966 to 1998. However, historical information regarding the city of Tempe's use of the property was not available.
Buildings M7109 and M7117	The city of Tempe operated a fire station at the site from 1966 to 1998. However, historical information regarding the city of Tempe's use of the property was not available

7.3 Potential Future Actions

Based upon available information, no AZARNG-related AOIs were identified during the PA. No known or suspected releases of PFAS have been identified at Tempe RC, as AZARNG did not manage AFFF at the Tempe RC. Additionally, there is no evidence of offsite releases of PFAS potentially impacting the Tempe RC. Therefore, no further action is warranted under CERCLA.

Identified areas were investigated based upon former use of the property as a fire station by the City of Tempe from 1966 to 1998. AZARNG began operation of the property in 2005 and has not managed AFFF.

CLIENT	ARNG			
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Germantown, MD 20876

Figure 7-1

C:\Users\stankevichm\OneDrive - AECOM Directory\ARNG_PFAS_GIS_60552172\MXDs\AZ\Tempe_Figures\Tempe_PA_Figures\Fig_7-1_Tempe_Summary.mxd

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Appendix A
Data Resources

Data resources will be provided separately on CD. Data resources for Tempe Readiness Center include:

Environmental Data Resources, Inc.™ Geocheck Report

- 2018 Environmental Data Resources, Inc.™ Geocheck Report for Tempe Armory, Arizona

Land Lease Documentation

- 2005 Special Warranty Deed, City of Tempe, Arizona

Miscellaneous Data Resources

- 2005 Environmental Baseline Survey, Tempe Armory, Arizona Army National Guard, 322 East 6th Street, Tempe, Arizona

Unregulated Contaminant Monitoring Rule 3 Information

- 2020 UCMR 3 City of Tempe Data

Appendix B
Preliminary Investigation Report

Appendix B.1
Interview Records

Preliminary Assessment – Pre-Interview Form

Need to Contact City of Tempe. ARNG has no info.

1. Installation Name: Tempe ~~National Guard Armory~~ Readiness Center	
2. Primary Points of Contact:(Name/Title/Telephone Number/Email Address):	
ARNG:	SFC [redacted]
USACE:	
Installation:	
3. Suggested Personnel to Interview (Name/Title/Number of Years at Installation/Retired): [redacted] -retired from station when unit took over SFC [redacted], [redacted]	
4. Is the ARNG property an enclave of a larger facility? What command or authority controls that facility? DoD or non-DoD? Does the facility have other DoD enclaves?	
5. Installation History (dates of operation, types of activity, active airfield, firefighting training): 1954-old fire station. Training activities unknown. 2007 unit took charge. Current activities include training, medical training, vehicle maintenance. Other training is offsite	
6. Potential Sites to Investigate (hangars, airstrips, FTAs, TAs, paint shops and kitchen AFFF, plating areas): vehicle fields if training took place there, inside if AFFF was stored or used inside or on vehicles	

7. Have we requested the following information from ARNG?		
Lease Information	YES / NO	Comment:
Material Purchase Information	YES / NO	Comment:
Permit/Transfer Documents	YES / NO	Comment:
Disposition Records for AFFF	YES / NO	Comment:

(Attach to the front of the Interview Form)

Preliminary Assessment – Pre-Interview Form

8. Does the Installation have an Administrative Record or a Document Repository? If so, does the installation have the following types of documents? Circle all that apply.

Historical Records Review

Preliminary Assessment

Site Inspections

Remedial Investigation

Remedial Action Documentation

Cultural Resources Management Plan

Natural Resources Management Plan

Annual TAG Reports

Firefighting Training Records (if documented)

As Built Drawings for Buildings with AFFF Systems

Fire Suppression in Dining Facilities

Responded to an Aircraft Crash

Responded to Forest Fires

Federal Facility Agreement

State Permit

RCRA Permit

NPDES Permit

Environmental Baseline Study

Groundwater Flow Information

Groundwater Studies

Groundwater Treatment Units

Groundwater Monitoring Well Location Map

Surface Water Flow Information

Historical Aerials

9. What GIS data do we have (e.g., HQANG GIS)? Do we need (e.g., State GIS)? Will aerial photographs be needed? (These files will be asked for during the interview)

(Attach to the front of the Interview Form)

Appendix B.2
Visual Site Inspection Checklists

Facility ST
Visual Survey Inspection Log

Recorded by: [redacted]
ARNG Contact:
Date: 11/27/18

Readiness Center Concrete Drainage PAD

Site Name / Area Name / Unique ID: Tempe ~~Armory~~ Potential Wash Area
Site / Area Acreage: 101,974 sq ft (parcel total)
Historic Site Use (Brief Description): City of Tempe Fire Dept.

Current Site Use (Brief Description): Army National Guard Readiness Center

1. Was AFFF used at the site/area? Y / N (unknown)
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014*) Former Fire Station
2. Has usage been documented? Y / (N)
   2a. If yes, keep a record (place electronic files on a disk)
   Need to call City of Tempe.

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? (Y) N
   1a. If so, please describe change. (*ex. Structures structures longer exist.*) No longer used for vehicle washing. Most likely used for truck washing when a fire Station.
2. Is the site/area vegetated? Y (N)
   2a. If not vegetated, briefly describe the site/area composition Asphalt covered.
3. Does the site or area exhibit evidence of erosion? Y / (N)
   3a. If yes, describe the location and extent of the erosion
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

Migration Potential:

1. Does site/area drainage flow off installation? Y (N)
   1a. If so, please note observation and location Drains toward onsite Storm drain.
2. Is there standing water or drainage issues within the site/area? Y (N)
   2a. If so, please note observation and location
3. Is there channelized flow within the site/area? (Y) N
   3a. If so, please note observation and location drains to Swale & then Storm drain.
4. Have man-made drainage channels been constructed within the site/area? Y (N)
   4a. If so, please note the location of the channel

Additional Notes

Facility ST
Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph
4 & 5	11/7/18	Outdoor washing area	Looking N.
6	11/7/18	Storm drain	Looking NW

Facility ST

Visual Survey Inspection Log

Recorded by: [redacted]

ARNG Contact:

Date: 11/27/18

Site Name / Area Name / Unique ID: Tempe ~~Armory~~ (Readiness Center) ~~Former truck Bay~~ (Maintenance Bay Door 1/23/20)

Site / Area Acreage: 101,974 sq-ft (parcel Total)

Historic Site Use (Brief Description): City of Tempe Fire Dept.

Current Site Use (Brief Description): Army National Guard Redines Center

1. Was AFFF used at the site/area? Y / N (Unknown)

3a. If yes, document how AFFF was used and usage time ~~(e.g., fire fighting training 2001 to 2014)~~ Former Fire Station.

2. Has usage been documented? Y (N)

2a. If yes, keep a record (place electronic files on a disk)

Need to call City of Tempe.

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? (Y) / N

1a. If so, please describe change (ex. *Structures structures longer exist.*) No longer a truck Bay. Used for Storage/Lockers.

2. Is the site/area vegetated? Y (N)

2a. If not vegetated, briefly describe the site/area composition Inside Building. Covered in concrete.

3. Does the site or area exhibit evidence of erosion? Y (N)

3a. If yes, describe the location and extent of the erosion

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

Migration Potential:

1. Does site/area drainage flow off installation? Y (N)

1a. If so, please note observation and location

2. Is there standing water or drainage issues within the site/area? Y (N)

2a. If so, please note observation and location

3. Is there channelized flow within the site/area? Y (N)

3a. If so, please note observation and location

4. Have man-made drainage channels been constructed within the site/area? Y (N)

4a. If so, please note the location of the channel

Additional Notes

Floor drain in former bay. Outfall unknown. Need to call city.

Facility ST
Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph
2 & 3	11/7/18	Former Truck Bay	Looking N.

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Tempe Readiness Center

Why has this location been identified as a site? The City of Tempe (CoT) operated a fire station at the from 1966 to 1998. However, Historical records regarding the CoT use of the property is unavailable.

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

See EDR

Training Events

Have any training events with AFFF occurred at this site? CoT historical records unavailable. None by AZARNG

If so, how often? N/A

How much material was used? Is it documented? N/A

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

Average rainfall? 9.33"

Any flooding during rainy season? No

Direct or indirect pathway to ditches? No

Direct or indirect pathway to larger bodies of water? Salt River is located approximately 0.5 miles north

Does surface water pond any place on site? No

Any impoundment areas or retention ponds? No

Any NPDES location points near the site? No

How does surface water drain on and around the flight line? N/A

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Regional groundwater flow is toward the west

Depth to groundwater? Approximately 50 to 263 feet

Uses (agricultural, drinking water, irrigation)? Non-Exempt well approximately 0.25 miles east according to EDR

Any groundwater treatment systems? No

Any groundwater monitoring well locations near the site? Yes. Located approximately 0.10 miles southwest

Is groundwater used for drinking water? Surface water sources are primarily used for drinking water.

Are there drinking water supply wells on installation? No

Do they serve off-post populations? No

Are there off-post drinking water wells downgradient? CoT wells are located approximately 0.5 miles north. However, these sources are not a primary source of drinking water.

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? N/A

Do we understand the fate of sludge waste? N/A

Is surface water from potential contaminated sites treated? N/A

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go? Historical records are unavailable regarding CoT use of the property. No fire fighting activities took placer during AZARNG operation of the site

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?
AZARNG has not managed AFFF or performed fire fighting related activities.

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker No

Construction Worker No

Recreational User No

Residential No

Child No

Ecological No

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)?
Commercial properties to the west, ASU recreational and athletic fields to the north, commercial properties to the south, offices to the east and apartments to the southeast.

Documentation

Ask for Engineering drawings (if applicable).

Has there been a reconstruction or changes to the drainage system? When did that occur? No

Appendix C
Photographic Log

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Tempe Readiness Center	Tempe, Arizona

Photograph No. 1

Description:

Looking north. Floor drain in the Tempe Readiness Center (building M7100) Maintenance Bay.

Photo Date: 11/27/18

Photograph No. 2

Description:

Looking north. Floor drain in the Tempe Readiness Center (building M7100) Maintenance Bay.

Photo Date: 11/27/18

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Tempe Readiness Center	Tempe, Arizona

Photograph No. 3

Description:

Looking north. Concrete drainage pad (M7117) located north of the Fire Tower (M7109). Surface water drains to a storm drain located at the north end of the concrete drainage pad.

Photo Date: 11/27/18

Photograph No. 4

Description:

Looking southwest. Storm drain at the end of the concrete drainage pad (M7117).

Photo Date: 11/27/18