FINAL
Preliminary Assessment Report
Lansing Hangar, Michigan

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

UNCLASSIFIED

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Acronyms and Abbreviations

AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AOI	area of interest
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CRAA	Capital Region Airport Authority
CSM	conceptual site model
EDR™	Environmental Data Resources, Inc.™
FTA	fire training area
GLISA	Great Lakes Integrated Sciences and Assessments
HA	Health Advisory
IED	Installations and Environment Division
PA	Preliminary Assessment
MDEQ	Michigan Department of Environmental Quality
MDMVA	Michigan Department of Military and Veteran Affairs
MDOT	Michigan Department of Transportation
MIARNG	Michigan Army National Guard
NPS	National Park Service
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site Inspection
UCMR3	Unregulated Contaminant Monitoring Rule 3
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Gological Survey
VSI	visual site inspection
WWTP	waste water treatment plant

Executive Summary

The Army National Guard (ARNG) is performing Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide. A PA for per- and polyfluoroalkyl substances (PFAS)-containing materials was completed for C-12 Hangar, also known as Lansing Hangar or the "facility", to assess potential PFAS release areas and exposure pathways to receptors caused by site activities. The facility consists of a cinder block office that was built in 1966 and a single bay hangar that was built in 1992. The facility has been leased by Michigan ARNG (MIARNG) from the Michigan Department of Transportation, Aeronautics Division since December 1992. No MIARNG aviation assets were present at the facility prior to initiation of the lease. The original office building construction was previously occupied by the Jackson National Insurance Company. The subject property is located at the Capital Region International Airport, 3700 Capital City Boulevard, Lansing, Michigan. The performance of this PA included the following tasks:

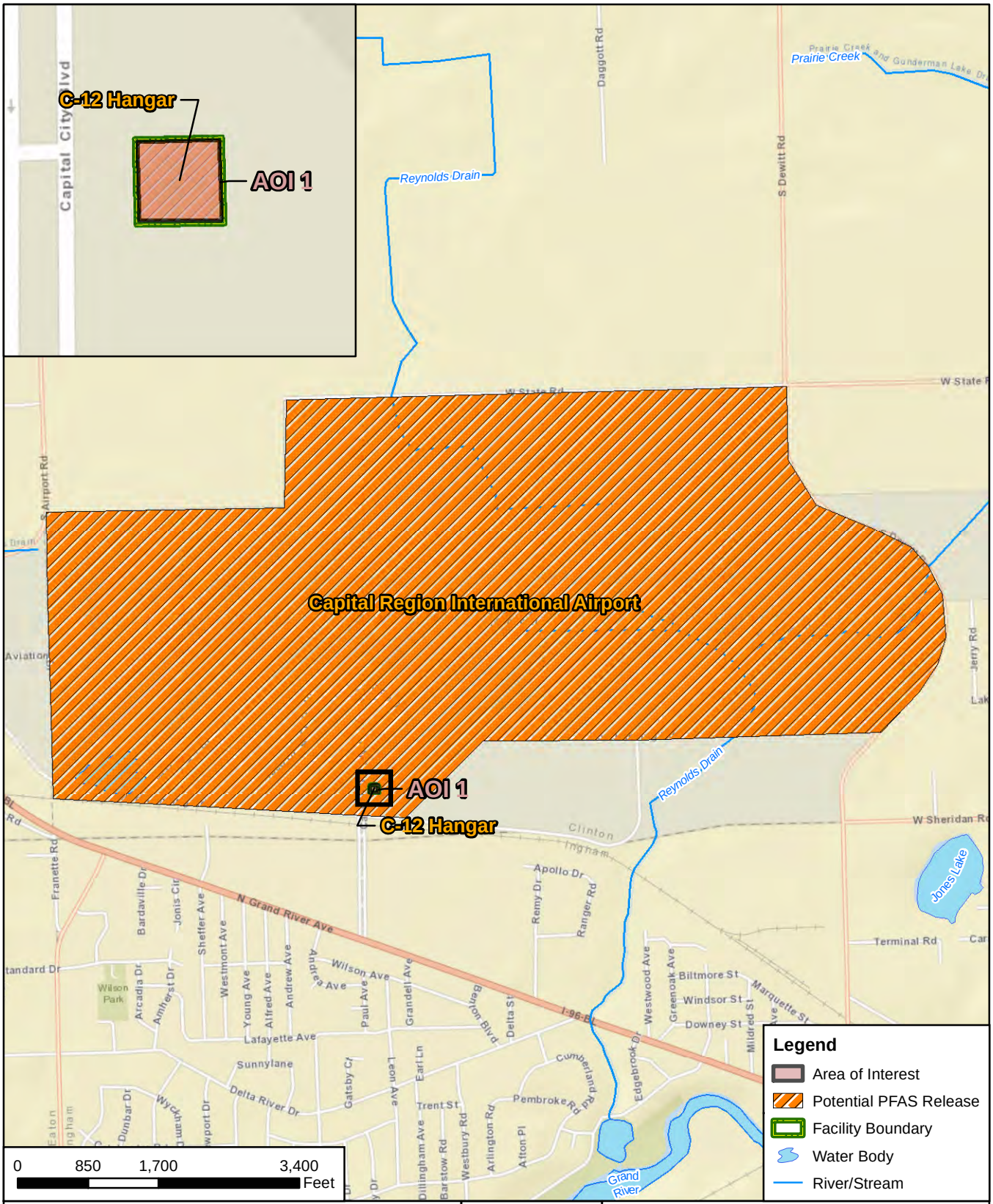
- Reviewed available administrative record documents and Environmental Data Resources, Inc. (EDR)™ report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a 1-day site visit on 7 June 2018 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed personnel familiar with the facility during the site visit, including:
  - United States (US) Army personnel at the facility from 2003-present
  - US Army Flight Operations Specialist at facility from 2016- present
- Conducted a phone interview on 13 June 2018 with the Facility Supervisor; and
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

One AOI related to a potential PFAS release was identified at Lansing Hangar during the PA. The AOI is shown on **Figure ES-1** and described in **Table ES-1** below:

Table ES-1: AOIs at Lansing Hangar

Area of Interest	Name	Used by	Potential Release Date
AOI 1	C-12 Hangar	MIARNG	1992 to 2003

Although there is no documented use or release of AFFF from the C-12 Hangar, there is a data gap in knowledge between the years 1992 (the beginning of MIARNG's property lease) and 2003. Thus, it is possible that historical activities may have resulted in the release of PFAS-containing materials. Based on potential PFAS releases at this AOI, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for Lansing Hangar, which presents the potential receptors and media impacted, is shown on **Figure ES-2**. Based on the US Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the USEPA's lifetime Health Advisories (HAs) within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.



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Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	9/15/2020

Summary of Findings

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Figure ES-1

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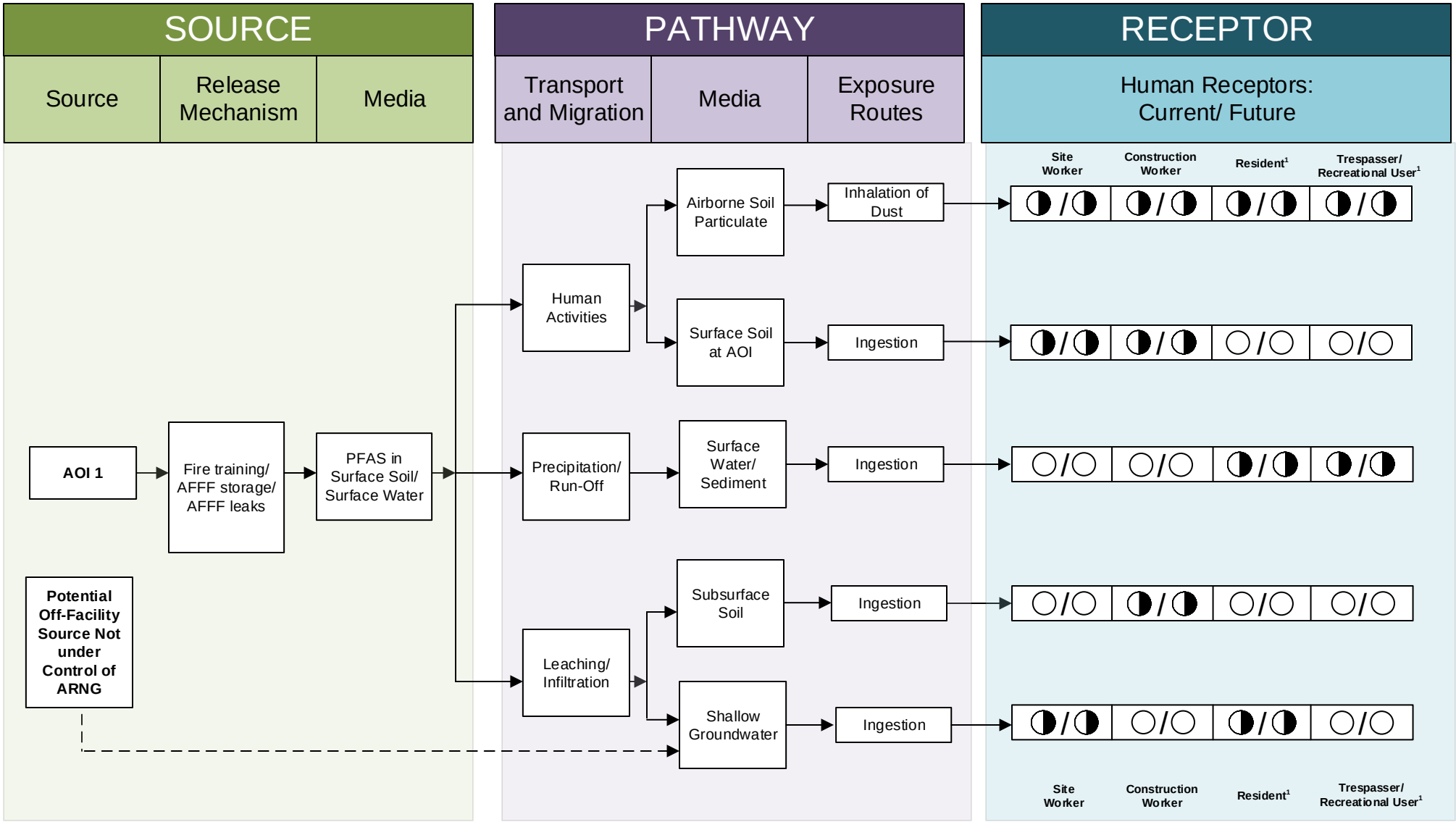


LEGEND

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

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure ES-2
Preliminary Conceptual Site Model
Lansing Hangar, MI

1. Introduction

1.1 Authority and Purpose

The Army National Guard (ARNG) G9 is the lead agency in performing *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) at Impacted Sites at ARNG Facilities Nationwide.* This work is supported by the United States (US) Army Corps of Engineers (USACE) Baltimore District and their contractor AECOM Technical Services, Inc. (AECOM) under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 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. The regulatory framework at both federal and state levels continues to evolve. The U.S. Environmental Protection Agency (USEPA) issued Drinking Water lifetime Health Advisories (HAs) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined.

AECOM completed a PA for PFAS at C-12 Hangar, also known as Lansing Hangar or the “facility”, to assess potential PFAS release areas and exposure pathways to receptors caused by site activities. This report presents findings of a PA for PFAS-containing materials at Lansing Hangar at the Capital Region International Airport, Lansing, Michigan 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 [CFR] Part 300), and Army requirements and guidance. The focus of this report is specific to the Lansing Hangar property. The Michigan ARNG (MIARNG) has leased the Lansing Hangar from Michigan Department of Transportation (MDOT) since December 1992 (Michigan Department of Military and Veteran Affairs [MDMVA], 2016).

This PA Report documents the evaluation of the potential for PFAS-containing materials, including AFFF, used or stored at the facility as well as additional locations where PFAS may have been released into the environment at the Lansing Hangar facility. 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 available administrative record documents and Environmental Data Resources, Inc. (EDR)™ report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a 1-day site visit on 7 June 2018 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed personnel familiar with the facility during the site visit, including:

  - US Army personnel at the facility from 2003-present
  - US Army Flight Operations Specialist at facility from 2016- present
- Conducted a phone interview on 13 June 2018 with the Facility Supervisor; and
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

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 as follows:

- **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 fire training areas (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 Sources:** describes sources of potential PFAS release adjacent to the facility that are not under the control of ARNG.
- **Section 6** – **Preliminary Conceptual Site Model:** describes the pathways of PFAS transport and receptors at each AOI.
- **Section 7** – **Conclusions:** summarizes the data findings and presents the conclusions and uncertainties 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

Lansing Hangar at Capital Region International Airport, 3700 Capital City Boulevard, is located in the city of Lansing, Michigan, in south central Clinton County, close to the junction of Ingham County, Clinton County, and Eaton County. The Capital Region International Airport was originally built in 1927-1928 and has undergone major expansions since that time. In 1980, an airport fire station was built (Capital Region Airport Authority [CRAA], 2006). The facility is bordered in the immediate area by Capital City Boulevard and Port Lansing Road in the south-central portion of the airport (**Figure 1-1**). The facility is surrounded by Capital Region International Airport property, south of the runways and terminal. Undeveloped land and agricultural farmlands are located to the north of the airport, a public golf course and cemetery are located to the west, and residential and business districts are located to the east and south.

Lansing Hangar consists of a one-story, cinder block office building and an attached single-bay hangar. The office building was constructed in 1966 and the single-bay hangar was added in

1992. The total facility area is approximately 10,000 square feet, and the original office building construction was first occupied by the Jackson National Insurance Company. MIARNG has leased the building and hangar from MDOT since 13 December 1992 (MDOT, 1992). The original lease spanned from December 1992 to December 2012, at which point the lease was extended for ten (10) years with an option to extend, if deemed necessary (MDOT, 2012) (**Appendix A**). Based on the VSI, the area is used solely for office work; no maintenance activities are performed in the office building.

1.5 Facility Environmental Setting

The Capital Region International Airport, formerly Lansing Capital City Airport, is located in the lower peninsula of Michigan in the Central Lowlands Physiographic Province. The province is part of the Interior Plains division of the United States and is characterized by flat lands with glacial geomorphic remnants. The majority of the Central Lowlands province is bounded by higher relief and comprises elevations of 2,000 feet or less (National Park Service [NPS], 2017). The terrain is relatively flat with the elevation at Capital Region International Airport ranging from 827 to 861 feet above mean seal level, possessing a gentle gradient to the north and east (US Geological Survey [USGS], 2018).

1.5.1 Geology

The topography at Lansing Hangar is relatively flat due to glacial scouring and deposition of glacial till; the elevation changes at most 20 feet over the course of 1 mile. The facility area is underlain by approximately 50- to 75-foot thick deposits of medium-textured Quaternary glacial till and end-moraines (Soller and Garrity, 2018).

Bedrock units in the area are the Lower Pennsylvanian-aged Saginaw Formation and the Upper Pennsylvanian-aged Grand River Formation. The Saginaw Formation is approximately 400-feet thick and is composed mainly of an upper shale unit, main coal unit, lower shale unit, and underlying quartz sandstone unit, which vary in thickness and presence across Michigan (Stark and McDonald, 1980). The depositional environment of the Saginaw represents a typical marine beach and backwater lagoon setting, where the wave- and wind-worked sands and low-energy black muds of the sandstone and shale were deposited respectively. The low-energy environment of the lagoon also accounts for the deposition of the coal lenses and black limestones found within the formation (Milstein, 1987).

The overlying geologic unit is primarily the Grand River Formation, composed of sandstone with minor interbedded shale. Bedrock is found approximately 60 feet below ground surface (bgs) at the facility. The Grand River, formed after the retreat of the last Pleistocene glaciers, likely cut its current course through joint structures in the bedrock (Milstein, 1987). Red bed deposits from the Jurassic age are also known to exist in the central Basin area in isolated occurrences. These red beds were formed entirely under glacial cover and consist of sandstone, shale, and minor limestone and gypsum (Gillespie, Harrison, and Grammer, 2008).

1.5.2 Hydrogeology

The bedrock formations of the Lower Michigan Basin are typically sedimentary deposits of Carboniferous age and the bedrocks of the Lansing area fall under this classification. Structural deformation in the region was limited to the actions of the last glacial advance and retreat resulting only in minor jointing of the bedrock, therefore aquifer conductivity is dependent on the primary porosity of the unit. The aforementioned Saginaw Formation is one such deposit which acts as the main aquifer for much of central Michigan including Michigan's capital, Lansing. An EDR™ report conducted a well search for a 1-mile radius surrounding the facility (**Appendix A**). Using additional online resources, such as state and local Geographic Information System databases,

wells were researched to a 4-mile radius of the facility. The depth to groundwater is approximately 30-40 feet based on static water level data for wells adjacent to the facility (Well Logic, n.d.).

1.5.3 Groundwater Use

There are 11 groundwater wells within a mile of the facility (**Figure 1-2**), four of which are domestic wells within the boundaries of the Capital Region International Airport. Drinking water for the site is provided by the municipality (MDMVA, 2016). The remaining wells include one public supply well, one industrial well, three domestic wells, and two wells for other uses. Based on static water levels, the general groundwater flow direction is eastward (Michigan Department of Environmental Quality [MDEQ], Wellogic System [Wellogic], n.d.).

Additionally, the Unregulated Contaminant Monitoring Rule 3 (UCMR3) data were assessed for the areas surrounding the Capital Region International Airport. Under the UCMR3 regulations, six PFAS compounds are analyzed. All six PFAS compounds were reported as non-detect in UCMR3 samples. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.

1.5.4 Hydrology

The Lansing area is located approximately 75 miles southwest of Saginaw Bay and approximately 82 miles west of Lake Michigan. The Grand River is approximately 1.2 miles south of the facility. The entirety of the facility falls within the Grand River Watershed and the groundcover is predominately paved with some grassy areas (**Figure 1-3**).

Storm water from paved areas flows into various catchments on the ground that drain into the Grand River or are collected in a retention pond on the southwest corner of the Capital Region International Airport. Edwards Drain is located to the west, and Reynolds Drain is located to the east. Both drains are part of a separate storm water drainage system authorized by the MS4 Watershed General Permit (CRAA, 2006).

The Capital Region International Airport is serviced by the Lansing Board of Water and Light for water and sewage utilities.

1.5.5 Climate

Clinton County is located in the Southeastern Lake Michigan River Basin, within the South Central Lower Michigan Climatic Division, which is bounded by the Indiana and Ohio borders to the south and includes the cities of Lansing, St. Johns, and Owosso to the north. The South Central Lower Michigan Climatic Division is designated as predominately continental with large seasonal variations characterized by hot summers and cold winters. In comparison to areas at the same latitude near the Great Lakes, the climatic division has larger temperature variations and minimal lake effect that lead to increased cloudiness during late fall and early winter (Great Lakes Integrated Sciences and Assessments [GLISA], n.d.).

The area of Clinton County experiences seasonal temperatures, varying from summer highs of 70.7 degrees Fahrenheit (°F) to winter lows of 21.5 °F. The average annual temperature is 47.1 °F. Prolonged periods of hot, humid weather in the summer and extreme cold weather in the winter are not typical for the area (CRAA, 2006).

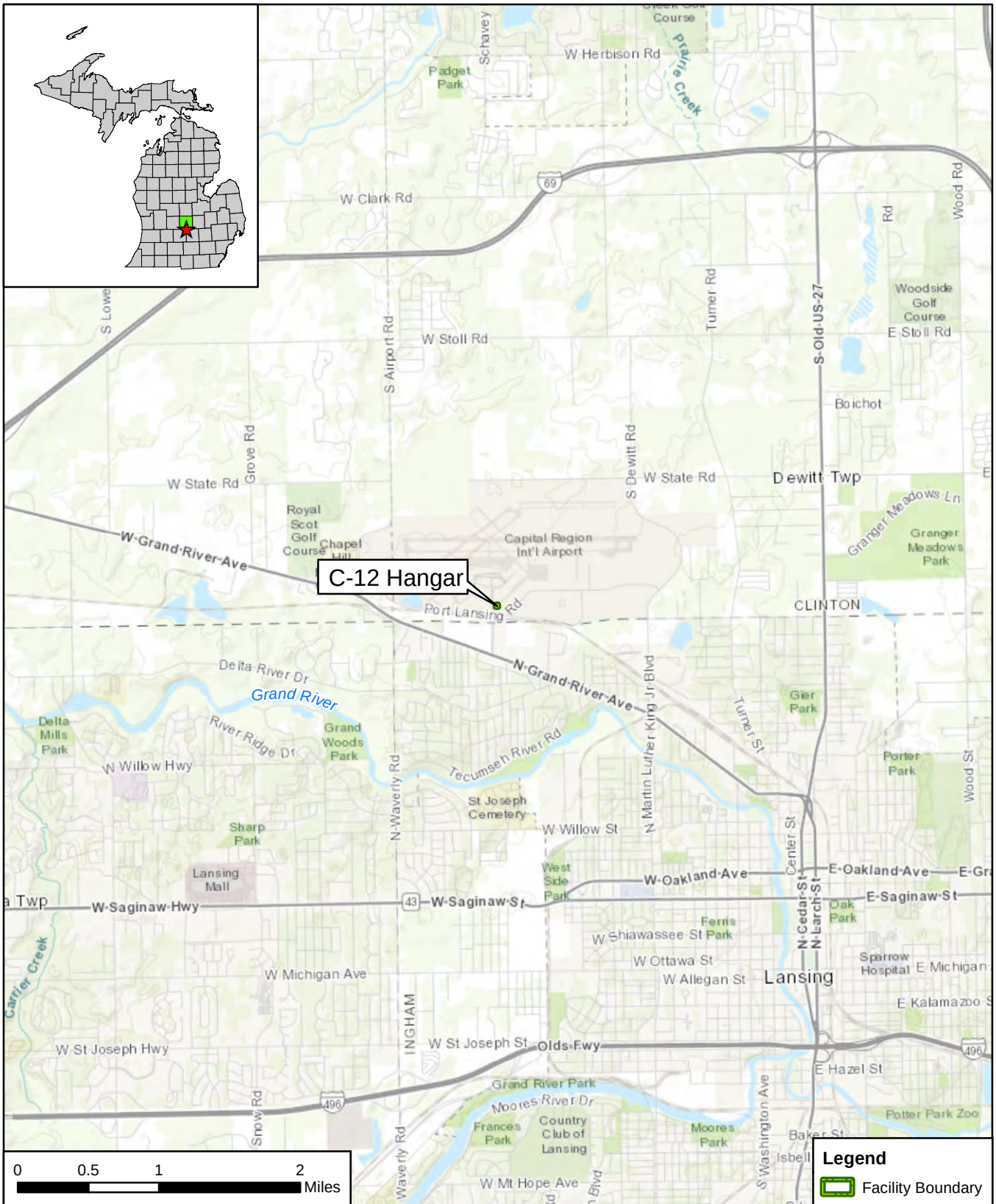
Precipitation is unevenly distributed during the year, falling primarily as snowfall in the winter months well into April, with an average of 10.5 inches of snowfall. The remainder falls as rain, distributed evenly throughout the year with an average of 2.5 inches per month. The prevailing

wind is typically southwesterly at ten miles per hour and can produce clearing skies and colder temperatures (CRAA, 2006).

1.5.6 Current and Future Land Use

MIARNG operations in Lansing Hangar currently include aircraft maintenance and aircraft support for the National Guard. The facility is staffed by both full- and part-time employees, and shares tarmac space with the surrounding Capital Region International Airport.

The eastern and southern borders of the Capital Region International Airport are abutted primarily by residential and business districts. Underdeveloped land and agricultural farmlands are located to the north of the airport and a public golf course and cemetery are located to the west. Future land development and expansion projects for the Capital Regional International Airport are expected to occur in surrounding property areas (CRAA, 2006). Reasonably anticipated future land use is not expected to change from the current land use described above for the Lansing Hangar.



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Base Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN,		PM	RG	9/15/2020

Facility Location

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Figure 1-1

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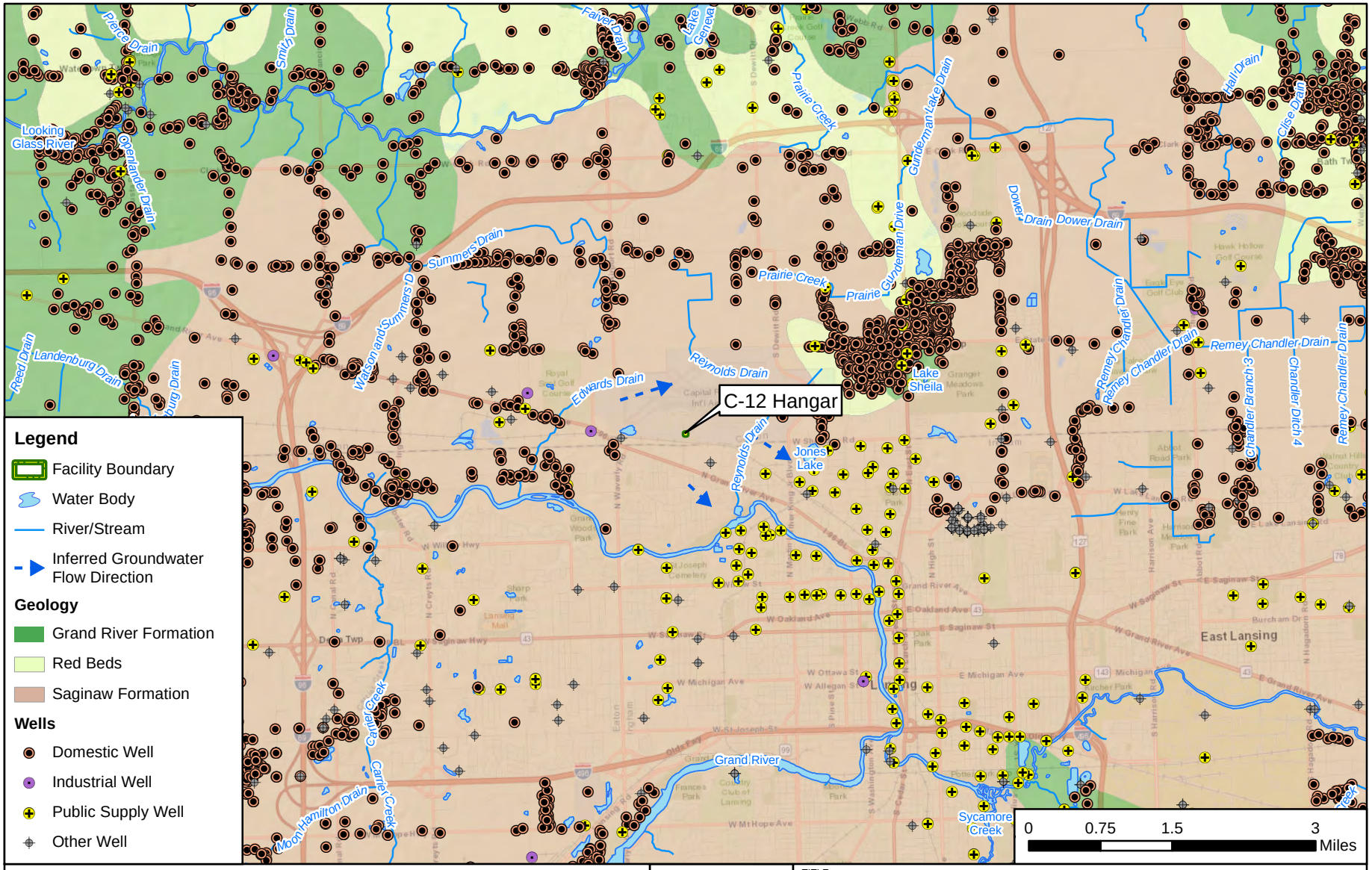

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TITLE

Groundwater Features

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Figure 1-2

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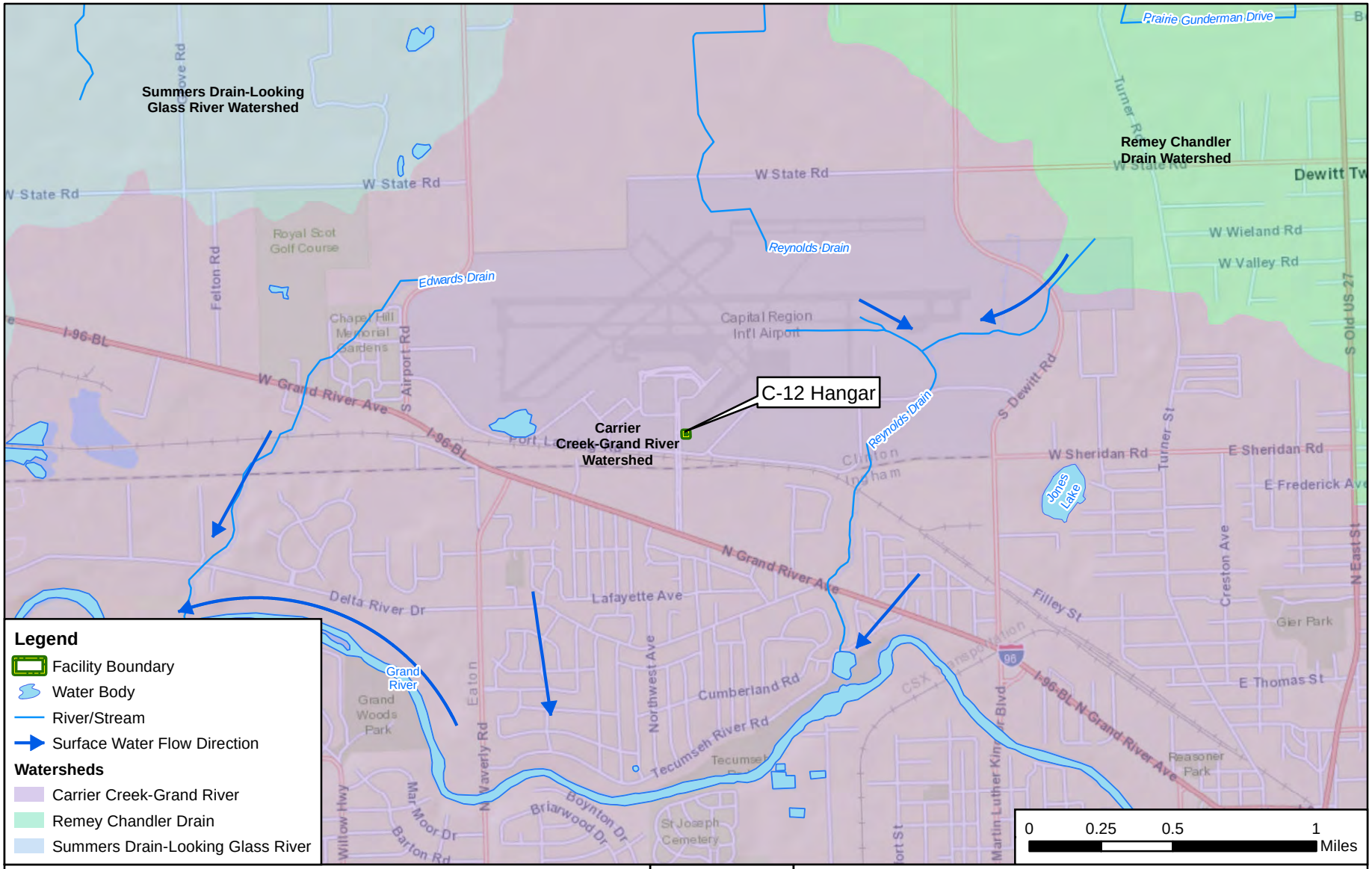

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TITLE

Surface Water Features

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Figure 1-3

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2. Fire Training Areas

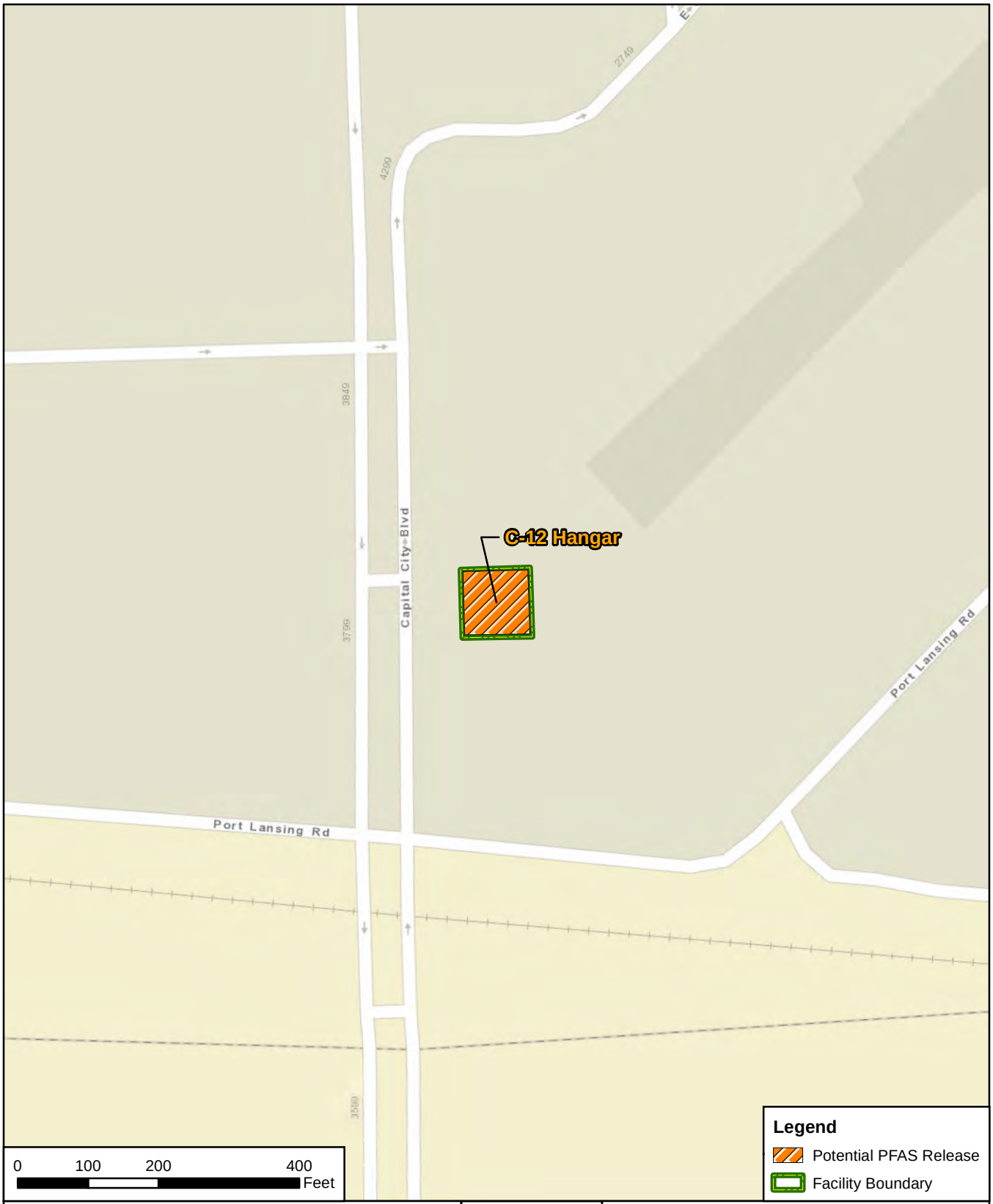
Based on the EDR™ report for the facility (**Appendix A**), interviewees' knowledge, and observations made during the VSI, no fire training areas where AFFF was used exist at the facility (**Appendix B**). The only fire training at the facility is related to the proper use of BC dry chemical fire extinguishers. Photographs of the fire extinguisher are included in the Photographic Log (**Appendix C**).

3. Non-Fire Training Areas

In addition to FTAs, the PA evaluated areas where PFAS-containing materials may have been broadly used, stored, or disposed. This may include buildings with fire suppression systems, paint booths, AFFF storage areas, and areas of compliance demonstrations. Information on these features obtained during the PA are included in **Appendices A** and **B**. One non-FTA where AFFF was stored and/or potentially released was identified during the PA. A description of the non-FTA is presented below, and the non-FTA is shown in **Figure 3-1**.

3.1 C-12 Hangar

Based on the knowledge of interviewees, whose collective tenure dates back to 2003, the hangar has never been equipped with a fire suppression system. AFFF is not currently or historically stored at the facility; as such, no leaks or releases have been documented. However, the use or storage of AFFF at the hangar between 1992 (the beginning of MIARNG's property lease) and 2003 is unknown. During the VSI, floor drains within the hangar were observed, but it is unknown where the drains discharge to. The C-12 Hangar is considered a potential PFAS release area due to the existing data gap regarding historical activities at the hangar. Photographs of the hangar are included in the Photographic Log (**Appendix C**).



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Non-Fire Training Area

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Figure 3-1

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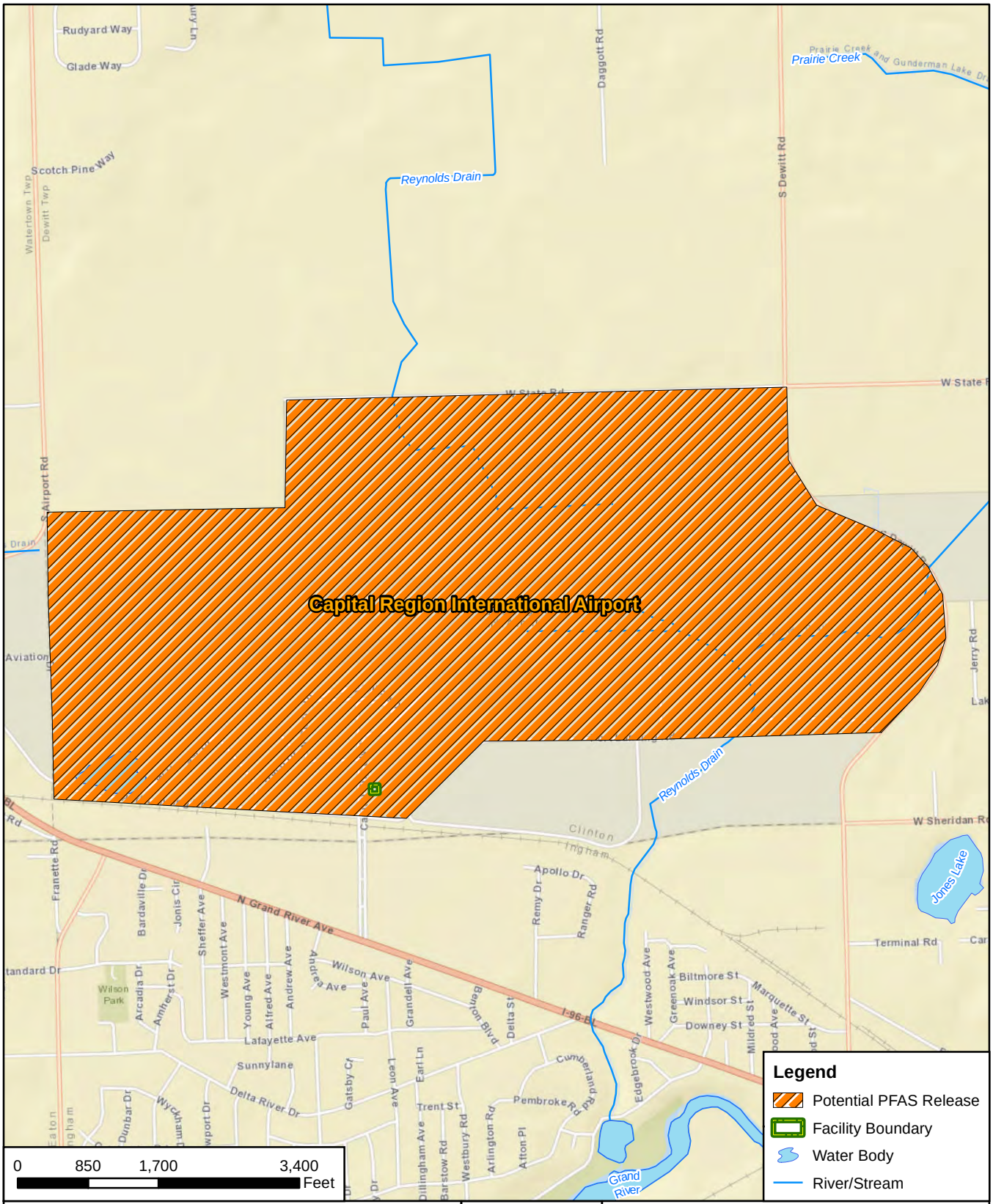
4. Emergency Response Areas

Based on the EDR™ report and confirmed by interviewees' knowledge of the facility history, no emergency response action using AFFF has occurred at the Lansing Hangar facility (**Appendix B**). The facility uses the Capital Region International Airport fire/police department for emergency response. A review of available online documentation and local news reports did not reveal any historical crashes having occurred at the Capital Region International Airport (formerly Lansing Capital City Airport).

5. Adjacent Sources

Based on the EDR™ report (**Appendix A**) and confirmed by interviewees' knowledge of the facility history dating back to 2003, one adjacent off-site potential source area was identified. According to information provided during the interviews, the Capital Region International Airport performs fire training simulations using water. Information regarding the use or storage or release of AFFF at the Capital Region International Airport is unknown. Due to the lack of information related to the Capital Region International Airport and their use of AFFF prior to 2003, this area is considered a potential source area. The location of the off-facility source area is shown on **Figure 5-1**.



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Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	9/15/2020

Adjacent Source

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Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings, one non-FTA was identified where PFAS may have been incidentally spilled or discharged to the ground surface: AOI 1 C-12 Hangar. Although there is no documented use or release of AFFF from the hangar, there is a data gap in knowledge between the years 1992 and 2003. Thus, it is possible that historical activities may have resulted in the release of PFAS-containing materials. As such, this area is determined to be an AOI and may be a potential PFAS source area. The AOI location is shown in **Figure 6-1**.

The following section describes the CSM components and the specific preliminary CSM developed for AOI 1. The CSM identifies the three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, (3) receptor. If any of these elements are missing, the pathway is considered incomplete. The preliminary CSM for AOI 1 is shown in **Figure 6-2**.

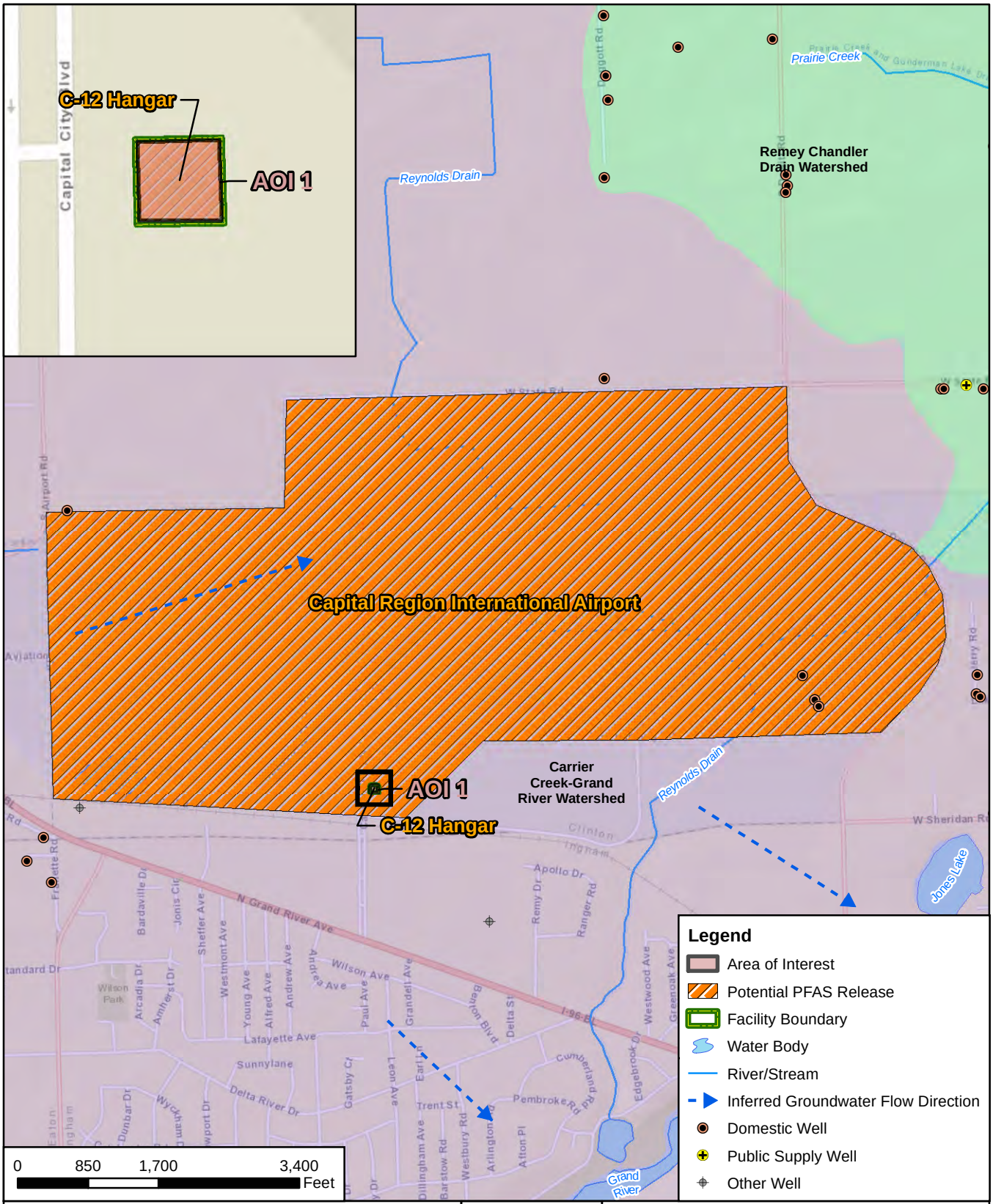
Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of PFAS toxicological study (National Ground Water Association, 2018). Receptors for the facility include site workers, construction workers, recreational users, trespassers, and off-facility residents. The preliminary CSM for the facility indicates which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1: C-12 Hangar

AOI 1 is the C-12 Hangar. The AOI is surrounded by both paved and unpaved, grassy surfaces. Ground-disturbing activities in these grassy areas as well as beneath the pavement may result in potential exposure to surface soils via ingestion and inhalation of dust particles for site workers and construction workers. Nearby off-facility residents, recreational users, and trespassers may also be exposed to airborne soil particles resulting from ground disturbing activities. AFFF releases to the paved surfaces could have infiltrated the subsurface via cracks in the pavement or joints between areas that are paved with different materials. Ground-disturbing activities may result in potential exposure to subsurface soils via ingestion for construction workers.

PFAS are water soluble and can migrate readily from soil to groundwater via leaching. Several domestic and public supply wells exist within 4 miles in all directions and may be potentially downgradient from the identified AOI, based on the inferred groundwater flow direction. Lansing Hangar is serviced by municipal water, so potential exposure to both site workers and off-facility residents may result from the ingestion of groundwater.

PFAS in runoff is likely to flow into catchments that drain into the Grand River or are collected in a retention pond on the southwest corner of the Capital Region International Airport. Recreational users and residents with access to these surface water features may be potentially exposed via ingestion of surface water and/or sediment. Recreational users may also be exposed to PFAS via the consumption of fish potentially affected by PFAS within surface waters. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Lansing Hangar, MI			
REVISED	9/15/2020	GIS BY	MS	9/15/2020
SCALE	1:1,920	CHK BY	CM	9/15/2020
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	9/15/2020

N

Area of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

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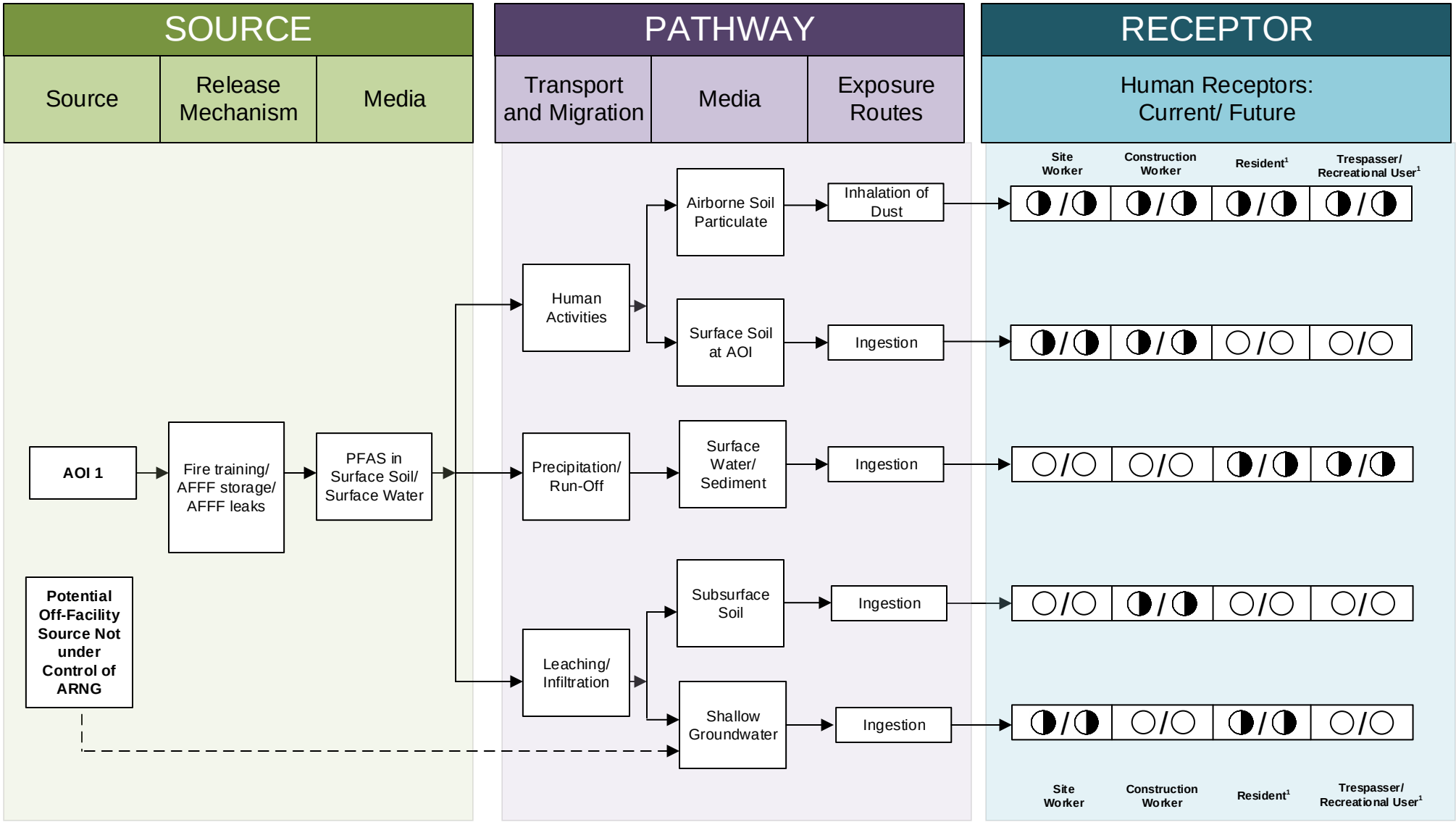


LEGEND

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

Notes:

1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-2
Preliminary Conceptual Site Model
Lansing Hangar, MI

7. Conclusions

This report presents a summary of available information gathered during the PA on the use of PFAS-related activities at the Lansing Hangar (**Figure 7-1**). The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

One AOI related to a potential PFAS release was identified at Lansing Hangar during the PA. The AOI is shown on **Figure 7-1** and described in **Table 7-1** below:

Table 7-1: AOIs at Lansing Hangar

Area of Interest	Name	Used by	Potential Release Date
AOI 1	C-12 Hangar	MIARNG	1992 to 2003

Based on potential PFAS releases at AOI 1, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for AOI 1 is shown on **Figure 6-2**, which presents the potential receptors and media impacted.

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 based on all available information, including: previous environmental reports, EDRs™, observations made during the VSI, and interviews. Interviews of personnel with direct knowledge of a facility generally provided the most useful insights regarding a facility's historical and current PFAS-containing materials. 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 were 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.

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

The following **Table 7-2** summarizes the uncertainties associated with the PA:

Table 7-2: Summary of Uncertainties

Location	Source of Uncertainty
Lansing Hangar	During the interview process, a limited number of personnel were available to be interviewed. Additionally, their tenure at the Lansing Hangar dates back to 2003. The use or storage of AFFF at the Lansing Hangar between 1992 and 2003 is unknown. It is also unknown where the floor drains within the C-12 Hangar discharge to.
Capital Region International Airport (Adjacent Source)	The use or storage of AFFF at the Capital Region International Airport is unknown. No interviews were conducted for the offsite area.

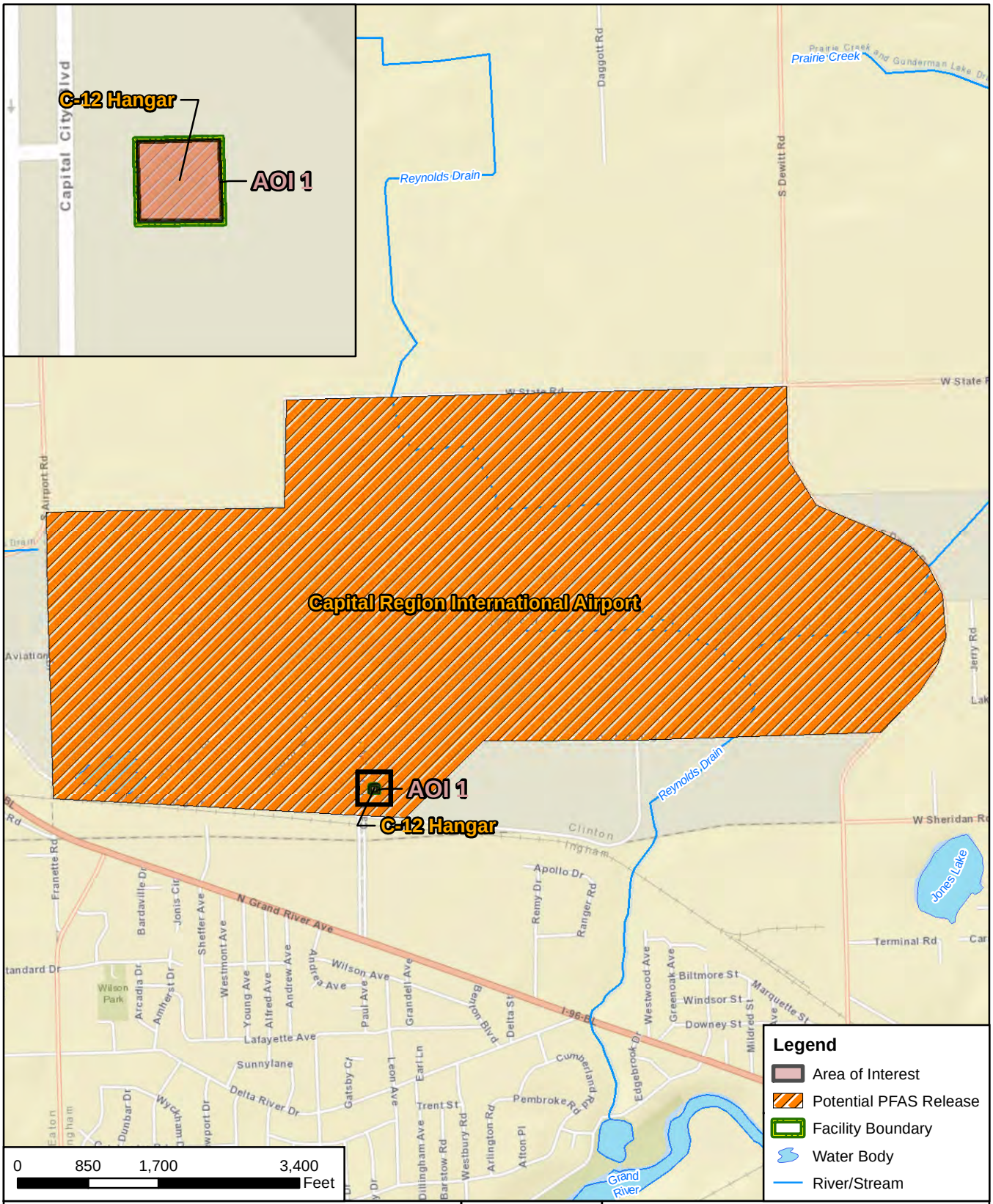
7.3 Potential Future Actions

Based on the PA findings and a lack of robust institutional knowledge regarding historical activities concerning AFFF use and storage at the facility, there is a potential for a PFAS release at the AOI identified during the PA. Based on the preliminary CSM developed for the AOI, there is potential for receptors to be exposed to PFAS contamination in media at or near the facility. **Table 7-3** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo an SI.

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1: C-12 Hangar	42°46'16.59"N, 84°35'17.74"W	Uncertainty regarding historical activities at hangar between 1992 and 2003	Proceed to an SI, focus on soil, groundwater, surface water, sediment

ARNG will evaluate the need for an SI at Lansing Hangar based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Lansing Hangar, MI			
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SCALE	1:1,920	CHK BY	CM	9/15/2020
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	9/15/2020

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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Appendix A
Data Resources

Data resources will be provided separately on CD. Data resources for Lansing Hangar include:

Previous Investigations Completed

- 2018 The EDR™ Target Property Lansing, 4100 Capitol City Blvd, Lansing, Michigan 48906.

Miscellaneous Data Resources

- 1992 Michigan Department of Transportation and Michigan Department of Military Affairs Leasing Document, Memorandum of Understanding
- 2012 Michigan Department of Transportation and Michigan Department of Military and Veterans Affairs, Lease Extension Documentation
- 2016 Capital Region Airport Master Plan Update
- 2016 National Guard Bureau, Review of National Environmental Policy and Environmental Condition of Property Requirements for Proposed Addition of Office and Hangar Space in Lansing, Michigan to the Facility Inventory and Stationing Plan for Federal Support
- 2016 State of Michigan Department of Military and Veterans Affairs, Environmental Division Memorandum for Leased Hangar

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire - Other

Facility: Lansing Airfield
Interviewer: [redacted]
Date/Time: 7 June 2018

[redacted] present

- No fire suppression system at hangar.
- Lansing fire department would respond in the event of an emergency.
- Hangar (ARNG) moved from Grand Ledge in ~1990's.
- Never used the foam at the site
- Only fire training at faculty is related to use of halon fire extinguishers.

CW5 [redacted] not present to interview. Was provided w/ contact information + will set up a call to discuss.

[redacted]

PA Interview Questionnaire - Other

Facility: Lansing Hangar
Interviewer: [redacted]
Date/Time: 06/13/18

Interviewee: CW5 [redacted]
Title: Facility Supervisor [redacted]
Phone # [redacted]
email: [redacted]

Role @ facility: Commander - 2 detachments (military and contractor) (~ 9 people) worked at facility since 2006

Previous ownership: facility owned by military aeronautics department. Leased since 1996 Believes was previously used as Rental car building / since purchased + used for Hangar.

History: no suppression system onsite; no foam stored, no crash @ facility, no pest control that would have used foam.

Training: Fire training activities done with water. Basic fire extinguisher (non AFFF) given to occupants.

Emergency Response: Airport fire department/ police incase of emergency. 150 lb fire extinguisher onsite. Does not recall adjacent crashes in vicinity of the site

Other potential contacts:
[redacted] - safety officer @ Grand Ledge Mechanic @ facility but Retired [redacted] stated he would reach out to see if [redacted] was interested in talking with us.

Appendix B.2
Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by:

ARNG Contact:

Date and Time:

Method of visit (walking, driving, adjacent): walking

Source/Release Information

Site Name / Area Name / Unique ID: Lansing Hangar (Hangar C12)

Site / Area Acreage: NO.29 acres (building + hangar)

Historic Site Use (Brief Description): office space (1960's) single bay hangar added in 1992

Current Site Use (Brief Description): Hangar

Physical barriers or access restrictions: Fence along north + east side of building

1. Was PFAS used (or spilled) at the site/area? Y / (N)

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

2. Has usage been documented? Y (N)

2a. If yes, keep a record (place electronic files on a disk): - not used at site

3. What types of businesses are located near the site? **Industrial / Commercial / Plating / Waterproofing / Residential**

3a. Indicate what businesses are located near the site

Lansing Airport

4. Is this site located at an airport/flightline? (Y) / N

4a. If yes, provide a description of the airport/flightline tenants:

Capital Region International Airport

Visual Survey Inspection Log

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:

drains to Reynolds Drain / Grand River

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

2a. If so, please note observation and location:

not w/in immediate area

3. Are monitoring or drinking water wells located near the site? (Y) / N

3a. If so, please note the location:

drinking water wells w/in 1 mile of hangar

4. Are surface water intakes located near the site? Y / (N)

4a. If so, please note the location:

5. Can wind dispersion information be obtained? Y / (N)

5a. If so, please note and observe the location:

6. Does an adjacent non-ARNG PFAS source exist? Y / (N)

6a. If so, please note the source and location.

6b. Will off-site reconnaissance be conducted? Y / (N)

Visual Survey Inspection Log

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:

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:

Receptor Information

1. Is access to the site restricted? (Y) N

1a. If so, please note to what extent:

portion of site Restricted; main entrance and parking lot accessible to public

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:

N 0.25 - 1 mile away

4. Are any schools/day care centers located near the site? (Y) N

4a. If so, please note the location/distance/type:

Daycare (Delta Mills), Elmwood, Willow + Glen Park Elementary schools (3) N 0.5 - 1 mile from airport

5. Are any wetlands located near the site? Y / (N)

5a. If so, please note the location/distance/type:

Visual Survey Inspection Log

Additional Notes No suppression system / no AFFF used or stored onsite

Photographic Log

Photo ID/Name	Date & Location	Photograph Description
see Appendix C		

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Lansing Hangar (Hangar C12)

Why has this location been identified as a site?

Drinking water + public water supply wells w/in one mile of site

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

Municipal airport - no AFFF use / emergency Response

Training Events

Have any training events with AFFF occurred at this site? No

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? South / Southeast to

Average rainfall? 25" (snow = 105")

Any flooding during rainy season? no

Direct or indirect pathway to ditches? Indirect to Reynolds / Edwards Drain

Direct or indirect pathway to larger bodies of water?

Does surface water pond any place on site? no

Any impoundment areas or retention ponds? no

Any NPDES location points near the site? unknown

How does surface water drain on and around the flight line? drains to Reynolds / Edwards drain

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Southeast / East

Depth to groundwater? unknown

Uses (agricultural, drinking water, irrigation)? - drinking water wells nearby + farmland

Any groundwater treatment systems? unknown

Any groundwater monitoring well locations near the site? yes

Is groundwater used for drinking water? yes

Are there drinking water supply wells on installation? no

Do they serve off-post populations? n/a

Are there off-post drinking water wells downgradient yes.

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?

None onsite

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?

None onsite

3. Other? none

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker ✓

Construction Worker ✓

Recreational User ✓ → travelers using the Airport

Residential

Child

Ecological

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

daycare, dog daycare, elementary schools farms.

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	Lansing Hangar	Lansing, Michigan

Photograph No. 1

Description:

Inside hangar; no fire suppression system. Photo taken on 7 June 2018.

Photograph No. 2

Description:

Example of 150lb BC (dry chemical) fire extinguisher available at the hangar. Photo taken on 7 June 2018.

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Lansing Hangar	Lansing, Michigan

Photograph No. 3

Description:

Tag on fire extinguisher presented in Photograph No. 3. Photo taken on 7 June 2018

Photograph No. 4

Description:

Floor drain located in center of the hangar. Photo taken on 7 June 2018.