RELATIVE RISK SITE EVALUATION

Louisville Air National Guard Base, Kentucky

Introduction

The Department of Defense (DoD) has identified certain per- and polyfluoroalkyl substances (PFAS) as emerging contaminants of concern which affected installations across the Air Force, which for these fact sheets includes the Air National Guard. These compounds, which include perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), and perfluorohexane sulfonate (PFHxS), are components of Aqueous Film Forming Foam (AFFF) that the Air Force began using in the 1970s as a firefighting agent to extinguish petroleum fires. The U.S. Environmental Protection Agency (EPA) has issued health based site specific Regional Screening Levels (RSLs) for surface soil and groundwater (drinking water) for PFOS, PFOA, PFBS, PFNA, PFHxS and hexafluoropropylene oxide dimer acid (HFPO-DA, or Gen-X).

Site Inspections (SIs) were initiated to collect soil and groundwater samples and analyze those media for 16 different PFAS at the potential AFFF release areas that were identified in the PA. The intent of the SI is to determine if a release has occurred and determine if there are impacts to soil and/or groundwater. The next step in the process is the Relative Risk Site Evaluation (RRSE). The RRSE is a DoD-wide methodology to evaluate the relative risks posed by PFAS present at an installation in relation to other installations. The RRSE is a tool used to sequence funding for which installations have the highest priority to begin a Remedial Investigation (RI). The DoD premise in installation sequencing is "worst first," meaning the DoD Component shall address installations that pose a relatively greater potential risk to public safety, human health, or the environment before installations posing a lesser risk.

The results of Louisville Air National Guard Base PA and SI can be found at the AFCEC Administrative Record (AR): https://ar.cce.af.mil/. Scroll to the bottom of the page and click on "Continue to site," then select "Air National Guard," scroll down the Installation List, and click on Standiford Field Louisville, KY. For the SI, enter 589729 in the "AR #" field, then click "Search" at the bottom of the page.

More information on the Air Force response to PFAS can be found at:
https://www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds/

Acronyms

AR - Administrative Record

AFFF - Aqueous Film Forming Foam

AST - Aboveground Storage Tank

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CHF - Contaminant Hazard Factor

DoD - Department of Defense

EPA - US Environmental Protection Agency

FTA - Fire Training Area

HA - Health Advisory

HFPO-DA - hexafluoropropylene oxide dimer acid (HFPO-DA, or Gen-X)

MPF - Migration Pathway Factor

PA - Preliminary Assessment

PFAS - Per- and poly-fluoroalkyl substances

PFBS - Perfluorobutane sulfonate

PFHxS - perfluorohexane sulfonate (PFHxS)

PFNA - perfluorononanoic acid (PFNA)

PFOS - Perfluorooctane sulfonate

PFOA - Perfluorooctanoic acid

RCRA - Resource Conservation and Recovery Act

RF - Reception Factor

RI - Remedial Investigation

RRSE - Relative Risk Site Evaluation

RSL - Regional Screening Level

SI - Site Inspection

SWMU - Solid Waste Management Unit

RELATIVE RISK SITE EVALUATION

Louisville Air National Guard Base, Kentucky

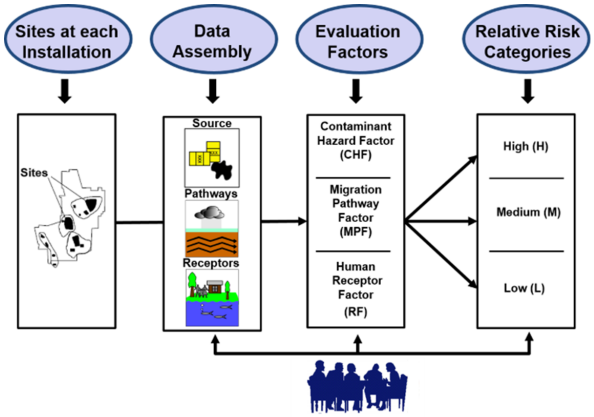
Q. What is the Relative Risk Site Evaluation (RRSE)?

A. RRSE is a methodology used by the Department of Defense (DoD) to sequence environmental restoration work . The DoD fundamental premise is "worst first," meaning the DoD Component shall address installations that pose a relatively greater potential risk to public safety, human health, or the environment before installations posing a lesser potential risk. Relative risk is not the sole factor in determining the sequence of environmental restoration work, but it is an important consideration in the sequencing process. The methodology is described in the DoD, Relative Risk Site Evaluation Primer, Summer 1997 Revised Edition denix.osd.mil/references/dod/policy-guidance/relative-risk-site-evaluation-primer/RRSE_Primer_Summer1997.pdf.

Q. What is the RRSE framework?

A. The RRSE framework provides a DoD-wide approach for evaluating the relative risks to human health and the environment posed by contamination present at component installations. The **Relative Risk Site Evaluation Concept Summary** (shown in the figure) illustrates the selection of sites, evaluation of the site data using three evaluation factors, and placement into high, medium, and low categories. The relative risk site evaluation framework is based on information fundamental to risk assessments: sources, pathways, and receptors, to sequence restoration work. However, the RRSE is not a baseline risk assessment or in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. Regulators and public stakeholders are provided the opportunity to participate in the process in accordance with the DoD Defense Environmental Restoration Program.

Relative Risk Site Evaluation Concept Summary

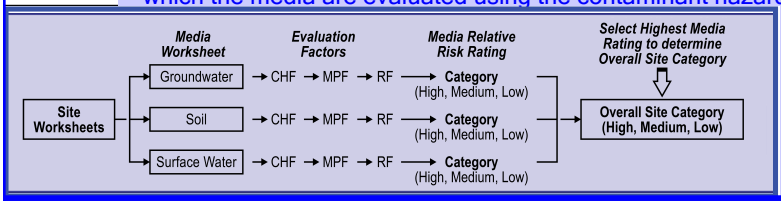


Regulator and Public Stakeholder Involvement in Technical Evaluation

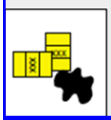
Sites at Each Installation

Q. What restoration sites are required to be evaluated in the RRSE process?

A. Restoration sites in CERCLA phases prior to remedy-in-place are evaluated in the RRSE process. Worksheets are developed for environmental media (such as, groundwater and surface soil) at each site. Environmental media lacking sufficient information to conduct a RRSE are assigned a "Not Evaluated" designation. The figure shows the process for which the media are evaluated using the contaminant hazard factor (CHF), the migration pathway factor (MPF), and the receptor factor (RF). Each media is scored to obtain a relative risk rating of High, Medium, or Low. The highest media-specific relative risk rating determines the Overall Site Category.



Q. How is the Contaminant Hazard Factor (CHF) calculated?



A. The **CHF** is calculated by dividing the maximum concentration of a contaminant by the approved screening value, or comparison value. Contaminant concentration ratios are totaled to arrive at the **CHF.** A CHF of greater than 100 earns a **High** rating. If the CHF is 2 to 100 it earns a **Moderate** rating. A **Minimal** rating is assigned when a CHF is less than **2.**

FOR MORE INFORMATION

Air Force Civil Engineer Center Environmental Restoration Program
www.afcec.af.mil

AFCEC CERCLA Administrative Record (AR)
ar.afcec-cloud.af.mil/

Q. How is the Migration Pathway Factor (MPF) determined?

A. The movement of contamination at a site is evaluated and assigned a **MPF** rating. Ratings for MPFs are designated as: **evident**, **potential**, or **confined** (for **High, Medium, and Low**). **Evident** exposure means the contamination is at a point where exposure to humans or the environment can occur, such as at a drinking water well. **Potential** ratings are given to sites where exposure may happen. A **confined** rating is given to sites where a low possibility for exposure may occur.

POINT OF CONTACT
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Q. How is the Receptor Factor (RF) determined?

A. The **RF** is determined by a receptor's, such as humans, potential to come into contact with contaminated media. **RFs** are designated as: identified, potential, or limited **(High, Medium, and Low). Identified** rating is given when receptors are in contact or threat of contact with contaminated media. **Potential** is given when receptor may contact contaminated media. **Limited** is given when there is little or no contact with contaminated media.

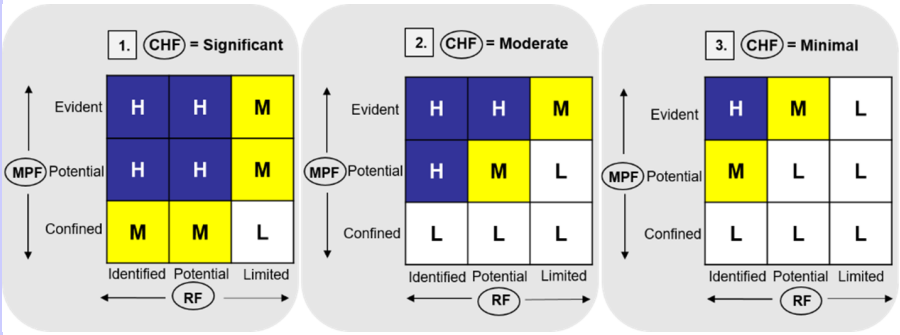
RELATIVE RISK SITE EVALUATION PROCESS, cont.

Media Relative Risk Rating

Q. How is the media-specific relative risk rating determined?

A. Use the charts on the right to determine the media-specific relative risk rating. Start by choosing the **CHF** result in the evaluation. If the **CHF** is **Significant**, use **box 1.** If the CHF is **Moderate**, use **box 2.** if the CHF is **Minimal**, use **box 3.** Then find the **MPF** and **RF** results and move to the square where the results meet. That square indicates the media-specific relative risk rating. For example, if the **CHF** is **Significant** - go to box 1**,** if the **MPF** is **Potential,** and the **RF** is **Identified**, then the rating is High (**H**).

Relative Risk Site Evaluation Concept Summary



CHF (Contaminant Hazard Factor) **MPF** (Migration Potential Factor) **RF** (Receptor Factor) **H** (High) **M** (Medium) **L** (Low)

Overall Site Category

Q. How do I determine the Overall Site Category?

A. The highest relative risk media rating becomes the **Overall Site Category** for the site. For example, if a site has a groundwater relative risk rating of **High**, and soil relative risk rating of **Low**, then the Overall Site Category rating for the site is **High**.

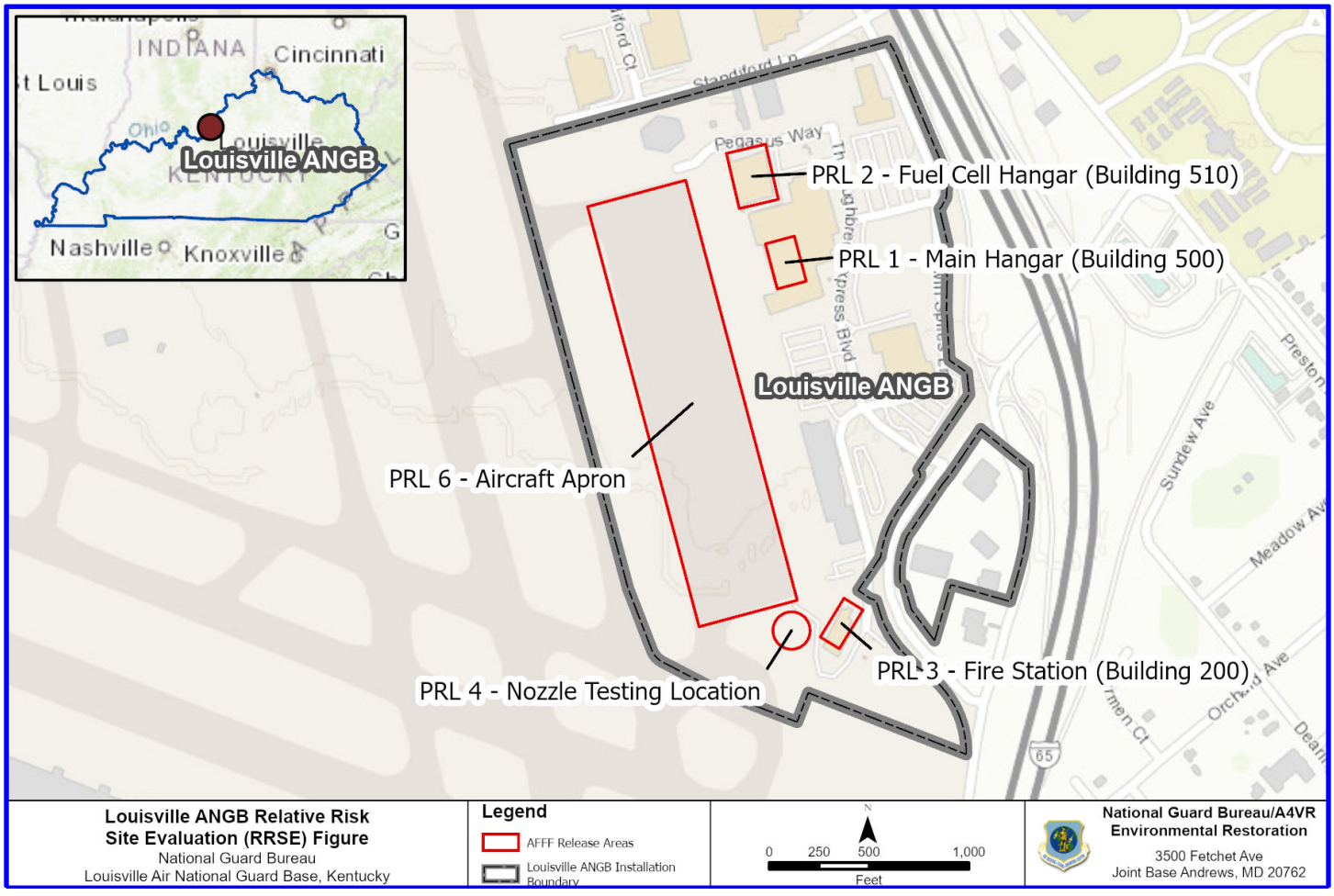
Regulatory and Stakeholder Involvement

Q. How do I participate as Stakeholder?

A. To offer opportunities to participate in the RRSE process, the Air Force announces a public comment period in your local newspaper. There is also opportunity to participate during installation Restoration Advisory Boards, where active. Installation Restoration Advisory Board meetings are announced in your local newspaper.

Relative Risk Site Evaluation Summary Louisville Air National Guard Base

Overall Site Category	Site Name (Sites are shown on the map below and RRSE Worksheets are attached)
HIGH	Not Applicable
MEDIUM	PRL 4
LOW	PRL 1, PRL 2, PRL 3, PRL 6



Louisville ANGB Relative Risk Site Evaluation (RRSE) Figure
National Guard Bureau
Louisville Air National Guard Base, Kentucky

Legend
AFFF Release Areas
Louisville ANGB Installation Boundary

0 250 500 1,000
Feet

National Guard Bureau/A4VR Environmental Restoration
3500 Fetchet Ave
Joint Base Andrews, MD 20762

Site Background Information			
Installation:	Louisville Air National Guard Base	**Date:**	7/30/2025
Location:	Kentucky	**Media Evaluated:**	GW, SS
Site Name and ID:	PRL 1 - Building 500- Main Hangar	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary	
Brief Site Description:	According to the 2019 Site Inspection Report, the Main Hangar (Building 500) was equipped with a fire suppression system (FSS) consisting of two 800-gallon above ground storage tanks (ASTs) of aqueous film forming foam (AFFF) in the mechanical room. Testing of the FSS was conducted annually, during which approximately 45 gallons of AFFF was discharged. In May 2001, approximately 1500 gallons of water mixed with AFFF was inadvertently released. The mixture was washed out of the hangar into the sanitary sewer system with permission from the Louisville Metropolitan Sewer District. The floor drains within the hangar, drain to the storm sewer that flows to Outfall 001 (PRL 7). AFFF systems were replaced basewide with high expansion foam (HEF).
Brief Description of Pathways:	The base is underlain by Quaternary and Tertiary age unconsolidated, interbedded silt, clay, sand, and gravel terrace deposits mapped 10-15 feet (ft) thick in the subject area that overlie the Devonian New Albany Shale. The uppermost shallow aquifer is encountered at 10-15 ft below ground surface (bgs) at this soil/bedrock interface. Surface topography in the subject area generally mimics bedrock topography and, in the absence of pumping, uppermost shallow groundwater flow likely follows local topography, generally south-southwest (S-SW). The Sellersburg, Jeffersonville, and Louisville Limestone Formations form the Silurian- Devonian carbonate aquifer, which is confined by the shale above and exhibits little karstification. The bedrock aquifer is mapped in the area and likely serves as a regional source for deep groundwater. PRL 1 is a Hangar, so infiltration would be minimal, depending on the concrete condition. The floor drains are connected to the storm sewer that flows to Outfall 001 (PRL 7), which is a surface drain inlet with a gate valve that can divert drainage to the sanitary sewer or an oil-water separator (OWS). Base drainage discharges to the Northern Ditch via Duck Springs Branch or Grade Lane Ditch and ultimately on to the Ohio River. At PRL 1, it appears some runoff leaving the hangar would reach the grassy areas and infiltrate with precipitation into the soil to possibly become part of the shallow groundwater system.
Brief Description of Receptors:	According to the Kentucky Geologic Map Information Service (April, 2020), there are no known drinking water wells downgradient (S-SW) and within 4 miles from PRL 1. However, there are multiple wells listed as "other" within the 4-mile radius and downgradient. There are no existing drinking water supply wells at the base and no plans for the installation of any drinking water wells. Louisville ANGB obtains drinking water from the City of Louisville's drinking water distribution system, which sources its water from the Ohio River located approximately 6 miles northwest (NW) of the ANGB. Surface soil receptors would most likely have only limited access to contaminated soil, such as commercial/industrial workers with special permission to be in a restricted area, as PRL 1 is a hangar and would have controlled access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 1 **AFFF Release Area #:** PRL 1

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFBS		0.6	
PFOA	0.0640	0.040	1.60
PFOS	0.0590	0.040	1.48
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**3.08**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**M**

Migratory Pathway Factor

Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor

Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Groundwater Category	**LOW**

Soil Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 1 **AFFF Release Area #:** PRL 1

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFBS	0.00130	1.9	0.000684
PFOA	0.00200	0.13	0.0154
PFOS	0.0430	0.13	0.331
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.347**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	M
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**

Site Background Information			
Installation:	Louisville Air National Guard Base	**Date:**	7/30/2025
Location:	Kentucky	**Media Evaluated:**	GW, SS
Site Name and ID:	PRL 2 - Building 510- Fuel Cell Hangar	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary	
Brief Site Description:	According to the 2019 Site Inspection Report, the Fuel Cell Hangar (Building 510) was constructed in 1997. The hangar was equipped with an aqueous film forming foam (AFFF) fire supression system (FSS), and the AFFF was stored in one 600-gallon aboveground storage tank (AST) in the mechanical room. Testing of the FSS was conducted annually during which approximately 45 gallons of AFFF was discharged. The trench drains within the hangar drain to the storm sewer that flows to Outfall 001 (PRL 7), which has a gate valve and allows the drainage to be diverted to the sanitary system or to an oil-water separator (OWS). AFFF systems were replaced basewide with high expansion foam (HEF).
Brief Description of Pathways:	The base is underlain by Quaternary and Tertiary age unconsolidated, interbedded silt, clay, sand, and gravel terrace deposits mapped 10-15 ft thick in the subject area that overlie the Devonian New Albany Shale. The uppermost shallow aquifer is encountered at 10-15 ft bgs at this soil/bedrock interface. Surface topography in the subject area generally mimics bedrock topography and, in the absence of pumping, uppermost shallow groundwater flow likely follows local topography, generally S-SW. The Sellersburg, Jeffersonville, and Louisville Limestone Formations form the Silurian-Devonian carbonate aquifer, which is confined by the shale above and exhibits little karstification. The bedrock aquifer is mapped in the area and likely serves as a regional source for deep groundwater. PRL 2 is a Hangar, so infiltration would be minimal, depending on the concrete condition. The trench drains are connected to the storm sewer that flows to Outfall 001 (PRL 7), which is a surface drain inlet with a gate valve that can divert drainage to the sanitary sewer or an OWS. Base drainage discharges to the Northern Ditch via Duck Springs Branch or Grade Lane Ditch, and ultimately on to the Ohio River. Some runoff leaving the hangar would reach the grassy areas and infiltrate with precipitation into the soil to possibly become part of the shallow groundwater system.
Brief Description of Receptors:	According to the Kentucky Geologic Map Information Service (April, 2020), there are no known drinking water wells downgradient (S-SW) and within 4 miles from PRL 2. However, there are multiple wells listed as "other" within the 4-mile radius and downgradient. There are no existing drinking water supply wells at the base and no plans for the installation of any drinking water wells. Louisville ANGB obtains drinking water from the City of Louisville's drinking water distribution system, which sources its water from the Ohio River, located approximately 6 miles NW of the ANGB. Surface soil receptors would most likely have only limited access to contaminated soil, such as commercial/industrial workers with special permission to be in a restricted area, as PRL 2 is a hangar and would have controlled access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 2 **AFFF Release Area #:** PRL 2

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFBS	0.0690	0.6	0.115
PFOA	0.0720	0.040	1.80
PFOS	0.240	0.040	6.00
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**7.91**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**M**

Migratory Pathway Factor

Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor

Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Groundwater Category	**LOW**

Soil Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 2 **AFFF Release Area #:** PRL 2

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFBS	0.000340	1.9	0.000179
PFOA	0.00300	0.13	0.0231
PFOS	0.170	0.13	1.31
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**1.33**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	H
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	H
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**

Site Background Information			
Installation:	Louisville Air National Guard Base	**Date:**	7/30/2025
Location:	Kentucky	**Media Evaluated:**	SS
Site Name and ID:	PRL 3 - Building 200- Fire Station	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary	
Brief Site Description:	According to the 2019 Site Inspection Report, the Fire Station (Building 200) was constructed in 1995. Vehicles containing aqueous film forming foam (AFFF) were stored in the engine bay of the Fire Station, washed, and refilled with AFFF as needed. Vehicles were previously filled using an overhead system, but the system was removed due to consistent minor leaks. AFFF was stored in the mezzanine of the building in two 300-gallon totes without secondary containment. The building has interior trench drains that drain to the storm sewer via a sump that then flows to Outfall 001 (PRL 7), which has a gate valve and allows the drainage to be diverted to the sanitary system or to an OWS. During any release, the drainage is diverted to the sanitary system. There were no known releases of AFFF reported by Base personnel. AFFF systems were replaced basewide with high expansion foam (HEF). The groundwater sample collected at PRL 3 was non-detect for PFAS compounds.
Brief Description of Pathways:	The base is underlain by Quaternary and Tertiary age unconsolidated, interbedded silt, clay, sand, and gravel terrace deposits mapped 10-15 ft thick in the subject area that overlie the Devonian New Albany Shale. The uppermost shallow aquifer is encountered at 10-15 ft bgs at this soil/bedrock interface. Surface topography in the subject area generally mimics bedrock topography and, in the absence of pumping, uppermost shallow groundwater flow likely follows local topography, generally S-SW. The Sellersburg, Jeffersonville, and Louisville Limestone Formations form the Silurian-Devonian carbonate aquifer, which is confined by the shale above and exhibits little karstification. The bedrock aquifer is mapped in the area and likely serves as a regional source for deep groundwater. PRL 3 is a building, so infiltration is minimal depending on the concrete condition. The trench drains are connected to the storm sewer that flows to Outfall 001 (PRL 7) (see above). Base drainage discharges to the Northern Ditch via Duck Springs Branch or Grade Lane Ditch, and ultimately on to the Ohio River. Runoff leaving the building would migrate to the grassy areas and infiltrate with precipitation into the soil to possibly become part of the shallow groundwater system.
Brief Description of Receptors:	According to the Kentucky Geologic Map Information Service (April, 2020), there are no known drinking water wells downgradient (NE) and within 4 miles from PRL 3. However, there are multiple wells listed as "other" within the 4-mile radius and downgradient. There are no existing drinking water supply wells at the base and no plans for the installation of any drinking water wells. Louisville ANGB obtains drinking water from the City of Louisville's drinking water distribution system that sources its water from the Ohio River, located approximately 6 miles NW of the ANGB. Surface soil receptors would most likely have only limited access to contaminated soil, such as firefighters, and/or commercial/industrial workers with special permission to be in a restricted area, as PRL 3 is a Fire Station and would have controlled access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Soil Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 3 **AFFF Release Area #:** PRL 3

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFBS	0.000290	1.9	0.000153
PFOA	0.00130	0.13	0.0100
PFOS	0.0570	0.13	0.438
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.448**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	M
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**

Site Background Information			
Installation:	Louisville Air National Guard Base	**Date:**	7/30/2025
Location:	Kentucky	**Media Evaluated:**	SS
Site Name and ID:	PRL 4 - Nozzle Testing Location	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	According to the 2019 Site Inspection Report, the Nozzle Testing Location is a grassy area located west of the Fire Station (PRL 3). Nozzle testing with aqueous film forming foam (AFFF) was performed annually during which 20 to 30 gallons of AFFF per vehicle would be discharged. Nozzle testing with AFFF was discontinued as of December 3, 2015. Discharged AFFF from this location was allowed to dissipate in the grass. A stormwater catch basin is located in the area of the nozzle testing location and ultimately discharges to Outfall 002 (PRL 8). The groundwater sample collected at PRL 4 was non-detect for PFAS compounds.
Brief Description of Pathways:	The base is underlain by Quaternary and Tertiary age unconsolidated, interbedded silt, clay, sand, and gravel terrace deposits mapped 10-15 ft thick in the subject area that overlie the Devonian New Albany Shale. The uppermost shallow aquifer is encountered at 10-15 ft bgs at this soil/bedrock interface. Surface topography in the subject area generally mimics bedrock topography and, in the absence of pumping, uppermost shallow groundwater flow likely follows local topography, generally S-SW. The Sellersburg, Jeffersonville, and Louisville Limestone Formations form the Silurian-Devonian carbonate aquifer, which is confined by the shale above and exhibits little karstification. The bedrock aquifer is mapped in the area and likely serves as a regional source for deep groundwater. PRL 4 is located within a grassy area, so infiltration is likely, depending on the permeability of the soils. A stormwater catch basin is located in the area of the nozzle testing location and ultimately discharges to Outfall 002 (PRL 8). Base drainage discharges to the Northern Ditch via Duck Springs Branch or Grade Lane Ditch and ultimately to the Ohio River.
Brief Description of Receptors:	According to the Kentucky Geologic Map Information Service (April, 2020), there are no known drinking water wells downgradient (NW) and within 4 miles from PRL 4. However, there are multiple wells listed as "other" within the 4-mile radius and downgradient. There are no existing drinking water supply wells at the base and no plans for the installation of any drinking water wells. Louisville ANGB obtains drinking water from the City of Louisville's drinking water distribution system, which sources its water from the Ohio River located approximately 6 miles NW of the ANGB. Surface soil receptors would most likely have only limited access to contaminated soil, such as firefighters, and/or commercial/industrial workers with special permission to be in a restricted area, as PRL 4 is a Nozzle Testing Location used for Fire Equipment, and would have controlled access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Soil Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 4 **AFFF Release Area #:** PRL 4

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFBS	0.000840	1.9	0.000442
PFOA	0.00160	0.13	0.0123
PFOS	0.290	0.13	2.23
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**2.24**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**M**

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	H
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	H
Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**MEDIUM**

Site Background Information			
Installation:	Louisville Air National Guard Base	**Date:**	7/30/2025
Location:	Kentucky	**Media Evaluated:**	GW, SS
Site Name and ID:	PRL 6 - Aircraft Apron	**Phase of Execution (e.g., RI, Record of Decision (ROD)):**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date signed):**	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary	
Brief Site Description:	According to the 2019 Site Inspection Report, the Aircraft Parking Apron has considerable aircraft operations and is located on the western side of the base. Stormwater from the apron flows into a trench drain system that flows to Outfall 001 (PRL 7). Outfall 001 has a gate valve that allows the drainage to be diverted to the sanitary system or to an OWS. During any release, the drainage is diverted to the sanitary system. There were no known releases of AFFF reported by base personnel.
Brief Description of Pathways:	The base is underlain by Quaternary and Tertiary age unconsolidated, interbedded silt, clay, sand, and gravel terrace deposits mapped 10-15 ft thick in the subject area that overlie the Devonian New Albany Shale. The uppermost shallow aquifer is encountered at 10-15 ft bgs at this soil/bedrock interface. Surface topography in the subject area generally mimics bedrock topography and, in the absence of pumping, uppermost shallow groundwater flow likely follows local topography, generally S-SW. The Sellersburg, Jeffersonville, and Louisville Limestone Formations form the Silurian-Devonian carbonate aquifer, which is confined by the shale above and exhibits little karstification. The bedrock aquifer is mapped in the area and likely serves as a regional source for deep groundwater. PRL 6 is a concrete apron, so infiltration is minimal depending on the concrete condition. The trench drains flow to Outfall 001 (PRL 7) (see above). Base drainage discharges to the Northern Ditch via Duck Springs Branch or Grade Lane Ditch and ultimately to the Ohio River. At PRL 6 it appears any runoff not collected by the trench drains would reach the grassy areas surrounding the apron and infiltrate with precipitation into the soil to possibly become part of the shallow groundwater system.
Brief Description of Receptors:	According to the Kentucky Geologic Map Information Service (April, 2020), there are no known drinking water wells downgradient (S, SE, and SW) and within 4 miles from PRL 6. However, there are multiple wells listed as "other" within the 4-mile radius and downgradient. There are no existing drinking water supply wells at the base and no plans for the installation of any drinking water wells. Louisville ANGB obtains drinking water from the City of Louisville's drinking water distribution system, which sources its water from the Ohio River located approximately 6 miles northwest of the ANGB. Surface soil receptors would most likely have only limited access to contaminated soil, such as commercial/industrial workers with special permission to be in a restricted area, as PRL 6 is a concrete aircraft apron, still currently in use, and would have controlled access. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.

Groundwater Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 6 **AFFF Release Area #:** PRL 6

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFBS	0.0250	0.6	0.0417
PFOA		0.040	
PFOS	0.00470	0.040	0.117
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.159**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

Migratory Pathway Factor

Evident	Analytical data or direct observation indicates that contamination in the groundwater has moved to a point of exposure (e.g., well)	
Potential	Contamination in the groundwater has moved beyond the source or insufficient information available to make a determination of Evident or Confined	M
Confined	Analytical data or direct observation indicates that the potential for contaminant migration from the source via groundwater is limited (possibly due to geological structures or physical controls)	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor

Identified	Impacted drinking water well with detected contaminants or existing downgradient water supply well within 4 miles and groundwater is current source of drinking water (EPA Class I or IIA groundwater)	
Potential	Existing downgradient drinking water well beyond 4 miles with no contaminant detection(s) or no known drinking water wells downgradient and groundwater is currently or potentially usable for drinking water (i.e., EPA Class I or II groundwater) or other beneficial use (e.g., agricultural)	
Limited	No known water supply wells downgradient and groundwater is not considered potential drinking water source and is of limited beneficial use (Class III)	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Groundwater Category	**LOW**

Soil Worksheet

Installation: Louisville Air National Guard Base

Site ID: PRL 6 **AFFF Release Area #:** PRL 6

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFBS	0.000790	1.9	0.000416
PFOA	0.00100	0.13	0.00769
PFOS	0.0120	0.13	0.0923
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.100**
CHF > 100	**H (High)**	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

Migratory Pathway Factor		
Evident	Analytical data or observable evidence that contamination is present at a point of exposure	
Potential	Contamination has moved beyond the source, could move but is not moving appreciably, or information is not sufficient to make a determination of Evident or Confined	M
Confined	Low possibility for contamination to be present at or migrate to a point of exposure	
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	M

Receptor Factor		
Identified	Receptors identified that have access to contaminated soil	
Potential	Potential for receptors to have access to contaminated soil	
Limited	No potential for receptors to have access to contaminated soil	L
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	L
	Soil Category	**LOW**