



RELATIVE RISK SITE EVALUATION

Hulman Field Air National Guard Base, Indiana

Introduction

The Department of Defense (DoD) identified certain per- and polyfluoroalkyl substances (PFAS) as emerging contaminants of concern which affected installations across the Air Force. When the term "Air Force" is used in this fact sheet, it includes Air National Guard. Specifically, perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS) are components of legacy 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) issued lifetime drinking water Health Advisories (HA) for PFOS and PFOA, and health-based regional screening levels for PFBS.

The Air Force has systematically evaluated potential AFFF releases on all Installations and former Installations. It began with the Preliminary Assessments, or PAs, that identified potential release areas. First responders, fire chiefs, and hangar staff were interviewed to determine where a release or a spill may have occurred on an Installation (for example, aircraft crash site or an accidental hangar AFFF release). Once the information in the PA was collected, we began Site Inspections, or SIs, to take soil and water samples and analyzed the media for PFAS compounds at the potential release areas. The intention of the SI was to determine if a release had occurred and to determine the impacts to soil and/or groundwater. The next step in the process is called the Relative Risk Site Evaluation, or RRSE, which is a tool used to sequence Sites/Installations to begin a Remedial Investigation, or RI. Air Force Installations are at the beginning of the more detailed investigative stage, the RI, to determine, where action is needed and to identify remedial technologies.

The Hulman Field Air National Guard Base (ANGB) PFAS PA and SI can be found at the Air Force CERCLA Administrative Record (AR): <https://ar.afcec-cloud.af.mil/> Scroll to the bottom of the page and click on "Continue to site", then select Air National Guard (e.g., Active, ANG, BRAC), scroll down the Installation List and click on Hulman Int (Terre Haute), IN then enter the AR Number 474878 in the "AR #" field for the PA. For the SI, enter the AR Number 585476. Then click "Search" at the bottom of the page. Click on the image of the eye to view the document.

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

Acronyms

AFFF - Aqueous Film Forming Foam	PFBS – Perfluorobutanesulfonic acid
AST – Aboveground Storage Tank	PFOS - Perfluorooctane sulfonate
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act	PFOA - Perfluorooctanoic acid
CHF – Contaminant Hazard Factor	RCRA – Resource Conservation and Recovery Act
DoD - Department of Defense	RF – Receptor Factor
EPA – US Environmental Protection Agency	RI – Remedial Investigation
FTA – Fire Training Area	RRSE – Relative Risk Site Evaluation
HA – Health Advisory	PRL - Potential Release Location
MPF – Migration Pathway Factor	SI – Site Inspection
PA – Preliminary Assessment	SWMU – Solid Waste Management Unit
PFAS - Per-and polyfluoroalkyl substances	



RELATIVE RISK SITE EVALUATION, cont.

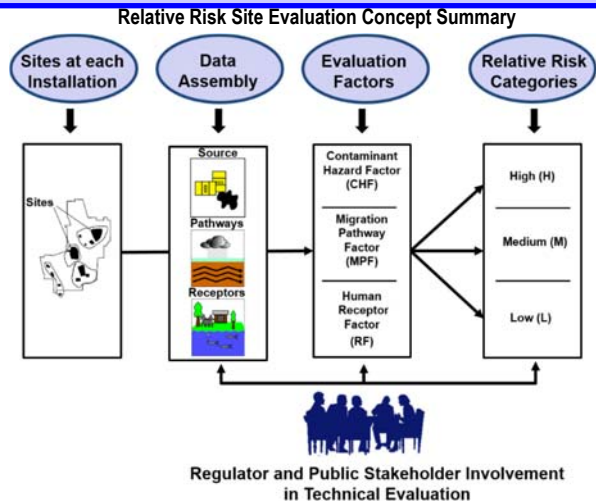


Q. What is the Relative Risk Site Evaluation (RRSE)?

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

Q. What is the RRSE framework?

A. The RRSE framework provides a DoD-wide approach for evaluating the relative risk to human health and the environment posed by contamination present at sites. 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 assessment: sources, pathways, and receptors to sequence restoration work. The RRSE is not a baseline risk assessment or health assessment in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. Regulators and public stakeholders in the environmental restoration process are provided the opportunity to participate in the process in accordance with the DoD Defense Environmental Restoration Program.



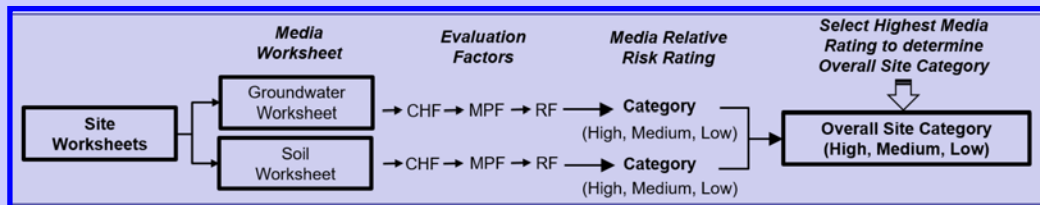
Sites at Each Installation

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

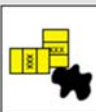


A. Restoration sites in CERCLA phases prior to remedy-in-place are evaluated in the process. Worksheets are developed for environmental media at each site. For consistency across all the Installations, only surface soil (0-1 foot deep) and groundwater media were evaluated in the RRSE.

The figure shows the process for a media to be 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 rating determines the Overall Site Category.



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



A. The **Contaminant Hazard Factor (CHF)** is determined by dividing the maximum level for a contaminant at each site by the approved screening values (i.e., risk-based comparison values). Contaminant concentration ratios are totaled to arrive at a **Contaminant Hazard Factor (CHF)**. A CHF sum of greater than 100 earns a **Significant (High)** ranking. **Moderate (Medium)** is when the total is 2 to 100. **Minimal (Low)** is when a CHF is less than two.

FOR MORE INFORMATION

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

AFCEC CERCLA
Administrative Record (AR)
<https://ar.afcec-cloud.af.mil/>

POINT OF CONTACT

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

A. The movement of contamination at a site is evaluated and assigned a **Migration Pathway Factor (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.

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

A. The **Receptor Factor (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.



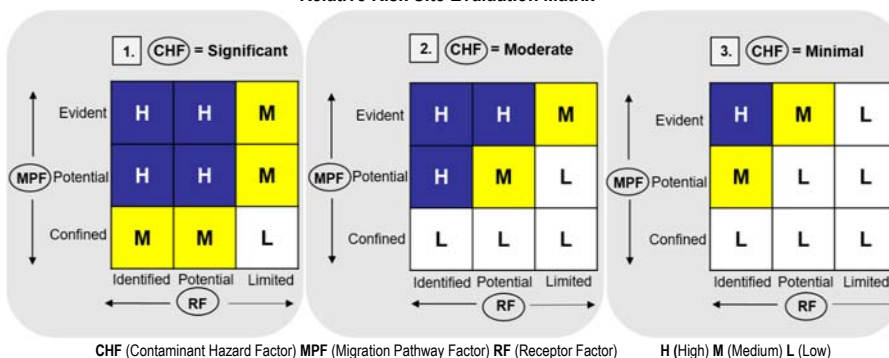
RELATIVE RISK SITE EVALUTION, cont.

Media Relative Risk Rating

Q. How is the media relative risk rating determined?

A. Use the chart to determine the relative risk rating for each media evaluated. Start by choosing the **CHF** result of the evaluation. If the **CHF** is **Significant**, use **box 1.**; if **Moderate**, use **box 2.**; if **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 relative risk rating. For example, if the **CHF** is **Significant** (go to **box 1.**), the **MPF** is **Potential** and the **RF** is **Identified**, then the rating is **High (H)**.

Relative Risk Site Evaluation Matrix



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

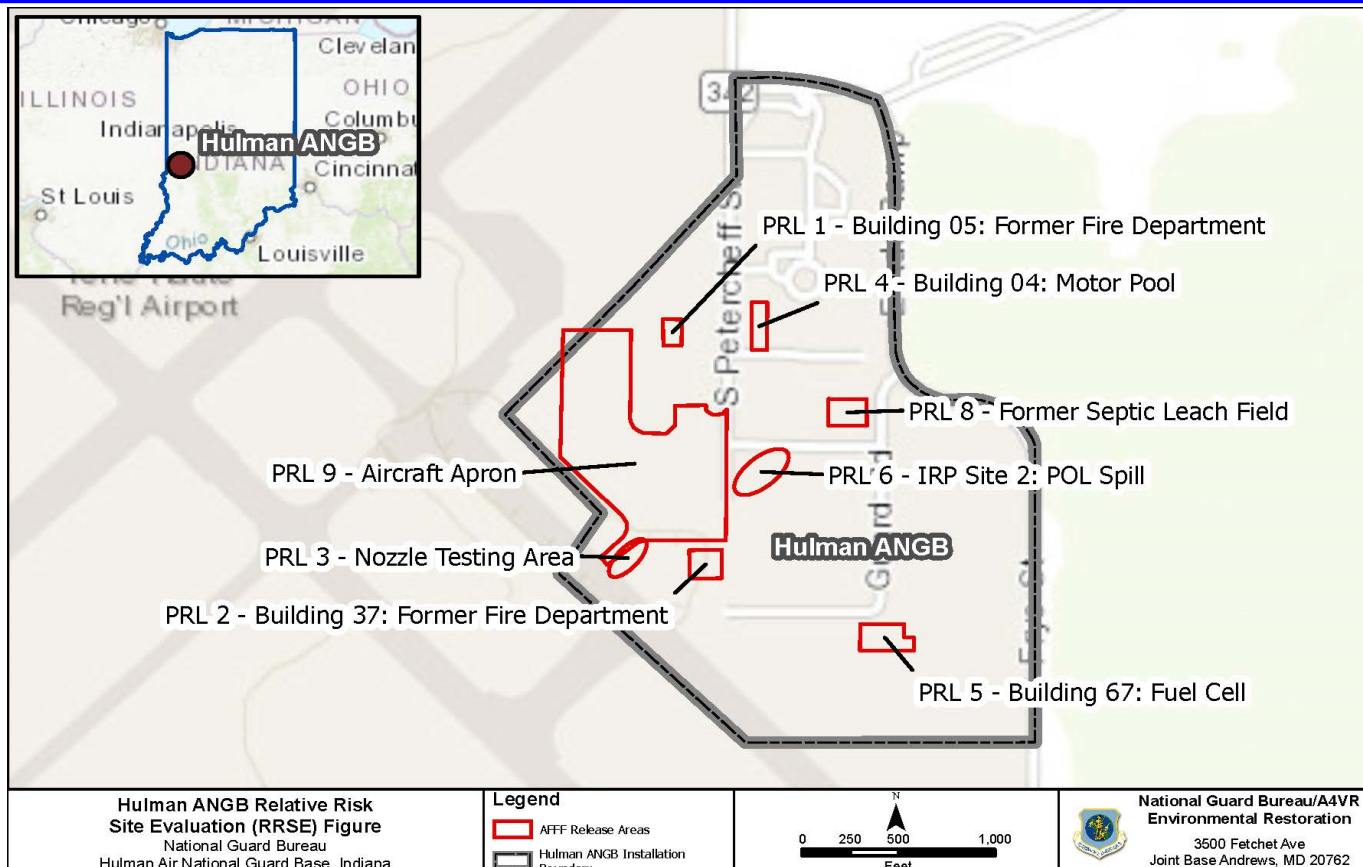
Q. How do I participate as Stakeholder?



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

Relative Risk Site Evaluation Summary Hulman Int (Terre Haute), IN

Overall Site Category	Site Name (Sites are shown on the map below and RRSE Worksheets are attached)
HIGH	PRL 1, PRL 2, PRL 3, PRL 4, PRL 5, PRL 8, and PRL 9
MEDIUM	PRL 6
LOW	None



Notes:

Aqueous Film Forming Foam (AFFF) Area is another term for Potential Release Location (PRL).

Site Background Information			
Installation:	Hulman Field Air National Guard Base (ANGB)	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Building 5 - Former Fire Dept. - PRL 1	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	The Former Fire Department, located in Building 5, served as the base fire department from its construction in 1955 until 2002, when the fire department moved into Building 37. Currently, the 6,010 square foot (sq. ft.) building is used by the Vigo County Emergency Management Agency for office space, supply and vehicle storage. Fire rescue vehicles, housed in the building's bays, were manually filled with aqueous film forming foam (AFFF) via 5-gallon buckets. According to the preliminary assessment (PA) report, approximately 100 5-gallon buckets were stored in this building (totaling approximately 500 gallons of AFFF stored within this building at a time). At the time of the PA site visit, floor drains ran under the bay of the building, which discharged to an oil water separator (OWS) and eventually to the sanitary sewer system. There were no known releases of AFFF within Building 5 - Former Fire Department.
Brief Description of Pathways:	<p>Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. A subsurface investigation was conducted indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet below ground surface (bgs) and flows predominantly to the southwest. Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm.</p> <p>PRL 1 is covered in pavement and a building; however, grassy areas are located to the southwest and east.</p>
Brief Description of Receptors:	PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located with 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 1

AFFF Release Area #: AFFF 1

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	15	0.04	375.0
PFOA	5.6	0.04	140.0
PFBS	0.59	0.602	1.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	516.0
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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	H
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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)	H
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)	
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).	H

Groundwater Category

HIGH

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 1

AFFF Release Area #: AFFF 1

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios	
PFOS	0.33	0.126	2.6	
PFOA	0.0057	0.126	0.0	
PFBS	0.00035	1.9	0.0	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	2.7	
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	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
Identified	Receptors identified that have access to contaminated soil			
Potential	Potential for receptors to have access to contaminated soil		M	
Limited	No potential for receptors to have access to contaminated soil			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		M	
Soil Category			HIGH	

Site Background Information			
Installation:	Hulman Field ANGB	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Building 37 - Former Fire Dept - PRL 2	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	Building 37 was originally constructed in 1978 and renovated in 2001 in order to house the Fire Department. After the aircraft and aircraft support missions left the base, the fire department was deactivated in 2008. During the 2016 PA site visit, it was noted that three fire rescue vehicles were stored in this 11,000 sq ft building: P4 with a 180-gallon AFFF storage tank; P19 with a 130-gallon AFFF storage tank; and P23 with a 320-gallon AFFF storage tank. After 2002, a 1,000-gallon foam trailer was stored at Building 37. Filling of this trailer was done from 55-gallon drums of AFFF. There were no known releases of AFFF within Building 37, but any incidental release within the building would have drained to floor trench drains, which discharged to an OWS and eventually the sanitary sewer system.
Brief Description of Pathways:	Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. The subsurface investigation conducted as part of this project indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet bgs and flows predominantly to the southwest. Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm. PRL 2 is covered in pavement and a building; however, a large grassy areas is located west/southwest and smaller landscaped areas are north and east of the building.
Brief Description of Receptors:	PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located within 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 2

AFFF Release Area #: AFFF 2

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios	
PFOS	13	0.04	325.0	
PFOA	1.4	0.04	35.0	
PFBS	1.7	0.602	2.8	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	362.8	
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		H	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
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)		H	
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)			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		H	
Groundwater Category			HIGH	

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 2

AFFF Release Area #: AFFF 2

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios	
PFOS	2	0.126	15.9	
PFOA	0.0088	0.126	0.1	
PFBS	0.0041	1.9	0.0	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	16.0	
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		M	
Limited	No potential for receptors to have access to contaminated soil			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		M	
Soil Category			HIGH	

Site Background Information			
Installation:	Hulman Field ANGB	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Nozzle Testing Area - PRL 3	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	According to former fire department personnel, from 2002 to 2008 quarterly nozzle or equipment testing using AFFF occurred in the Nozzle Testing Area (NTA), located west of Building 37 (PRL 2) and adjacent to the Aircraft Apron (PRL 9). AFFF used during the testing was allowed to dissipate and could have entered the nearby storm drains.
Brief Description of Pathways:	Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. The subsurface investigation conducted as part of this project indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet bgs and flows predominantly to the southwest. Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm. PRL 3 is a grassy area south of the aircraft apron.
Brief Description of Receptors:	PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located within 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 3

AFFF Release Area #: AFFF 3

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios	
PFOS	0.018	0.04	0.4	
PFOA	0.48	0.04	12.0	
PFBS	0.01	0.602	0.0	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	12.4	
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	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
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)		H	
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)			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		H	
Groundwater Category			HIGH	

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 3

AFFF Release Area #: AFFF 3

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios	
PFOS	0.046	0.126	0.4	
PFOA	0.0085	0.126	0.1	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.5	
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		M	
Limited	No potential for receptors to have access to contaminated soil			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		M	
Soil Category			LOW	

Site Background Information			
Installation:	Hulman Field ANGB	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Building 4 - Motor Pool - PRL 4	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	<p>The Motor Pool, located in Building 4, was constructed in 1955 and served as a location for vehicle maintenance, including fire department vehicles. At the time of the 2016 PA site visit, it was unknown if there had been any discharges of AFFF, but if any incidental releases had occurred within the building, they would have drained to floor trench drains, which discharge to an OWS and eventually the sanitary sewer system.</p>
Brief Description of Pathways:	<p>Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. The subsurface investigation conducted as part of this project indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet bgs and flows predominantly to the southwest. Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm.</p> <p>PRL 4 is covered in pavement and a building.</p>
Brief Description of Receptors:	<p>PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located within 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities</p>

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 4

AFFF Release Area #: AFFF 4

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios	
PFOS	0.14	0.04	3.5	
PFOA	0.28	0.04	7.0	
PFBS	0.044	0.602	0.1	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	10.6	
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	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
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)		H	
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)			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		H	
Groundwater Category			HIGH	

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 4

AFFF Release Area #: AFFF 4

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0013	0.126	0.0
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.0
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		
Confined	Low possibility for contamination to be present at or migrate to a point of exposure		L
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		L
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:	Hulman Field ANGB	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Building 67 - Fuel Cell - PRL 5	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	Building 67 was built in 2001 and is equipped with an AFFF fire suppression system (FSS). During the PA site visit conducted in 2016, visual observations identified components of the AFFF FSS, including oscillating monitors in the main hangar area along with a 100-gallon AFFF storage tank in a storage room. It was noted that the tank was located within a concrete berm that provided secondary containment. Although the components were in good condition, the tank's inspection tag indicated that as of late 2014, the system was out of service. It was unclear if any AFFF was being stored in the tank at the time of the PA site visit. The PA noted that an unknown quantity of AFFF was accidentally released during construction of the FSS in 2001. The foam entered the floor drains, which discharge to an OWS and eventually to the sanitary sewer system.
Brief Description of Pathways:	Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. The subsurface investigation conducted as part of this project indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet bgs and flows predominantly to the southwest. Groundwater flow at PRL 5 is more west/southwest based on the site investigation (SI). Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm. PRL 5 is covered in pavement and a building. A grassy area is located to the north.
Brief Description of Receptors:	PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located within 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 5

AFFF Release Area #: AFFF 5

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios	
PFOS	2.2	0.04	55.0	
PFOA	0.45	0.04	11.2	
PFBS	0.11	0.602	0.2	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	66.4	
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	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
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)		H	
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)			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		H	
Groundwater Category			HIGH	

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 5

AFFF Release Area #: AFFF 5

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.029	0.126	0.2
PFOA	0.00078	0.126	0.0
PFBS	0.00063	1.9	0.0
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.2
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		M
Limited	No potential for receptors to have access to contaminated soil		
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		M
Soil Category			LOW

Site Background Information			
Installation:	Hulman Field ANGB	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	IRP Site 2 - POL Spill - PRL 6	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	In June 1985, the overfilling of a storage tank containing jet fuel #4 (JP-4) caused a 400-gallon spill which spread across an asphalt paved lot and into a grassy area, referred to as Installation Restoration Program (IRP) Site 2 – Petroleum, Oil and Lubricant (POL) spill. The spill area and associated storm sewers and ditches were bermed, and approximately 100 gallons of fuel was recovered. Base personnel confirmed this spill, and added that AFFF was applied to the area as a precaution. A SI of this site was conducted from 1990-1992 under the IRP. In 1995, four underground storage tanks were removed and associated soils were excavated. An SI addendum was conducted in 2000 and a Decision Document selecting No Further Response Action was approved in 2001; however, there was no known sampling for PFAS during these activities.
Brief Description of Pathways:	Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. The subsurface investigation conducted as part of this project indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet bgs and flows predominantly to the southwest. Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm. PRL 6 is covered in pavement and grass.
Brief Description of Receptors:	PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located within 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 6

AFFF Release Area #: AFFF 6

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios	
PFOA	0.007	0.04	0.2	
PFBS	0.022	0.602	0.0	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.2	
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)		H	
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)			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		H	
Groundwater Category			MEDIUM	

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 6

AFFF Release Area #: AFFF 6

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios	
PFOS	0.025	0.126	0.2	
PFOA	0.001	0.126	0.0	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.2	
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		M	
Limited	No potential for receptors to have access to contaminated soil			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		M	
Soil Category			LOW	

Site Background Information			
Installation:	Hulman Field ANGB	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Former Septic Leach Field - PRL 8	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	The former septic leach field's historical location extended beneath a portion of current Building 64 and the parking lot to the west. The hangar, crash truck station, motor pool, and supply and armament storage sanitary sewer lines all originally discharged to the septic leach field. In 1988, the entire septic system was reportedly removed, although no soil or groundwater samples were collected and the extent of the removal is unknown. The area is currently asphalt and is used as a parking/storage area and is also partially covered by a building.
Brief Description of Pathways:	Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. The subsurface investigation conducted as part of this project indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet bgs and flows predominantly to the southwest. Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm. PRL 8 is currently covered in pavement and is also partially covered by a building.
Brief Description of Receptors:	PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located within 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 8

AFFF Release Area #: AFFF 8

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios	
PFOS	0.11	0.04	2.7	
PFOA	0.099	0.04	2.5	
PFBS	0.035	0.602	0.1	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	5.3	
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	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
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)		H	
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)			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		H	
Groundwater Category			HIGH	

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 8

AFFF Release Area #: AFFF 8

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.00016	0.126	0.0
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.0
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		
Confined	Low possibility for contamination to be present at or migrate to a point of exposure		L
Migratory Pathway Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		L
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:	Hulman Field ANGB	Date:	9/8/2021
Location (State):	Indiana	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Aircraft Apron - PRL 9	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Aubrey Higginbotham	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: HIGH			

Site Summary	
Brief Site Description:	Located on the western side of Hulman Field ANGB, historic operations within the aircraft apron may have resulted in the periodic release of AFFF to the concrete, which would runoff to the grassy areas surrounding the apron or to the base storm drain system.
Brief Description of Pathways:	Pennsylvanian bedrock of the Petersburg formation occurs at Hulman Field ANGB, underlying 50 - 75 feet of glacial till and loess. The subsurface investigation conducted as part of this project indicates that groundwater is generally encountered in unconsolidated deposits at depths ranging from approximately 3 to 7 feet bgs and flows predominantly to the southwest. Groundwater in Vigo County occurs in two aquifers, within the unconfined glacial till and loess and within the underlying consolidated bedrock. Groundwater exists in the bedrock, in the porous space of sandstone units and in fractures in coal and shale units. The unconsolidated aquifer yields as high as 2,700 gpm while the bedrock yields anywhere from 3 to 10 gpm. PRL 9 is covered in pavement; however, the aircraft apron is surrounded by grassy areas.
Brief Description of Receptors:	PFAS were detected in groundwater samples collected at each PRL. The analytical results from the four wells located along the base boundary to the southwest indicate that PFAS may be migrating off-base and may impact two drinking water wells located southwest of the base. Impacts to human receptors are possible based on current information. There are currently no known public water supply wells at the base and the shallow groundwater system in the area of the base is not used as a source of drinking water. There are 32 non-public water supply wells located with 2 miles of the ANGB screened in both the shallow and deep aquifers. While the use of the wells is unknown, they may be used as local drinking water sources. The base is provided water via the municipal water distribution system operated by the City of Seelyville. Exposure to surface and sub-surface soils may occur during routine activities or during construction and excavation activities

Groundwater Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 9

AFFF Release Area #: AFFF 9

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios	
PFOS	0.18	0.04	4.5	
PFOA	1	0.04	25.0	
PFBS	0.68	0.602	1.1	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	30.6	
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	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
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)		H	
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)			
Receptor Factor	DIRECTIONS: Record the single highest value from above in the box to the right (maximum value = H).		H	
Groundwater Category			HIGH	

Soil Worksheet

Installation: Hulman Field ANGB

Site ID: PRL 9

AFFF Release Area #: AFFF 9

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios	
PFOS	0.45	0.126	3.6	
PFOA	0.0035	0.126	0.0	
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	3.6	
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	
<u>Migratory Pathway Factor</u>				
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	
<u>Receptor Factor</u>				
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	