RELATIVE RISK SITE EVALUATION

Charlotte Air National Guard Base, North Carolina

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 (ANG). 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, Site Inspections, or SIs, were initiated 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 Charlotte Air National Guard Base (ANGB) PFAS PA and SI can be found at the Air Force Comprehensive Environmental Response, Compensation, and Liability Act (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, scroll down the Installation List and click on Charlotte Douglas Int'l Airport, NC, then enter the AR Number 546382 in the “AR #” field for the PA. For the SI, enter the AR Number 586251. Then click “Search” at the bottom of the page. Click on the spy glass 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

ANG - Air National Guard

ANGB - Air National Guard Base

AR - Administrative Record

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

MPF – Migration Pathway Factor

PA – Preliminary Assessment

PFAS - Per-and polyfluoroalkyl substances

PFBS – Perfluorobutanesulfonic acid

PFOA - Perfluorooctanoic acid

PFOS - Perfluorooctane sulfonate

PRL - Potential Release Location

RF – Receptor Factor

RI – Remedial Investigation

RRSE – Relative Risk Site Evaluation

SI – Site Inspection

RELATIVE RISK SITE EVALUATION, cont.

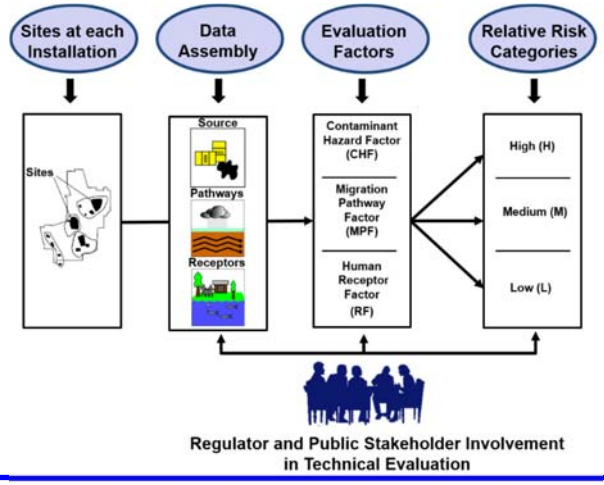
Q. What is the Relative Risk Site Evaluation (RRSE)?

A. RRSE is a methodology to sequence environmental restoration work used by the 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 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.

Relative Risk Site Evaluation Concept Summary

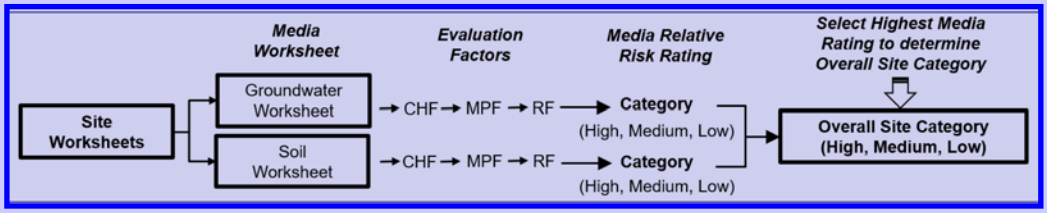


Sites at Each Installation

. 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 **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 **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 an **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?

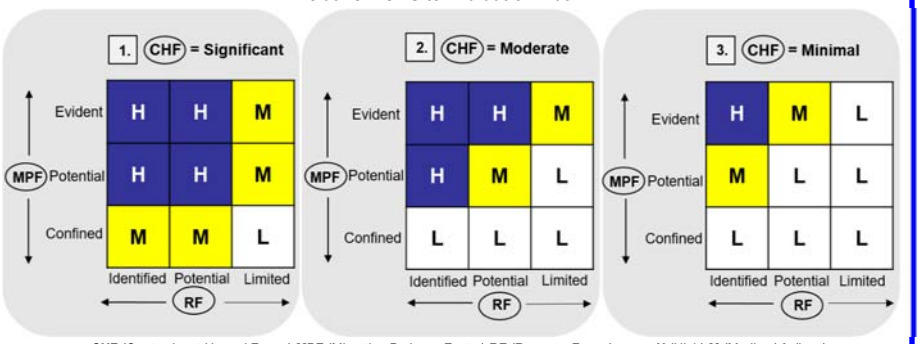
A. The **RF** is determined by a receptor's, such as humans, potential to come into contact with contaminated media. **RFs** are designated as: identified, potential, or limited **(High, Medium, and Low). Identified** rating is given when receptors are in contact or threat of contact with contaminated 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



CHF (Contaminant Hazard Factor) **MPF** (Migration Pathway 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**.

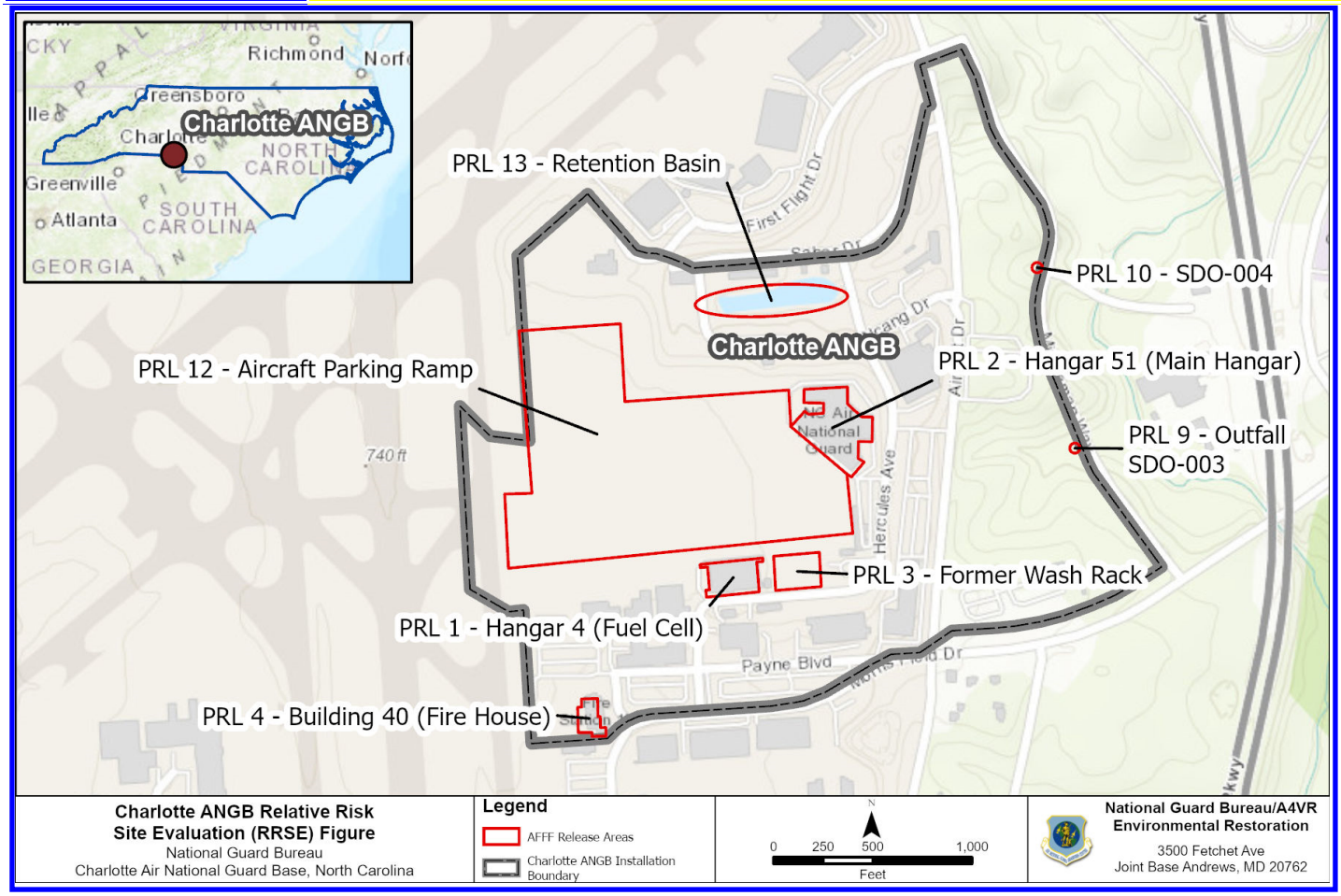
Regulatory and Stakeholder Involvement

Q. **How do I participate as Stakeholder?**

A. To offer 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 Charlotte ANGB, NC

Overall Site Category	Site Name (Sites are shown on the map below and RRSE Worksheets are attached)
HIGH	PRL 10
MEDIUM	PRL 2, PRL 3, PRL 4, PRL 12, PRL 13
LOW	PRL 1, PRL 9



Site Background Information			
Installation:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	PRL 1 - Hangar 4	**Phase of Execution (e.g., RI, Record of Decision**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date**	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary	
Brief Site Description:	PRL 1 consists of Hangar 4, which was constructed in 1968 with a fire suppression system (FSS). During the PA, Base personnel indicate that AFFF was introduced in 1987, when it replaced a carbon dioxide system with a hose reel. At the time of the SI, the Hangar 4 AFFF FSS consisted of two 400-gal-capacity AFFF tanks that were connected to overhead piping from the AFFF room to the hangar underwing turrets. There were also two 55-gal drums containing AFFF stored on containment pallets for reserve purposes within the AFFF room. A trench drain that runs the entire length of the hangar is located just inside the hangar doors. The trench drain discharges to a 1,000-gal oil/water separator (OWS) connected to the sanitary sewer. According to Base personnel, no FSS testing utilizing AFFF has been conducted; however, there were two releases associated with Hangar 4. In 1999, approximately 10 gal was released during a system test. A valve at the OWS was not positioned completely toward the sanitary sewer and the release was discharged to the storm sewer. Foam appeared at Building 7 and in a ditch off-Base. Additional water was added to the storm sewer to minimize oxygen demands downstream. The AFFF was allowed to naturally dissipate, and no additional response activities were required by regulatory agencies. In 2015, approximately 5 gal of AFFF concentrate mixed with water was discharged via the hangar underwing turret nozzles as a result of a system malfunction. The discharge was directed into the hangar trench drain and into the sanitary sewer via the OWS. However, once in the sanitary sewer, a small amount of foam overflowed from a manhole into the storm sewer, and no additional response activities were required by regulatory agencies. The foam was allowed to dissipate. The outfall for this area is SDO-002.
Brief Description of Pathways:	Approximately 85% of the Base west of Airport Drive is covered by buildings, pavement, or other impervious surfaces. Soils at PRL 1 are covered by buildings and asphalt which limits exposure pathways. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. below ground surface (BGS) in 03MW-08 to 27.4 ft. BGS in 04MW-33.
Brief Description of Receptors:	A review of the Environmental Data Resources (EDR) Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. PRL 1 is on an active aircraft parking and taxiway; therefore, access is restricted.

Groundwater Worksheet

Installation: Charlotte ANGB

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

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.0011	0.04	0.0
PFBS	0.00074	0.602	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 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	
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)	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	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: Charlotte ANGB

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

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0032	0.126	0.0
PFOA	0.00015	0.126	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.0**
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

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:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater
Site Name and ID:	PRL 2 - Hangar 51 - Main Hangar	**Phase of Execution (e.g., RI, Record of Decision**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	PRL 2 consists of Hangar 51, the main hangar building, which was constructed in 2003 and equipped with an AFFF FSS. The Hangar 51 AFFF system consists of four 900-gal-capacity AFFF tanks that are connected via overhead piping from the AFFF room to the hangar underwing turrets and the four zones of overhead pre-action risers for the sprinkler system. A trench drain that runs the entire length of the hangar is located just inside the hangar doors. The trench drain is connected to a 1,000-gal OWS, which is connected to the sanitary sewer. According to Base personnel, no FSS testing utilizing AFFF has been conducted. Base personnel reported that there was one release associated with Hangar 51, in January 2013. The estimated 90-gal release occurred as a result of a malfunction in the FSS. Less than 50 gal of discharged AFFF from the FSS flowed out of the hangar doors on the southwest side of the building and traveled by sheet flow along the street and entered the storm sewer. The outfall for this portion of the storm sewer is SDO-004 (PRL 10). Additionally, approximately 30 to 40 gal of discharged foam was diverted to the trench drain south of Building 51 and into the concrete stormwater holding basin. The foam was allowed to dissipate, and then the water was discharged from the concrete stormwater holding basin and into the retention basin (PRL 13). Surface soil samples were collected and analyzed at the PRL but results were non-detect.
Brief Description of Pathways:	Approximately 85% of the Base west of Airport Drive is covered by buildings, pavement, or other impervious surfaces. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. BGS in 03MW-08 to 27.4 ft. BGS in 04MW-33. Soil samples were collected from exposed soils on landscaped areas adjacent to the Hangar and adjacent buildings; though surface soil sample results were non-detect for PFAS constituents.
Brief Description of Receptors:	A review of the EDR Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB, and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. PRL 2 is on an active aircraft parking and taxiway; therefore, access is restricted.

Groundwater Worksheet

Installation: Charlotte ANGB

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

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.38	0.04	9.5
PFOA	0.031	0.04	0.8
PFBS	0.093	0.602	0.2

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	10.4
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

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)	M
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).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation Charlotte ANGB

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

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**Non-detect**
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**	**NA**

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	**NA**

Site Background Information			
Installation:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	PRL 3 - Former Wash Rack	**Phase of Execution (e.g., RI, Record of Decision**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	PRL 3 consists of a former wash rack that was located south of the aircraft parking ramp and east of Hangar 4. Based on historic site drawings, the wash rack was constructed in 1967 east of Hangar 4 and appeared to be an outdoor, concrete-paved area with a drain that was connected to the sanitary sewer. Aerial photographs from May 2004 show the wash rack still intact. However, aerial photographs from February 2005 show that the wash rack was removed. In 2000, the Base Fire Department was testing a truck on the wash rack and, in the process, approximately 10 gal of AFFF concentrate was discharged to the wash rack. Initially, the estimate was 20 gal of concentrate, but this was later revised to 10. Approximately 1,500 gal of water was used to flush the concentrate.
Brief Description of Pathways:	Approximately 85% of the Base west of Airport Drive is covered by buildings, pavement, or other impervious surfaces. Soils are covered by buildings and asphalt which limits exposure pathways. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. BGS in 03MW-08 to 27.4 ft. BGS in 04MW-33.
Brief Description of Receptors:	A review of the EDR Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB, and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. PRL 3 is located near an active aircraft parking ramp; therefore, access is restricted.

Groundwater Worksheet

Installation: Charlotte ANGB

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

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.022	0.04	0.5
PFOA	0.052	0.04	1.3
PFBS	0.23	0.602	0.4

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	2.2
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	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)	M
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).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation Charlotte
ANGB **Site ID:** PRL 3 **AFFF Release Area #:** AFFF 3

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0024	0.126	0.0
PFOA	0.00082	0.126	0.0
PFBS	0.00024	1.9	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.0
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
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:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	PRL 4 - Fire House Bldg 40	**Phase of Execution (e.g., RI, Record of Decision**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	PRL 4 is the Fire House (Building 40), which was constructed in 1985 and equipped with an overhead AFFF FSS in 1987. The overhead FSS was fed by a 2,135-gal aboveground storage tank. According to Base personnel, no FSS testing utilizing AFFF has been conducted. AFFF is also loaded directly into trucks using 5-gal containers. AFFF is stored in seven vehicles: Blaze 5 (22 gal), Engine 17 (25 gal), Engine 41 (50 gal), Blaze 54 (56 gal), Blaze 1 (420 gal), Blaze 2 (420 gal), and a foam trailer 9800 gal). According to Base personnel, in 2003, an AFFF release occurred when the overhead AFFF drop feed was struck by a vehicle's overhead exhaust system. Approximately 2 to 5 gal of AFFF was released to the floor and washed to the trench drain within Building 40. Based on information in the SI, the trench drain is connected the sanitary system. This portion of the Base discharges to Outfall SDO-001, which is located off-Base. Just outside to the southwest of Building 40 is a concrete Fire Department wash rack that is connected to the sanitary sewer via a 500-gal OWS. Fire vehicles are rinsed off here. AFFF residuals, if any, would have been rinsed to the sanitary sewer. No releases have been reported at the Fire Department wash rack.
Brief Description of Pathways:	Approximately 85% of the Base west of Airport Drive is covered by buildings, pavement, or other impervious surfaces which limits exposure pathways. Soil samples were collected from grassy areas adjacent to Building 40. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. BGS in 03MW-08 to 27.4 ft. BGS in 04MW-33.
Brief Description of Receptors:	A review of the EDR Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB, and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. PRL 4 is on the base but is immediately adjacent to non-Base areas where potential receptors would be industrial/commercial workers.

Groundwater Worksheet

Installation: Charlotte ANGB

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

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.02	0.04	0.5
PFOA	0.0046	0.04	0.1
PFBS	0.022	0.602	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.7
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

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	
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)	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	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: Charlotte ANGB

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

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	1.7	0.126	13.5
PFOA	0.0087	0.126	0.1
PFBS	0.016	1.9	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**13.6**
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**

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	**MEDIUM**

Site Background Information			
Installation:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater
Site Name and ID:	PRL 9 - Outfall 003	**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:	PRL 9 consists of Outfall 003 (SDO-003), which is located on the east boundary of the Base and is grass lined. This outfall is affiliated with drainage area DA-003, which collects stormwater and non-stormwater discharges from the aircraft parking apron, aircraft maintenance Hangar 51, hazardous waste storage areas, the Base Supply Warehouse (Building 63), a powered aerospace ground equipment maintenance facility, a vehicle parking area, and an access road to industrial sites. The basin discharges to SDO-003 and has a drainage area of approximately 17.75 acres and is approximately 50% impervious. Since this PRL is an outfall, no surface soil was collected at this location; therefore, no soil worksheet was completed for this RRSE.
Brief Description of Pathways:	Surfaces at PRL 9 are grass covered. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. BGS in 03MW-08 to 27.4 ft. BGS in 04MW-33.
Brief Description of Receptors:	A review of the EDR Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB, and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. PRL 9 is located within the Base boundary but is near the installation boundary fence.

Groundwater Worksheet

Installation: Charlotte ANGB

Site ID: PRL 9 **AFFF Release Area #:** AFFF 9

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.014	0.04	0.4
PFOA	0.0034	0.04	0.1
PFBS	0.014	0.602	0.0

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 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	
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)	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	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**

Site Background Information			
Installation:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater
Site Name and ID:	PRL 10 - Outfall 004	**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: HIGH			

Site Summary	
Brief Site Description:	PRL 10 consists of Outfall 004 (SDO-004), which is located on the east boundary of the Base and is grass lined. This outfall is affiliated with drainage area DA-004, which collects stormwater and non-stormwater discharges from hazardous materials and hazardous waste storage areas, the Base Supply Warehouse (Building 63), a vehicle fueling station, and an access road to industrial sites. The basin has a drainage area of approximately 5.44 acres and is approximately 30% impervious. Since this PRL is an outfall, no surface soil was collected at this location; therefore, no soil worksheet was completed for this RRSE.
Brief Description of Pathways:	Surfaces at PRL 10 are grassy. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. BGS in 03MW-08 to 27.4 ft. BGS in 04MW-33.
Brief Description of Receptors:	A review of the EDR Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB, and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. PRL 10 is located within the Base boundary but is near the installation boundary fence.

Groundwater Worksheet

Installation: Charlotte ANGB

Site ID: PRL 10 **AFFF Release Area #:** AFFF 10

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	6	0.04	150.0
PFOA	4.1	0.04	102.5
PFBS	1.3	0.602	2.2

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	254.7
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)		
2 > CHF	L (Low)		

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

CHF Value	CHF VALUE	H

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)	M
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).	M
	Groundwater Category	**HIGH**

Site Background Information			
Installation:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	PRL 12 - Aircraft Parking Ramp	**Phase of Execution (e.g., RI, Record of Decision**	N/A
RPM's Name:	Jenna Laube	**Agreement Status (e.g., Federal Facility Agreement date**	N/A
OVERALL SITE CATEGORY: MEDIUM			

Site Summary	
Brief Site Description:	PRL 12 consists of the Aircraft Parking Ramp, which is utilized for parking, minor maintenance, fueling, and deicing. The Aircraft Parking Ramp is concrete, surrounded by grassy areas, and equipped with stormwater catch basins that drain to outfall SDO-005 via underground piping. Sheet flow from the Aircraft Parking Ramp also discharges to outfalls SDO-001, SDO-002, and SDO-003. No specific AFFF releases were identified on the Aircraft Parking Ramp.
Brief Description of Pathways:	Approximately 85% of the Base west of Airport Drive is covered by buildings, pavement, or other impervious surfaces. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. BGS in 03MW-08 to 27.4 ft. BGS in 04MW-33. PRL 12 is a concrete aircraft parking ramp so exposure pathways are limited.
Brief Description of Receptors:	A review of the EDR Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB, and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. PRL 12 surface cover is concrete; therefore, there is limited potential for receptors to come into contact with soils at this PRL.

Groundwater Worksheet

Installation: Charlotte ANGB

Site ID: PRL 12 **AFFF Release Area #:** AFFF 12

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.43	0.04	10.8
PFOA	1	0.04	25.0
PFBS	0.031	0.602	0.1

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	35.8
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	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)	M
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).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation: Charlotte ANGB

Site ID: PRL 12 **AFFF Release Area #:** AFFF 12

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0016	0.126	0.0
PFOA	0.0011	0.126	0.0
CHF Scale	**CHF Value**	**Contamination Hazard Factor (CHF)**	**0.0**
CHF > 100	**H (High)**		
100 > CHF > 2	**M (Medium)**		
2 > CHF	**L (Low)**		
CHF Value		**CHF VALUE**	**L**

$$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$$

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:	Charlotte ANGB	**Date:**	08/01/2022
Location (State):	North Carolina	**Media Evaluated:**	Groundwater, Soil
Site Name and ID:	PRL 13 - Retention Basin	**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:	PRL 13 consists of the Retention Basin is located northeast of the Aircraft Parking Ramp. The Retention Basin is grass lined, drains a portion of the Aircraft Parking Ramp, and discharges to outfall SDO-005. The Retention Basin has also been impacted by the AFFF discharge from Hangar 51. The Retention Basin is a receiving PRL rather than a source PRL.
Brief Description of Pathways:	Approximately 85% of the Base west of Airport Drive is covered by buildings, pavement, or other impervious surfaces. Groundwater flow occurs in the combined fill, or debris fill, and the aquifer unit is unconfined. The general groundwater flow direction at Charlotte ANGB is from the southwest to the northeast. Depths to first water in the nine monitoring wells sampled during the SI ranged from 7.0 ft. BGS in 03MW-08 to 27.4 ft. BGS in 04MW-33. The retention pond is an earthen depression with exposed soils.
Brief Description of Receptors:	A review of the EDR Report shows one water well with a status of "closed" within a 1-mile radius of Charlotte ANGB as listed in the U.S. Geological Survey, Federal Public Water Systems and North Carolina Public Water Supply Wells Databases. The well is located side-gradient to groundwater flow 1/2 to 1 mile northwest of Charlotte ANGB, and is listed as a private well owned by the Copal Grill. Although listed as "closed", the information has not been confirmed. The Catawba River serves as the primary source of water for the City of Charlotte. The retention pond is a restricted area within the base and is not accessible.

Groundwater Worksheet

Installation: Charlotte ANGB

Site ID: PRL 13 **AFFF Release Area #:** AFFF 13

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.44	0.04	11.0
PFOA	0.53	0.04	13.2
PFBS	0.11	0.602	0.2

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	24.4
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

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)	M
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).	M
	Groundwater Category	**MEDIUM**

Soil Worksheet

Installation: Charlotte ANGB

Site ID: PRL 13 **AFFF Release Area #:** AFFF 13

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.014	0.126	0.1
PFOA	0.0014	0.126	0.0
PFBS	0.00015	1.9	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.1
CHF > 100	H (High)		
100 > CHF > 2	M (Medium)	$CHF = \sum \frac{\text{[Maximum Concentration of Contaminant]}}{\text{[Comparison Value for Contaminant]}}$	
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**