



RELATIVE RISK SITE EVALUATION

Quonset Air National Guard Base, Rhode Island

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

The Quonset 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 Quonset State Airport, RI, then enter the AR Number 470205 in the "AR #" field for the PA. For the SI, enter the AR Number 575032. 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

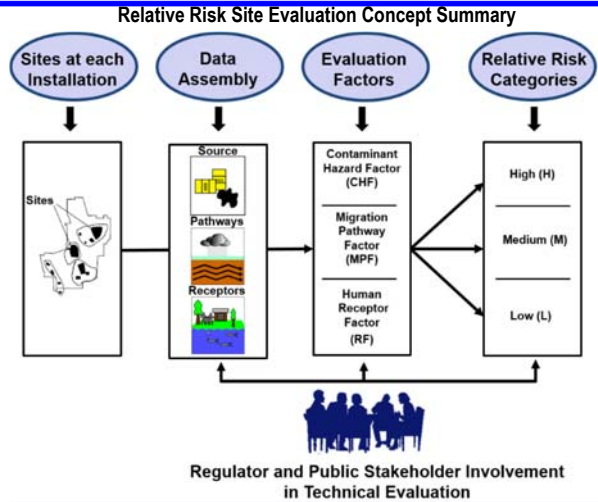
AFFF - Aqueous Film Forming Foam	PA – Preliminary Assessment
ANG - Air National Guard	PFAS - Per-and polyfluoroalkyl substances
ANGB - Air National Guard Base	PFBS – Perfluorobutanesulfonic acid
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act	PFOA - Perfluorooctanoic acid
CHF – Contaminant Hazard Factor	PFOS - Perfluorooctane sulfonate
DoD - Department of Defense	PRL - Potential Release Location
EPA – US Environmental Protection Agency	RCRA – Resource Conservation and Recovery Act
HA – Health Advisory	RI – Remedial Investigation
	RRSE – Relative Risk Site Evaluation
	RSL -- Regional Screening Level
	SI – Site Inspection

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/>

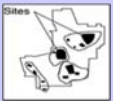
Q. What is the RRSE framework?

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 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.



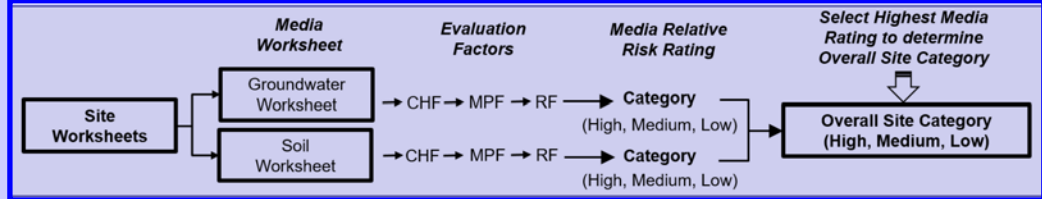
Sites at Each Installation

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

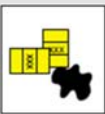


A. Restoration sites in CERCLA phases prior to remedy-in-place are evaluated in the process. Worksheets are developed for environmental media at each site. For consistency across all the Installations, only surface soil (0-1 foot deep) and groundwater media were evaluated in the RRSE.

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 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

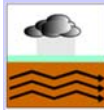
Air Force Civil Engineer Center
Environmental Restoration Program
www.afcec.af.mil

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

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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 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.

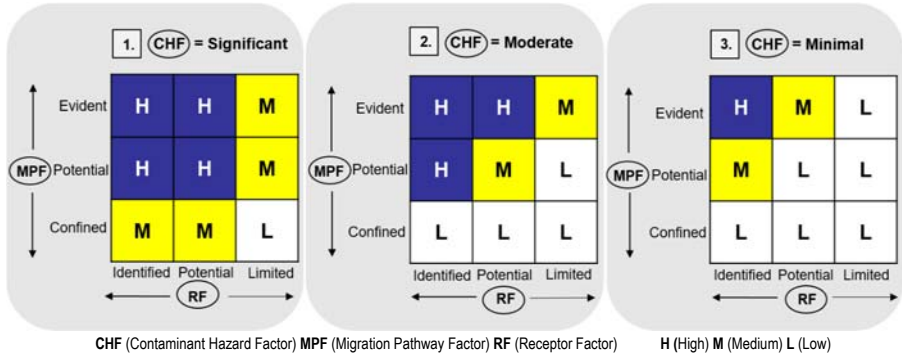
RELATIVE RISK SITE EVALUATION, cont.

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 Quonset ANGB, RI

Overall Site Category	Site Name (Sites are shown on the map below and RRSE Worksheets are attached)
HIGH	N/A
MEDIUM	N/A
LOW	PRL 1, PRL 2, PRL 3



Site Background Information

Installation:	Quonset ANGB	Date:	1/6/2022
Location (State):	Rhode Island	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Fire Station - Building 11 - PRL 1	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Jody Murata	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary

Brief Site Description:	<p>The fire station was built in 1981 and, according to the Per- and Polyfluoroalkyl Substances (PFAS) Preliminary Assessment (PA) Report, housed four fire department crash trucks and one 1,000-gallon foam trailer. At the time of the PA site visit, the crash trucks contained a combined capacity of 822-gallons of 3% aqueous film forming foam (AFFF). When needed, trucks were reportedly refilled from the foam trailer using a transfer pump. The trailer was refilled manually by pouring 5-gallon totes into the reservoir or using transfer pumps when using 55-gallon drums of AFFF. There were no known releases of AFFF at the fire station. Any spills within the building would have likely been captured in the floor drain system and routed to the municipal sanitary sewer. Although a historical release is unlikely, the PA identified the Fire Station as a Potential Release Location (PRL) and recommended inspection of soil and groundwater during the site inspection (SI).</p>
Brief Description of Pathways:	<p>Bedrock consists of gray to black, fine- to coarse-grained quartz arenite, litharenite, shale, and conglomerate with minor beds of anthracite and meta-anthracite. Readily-available information on depth to bedrock was not identified; however, surficial glaciofluvial and glaciolacustrine deposits are typically 60 to 70 feet (ft.) thick in this region. The base is located above the Potowomut-Wickford Aquifer System, which is contained within unconfined surficial glacial deposits and bedrock. Groundwater bearing surficial deposits include stratified sand and gravel inter-bedded with fine sand and silt and glacial till. Groundwater during the SI was encountered between 4 and 9 ft. below ground surface (bgs). Groundwater flow during the SI was generally to the southeast. The base is comprised of a single drainage area where stormwater is collected in a series of catch basins and conveyed through subsurface drainage structures to Outfall 001 located off base. Stormwater empties into Frys Pond and then discharges into Narragansett Bay. Soil samples were collected during the SI from a paved area immediately adjacent to the Fire Station.</p>
Brief Description of Receptors:	<p>There are no known drinking water wells located on or near the base. The Environmental Data Resources (EDR) well search indicated that there are no water wells within a one-mile radius of the base. It should be noted that Narragansett Bay is directly east of the base and within one mile of the base. Based on the direction of groundwater movement, EDR search results, and proximity to the Bay, there are no drinking water wells within 4 miles downgradient of the base. Groundwater in the Quonset Point area is not within a designated Community or Non-Community Wellhead Protection Area; the nearest wellhead protection area is located over two miles west of the base. The town of North Kingstown supplies water to 24,000 customers from three sole-source aquifers drawing water from 11 wells. The Wellhead Protection Areas for these wells are located two to three miles northwest, west and southwest, and hydraulically up- or cross-gradient from base. The Fire Station is adjacent to the air field and is accessible by Fire Station personnel and escorted visitors. PFAS including Perfluorooctanoic acid (PFOA), Perfluorooctane sulfonate (PFOS), and Perfluorobutanesulfonic acid (PFBS) have been detected at multiple on-base wells at varying concentrations.</p>

Groundwater Worksheet

Installation Quonset ANGB

Site ID: PRL 1

AFFF Release Area #: AFFF 1

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	2.68	0.04	67.0
PFOA	0.185	0.04	4.6
PFBS	0.0645	0.602	0.1
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	71.7
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 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)		
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 Quonset ANGB

Site ID: PRL 1

AFFF Release Area #: AFFF 1

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	1.11	0.126	8.8
PFOA	0.00608	0.126	0.0
PFBS	0.000686	1.9	0.0
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	8.9
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	
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:	Quonset ANGB	Date:	1/6/2022
Location (State):	Rhode Island	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Fire Dept. Equipment Test Area - PRL 2	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Jody Murata	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary

Brief Site Description:	The Fire Department reportedly performed abbreviated foam tests on the concrete apron and ramp area immediately east of the Fire Station between 2010 and 2015. The approximate quantity of the AFFF discharged is unknown. Most of the AFFF discharged during tests would have likely entered nearby storm drains that ultimately discharge to Frys Pond; however, some might have entered the subsurface through cracks and joints in the concrete apron and ramp area.
Brief Description of Pathways:	Bedrock consists of gray to black, fine- to coarse-grained quartz arenite, litharenite, shale, and conglomerate with minor beds of anthracite and meta-anthracite. Readily-available information on depth to bedrock was not identified; however, surficial glaciofluvial and glaciolacustrine deposits are typically 60 to 70 ft. thick in this region. The base is located above the Potowomut-Wickford Aquifer System, which is contained within unconfined surficial glacial deposits and bedrock. Groundwater bearing surficial deposits include stratified sand and gravel inter-bedded with fine sand and silt and glacial till. Groundwater during the SI was encountered between 4 and 9 ft. bgs. Groundwater flow during the SI was generally to the southeast. The base is comprised of a single drainage area where stormwater is collected in a series of catch basins and conveyed through subsurface drainage structures to Outfall 001 located off base. Stormwater empties into Frys Pond and then discharges into Narragansett Bay. Soil samples were collected from a paved area of the site.
Brief Description of Receptors:	There are no known drinking water wells located on or near the base. The EDR well search indicated that there are no water wells within a one-mile radius of the base. It should be noted that Narragansett Bay is directly east of the base and within one mile of the base. Based on the direction of groundwater movement, EDR search results, and proximity to the Bay, there are no drinking water wells within 4 miles downgradient of the base. Groundwater in the Quonset Point area is not within a designated Community or Non-Community Wellhead Protection Area; the nearest wellhead protection area is located over two miles west of the base. The town of North Kingstown supplies water to 24,000 customers from three sole-source aquifers drawing water from 11 wells. The Wellhead Protection Areas for these wells are located two to three miles northwest, west and southwest, and hydraulically up- or cross-gradient from base. PRL 2 is located on the aircraft apron/ramp, so access is restricted. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-base wells at varying concentrations.

Groundwater Worksheet

Installation Quonset ANGB

Site ID: PRL 2

AFFF Release Area #: AFFF 2

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.956	0.04	23.9
PFOA	1.11	0.04	27.8
PFBS	0.0478	0.602	0.1

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	51.7
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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	M
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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)	
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 Quonset ANGB

Site ID: PRL 2

AFFF Release Area #: AFFF 2

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.166	0.126	1.3
PFOA	0.00207	0.126	0.0
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	1.3
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		L
<u>Migratory Pathway Factor</u>			
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
<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			LOW

Site Background Information

Installation:	Quonset ANGB	Date:	1/6/2022
Location (State):	Rhode Island	Media Evaluated:	Groundwater, Soil
Site Name and ID:	Vehicle Maintenance Shop - Building 3 - PRL 3	Phase of Execution (e.g., RI, Record of Decision (ROD)):	N/A
RPM's Name:	Jody Murata	Agreement Status (e.g., Federal Facility Agreement date signed):	N/A
OVERALL SITE CATEGORY: LOW			

Site Summary

Brief Site Description:	<p>Building 3 was constructed in 1980 and is used for vehicle service and maintenance. The building contains floor drains which discharge to the sanitary sewer via an oil-water separator. During maintenance of a fire truck in 2005, an undetermined amount of 3% AFFF was released to the floor drain system that discharges to the sanitary sewer. Although it is not known if AFFF was released to the environment, the discharge was substantial enough to cause foaming at the local publicly owned treatment works. Although a historical release to the environment is unlikely, the PA identified the Vehicle Maintenance Shop as a PRL and recommended inspection of soil and groundwater during the SI.</p>
Brief Description of Pathways:	<p>Bedrock consists of gray to black, fine- to coarse-grained quartz arenite, litharenite, shale, and conglomerate with minor beds of anthracite and meta-anthracite. Readily-available information on depth to bedrock was not identified; however, surficial glaciofluvial and glaciolacustrine deposits are typically 60 to 70 ft. thick in this region. The base is located above the Potowomut-Wickford Aquifer System, which is contained within unconfined surficial glacial deposits and bedrock. Groundwater bearing surficial deposits include stratified sand and gravel inter-bedded with fine sand and silt and glacial till. Groundwater during the SI was encountered between 4 and 9 ft. bgs. Groundwater flow during the SI was generally to the southeast. The base is comprised of a single drainage area where stormwater is collected in a series of catch basins and conveyed through subsurface drainage structures to Outfall 001 located off base. Stormwater empties into Frys Pond and then discharges into Narragansett Bay. Soil samples were collected from a paved area immediately adjacent to the Maintenance Shop.</p>
Brief Description of Receptors:	<p>There are no known drinking water wells located on or near the base. The EDR well search indicated that there are no water wells within a one-mile radius of the base. It should be noted that Narragansett Bay is directly east of the base and within one mile of the base. Based on the direction of groundwater movement, EDR search results, and proximity to the Bay, there are no drinking water wells within 4 miles downgradient of the base. Groundwater in the Quonset Point area is not within a designated Community or Non-Community Wellhead Protection Area; the nearest wellhead protection area is located over two miles west of the base. The town of North Kingstown supplies water to 24,000 customers from three sole-source aquifers drawing water from 11 wells. The Wellhead Protection Areas for these wells are located two to three miles northwest, west and southwest, and hydraulically up- or cross-gradient from base. The maintenance shop is accessible by base personnel. PFAS including PFOA, PFOS, and PFBS have been detected at multiple on-site wells at varying concentrations.</p>

Groundwater Worksheet

Installation Quonset ANGB

Site ID: PRL 3

AFFF Release Area #: AFFF 3

Contaminant	Maximum Concentration (ug/L)	Comparison Value (ug/L)	Ratios
PFOS	0.139	0.04	3.5
PFOA	0.0197	0.04	0.5
PFBS	0.00636	0.602	0.0

CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	4.0
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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	M
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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)	
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 Quonset ANGB

Site ID: PRL 3

AFFF Release Area #: AFFF 3

Contaminant	Maximum Concentration (mg/kg)	Comparison Value (mg/kg)	Ratios
PFOS	0.0374	0.126	0.3
PFOA	0.00101	0.126	0.0
CHF Scale	CHF Value	Contamination Hazard Factor (CHF)	0.3
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		L
<u>Migratory Pathway Factor</u>			
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
<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			LOW