

N0428A\_003060  
NAS PATUXENT RIVER, MD  
SSIC 5000-33a

**FINAL PRELIMINARY ASSESSMENT FOR PER AND POLYFLUOROALKYL  
SUBSTANCES WEBSTER OUTLYING LANDING FIELD NAS PATUXENT RIVER  
MD**  
04/01/2019  
CH2M HILL

Approved for public release: distribution unlimited.



Washington

**Final**

**Preliminary Assessment for  
Per- and Polyfluoroalkyl Substances**

Naval Air Station Patuxent River - Webster Outlying Landing Field  
St. Inigoes, Maryland

April 2019



Washington

**Final**

**Preliminary Assessment for  
Per- and Polyfluoroalkyl Substances**

Naval Air Station Patuxent River - Webster Outlying Landing Field  
St. Inigoes, Maryland

April 2019

Prepared for NAVFAC Washington  
by CH2M HILL, Inc.  
Herndon, Virginia  
Contract N62470-16-D-9000  
CTO JU18



# Contents

<b>Acronyms and Abbreviations.....</b>	<b>V</b>
<b>1 Introduction.....</b>	<b>1-1</b>
1.1 Preliminary Assessment Objectives.....	1-1
1.2 PFAS Background.....	1-2
1.2.1 General Uses of PFAS.....	1-2
1.2.2 Key PFAS Sources at Naval Installations.....	1-2
1.2.3 PFAS in the Environment.....	1-3
1.2.4 Health Effects.....	1-3
1.3 Regulatory Background and History.....	1-4
1.3.1 PFOA Stewardship Program.....	1-4
1.3.2 Third Unregulated Contaminant Monitoring Rule and Health Advisories.....	1-4
1.3.3 State Specific Action Levels.....	1-4
1.4 Navy Policy.....	1-4
1.4.1 DASN (EI&E) Policy Memo, 21 Oct 2014.....	1-4
1.4.2 DASN (E) Policy Memo, 14 Jun 2016.....	1-5
1.4.3 DASN (E) Policy Memo, 20 Jun 2016.....	1-5
1.4.4 DASN (E) Policy Memo, 17 Jun 2016.....	1-5
1.5 Report Organization.....	1-6
<b>2 Facility Description.....</b>	<b>2-1</b>
2.1 Facility Background.....	2-1
2.2 Environmental Setting.....	2-1
2.2.1 Topography.....	2-1
2.2.2 Geology.....	2-1
2.2.3 Hydrogeologic Setting.....	2-2
2.2.4 Soils.....	2-2
2.2.5 Human Receptors.....	2-2
2.2.6 Ecological Receptors.....	2-2
2.2.7 Water Usage.....	2-3
2.3 PFAS Sampling at Webster Field.....	2-3
<b>3 Investigation Summary.....</b>	<b>3-1</b>
3.1 Archive Search Activities.....	3-1
3.1.1 Environmental Restoration Program Records.....	3-1
3.1.2 Internet Records.....	3-1
3.1.3 Maps and Aerial Photographs.....	3-1
3.2 Interviews.....	3-1
3.3 Summary of Areas Evaluated.....	3-2
<b>4 Preliminary Assessment Findings.....</b>	<b>4-1</b>
4.1 Potential Exposure Points and Routes.....	4-1
4.1.1 Groundwater.....	4-1
4.1.2 Soil and Air.....	4-1
4.1.3 Sediment.....	4-1
4.1.4 Surface Water.....	4-1
4.2 Potential PFAS Release Areas.....	4-1
4.2.1 Fire Station 3 (Building 8076).....	4-2
4.2.2 AFFF Crash Truck Maintenance Check Area.....	4-3
<b>5 Conclusions and Recommendations.....</b>	<b>5-1</b>
<b>6 References.....</b>	<b>6-1</b>

**Appendices**

- A List of Rare, Threatened, and Endangered Species of St. Mary’s County
- B Webster Analysis Report – Potable Water
- C Summary of Records Reviewed
- D Aerial Photographs
- E Interview Questionnaires and Communication Records

**Table**

- 3-1 Areas Evaluated for Potential PFAS Releases

**Figures**

- 1 Location Map
- 2 Potential Source Area for PFAS
- 3 Fire Station 3, Building 8076
- 4 AFFF Crash Truck Maintenance Check Area

# Acronyms and Abbreviations

AFFF	aqueous film-forming foam
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CH2M	CH2M HILL, Inc.
CLEAN	Navy Comprehensive Long-term Environmental Action—Navy
DASN	Deputy Assistant Secretary of the Navy
DoD	Department of Defense
EDR	Environmental Data Research, Inc.
ER	Environmental Restoration
MIL-SPEC	military specification
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NAVSUP	Naval Supply Systems Command
Navy	Department of the Navy
PA	Preliminary Assessment
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutane sulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
ppt	part per trillion
PWS	public water system
RfD	reference dose
UCMR 3	Third Unregulated Contaminant Monitoring Rule
USEPA	United States Environmental Protection Agency
Webster Field	Naval Air Station Patuxent River Webster Field Annex
WWTP	wastewater treatment plant

# Introduction

This Preliminary Assessment (PA) report of potential sources of per- and polyfluoroalkyl substances (PFAS) at Naval Air Station (NAS) Patuxent River Webster Outlying Landing Field (Webster Field) has been prepared under the Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC), Comprehensive Long-term Environmental Action—Navy (CLEAN) 9000 Contract N62470-16-D-9000, Contract Task Order JU18.

## 1.1 Preliminary Assessment Objectives

This installation-specific PFAS PA is part of a Navy-wide installations assessment of potential historical sources of PFAS use. This PA was conducted in accordance with the United States Environmental Protection Agency's (USEPA's) *Guidance for Performing Preliminary Assessments under CERCLA* (PA Guidance) (USEPA, 1991), with additional guidance from the Navy's *Interim Per-and Polyfluoroalkyl Substances (PFAS) Site Guidance for NAVFAC Remedial Project Managers (RPMs)/September 2017 Update* (Navy PFAS Guidance) (Navy, 2017). The objectives of this PFAS PA of Webster Field are to:

- Identify and catalog all known and potential PFAS sources.
- Eliminate from further consideration those areas where there is no evidence of a PFAS release or suspected release and document the rationale for their elimination.
- Identify areas requiring further PFAS investigation.
- Identify receptors and migration pathways (both on and off the facility).
- Determine whether an emergency response action is warranted because of current complete exposure pathways (for example, on- Base or off-Base drinking water source within 1-mile downgradient of potential source area).
- If it is the team's preference, prioritize areas identified for further PFAS inspection.

To accomplish these objectives, the following activities were completed:

- A review of existing information to identify potential PFAS releases.
- A review of existing information to identify potential off-Base receptors within 1-mile of the facility boundary. Note: This is less extensive than the study area defined in USEPA's PA Guidance (USEPA, 1991), but will be expanded if necessary in later project phases if complete pathways beyond 1 mile are identified.
- Interviews conducted with appropriate site personnel to validate and verify data collected during the data review, and to provide supplemental information.
- A site reconnaissance of the facility to identify any evidence of PFAS releases and potential receptors and migration pathways, ensure that all areas of concern have been identified, and fill data gaps identified in the data review and interviews.
- Identify any need for initiation of a rapid response drinking water investigation in accordance with the Deputy Assistant Secretary of the Navy (DASN) (E) Policy Memorandum, 20 JUN 2016, and immediately notify Navy if investigation is needed.
- Report findings in the Preliminary Assessment Report and make recommendation for future activities (for example, a Site Inspection [SI] or no further action [NFA]).

## 1.2 PFAS Background

PFAS have been identified by the Department of Defense (DoD) and USEPA as “emerging contaminants” (USEPA, 2014).<sup>1</sup> PFAS are of environmental concern because of their persistence in the environment and in organisms, their migration potential in aqueous systems (e.g., groundwater), their historically widespread use in commercial products, and their possible health effects at low levels of exposure. PFAS are anthropogenic compounds with multiple strong carbon-fluorine bonds.

### 1.2.1 General Uses of PFAS

The chemical properties of PFAS make them useful for many commercial products because they are heat-resistant and can repel oil, grease, and water. PFAS have been manufactured for use in a wide variety of products including fire-fighting foam, non-stick cookware, fiber and fabric stain protection, food packaging, and personal care products. The pervasive use of PFAS in commercial and industrial products has led to the discovery of PFAS in soil, air, and groundwater.

### 1.2.2 Key PFAS Sources at Naval Installations

PFAS have been used in a variety of military applications, including as a component of aqueous film-forming foam (AFFF), a fire-fighting foam that was routinely used at fire-fighting training areas, equipment check areas, and fire suppression systems. In addition, current and historical AFFF storage and transfer areas are of potential concern for release to the environment. As such, identification of areas where AFFF was released to the environment, either as repeated small releases or as a significant one-time release, is key to determining potential PFAS sources to environmental media.

PFAS from AFFF used in firefighting, firefighting training, and fire suppression systems are considered to have the greatest potential for release of PFAS to the environment in terms of mass and concentration at Navy installations. Other potential sources of PFAS to the environment include operations wastes (for example, from electroplating), historical onsite disposal areas and landfills of PFAS-containing materials, wastewater treatment sludges and effluents, and releases of other PFAS-containing materials. Areas of interest for this PFAS PA include those where AFFF may have been applied, released, or stored. These include current and former fire-training areas, equipment check and cleanout areas, buildings with fire-fighting infrastructure (such as hangars, AFFF storage, handling areas, and pump houses), unplanned release areas (such as crash sites), and fire suppression systems located at fuel storage areas.

#### AFFF in Fire-fighting Training and Fire Suppression

AFFF-containing PFAS was developed in the 1960s for use on Class B fires (fires in flammable liquids or vapors) and was put into routine use by the early 1970s. In November 1969, a military specification (MIL-SPEC) was issued that described characteristics which AFFF needed to demonstrate to be used by the military, including a requirement for formulations containing PFAS. Most AFFF used at military installations after the 1970s likely included some combination of PFAS.

Typically, AFFF concentrate was mixed proportionally into water using in-line eductors or other proportioning devices to create the necessary foam solution, ranging from 3 to 6 percent of the concentrate. Class A fire-fighting foams were used to extinguish wood and grass fires and do not contain PFAS; therefore, Class A fire-fighting foams are not a concern for this PA.

---

<sup>1</sup> USEPA (2014) defines an “emerging contaminant” as “a chemical or material characterized by a perceived, potential, or real threat of human health or the environment or by a lack of published health standard.”



## Electroplating

Electroplating, specifically hard chromium plating, is an industrial activity where PFAS-containing mist suppressants may have been used. Electroplating consists of creating an electrolytic cell that enables a thin layer of metal to be deposited onto an electrically conductive metal surface. PFAS were sometimes used during the chromium electroplating process as a surfactant in chromic acid baths. As a surfactant, PFAS lowered the surface tension (adhesion of materials) by creating a thin, foamy layer on the surface of the chrome bath for mist-suppression. This mist-suppressant reduced the formation of airborne chromium aerosols during the plating process, which are known to be carcinogenic and allergenic. Areas where non-chromium electroplating operations were carried out would not be expected to have used PFAS-containing mist suppressants.

## Landfill Operations, Waste Disposal Areas, and Wastewater Treatment Plants

Historically, landfills received wastes generated from military installations, including waste streams from operational areas (such as machine shops and electroplating operations), housing areas, and waste from wastewater treatment plants (WWTPs) and/or homeported ships. These waste streams may contain industrial and/or consumer products that were either manufactured with PFAS or contain PFAS constituents which may leach out of the landfill. Additionally, waste material biosolids and sludge from WWTPs can contain PFAS.

## Other Potential Sources

Because of the widespread use of PFAS, there may be activities other than the ones mentioned previously, where PFAS were used. For example, PFAS have been included in some anti-fouling and stain-resistant paint formulations. In significant amounts, these could be sources of PFAS to the environment.

### 1.2.3 PFAS in the Environment

PFAS are a class of anthropogenic compounds characterized by carbon chains of varying lengths containing carbon-fluorine bonds. The strong electronegative force of the carbon-fluorine bond requires a large amount of energy to break, which makes PFAS extremely resistant to biodegradation, photo-oxidation, direct photolysis, and hydrolysis. In addition to their environmental persistence, PFAS are readily soluble in aqueous solution and therefore have potential for migration to groundwater from soil and with groundwater flow to offsite locations. Due to their persistence and mobility, releases of PFAS to the environment present a unique set of challenges and concerns.

### 1.2.4 Health Effects

Additional research is needed to more clearly understand the potential health effects that may be caused by exposure to PFAS compounds. To date there is limited information on only a few PFAS, specifically, perfluorobutane sulfonate (PFBS), perfluorooctanoic acid (PFOA), and perfluorooctane sulfonate (PFOS). To date, there are no Tier 1 toxicity values for any PFAS. Tier 1 toxicity values are the preferred source for toxicity factors in Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) assessments.

USEPA's Superfund Health Risk Technical Support Center has estimated a Tier 2 noncarcinogenic toxicity value for PFBS. The reference dose (RfD) is based on kidney effects observed in female rats. Due to a lack of information in the current literature, toxicity values for inhalation exposure and cancer endpoints could not be estimated for PFBS.

USEPA Office of Water developed an RfD for PFOA which is based on a developmental toxicity study using mice. The critical effects included reduced ossification in parts of the hand/feet and accelerated puberty in male pups following exposure during gestation and lactation (USEPA, 2016). The USEPA Office of Water also determined that PFOA should be classified as "suggestive evidence of carcinogenic potential" and estimated an oral cancer slope factor based on tumor development in rat testes.

USEPA Office of Water estimated an RfD for PFOS based on a developmental toxicity study in rats; the critical effect was decreased pup body weight following exposure during gestation and lactation (USEPA, 2016).

PFOA and PFOS are known to be transmitted to the fetus in cord blood and to the newborn in breast milk. Because the developing fetus and newborn seem particularly sensitive to PFOA- and PFOS-induced toxicity, the RfDs based on developmental effects also are protective of adverse effects in adults.

## 1.3 Regulatory Background and History

### 1.3.1 PFOA Stewardship Program

In 2006, USEPA initiated the 2010/2015 PFOA Stewardship Program in which eight major companies in the United States committed to reduce facility emissions and product contents of PFOA and related chemicals on a global basis by 95 percent no later than 2010, and to work toward eliminating emissions and product content of these chemicals by 2015. All companies have met the program goals. To meet the program goals, most companies stopped the manufacture and import of long-chained PFAS, and then transitioned to alternative chemicals. On January 21, 2015, USEPA proposed a Significant New Use Rule under the Toxics Substances Control Act to require manufacturers (including importers) of PFOA- and PFOA-related chemicals to notify USEPA at least 90 days before starting or resuming new uses of these chemicals in any process.

### 1.3.2 Third Unregulated Contaminant Monitoring Rule and Health Advisories

The USEPA issued the Third Unregulated Contaminant Monitoring Rule (UCMR 3)<sup>2</sup> in May 2012. UCMR 3 required monitoring, between 2013 and 2015, for 30 substances of all large public water systems (PWSs) serving more than 10,000 people and 800 representative PWSs serving 10,000 or fewer people. Six PFAS compounds were included in the UCMR 3 contaminant list. Of these six PFAS, USEPA issued provisional health advisory levels for only two, PFOA and PFOS. USEPA also published toxicity values for one other, PFBS. In May 2016 the USEPA Office of Water issued a drinking water Lifetime Health Advisory for PFOA and PFOS. The Lifetime Health Advisories are not enforceable, regulatory levels. The Lifetime Health Advisory was set at a level that would provide Americans, including the most sensitive populations, with a margin of protection from a life-time of exposure to PFOA and PFOS from drinking water. The Lifetime Health Advisory is 70 parts per trillion (ppt) for PFOA and 70 ppt for PFOS. When both PFOA and PFOS are found in drinking water, the combined concentrations of PFOA and PFOS should be compared with the 70 ppt health advisory level.

The supply water system at Webster Field does not serve more than 10,000 people; therefore, it was not part of the UCMR 3 required monitoring

### 1.3.3 State Specific Action Levels

Maryland does not have state specific action levels for PFAS.

## 1.4 Navy Policy

### 1.4.1 DASN (EI&E) Policy Memo, 21 Oct 2014

Because of Navy releases impacting PWS tested under the UCMR 3, the Navy issued a policy in October 2014, requiring on-Base drinking water sampling for PFOA and PFOS for bases where groundwater was used as drinking water and PFAS could have been released nearby in the past. Under the policy, all installations not previously tested under UCMR 3 that produce drinking water from on-installation sources and have an identified or

---

<sup>2</sup> The 1996 Safe Drinking Water Act amendments require that once every 5 years USEPA issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems (PWSs).

suspected PFAS release within approximately 1-mile upgradient of the drinking water source were required to sample their finished drinking water by December 2015.

#### 1.4.2 DASN (E) Policy Memo, 14 Jun 2016

This policy expanded the sampling PFOA and PFOS at all Navy installations where such sampling was not previously completed under the USEPA's UCMR 3 or the Navy's October 2014 policy.

There are three community supply water supply wells located within the Webster Field boundary, two being active, and both active wells were sampled for PFAS in 2016. Additional details concerning these wells and sampling results are presented in **Section 2.3**.

#### 1.4.3 DASN (E) Policy Memo, 20 Jun 2016

Identification of off-Base impacted drinking water during the implementation of the October 2014 policy led the Navy to issue another policy in June 2016. This policy required the Navy to identify and prioritize sites for investigation if drinking water resources, on- or off-Base, are thought to be vulnerable to PFAS contamination from past Navy/Marine Corps PFAS releases. Sites with drinking water sources within 1 mile downgradient of known or potential releases of PFAS were assigned the highest priority. This policy directed the sampling of off-Base drinking water at these high priority (Priority 1) sites within fiscal year 2017.

The primary mechanism to identify potential PFAS release sites and areas of concern, was review of Environmental Restoration (ER), Navy records. Of the sites identified in the initial query, only the Fire Station 3 (Building 8076) and the AFFF Crash Truck Maintenance Check Area were identified as potential impacts to groundwater at Webster Field. Three other ER, Navy sites or buildings were identified, but were determined to require no PFAS investigation because the records reviewed determined no PFAS was used and no complete exposure pathway existed.

Webster Field was not assigned highest priority and therefore, sampling was not required at Webster Field. To date, the Navy has not conducted off-Base drinking water sampling.

#### 1.4.4 DASN (E) Policy Memo, 17 Jun 2016

This policy defines the Navy's intention to remove, dispose, and replace legacy AFFF that contains PFOS and/or PFOA once environmentally suitable substitutes are identified and certified to meet MIL-SPEC requirements. This policy directs the following actions be taken until suitable replacements are certified:

- Immediately cease the uncontrolled environmental release of AFFF for shoreside installations, except for emergency responses. Where such non-emergency operations are deemed necessary, complete containment, capture, and proper disposal mechanisms and procedures must first be in place to the maximum extent practicable before conducting such actions to ensure no AFFF is released to the environment.
- Update and implement Navy and Marine Corps firefighting system requirements, as needed to ensure fire and emergency service vehicles and equipment at Navy installations and facilities are tested and certified in a manner that does not allow the release of AFFF to the environment.
- By the end of fiscal year 2020, remove and dispose of uninstalled PFOS-containing AFFF in drums and cans from local stored supplies for shore installations and ships to prevent future environmental releases.

Currently, the Navy is working with manufacturers to determine the exact chemical composition of AFFF alternatives and plans to publish amended MIL-SPEC in late 2018. The revision will lay the framework for segregating products by PFOS and PFOA content and will establish lower limits to enable acquiring AFFF formulations with the lowest possible levels of PFOS and PFOA (DoD, 2018).

Navy policy also directs the Naval Supply Systems Command (NAVSUP) to coordinate with the Defense Logistics Agency to facilitate replacing AFFF containing PFOS and to enact a method that ensures only AFFF that meets the amended MIL-SPEC is supplied to Navy and Marine Corps customers by September 2018. In addition, NAVSUP will inventory and dispose of all stored legacy AFFF not compliant with the amended MIL-SPEC (DoD, 2018).

## 1.5 Report Organization

This PFAS PA Report is organized as follows:

- Section 1** – Introduction
- Section 2** – Facility Description
- Section 3** – Investigation Summary
- Section 4** – Preliminary Assessment Findings
- Section 5** – Conclusions and Recommendations
- Section 6** – References

The following appendixes are included:

- A** List of Rare, Threatened, and Endangered Species of St. Mary’s County
- B** Groundwater Sampling Results – October 2016
- C** Summary of Records Reviewed
- D** Aerial Photographs
- E** Interview Questionnaires

# Facility Description

Base information relevant to this PFAS PA, including facility background, environmental setting, and other PFAS investigations, is presented in the following subsections.

## 2.1 Facility Background

Webster Field is an 850-acre Navy facility located in St. Inigoes, approximately 15 miles southwest of NAS Patuxent River in St. Mary's County, Maryland (**Figure 1**). Webster Field opened October 20, 1943 and was used as a dispersal field in the event of aerial attacks during World War II and as an alternate landing site when air traffic was heavy at NAS Patuxent River. The site was also used as a training site for dive-bombing, aerial gunnery, target practice, and glider control experiments. The facility originally had three intersecting runways. All three runways are 150 feet wide, two runways are 5,000 feet long, and the third is 4,300 feet long (Tetra Tech NUS, 2010). The 4,300-foot runway (Runway 36-18, running north-south) was permanently taken out of use in the 1950s (CH2M, 2012).

After the war, Webster Field became the site of Naval Air Reserve Training Unit for Naval Air Station Anacosta. Between the years of 1967 and 1993, NAS Patuxent River remained in control of the airspace and runways at Webster Field, but the property was run by and renamed the Naval Electronics System Test and Evaluation Facility (later the Naval In-Service Engineering – East). After Base Realignment and Closure (BRAC) in 1994, NAS Patuxent River took over all operations at Webster Field, except for a portion of land that was dedicated to the U.S. Coast Guard in 1976. The facility is now used principally for test activities such as the Unmanned Aerial Vehicle operations. NAS Patuxent River serves as the Navy's principal location for research, development, test evaluation, engineering, and fleet support activities for naval aircraft, engines, avionics, aircraft support systems and ship/shore/air operations. NAS Patuxent River hosts the Navy Test Pilot School, and Webster Field hosts the Unmanned Aerial Vehicle operations, all of which regularly use the installation's airspace complex. Webster Field is designated as a Naval Auxiliary Landing Strip and is used as an auxiliary field for daylight testing. The major tenant at Webster Field is the Ship and Shore Based Electronics Systems Competency which does not use the airfield.

## 2.2 Environmental Setting

### 2.2.1 Topography

St. Inigoes Creek borders Webster Field to the north and St. Mary's Rivers borders Webster Field to the west. The topography of Webster Field varies from gently rolling to flat. In general, the topography of the site tends to slope gently from the northeast to the southwest towards St. Mary's River, which empties into the Potomac River (**Figures 1 and 2**). The elevation at the east end of the northeast/southwest trending runway is 21 feet above mean sea level and the elevation at the west end of the runway near St. Mary's River is approximately 12 feet above mean sea level (Tetra Tech NUS, Inc., 2010).

### 2.2.2 Geology

Webster Field is in the Coastal Plain, about 50 miles southeast of the Piedmont. The sediments of the Coastal Plain are a thick sequence of unconsolidated sand, clay, and gravel that dip (less than 1 degree) to the east and southeast (Fred C. Hart Associates, 1984). The thickness of these sedimentary units varies from approximately 2,000 feet in the northwestern part of St. Mary's County to 3,000 feet in the southeastern area of the county. These sediments overlie crystalline rocks at Webster Field.

### 2.2.3 Hydrogeologic Setting

The regional hydrogeological system of the Coastal Plain near Webster Field consists of several aquifers within the geologic units. From shallowest to deepest, the aquifers of primary interest with respect to Webster Field are the surficial aquifer, the Piney Point-Nanjemoy aquifer, and the Aquia aquifer. The surficial (water table) aquifer consists of the Lowland deposits and is unconfined. The St. Mary's Formation, as one formation of the low-permeability Chesapeake Group, functions primarily as a confining unit underlying the surficial aquifer. This confining unit is approximately 210 to 250 feet thick. The Piney Point-Nanjemoy, Aquia, and Upper Patapsco aquifers are deeper, confined aquifers below the St. Mary's Formation (Fred C. Hart Associates, 1984).

Groundwater from the surficial aquifer discharges to surface water at Webster Field, including ponds, streams, and the St. Mary's River. The surficial aquifer is recharged by precipitation falling directly on Webster Field and infiltrating the water table.

### 2.2.4 Soils

The distribution of soils at Webster Field depends on the climate and vegetation, topography, geologic sediment ("parent material") from which the soil is derived, and the time over which the soil has evolved. In St. Mary's County, there are 12 soil groupings or associations (Fred C. Hart Associates, 1984). Based on soil maps of St. Mary's County, it appears that the following general soil association is found at Webster Field.

The Othello-Mattapex Association is a level to gently sloping topography, poorly drained, and moderately well-drained silty soils. Subsoil is also silty. The parent material is generally made of silty Aeolian sediments underlain by coarse fluvial or marine sediments (Fred C. Hart Associates, 1984).

### 2.2.5 Human Receptors

For the general population, human receptors include people that may use groundwater for drinking water on or off the Base, with ingestion of groundwater considered the primary exposure pathway to PFAS. Additionally, people on-Base, which includes construction workers and other people who work or live on-Base, could be exposed to PFAS in soil at any source area. Migration pathways from PFAS source areas to potential exposure points include:

- Direct release of PFAS to surface and/or subsurface soil
- Leaching of PFAS from surface and/or subsurface soil to groundwater
- Direct releases of PFAS to surface water pathways through stormwater conveyances leading to water bodies used for drinking water
- Transport via advection with groundwater flow to areas downgradient of PFAS source areas

The rates of migration of individual PFAS compounds to possible human health receptors, from source areas to exposure points, can vary based on their affinity for environmental media (that is, air, soil, surface water, groundwater). PFAS are water soluble and can be transported long distances in surface water and groundwater, depending on sorption to sediment and soil. Although most PFAS have a low volatility, they can be transported over long distances in the atmosphere with fugitive dust particles; however, compared to data on ingestion of groundwater, the exposure pathway from inhalation and ingestion of dust particulates is unclear.

There are three community supply wells within the boundary of Webster Field, two of which are active supply wells. The potential for these wells as drinking water receptors is discussed in more details in **Section 2.2.7**.

### 2.2.6 Ecological Receptors

Grassland and forest species (e.g., vegetation, birds, small animals, reptiles/amphibians) are expected to utilize the available habitat in the land portion of Webster Field. Aquatic flora and fauna are expected to be present in

the water portion of the site (such as St. Mary's River). Avian species are expected to be present in the land and water portions of the site (Tetra Tech NUS, Inc., 2010).

A review of the Maryland Department of Natural Resources website provided a list of rare, threatened, or endangered species that have the potential to inhabit Webster Field (Maryland Department of Natural Resources, 2018). The complete list is provided in **Appendix A**.

### 2.2.7 Water Usage

There are three community supply wells at Webster Field. Well 2 is located at Building 8130 (Coast Guard Building) and Wells 4 and 5 are located at Building 8195 (**Figure 2**). Wells 2 and 4 are screened in the Aquia aquifer at 537 feet and 539 feet, respectively; however, Well 4 is not functioning and is expected to be replaced in 2019. Well 5 is screened in the deeper Upper Patapsco aquifer at 884 feet. These wells connect to the main water supply for the whole Base.

The closest residential community to Webster Field is the St. Inigoes Shores Community near the facility entrance off Villa Road. This community and adjacent properties to Webster Field are not by supplied by county water and are on private water wells (St. Mary's County, 2018). The closest private residential well is approximately 0.54 miles upgradient from AFFF Crash Truck Maintenance Check Area. **Figure 2** shows the location of the St. Inigoes Shores Community in comparison to the AFFF Crash Truck Maintenance Check Area.

## 2.3 PFAS Sampling at Webster Field

In October of 2016, two grab potable water samples were collected from community water supply wells, Wells 2 and 5, located at Buildings 8130 and Building 8195 at Webster Field (**Figure 2**). Samples were analyzed for six PFAS (PFOS, PFOA, PFBS, perfluorononanoic acid, perfluorohexane sulfonic acid, and perfluoroheptanoic acid). Analytical results indicated no detections of the PFAS constituents analyzed. The analysis report for this sampling event is included in **Appendix B**.

# Investigation Summary

As described in **Section 1**, the following activities were performed in support of this PFAS PA:

- Review of existing information to identify and characterize potential PFAS releases and to identify potential off-Base receptors.
- Interviews conducted with relevant site personnel to validate and verify data collected during the data review, and to provide supplemental information.
- Site reconnaissance of the facility to identify any evidence of PFAS releases and potential receptors and migration pathways; identify all areas of concern; and fill data gaps identified in the data review and interviews.

## 3.1 Archive Search Activities

Information was gathered and evaluated during the archive search to identify and characterize locations of potential PFAS use or disposal. The information was obtained from existing documents and interviews conducted with relevant individuals. A summary of information reviewed is provided as **Appendix C**. The following subsections specify document types were evaluated during the preliminary review.

### 3.1.1 Environmental Restoration Program Records

Environmental Restoration Program reports from the administrative record, other environmental liabilities database, and Environmental Data Resources, Inc. (EDR) reports (2016a, 2016b, 2016c) were searched for key terms to identify potential PFAS release areas and to obtain information on physical investigations and identification of potential pathways and receptors at those areas.

### 3.1.2 Internet Records

Internet search engines were utilized to find historical information on crashes, fires, use of AFFF, and spills at Webster Field. Search terms included; “Webster Field Annex,” “Webster Field fires,” Webster Field crash,” and “Fire-Fighting Foam, Webster Field.” There was no evidence of airplane crashes, fires, use of AFFF, or spills of materials that potentially contained PFAS at Webster Field during the internet search.

### 3.1.3 Maps and Aerial Photographs

Aerial photographs of Webster Field from 1938, 1952, 1957, 1964, 1985, 1993, 2003, 2007, 2013, and 2015 were reviewed to identify potential PFAS use, release, or disposal areas. There was no evidence of burning, firefighting, landfilling, or spills of materials that potentially contained PFAS noted in the aerial photographs. The aerial photographs are included as **Appendix D**.

## 3.2 Interviews

Interviews were conducted in September 2016 at NAS Patuxent River to gather pertinent information regarding the history and operations at Webster Field and potential PFAS storage, use, or release. Prior to the interviews, a questionnaire was sent to Fire Station 3 personnel with specific or anecdotal knowledge of AFFF usage, including but not limited to active and retired firefighters and fire chiefs, building and hangar representatives at structures with AFFF fire suppression systems, Fire Suppression/AFFF technicians, the Spill Response Manager, the Natural Resources Manager, and the Hazardous Waste Manager. After questionnaires were received and reviewed, interviews were conducted to validate and verify data collected during document and record reviews, and to identify other information related to PFAS not previously found in historical documents. Completed questionnaires are provided in **Appendix E**.



During the interviews, two areas of interest were identified as potential PFAS storage areas. The Fire Station 3-Building 8076 stores AFFF to administer in the case of a fuel fire at Webster Field. The AFFF Crash Truck Maintenance Check Area is where the fire department at Webster Field conducted monthly AFFF spray checks with the crash truck from Fire Station 3, Building 8076, approximately 100 feet to 150 feet from the “T” on the taxiway adjacent Runway 13-42 (Figure 4).

### 3.3 Summary of Areas Evaluated

A list of all the areas evaluated in this PFAS PA is presented in **Table 3-1**. This table also lists whether each area was determined to be a potential PFAS release area, along with the rationale for that determination. An evaluation of the potential PFAS release area is detailed in **Section 4**.

**Table 3-1. Areas Evaluated for Potential PFAS Releases**

Area	Potential PFAS Release Area (Yes/No)	Rational
<b>Fire-Training Areas</b>		
No current or former fire-training areas were identified at Webster Field	--	--
<b>Fire Stations</b>		
Fire Station 3 – Building 8076	Yes	Building holds approximately 310 gallons of 3 percent AFFF. The date of start of AFFF storage is not known. No known release of AFFF was identified. (Correspondence with retired firefighters Don Ervin and Bobby Johnson; interview with Michael Carroll [Appendix E]).
<b>AFFF Maintenance Checks</b>		
AFFF Crash Truck Maintenance Check Area	Yes	Monthly crash truck AFFF equipment check. The spray of AFFF would occur at the “T” of the taxiway approximately 100 to 150 feet right and left on the runway to ensure the equipment functioned and the foam set up correctly.  (Correspondence with Bobby Johnson, January 2017; emails from Heidi Morgan, NAVFAC, January 2017 [Appendix E]).
<b>Hangars</b>		
Flight line hangar for Fleet Composite Squadron 6 (VC-6) Pioneer unmanned aircraft systems	No	Two adjoining hangars covering 87,000 square feet with concrete apron surrounding it (Tetra Tech NUS, 2010). There is no AFFF system within the hangar.
<b>Plating Shop</b>		
No current or former chrome electroplating shops identified at Webster Field	No	--
<b>Storage Areas of PFAS Materials</b>		
No current or former storage areas containing PFAS materials identified at Webster Field	--	--
<b>Wastewater Treatment Plants</b>		
No current or former WWTP identified at Webster Field	--	--

Table 3-1. Areas Evaluated for Potential PFAS Releases

Area	Potential PFAS Release Area (Yes/No)	Rational
<b>ER Sites</b>		
Rubble Area 1 – Site 32	No	Formally referred to as Site 32, this site was the official disposal area for Webster Field from early 1960s to 1967. The area is known to contain garbage from mess halls, construction debris, vegetation matter, waste oils, concrete, brick, wood, one inert ordnance shape, and expended parachute illumination flares (CH2M, 2005). No record was found of this area containing PFAS materials and the dates of use predate widespread use of PFAS-containing AFFF.
Rubble Area 2 – Site 33	No	Formally referred to as Site 33. Very little is known about the history; the area is known to contain construction debris and concrete (CH2M, 2005). No record was found of this area containing PFAS materials.
<b>Paints</b>		
Paint Shop – Building 8229	No	PFAS are used in a wide range of consumer goods and may be found in paints. No formal records of paint releases were identified during document or interview review (Tetra Tech NUS, 2010). If there was a paint release incident, it was likely a small-volume spill and not enough to lead to groundwater impacts and there is no record of paint used in this building containing AFFF.
<b>Pesticides</b>		
No current or former pesticide storage areas identified at Webster Field	--	--
<b>Petroleum Oil, Lubricants</b>		
Aboveground storage tanks storing petroleum products	No	No evidence of AFFF storage was found.
<b>Crash Sites</b>		
Glider crash	No	Occurred in the 1970s. The use of AFFF on a glider crash is unlikely. (Correspondence between Heidi Morgan, NAVFAC and Mike Smolek [Appendix E]).
Sikorsky CH53E Super Stallion Helicopter crash	No	Occurred in 1978. No evidence of AFFF use. (Correspondence between Heidi Morgan, NAVFAC and Mike Smolek [Appendix E]).

Two sites with storage and potential release of AFFF at Webster Field were identified during the desktop document research: Fire Station 3 (Building 8076) and AFFF Crash Truck Maintenance Check Area.

# Preliminary Assessment Findings

This section summarizes the characteristics of the locations on Webster Field identified as potential PFAS release areas, describes the potential for PFAS to have been used or released at each area, and assesses the migration pathways and potential exposure that could result from a PFAS release. If no PFAS use or release was identified at an area, the potential migration pathways and exposures were considered incomplete and were not evaluated.

## 4.1 Potential Exposure Points and Routes

Through the historical use of materials containing PFAS, those substances may have been released to the environment. Because of their chemical structure, PFAS are chemically and biologically stable and resist typical degradation processes. As a result, PFAS persist in the environment. Additionally, PFAS are water-soluble and migrate readily from soil to groundwater where they can be transported long distances (USEPA, 2014). Various receptors could potentially be exposed to PFAS in the following media: groundwater, soil, air, sediment, and surface water.

### 4.1.1 Groundwater

In areas where groundwater is within the potential depth of construction activities, construction workers could be exposed to PFAS in groundwater through dermal contact with groundwater during excavation activities due to shallow groundwater in some portion of the facility. There are no regulatory screening levels or other criteria for dermal contact with PFAS in groundwater. Shallow groundwater is not used as a source of drinking water within or in the vicinity of Webster Field; however, if contaminants migrated into deep aquifers, potential consumers of drinking water could be exposed through ingestion.

### 4.1.2 Soil and Air

Residents, construction workers, maintenance/industrial workers, and trespassers could be exposed to PFAS in soil through incidental ingestion of, and dermal contact with, surface and subsurface soil or respiration of surface soil dust in the air. Terrestrial ecological receptors could be exposed to PFAS in soil through direct exposure with soil; however, there are currently no USEPA screening criteria available to evaluate ecological receptors.

### 4.1.3 Sediment

Residents and trespassers could be exposed to PFAS in sediment through incidental ingestion of, and dermal contact with, sediment. Terrestrial ecological receptors could be exposed to PFAS in sediment through direct exposure with sediment; however, there are currently no USEPA screening criteria available to evaluate ecological receptors.

### 4.1.4 Surface Water

Residents and trespassers could be exposed to PFAS in surface water through dermal contact with surface water and incidental ingestion. There are no screening levels or other criteria for dermal contact with surface water. Terrestrial and aquatic ecological receptors could be exposed to PFAS in surface water primarily through direct exposure to surface water; however, there are currently no USEPA screening criteria available to evaluate ecological receptors.

## 4.2 Potential PFAS Release Areas

The following areas were identified as a PFAS storage/release areas based on information gathered during the PA investigation.

## 4.2.1 Fire Station 3 (Building 8076)

### Description and Operational History

Fire Station 3, Building 8076, is located at the northwestern portion of Webster Field, approximately 200 feet east of St. Mary's River (**Figure 3**). Building 8076 was constructed in 1968, a one-story permanent structure, encompassing approximately 2,600 square feet. This building currently serves as a fire station. Representatives of Fire Station 3 stated AFFF was stored at Fire Station 3 (interview with Michael Carroll [**Appendix E**]). It is important to note that all fire training is conducted at NAS Patuxent River and not at Webster Field.

### Waste Characteristics

Webster Field Fire Station 3 stores approximately 310 gallons of 3M Light Water 3 percent AFFF, MIL-Spec F-24385F in the crash truck and the two separate tanks at Building 8076. Records regarding the date the AFFF was first stored at the facility or whether other AFFF formulations, besides 3M product, were ever stored were not found. Five-gallon buckets are used to fill the AFFF to the crash truck from the storage tanks. There is no record of where empty containers are disposed. Currently, only water is used when the crash truck is tested for spray patterns to make sure the equipment is working properly (interview with Michael Carroll [**Appendix E**]). The spray checks in the past were conducted daily at the Crash Truck Maintenance Check Area, as discussed in **Section 4.2.2**.

### Pathway and Environmental Hazard Assessment

The current and former firefighter representatives at Webster Field are not aware of any historical or current release of AFFF at Fire Station 3 (correspondence with retired firefighters Don Ervin and Bobby Johnson and interview with the current fire chief, Michael Carroll [**Appendix E**]). The only potential release of AFFF would be during transfer or refilling of AFFF to the crash truck. The potential for PFAS contamination in the various site media (shallow groundwater, surface water, soil, and air) is minimal.

### Groundwater Pathway and Targets

Groundwater in and around Webster Field can only be practically accessed by wells. This area is entirely paved, with minimal natural ground exposure. Landscaped areas surrounding Fire Station 3 consist of grasses, shrubs, and mulch. There is a parking lot to the east of the building. The pathway to groundwater could be exposed through cracks in the pavement, which may or may not have been present during the daily equipment checks. There are two active supply wells (Wells 2 and 5) within Webster Field (**Figure 2**). The nearest supply well to Fire Station 3 is Well 2, approximately 0.7-mile northeast of the site. The other supply well (Well 5) is approximately 0.9 mile south to southeast of the site; however, these wells are screened in deeper aquifers and testing data indicates no detections of PFAS constituents. The potential for PFAS contamination in shallow groundwater is minimal at this site.

### Surface Water Pathways and Targets

The closest water body to Fire Station 3 is St. Mary's River – approximately 200 feet to the northwest and 265 feet to the southwest. The closest pond to Fire Station 3 is approximately 490 feet to the northeast. Langley Pond is the largest pond at Webster Field, approximately 2,170 feet southeast of the fire station. Surface water runoff from Building 8076 would move toward the St. Mary's River. The Basewide and site maps (**Figures 2 and 3**) show a storm sewer discharge point adjacent to the building. The potential for PFAS contamination to surface water is minimal at the site.

### Soil and Air Pathways and Targets

This area is entirely paved, with minimal natural ground exposure. Landscaped areas surrounding Fire Station 3 consist of grasses, shrubs, and mulch. There is a parking lot to the east of the building. There is no evidence of a PFAS release at this site. However, if PFAS had been released to soil at Fire Station 3, the nature of the asphalt surface surrounding the building would limit infiltration to soil or air transport of dust from potential PFAS-impacted soil particles. The potential for PFAS contamination in soil is minimal at the site.

Because this site is a fire station, there are onsite workers at this site. There are no residential areas within a 1-mile radius downgradient of the fire station. The closest residences are located upgradient of the fire station in the St. Inigoes Shores Community adjacent to the facility entrance. Workers and trespassers present within a 1-mile radius of Fire Station 3 could potentially be exposed to AFFF through inhalation of AFFF during spraying and handling of AFFF. However, most PFAS are not volatile and there are no day care facilities, medical centers, nursing homes, schools, or hospitals within a 2-mile radius of Webster Field (EDR, 2016b).

## 4.2.2 AFFF Crash Truck Maintenance Check Area

### Description and Operational History

The AFFF Crash Truck Maintenance Check Area is where the fire department at Webster Field conducted monthly AFFF spray checks with the crash truck from Fire Station 3, Building 8076. This check area is approximately 100 feet to 150 feet from the “T” on the taxiway adjacent Runway 13-42 (**Figures 2 and 4**). These checks verify the equipment is functioning properly and the spray pattern of AFFF is setup correctly. The period over which equipment functioning testing with AFFF was conducted is unknown, but guidance for using NoFoam Kits in lieu of the AFFF spray checks has been available since the mid-2000s. The crash truck at Webster Field is currently tested monthly with water only at the Crash Truck Maintenance Check Area (interview with Michael Carroll [**Appendix E**]).

### Waste Characteristics

The AFFF Crash Truck is available to support the extinguishing of fires of any aircraft crashes. The crash truck carries a storage tank holding approximately 200 gallons of 3 percent AFFF solution. Three percent AFFF is stored at Fire Station 3 as a re-supply if needed. However, there is no record of AFFF having been used during aircraft crashes at Webster Field (**Appendix E**). The only use of AFFF in the past has been during the monthly spray checks in the Crash Truck Maintenance Check Area along the taxiway.

### Pathway and Environmental Hazard Assessment

#### Groundwater Pathway and Targets

Groundwater in and around Webster Field can only be practically accessed by wells. This area is entirely paved, with minimal natural ground exposure. The pathway to groundwater could be exposed through cracks in the pavement, which may or may not have been present during the monthly equipment checks. Cracks in the pavement and/or overland flow of AFFF during equipment checks to nearby unpaved areas may potentially have allowed some migration of AFFF to groundwater. There are two active supply wells within Webster Field (**Figure 2**). The nearest supply well to The AFFF Crash Truck Maintenance Check Area is approximately 0.5-mile northeast of the site. The other well is approximately 0.6 mile southeast of the site. The potential exists for shallow groundwater contamination from PFAS at the site because AFFF spray checks were conducted monthly over an extended period in the past. Drinking water wells are screened in the deeper aquifers and have been tested for PFAS; no detections of PFAS constituents were noted.

#### Surface Water Pathway and Targets

The Basewide and site maps show stormwater conveyances leading south from the AFFF Crash Truck Maintenance Check Area to Langley Hollow Pond, which is approximately 750 feet from the site (**Figures 2 and 4**). St. Mary’s River is approximately 785 feet west of the site. The potential exists for surface water contamination from PFAS at the site because AFFF spray checks were conducted monthly over an extended period of time in the past.

#### Soil and Air Pathways and Targets

This area is entirely paved, with minimal natural ground exposure. The pathway to soil could be exposed through cracks in the pavement, which may or may not have been present during the monthly equipment checks. Because the area is paved, soil contaminated with PFAS is minimal. Workers and trespassers could be exposed to AFFF

through inhalation of AFFF during handling of AFFF. Because it is possible to be exposed to be AFFF during handling of AFFF, there is potential for inhalation exposure to PFAS; however, most PFAS are not volatile.

Because this site is a taxiway adjacent to a runway, there are onsite workers but no residents at this site. There are no residential areas within a 1-mile radius downgradient of the AFFF Crash Truck Maintenance Check Area. The closest residences are located upgradient of the fire station in the St. Inigoes Shores Community adjacent to the facility entrance. There are no day care facilities, medical centers, nursing homes, schools, or hospitals within a 2-mile radius of Webster Field (EDR, 2016b).

## Conclusions and Recommendations

This PFAS PA report evaluated areas for potential PFAS releases. Based on the gathered information on the storage, use, and potential release of AFFF at Webster Field, two sites with storage and potential release of AFFF at Webster Field were identified: Fire Station 3 (Building 8076) and AFFF Crash Truck Maintenance Check Area.

Fire Station 3 stores approximately 310 gallons of 3 percent AFFF solution in the crash truck and the two separate tanks at Building 8076. Currently, spray checks are conducted daily with water, and spray checks were performed in the past at the Crash Truck Maintenance Check Area. There is a potential of AFFF being released at Fire Station 3 from possible spills during transfer or refilling of AFFF to the crash truck. Therefore, additional investigation is recommended for Fire Station 3 through a SI.

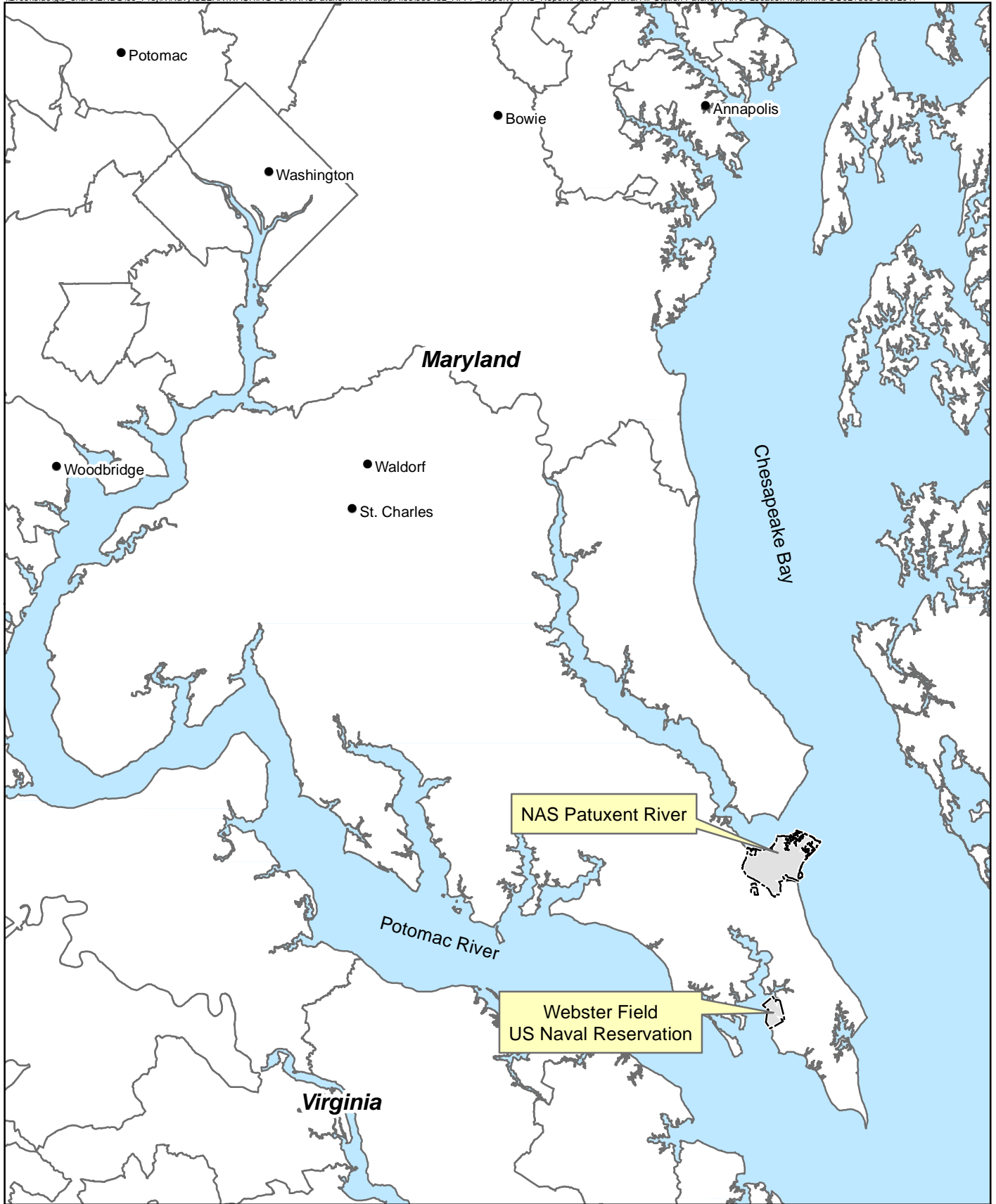
At the AFFF Crash Truck Maintenance Check Area, the crash truck from Fire Station 3 performed monthly AFFF spray checks along the taxiway. Although the area is entirely paved, the pathway to groundwater and soil could be exposed through AFFF runoff and cracks in the pavement. Because an exposure pathway from a release to environmental media and from environmental media to potential receptors exists, the AFFF Crash Truck Maintenance Check Area is recommended for additional investigation through a SI.

# References

- CH2M HILL, Inc. (CH2M). 2005. *Draft Site Inspection Report for Rubble Area 1 and Rubble Area 2, Webster Field Annex, Naval Air Station Patuxent River, St. Mary's County, Maryland*.
- CH2M. 2012. *Expanded Preliminary Assessment Former Aerial Bombing Range, Webster Field Annex, St. Inigoes, Maryland Technical Memorandum*. July.
- Coletta, Paolo E. 1985. *United States Navy and Marine Corps Bases, Domestic*. Westport, Connecticut: Greenwood Press, 1985. Print.
- Commander, Navy Installations Command (CNIC). 2012. Webster Field Annex. <http://www.cnic.navy.mil/Patuxent/About/TenantCommands/WebsterField>. Accessed February 24, 2012.
- Department of Defense (DoD). 2018. *Alternatives to Aqueous Film Forming Foam Report to Congress*. Under Secretary of Defense for Acquisition and Sustainment. June.
- Department of the Navy (Navy). 2016. *Perfluorinated Compounds/Perfluoroalkyl Substances (PFC/PFAS) – Identification of Potential Areas of Concern (AOCs)*. June.
- Navy. 2017. *Interim Per- and Polyfluoroalkyl Substances (PFAS) Site Guidance for NAVFAC Remedial Project Manages (RPMS)/September 2017 Update*. 5090 Ser EV/006. September.
- Environmental Data Resources, Inc. (EDR). 2016a. *EDR NEPA Check – Webster Saint Inigoes, MD 20684. Inquiry Number: 4770212.2s*. November.
- EDR. 2016b. *EDR Offsite Receptor Report - Webster Saint Inigoes, MD 20684. Inquiry Number: 4770212.3s*. November.
- EDR. 2016c. *EDR GeoCheck Report- Webster Saint Inigoes, MD 20864. Inquiry Number 4770212.1s*. November.
- Global Security.org. 2011. Webster Field Annex. <https://www.globalsecurity.org/military/facility/webster-field.htm>. Page last modified: 05-07-2011. Accessed February 24, 2012.
- Fred C. Hart Associates, Inc. 1984. Initial Assessment Study, Naval Air Station, Patuxent River, Maryland.
- Maryland Department of Natural Resources. 2018. *List of Rare, Threatened, and Endangered Species of St. Mary's County*. February. ([http://dnr.maryland.gov/wildlife/Documents/StMarys\\_County\\_RTEs.pdf](http://dnr.maryland.gov/wildlife/Documents/StMarys_County_RTEs.pdf))
- Tetra Tech NUS, Inc., 2010. *Draft Preliminary Assessment for Munitions Response Program, Webster Field Annex, Saint Inigoes, Maryland*. September.
- St. Mary's County, Maryland. 2018. *GIS* <http://www.co.saint-marys.md.us/GIS/>. October.
- United States Coast Guard (USCG). 2012. Coast Guard Station St. Inigoes. <http://www.uscg.mil/d5/stastinigoes/>. Accessed May 2, 2012.
- United States Environmental Protection Agency (USEPA). 1991. *Guidance for Performing Preliminary Assessments under CERCLA*.
- USEPA. 2014. *Emerging Contaminants – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)*. EPA 505-F-14-001. March.
- USEPA. 2016. *Fact Sheet: PFOA and PFOS Drinking Water Health Advisories*. EPA 800-F-16-003. November.



Figures



**Legend**

- Cities
- Installation Boundary

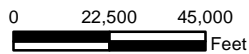


Figure 1  
Location Map  
Preliminary Assessment for PFAS  
NAS Patuxent River Webster Field Annex  
St. Mary's County, Maryland



- Legend**
- Supply Well
  - Building
  - AFFF Crash Truck Maintenance Check Area
  - Nearest Residential Homes with Private Wells
  - Installation Boundary
  - Storm Sewer Discharge Point
  - Catch Basin
  - Storm Sewer Manhole
  - Storm Sewer Valve Point
  - ~ Storm Sewer Culvert
  - ~ Storm Sewer Headwall
  - ~ Storm Sewer Line
  - ~ Storm Sewer Open Drainage Ditch

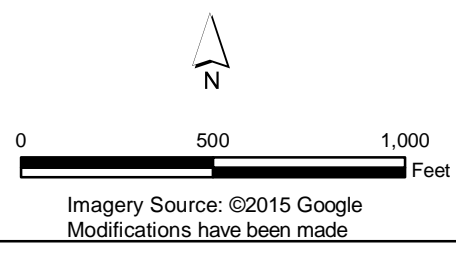




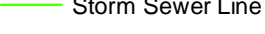
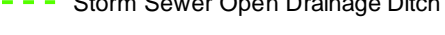
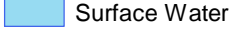

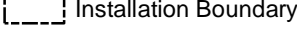


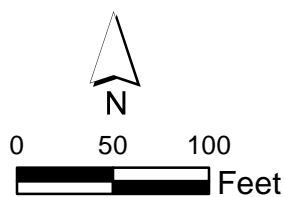
Figure 2  
Potential Source Area for PFAS  
NAS Patuxent River Webster Field Annex  
St. Inigoes, Maryland





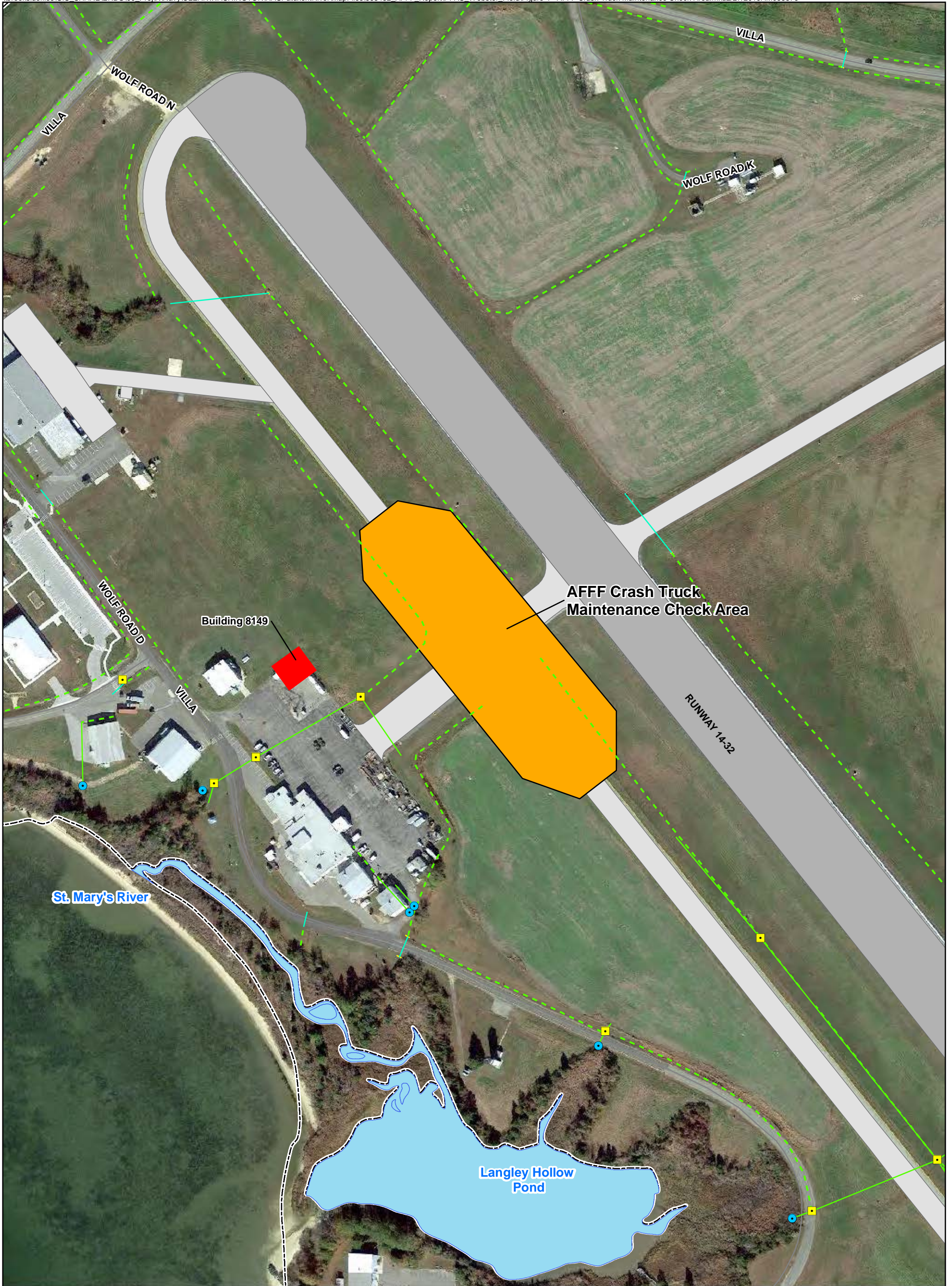
**Legend**

-  Storm Sewer Discharge Point
-  Catch Basin
-  Storm Sewer Culvert
-  Storm Sewer Headwall
-  Storm Sewer Line
-  Storm Sewer Open Drainage Ditch
-  Surface Water
-  Building
-  Installation Boundary



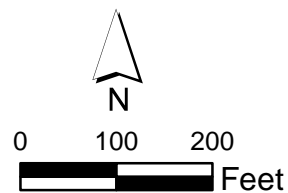
Imagery Source: ©2015 Google  
Modifications have been made

Figure 3  
Fire Station, Building 8076  
NAS Patuxent River Webster Field Annex  
St. Inigoes, Maryland



**Legend**

- Storm Sewer Discharge Point
- Catch Basin
- Storm Sewer Culvert
- Storm Sewer Headwall
- Storm Sewer Line
- - - Storm Sewer Open Drainage Ditch
- Building
- AFFF Crash Truck Maintenance Check Area
- Surface Water
- Taxiway
- Runway
- Installation Boundary



Imagery Source: ©2015 Google  
Modifications have been made

Figure 4  
AFFF Crash Truck Maintenance Check Area  
NAS Patuxent River Webster Field Annex  
St. Iniges, Maryland

Appendix A  
List of Rare, Threatened, and  
Endangered Species of St. Mary's County

# List of Rare, Threatened, and Endangered Species of St. Mary's County

February 2018



Maryland Wildlife and Heritage Service  
Natural Heritage Program



Larry Hogan, Governor  
Mark Belton, Secretary

## **Wildlife & Heritage Service**

Natural Heritage Program  
Tawes State Office Building, E-1  
580 Taylor Avenue  
Annapolis, MD 21401  
410-260-8540  
Fax 410-260-8596  
[dnr.maryland.gov/wildlife](http://dnr.maryland.gov/wildlife)

Additional Telephone Contact Information:  
Toll free in Maryland: 877-620-8DNR ext. 8540 OR  
Individual unit/program toll-free number  
Out of state call: 410-260-8540  
Text Telephone (TTY) users call via the Maryland Relay

*The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin or physical or mental disability. This document is available in alternative format upon request from a qualified individual with disability.*

## ACKNOWLEDGMENTS

The Maryland Department of Natural Resources would like to express sincere appreciation to the many scientists and naturalists who willingly share information and provide their expertise to further our mission of conserving Maryland's natural heritage.

Publication of this list is made possible by taxpayer donations to Maryland's Chesapeake Bay and Endangered Species Fund.

## IMPORTANT NOTES

This list is a subset of the main reports:

[Maryland Natural Heritage Program. 2016. List of Rare, Threatened, and Endangered Plants of](#)

[Maryland](#) DNR 03-010418-42 and

[Maryland Natural Heritage Program. 2016. Rare, Threatened, and Endangered Plants of Maryland](#)

DNR 03-010418-43 and

[Maryland Natural Heritage Program. 2016. List of Rare, Threatened, and Endangered Animals of](#)

[Maryland](#) DNR 03-1272016-633

**Please refer to these for important information including history, purpose, governing laws and regulations, understanding state and federal conservation status ranks and legal statuses, and for additional resources.**

This list is derived from an extensive data collection effort and numerous field surveys to determine distribution and abundance of plants and animals native to Maryland. Although based on a large volume of information, this list should not be viewed as complete or definitive. While much is known about some species, very little is known about others. The Maryland Natural Heritage Program welcomes additional information or recommendations regarding any of the taxa listed herein.

## HOW YOU CAN HELP

You can take an active part in conserving Maryland's rare species by contacting the Wildlife and Heritage Service with the following types of information:

1. Location details should be included (exact mapped location using GPS is preferred, but not required). Online applications such as Google Earth are invaluable but precise, written directions including driving and walking are acceptable.
2. Documentation that includes a photograph, description of the species, identification source, and habitat description should accompany the report.
3. Information on the ecology and or biology of the species including observed and/or identified pollinators should accompany the report.

\*\*Additional information, including a downloadable PDF of our rare plant reporting form can be found at: [dnr.maryland.gov/wildlife/Pages/plants\\_wildlife/rte\\_reportinginst.aspx](http://dnr.maryland.gov/wildlife/Pages/plants_wildlife/rte_reportinginst.aspx)

Definitions of qualifiers used in the county distribution of species.

Distributional Qualifier	Definition
{species} <sup>?</sup>	Record for the county is reported but unverified or may indicate that the record occurs outside of the known range or in atypical habitat.
{species} <sup>h</sup>	Record for the county is based upon a historical collection but no extant population is known.
{species} <sup>I</sup>	Record for the county is the result of an introduction.



SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	STATE STATUS	FEDERAL STATUS
<b>Animals</b>					
<i>Alasmidonta heterodon</i>	Dwarf Wedge Mussel	G1G2	S1	E	LE
<i>Caecidotea sp. 1</i>	An Isopod	G1	S1		
<i>Centrarchus macropterus</i>	Flier	G5	S1S2	T	
<i>Cicindela dorsalis dorsalis</i>	Northeastern Beach Tiger Beetle	G3G4T2	S1	E	LT
<i>Circus cyaneus</i>	Northern Harrier	G5	S2B	I	
<i>Cistothorus platensis</i>	Sedge Wren	G5	S1B	E	
<i>Cordulegaster obliqua</i>	Arrowhead Spiketail	G4	S2		
<i>Fundulus luciae</i>	Spotfin Killifish	G4	S2?		
<i>Gastrophryne carolinensis</i>	Eastern Narrow-mouthed Toad	G5	S1S2	E	
<i>Gomphus rogersi</i>	Sable Clubtail	G4	S2	I	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3S4		
<i>Hermeuptychia sosybius</i>	Carolina Satyr	G5	S1S3		
<i>Lucanus elaphus</i>	Giant Stag Beetle	G3G5	SU		
<i>Sternula antillarum</i>	Least Tern	G4	S2B	T	
<i>Stygobromus indentatus</i>	Tidewater Amphipod	G3	S1		
<i>Tachopteryx thoreyi</i>	Gray Petaltail	G4	S3		
<b>Plants</b>					
<i>Ammannia latifolia</i> <sup>h</sup>	Koehne Ammannia	G5	S2		
<i>Arnica acaulis</i> <sup>h</sup>	Leopard's-bane	G4	S1	E	
<i>Aronia x prunifolia</i>	Purple Chokeberry	GNA	S3		
<i>Asclepias verticillata</i> <sup>h</sup>	Whorled Milkweed	G5	S3		
<i>Atriplex mucronata</i> <sup>h</sup>	Seabeach Orach	G5	S1S2		
<i>Bartonia paniculata</i>	Twining Screwstem	G5	S3		
<i>Carex bullata</i>	Button Sedge	G5	S3		
<i>Carex buxbaumii</i>	Buxbaum's Sedge	G5	S2	T	
<i>Carex louisianica</i>	Louisiana Sedge	G5	S3		
<i>Carex oxylepis</i>	Sharpscale Sedge	G5?	S1		
<i>Carex pellita</i>	Wooly Sedge	G5	S2?		
<i>Carex striatula</i>	Lined Sedge	G4G5	S3		
<i>Carex venusta</i>	Dark Green Sedge	G4	S3S4		
<i>Castanea dentata</i>	American Chestnut	G4	S2S3		
<i>Centrosema virginianum</i>	Coastal Butterfly Pea	G5	S2		
<i>Chelone obliqua</i>	Red Turtlehead	G4	S2	T	
<i>Chimaphila umbellata</i>	Common Wintergreen	G5	S3		
<i>Cuscuta coryli</i> <sup>h</sup>	Hazel Dodder	G5?	S1	X	
<i>Cuscuta indecora</i> <sup>h</sup>	Bigseed Dodder	G5	S2?		
<i>Dichanthelium ravenelii</i> <sup>h</sup>	Ravenel's Witchgrass	G5	SH		
<i>Drosera capillaris</i> <sup>h</sup>	Pink Sundew	G5	S1	E	
<i>Eleocharis albida</i> <sup>h</sup>	White Spikerush	G4G5	S2S3		
<i>Eleocharis engelmannii</i>	Engelmann's Spikerush	G4G5	S3		
<i>Eleocharis tortilis</i>	Twisted Spikerush	G5	S3		

SCIENTIFIC NAME	COMMON NAME	GLOBAL RANK	STATE RANK	STATE STATUS	FEDERAL STATUS
<i>Elephantopus tomentosus</i>	Tobaccoweed	G5	S1	E	
<i>Fimbristylis annua</i> ?	Annual Fimbry	G5	S3		
<i>Fimbristylis puberula</i> h	Hairy Fimbristylis	G5	SU		
<i>Galactia volubilis</i>	Downy Milkpea	G5	S3		
<i>Gonolobus suberosus</i> var. <i>suberosus</i>	Angular-fruit Milkvine	G5	S2		
<i>Gratiola viscidula</i>	Short's Hedge-hyssop	G4G5	S1	E	
<i>Hylodesmum pauciflorum</i> h	Few-flowered Tick-trefoil	G5	S2	E	
<i>Hypericum gymnanthum</i> h	Clasping-leaf St. John's-wort	G4	S3		
<i>Ilex decidua</i>	Deciduous Holly	G5	S2		
<i>Iris prismatica</i>	Slender Blueflag	G4G5	S2	E	
<i>Juncus elliotii</i>	Elliott's Rush	G4G5	S1		
<i>Krigia dandelion</i>	Potato Dwarf-dandelion	G5	S2S3		
<i>Lechea maritima</i> h	Virginian Beach Pinweed	G5	S3		
<i>Linum intercursum</i>	Sandplain Flax	G4	S2	T	
<i>Liparis liliifolia</i> h	Large Twayblade	G5	S2S3		
<i>Listera australis</i>	Southern Twayblade	G4	S3		
<i>Malaxis unifolia</i>	Green Adder's-mouth Orchid	G5	S1S3		
<i>Myosotis macrosperma</i>	Large-seed Forget-me-not	G5	S3S4		
<i>Orbexilum psoralioides</i> ?	False Scurfpea	G5T4?	SX		
<i>Panicum philadelphicum</i> h	Philadelphia Panicgrass	G5	SU		
<i>Pilea fontana</i> h	Springs Clearweed	G5	S3		
<i>Platanthera cristata</i>	Crested Yellow Orchid	G5	S3		
<i>Polygala incarnata</i> h	Pink Milkwort	G5	S2S3		
<i>Polygonum glaucum</i>	Seabeach Knotweed	G3	S1	E	
<i>Polygonum ramosissimum</i> h	Bushy Knotweed	G5	SH	X	
<i>Potamogeton perfoliatus</i>	Claspingleaf Pondweed	G5	S3		
<i>Prunus maritima</i>	Beach Plum	G4	S1	E	
<i>Rhynchospora glomerata</i>	Clustered Beakrush	G5	S3		
<i>Sarracenia purpurea</i> l	Northern Pitcherplant	G5	S2	T	
<i>Sceptridium oneidense</i> h	Blunt-lobe Grapefern	G4	S1	E	
<i>Scleria triglomerata</i>	Whip Nutrush	G5	S3		
<i>Smilax pseudochina</i>	Long-stalk Greenbrier	G4G5	S2	T	
<i>Symphotrichum concolor</i> h	Eastern Silvery Aster	G5	S1	E	
<i>Thysanthea difformis</i>	Climbing Dogbane	G4G5	S1	E	
<i>Torreyochloa pallida</i> var. <i>pallida</i>	Pale Mannagrass	G5	S3		
<i>Typha domingensis</i>	Southern Cattail	G4G5	S3		
<i>Utricularia inflata</i>	Swollen Bladderwort	G5	S2	E	
<i>Utricularia subulata</i>	Zigzag Bladderwort	G5	S3		

Appendix B

Webster Analysis Report – Potable Water

## ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental  
2425 New Holland Pike  
Lancaster, PA 17601

Prepared for:

Inspection Experts, Inc.  
9220 Rumsey Road  
Bay #5  
Columbia MD 21045

Report Date: December 21, 2016

### Project: NAVFAC - Pax River Sampling

Submittal Date: 10/07/2016

Group Number: 1718862

PO Number: 15-0011-219

State of Sample Origin: MD

#### Client Sample Description

Soloman-6041 Grab Potable Water  
Webster Field-8130 Grab Potable Water  
Webster Field-8195 Grab Potable Water

Lancaster Labs

(LL) #

8635204

8635206

8635208

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To Inspection Experts Inc.

Attn: Kosala De Silva

Respectfully Submitted,



Stacy L. Hess  
Project Manager

(717) 556-7236

Sample Description: Soloman-6041 Grab Potable Water  
NAVFAC-Pax River Sampling

LL Sample # PW 8635204  
LL Group # 1718862  
Account # 38771

Project Name: NAVFAC - Pax River Sampling

Collected: 10/06/2016 07:50 by GK

Inspection Experts, Inc.  
9220 Rumsey Road  
Bay #5  
Columbia MD 21045

Submitted: 10/07/2016 18:45

Reported: 12/21/2016 14:11

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>Misc. Organics</b>		<b>EPA 537 Rev. 1.1 modified</b>	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	N.D.	1	2	1
10954	Perfluorononanoic acid	375-95-1	N.D.	1	2	1
10954	Perfluoroheptanoic acid	375-85-9	N.D.	1	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.	4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	5	10	1

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

### Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16291011	10/22/2016 01:09	Jason W Knight	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16291011	10/18/2016 19:00	Devon M Whooley	1

\*=This limit was used in the evaluation of the final result

Sample Description: Webster Field-8130 Grab Potable Water  
NAVFAC-Pax River Sampling

LL Sample # PW 8635206  
LL Group # 1718862  
Account # 38771

Project Name: NAVFAC - Pax River Sampling

Collected: 10/06/2016 08:50 by GK

Inspection Experts, Inc.  
9220 Rumsey Road  
Bay #5  
Columbia MD 21045

Submitted: 10/07/2016 18:45

Reported: 12/21/2016 14:11

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>Misc. Organics</b>		<b>EPA 537 Rev. 1.1 modified</b>	<b>ng/l</b>	<b>ng/l</b>	<b>ng/l</b>	
10954	Perfluorooctanoic acid	335-67-1	N.D.	1	2	1
10954	Perfluorononanoic acid	375-95-1	N.D.	1	2	1
10954	Perfluoroheptanoic acid	375-85-9	N.D.	1	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.	4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	5	10	1

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

### Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16291011	10/22/2016 01:42	Jason W Knight	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16291011	10/18/2016 19:00	Devon M Whooley	1

\*=This limit was used in the evaluation of the final result

Sample Description: Webster Field-8195 Grab Potable Water  
NAVFAC-Pax River Sampling

LL Sample # PW 8635208  
LL Group # 1718862  
Account # 38771

Project Name: NAVFAC - Pax River Sampling

Collected: 10/06/2016 09:12 by GK

Inspection Experts, Inc.  
9220 Rumsey Road  
Bay #5  
Columbia MD 21045

Submitted: 10/07/2016 18:45

Reported: 12/21/2016 14:11

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
<b>Misc. Organics</b>		<b>EPA 537 Rev. 1.1 modified</b>	ng/l	ng/l	ng/l	
10954	Perfluorooctanoic acid	335-67-1	N.D.	1	2	1
10954	Perfluorononanoic acid	375-95-1	N.D.	1	2	1
10954	Perfluoroheptanoic acid	375-85-9	N.D.	1	2	1
10954	Perfluorobutanesulfonate	375-73-5	N.D.	4	10	1
10954	Perfluorohexanesulfonate	355-46-4	N.D.	4	10	1
10954	Perfluoro-octanesulfonate	1763-23-1	N.D.	5	10	1

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

### Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10954	PFAAs in Water by LC/MS/MS	EPA 537 Rev. 1.1 modified	1	16291011	10/22/2016 01:58	Jason W Knight	1
14091	PFAA Water Prep	EPA 537 Rev. 1.1 modified	1	16291011	10/18/2016 19:00	Devon M Whooley	1

\*=This limit was used in the evaluation of the final result

## Quality Control Summary

Client Name: Inspection Experts, Inc.  
Reported: 12/21/2016 14:11

Group Number: 1718862

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### Method Blank

Analysis Name	Result	MDL**	LOQ
	ng/l	ng/l	ng/l
Batch number: 16291011	Sample number(s): 8635204,8635206,8635208		
Perfluorooctanoic acid	N.D.	1	2
Perfluorononanoic acid	N.D.	1	2
Perfluoroheptanoic acid	N.D.	1	2
Perfluorobutanesulfonate	N.D.	4	10
Perfluorohexanesulfonate	N.D.	4	10
Perfluoro-octanesulfonate	N.D.	5	10

### LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ng/l	ng/l	ng/l	ng/l					
Batch number: 16291011	Sample number(s): 8635204,8635206,8635208								
Perfluorooctanoic acid	200	167.38	200	149.06	84	75	70-130	12	30
Perfluorononanoic acid	200	148.47	200	141.11	74	71	70-130	5	30
Perfluoroheptanoic acid	200	164.76	200	136.34	82	68*	70-130	19	30
Perfluorobutanesulfonate	177	145.6	177	140.39	82	79	70-130	4	30
Perfluorohexanesulfonate	189	166.34	189	158.46	88	84	70-130	5	30
Perfluoro-octanesulfonate	191	159.48	191	158.25	83	83	70-130	1	30

### MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ng/l	ng/l	ng/l	ng/l	ng/l					
Batch number: 16291011	Sample number(s): 8635204,8635206,8635208 UNSPK: 8635204									
Perfluorooctanoic acid	N.D.	199.52	153.25			77		70-130		
Perfluorononanoic acid	N.D.	199.52	137.65			69*		70-130		
Perfluoroheptanoic acid	N.D.	199.52	139.65			70		70-130		
Perfluorobutanesulfonate	N.D.	176.58	154.33			87		70-130		
Perfluorohexanesulfonate	N.D.	188.55	165.41			88		70-130		

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.



## Quality Control Summary

Client Name: Inspection Experts, Inc.  
Reported: 12/21/2016 14:11

Group Number: 1718862

### MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ng/l	MS Spike Added ng/l	MS Conc ng/l	MSD Spike Added ng/l	MSD Conc ng/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Perfluoro-octanesulfonate	N.D.	190.54	159.18			84		70-130		

\*- Outside of specification

\*\* - This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P##### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

# Environmental Analysis Request/Chain of Custody



Lancaster Laboratories  
Environmental

Acct. # 38771 Group # 1718862 Sample # 8635203-08

Client: <b>Inspection Experts Inc.</b>				<b>Matrix</b>			<b>Analyses Requested</b>										<b>For Lab Use Only</b>				
Project Name/#: NAVFAC - Pax River Sampling		Site ID #:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Preservation Codes</b>										SF #:				
Project Manager: Kosala De Silva		P.O. #: 15-0011-219		Soil <input type="checkbox"/> Sediment <input type="checkbox"/> Tissue <input type="checkbox"/>	Potable <input type="checkbox"/> Ground <input type="checkbox"/> Surface <input type="checkbox"/>	Water <input type="checkbox"/> NPDES <input type="checkbox"/>	Other: _____	Total # of Containers	PFOS/PFOA (EPA 537)											SCR #: _____	
Sampler: Gayan Kularatne		PWSID #:																		<b>Preservation Codes</b> H = HCl      T = Thiosulfate N = HNO <sub>3</sub> B = NaOH S = H <sub>2</sub> SO <sub>4</sub> P = H <sub>3</sub> PO <sub>4</sub> O = Other	
Phone #: 410-715-3939		Quote #:																			
State where samples were collected: _____		For Compliance: Yes <input type="checkbox"/> No <input type="checkbox"/>																			
Sample Identification			Collection		Grab	Composite											Remarks				
			Date	Time																	
Soloman - 6041 - FB			10/06	0746	X												Field Reagent Blank to be				
Soloman - 6041			10/06	0750	X												analyzed only with confirmed				
Webster field - 8130 - FB			10/06	0845	X												positive result of respective				
Webster Field - 8130			10/06	0850	X												sample				
webster field - 8195 - FB			10/06	0908	X																
webster Field - 8195			10/06	0912	X																
Turnaround Time Requested (TAT) (please check): Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/>				Relinquished by: _____			Date	Time	Received by: _____			Date	Time								
(Rush TAT is subject to laboratory approval and surcharges.)				Date results are needed: _____			10/06/16		10/6/16			12:00									
Rush results requested by (please check): E-Mail <input checked="" type="checkbox"/> Phone <input type="checkbox"/>				Relinquished by: _____			Date	Time	Received by: _____			Date	Time								
E-mail Address: kosala@ieinc.net				Relinquished by: _____			10/7/16		10-7-16			10:35									
Phone: _____				Relinquished by: _____			Date	Time	Received by: _____			Date	Time								
				Relinquished by: _____			10-7-16	21:00													
<b>Data Package Options</b> (please check if required)				Relinquished by: _____			Date	Time	Received by: _____			Date	Time								
Type I (Validation/non-CLP)	<input type="checkbox"/>	MA MCP	<input type="checkbox"/>	Relinquished by: _____			Date	Time	Received by: _____			Date	Time								
Type III (Reduced non-CLP)	<input type="checkbox"/>	CT RCP	<input type="checkbox"/>	Relinquished by: _____			Date	Time	Received by: _____			Date	Time								
Type VI (Raw Data Only)	<input type="checkbox"/>	TX TRRP-13	<input type="checkbox"/>	Relinquished by: _____			Date	Time	Received by: _____			Date	Time								
NJ DKQP	<input type="checkbox"/>	NYSDEC Category	<input type="checkbox"/> A or <input type="checkbox"/> B	Relinquished by Commercial Carrier: _____			Date	Time	Received by: _____			Date	Time								
EDD Required? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, format: _____				UPS _____ FedEx _____ Other _____			Temperature upon receipt			1.3°C			10/12/16 °C (3)								

Client: Inspection Experts Inc.

**Delivery and Receipt Information**

Delivery Method: ELLE Courier      Arrival Timestamp: 10/07/2016 18:48  
 Number of Packages: 1      Number of Projects: 1

**Arrival Condition Summary**

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	0
Paperwork Enclosed:	Yes	Air Quality Samples Present:	No
Samples Intact:	Yes		
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

*Unpacked by Cathy Murphy (10960) at 22:55 on 10/07/2016*

**Samples Chilled Details**

Thermometer Types:    *DT = Digital (Temp. Bottle)*    *IR = Infrared (Surface Temp)*    *All Temperatures in °C.*

<u>Cooler #</u>	<u>Thermometer ID</u>	<u>Corrected Temp</u>	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	DT121	1.3	DT	Wet	Y	Bagged	N

# Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

<b>BMQL</b>	Below Minimum Quantitation Level	<b>mg</b>	milligram(s)
<b>C</b>	degrees Celsius	<b>mL</b>	milliliter(s)
<b>cfu</b>	colony forming units	<b>MPN</b>	Most Probable Number
<b>CP Units</b>	cobalt-chloroplatinate units	<b>N.D.</b>	none detected
<b>F</b>	degrees Fahrenheit	<b>ng</b>	nanogram(s)
<b>g</b>	gram(s)	<b>NTU</b>	nephelometric turbidity units
<b>IU</b>	International Units	<b>pg/L</b>	picogram/liter
<b>kg</b>	kilogram(s)	<b>RL</b>	Reporting Limit
<b>L</b>	liter(s)	<b>TNTC</b>	Too Numerous To Count
<b>lb.</b>	pound(s)	<b>µg</b>	microgram(s)
<b>m3</b>	cubic meter(s)	<b>µL</b>	microliter(s)
<b>meq</b>	milliequivalents	<b>umhos/cm</b>	micromhos/cm
<b>&lt;</b>	less than		
<b>&gt;</b>	greater than		
<b>ppm</b>	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.		
<b>ppb</b>	parts per billion		
<b>Dry weight basis</b>	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.		

## Laboratory Data Qualifiers:

- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value  $\geq$  the Method Detection Limit (MDL or DL) and  $<$  the Limit of Quantitation (LOQ or RL)
- P - Concentration difference between the primary and confirmation column  $>40\%$ . The lower result is reported.
- U - Analyte was not detected at the value indicated
- V - Concentration difference between the primary and confirmation column  $>100\%$ . The reporting limit is raised due to this disparity and evident interference...
- W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

**Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Appendix C  
Summary of Records Reviewed

**Appendix C**

Summary of Records Reviewed

Webster Field Annex, St. Inigoes, Maryland

Date	Title	Author Affiliation
<b>Environmental Restoration Program Record Research</b>		
September 2010	Draft Preliminary Assessment for Munitions Response Program Webster Field Annex, Saint Inigoes, Maryland.	Tetra Tech NUS, Inc.
July 2012	Technical Memorandum- Expanded Preliminary Assessment - Former Aerial Bombing Range -Webster Field Annex, St. Inigoes, Maryland.	CH2M HILL
May 2012	Geophysical System Verification Results, Former Aerial Bombing Range	CH2M HILL
February 2012	Surface Geophysical Investigation Plan, Former Aerial Bombing Range - Webster Field Annex, St. Inigoes, Maryland.	CH2M HILL
October 2012	Draft Site Inspection Report- UXO 0001 Former Aerial Bombing Range, Webster Field Annex, St. Inigoes, Maryland.	CH2M HILL
November 2005	Draft Site Inspection Report for Rubble Area 1 and Rubble Area 2, Webster Field Annex, Naval Air Station Patuxent River, St. Mary's County, Maryland.	CH2M HILL
February 2003	Webster Field Annex, NAS Patuxent River, Site Visit TM	CH2M HILL
2018 - search	Other Environmental Liabilities database search - Building 8008 (Technical Services Lab)	OEL search
2018- search	Other Environmental Liabilities database search - Building 8076 (Fire Station 3)	
November 2016	EDR NEPA Check	
	EDR Offsite Receptor Report	Environmental Data Research, Inc.
	EDR GeoCheck Report	
2002 through 2016	NAS Patuxent River Complex Spill History (September 2002 - July 2016)	Naval Air Station Patuxent River
<b>Internet Records</b>		
October 2016	UCMR3. <a href="https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule">https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule</a>	USEPA
February 2018	List of Rare, Threatened, and Endangered Species of St. Mary's County.	Maryland Department of Natural Resources
October 2018	<a href="http://dnr.maryland.gov/wildlife/Documents/StMarys_County_RTEs.pdf">http://dnr.maryland.gov/wildlife/Documents/StMarys_County_RTEs.pdf</a>	St. Mary's County, Maryland
October 2018	<a href="http://www.co.saint-marys.md.us/GIS/">St. Mary's County, Maryland- GIS: http://www.co.saint-marys.md.us/GIS/</a>	National Archives Catalog
October 2018	<a href="https://catalog.archives.gov/">https://catalog.archives.gov/</a>	Aviation Safety Network
October 2018	<a href="https://aviation-safety.net/database/databases.php">https://aviation-safety.net/database/databases.php</a> (ASN Accident Databse and Wikibase)	Bureau of Aircraft Accidents Archives
October 2018	<a href="http://www.baaa-acro.com/">http://www.baaa-acro.com/</a>	The Lexington Park Leader
October 2018	<a href="https://lexleader.net/fire-scout-hard-landing-at-webster-field-investigatedfield/">The Lexington Park Leader online news source: https://lexleader.net/fire-scout-hard-landing-at-webster-field-investigatedfield/</a>	The Enterprise
October 2018	<a href="http://www.somdnews.com/enterprise/">Southern Maryland Online: http://www.somdnews.com/enterprise/</a>	County Times, St. Mary's County, Calvert County
October 2018	<a href="https://countytimes.somd.com/">County Times: https://countytimes.somd.com/</a>	Capital Gazette
October 2018	<a href="http://www.capitalgazette.com/">Capital Gazette: http://www.capitalgazette.com/</a>	
<b>Maps and Aerial Photographs</b>		
1938- 1985	Aerial Photographs - 1938, 1952, 1957, 1964, 1985	Naval Air Station Patuxent River
1993- 2015	Aerial Photographs - 1993, 2003, 2007, 2013, 2015	Google Maps

Appendix D  
Aerial Photographs



Figure 1  
Webster Field  
1938 Imagery







Figure 1  
Webster Field  
1952 Imagery



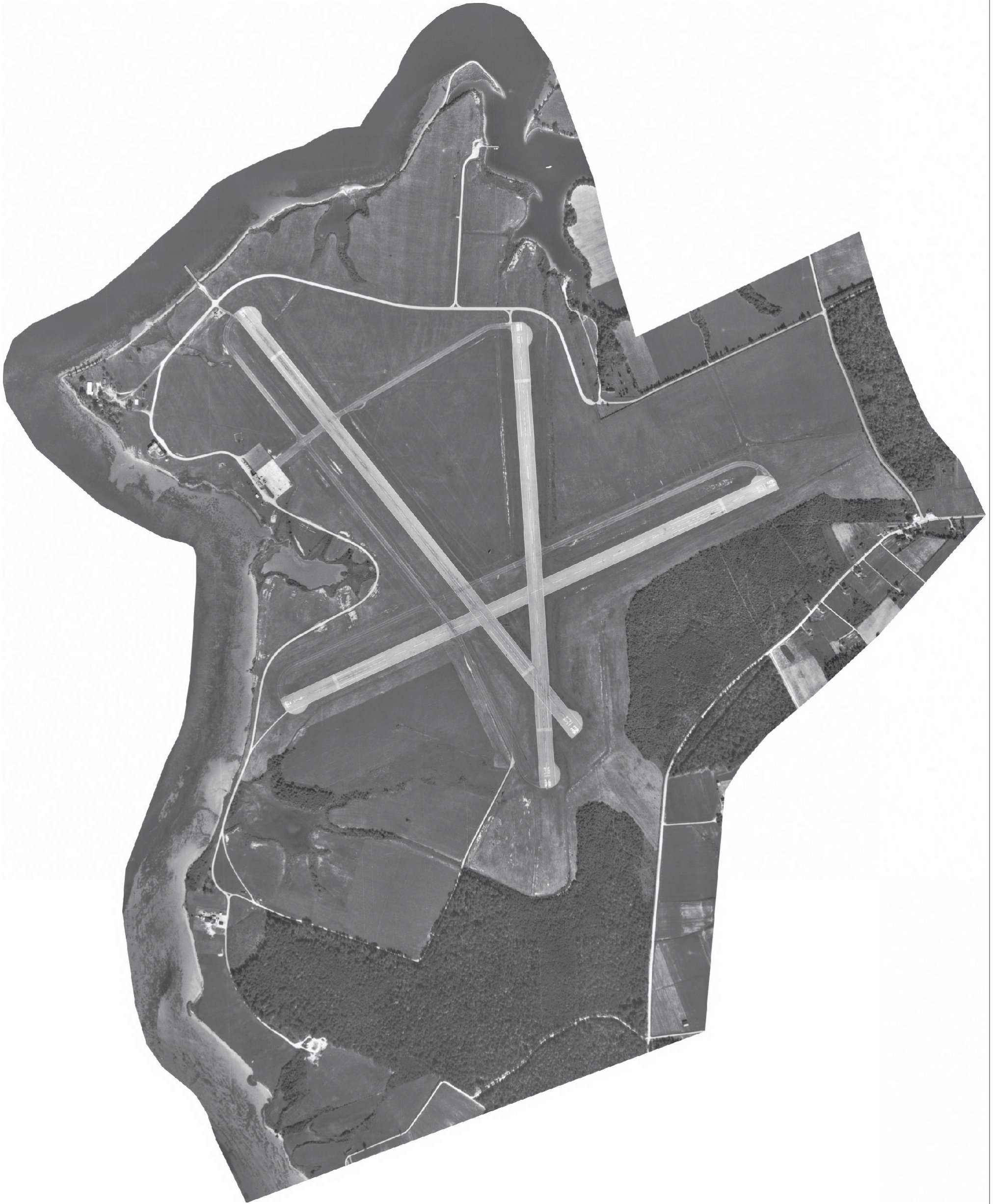


Figure 1  
Webster Field  
1957 Imagery



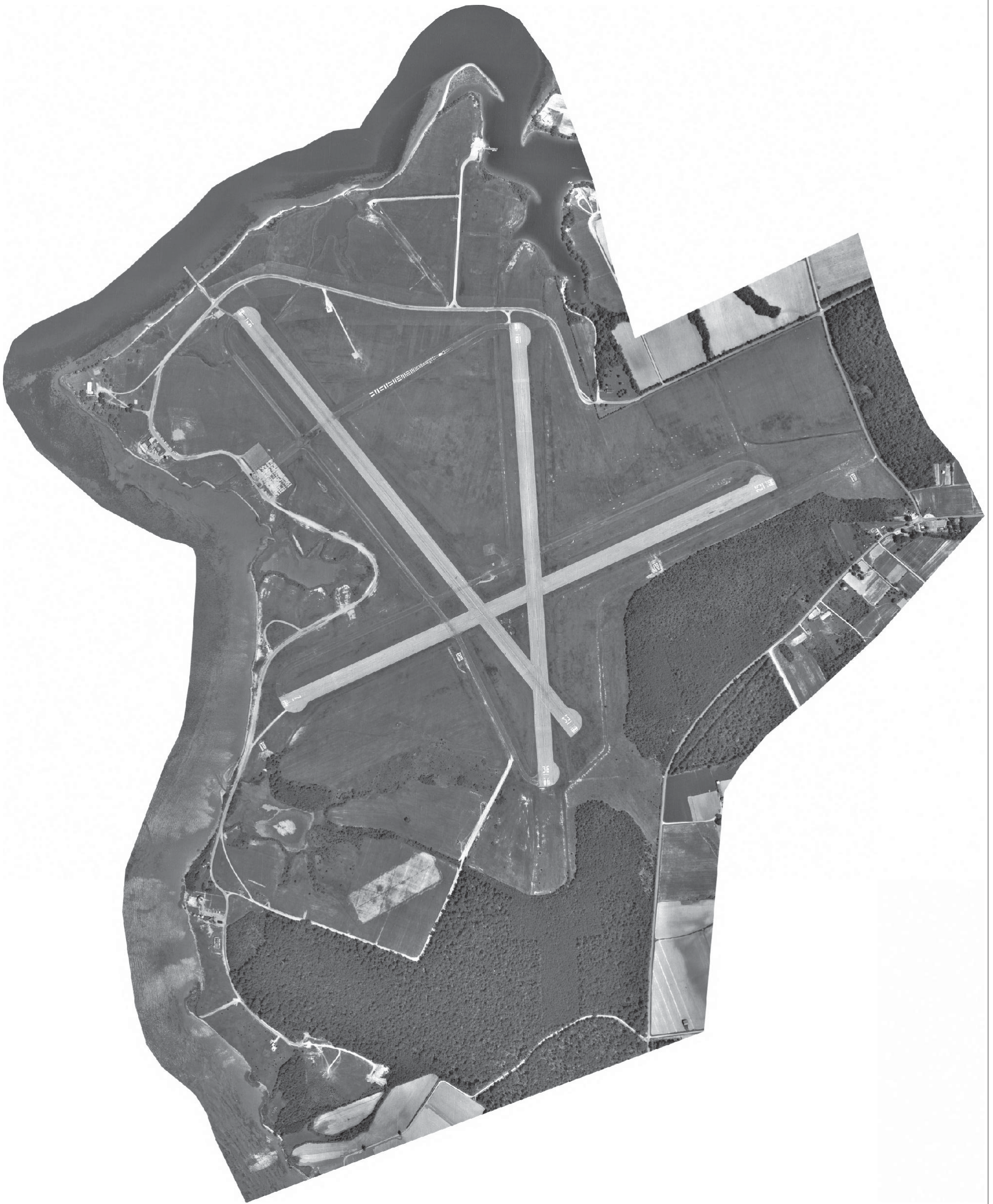


Figure 1  
Webster Field  
1964 Imagery





Figure 1  
Webster Field  
1985 Imagery





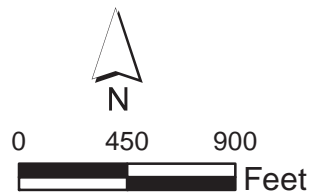
St. Mary's River

Langley Hollow Pond

**Legend**

 Installation Boundary

Historical Imagery - 1993  
NAS Patuxent River Webster Field Annex  
St. Iniges, Maryland



Imagery Source: ©1993 Google  
Modifications have been made

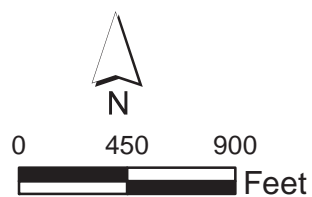
**ch2m**



**Legend**

 Installation Boundary

Historical Imagery - 2003  
NAS Patuxent River Webster Field Annex  
St. Iniges, Maryland



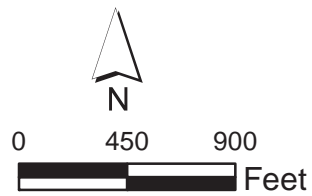
Imagery Source: ©2003 Google  
Modifications have been made

**ch2m**



**Legend**

 Installation Boundary



Imagery Source: ©2007 Google  
Modifications have been made

Historical Imagery - 2007  
NAS Patuxent River Webster Field Annex  
St. Iniges, Maryland

**ch2m.**



**Legend**

 Installation Boundary



0 450 900  
Feet

Imagery Source: ©2013 Google  
Modifications have been made

Historical Imagery - 2013  
NAS Patuxent River Webster Field Annex  
St. Iniges, Maryland



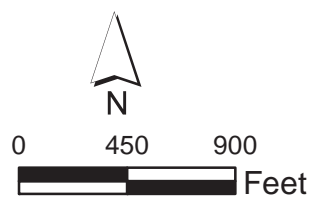




**Legend**

 Installation Boundary

Historical Imagery - 2015  
NAS Patuxent River Webster Field Annex  
St. Iniges, Maryland



Imagery Source: ©2015 Google  
Modifications have been made

**ch2m**

Appendix E  
Interview Questionnaires and  
Communication Records

## Review of the Historical Use of AFFFs and Potential Release of PFCs NAS Patuxent River and Webster Field Annex

**Introduction:** The purpose of this survey is to determine the possible environmental releases or storage of AFFFs at NAS Patuxent River and Webster Field Annex, and to determine whether a follow-up interview is needed to obtain further information. The survey and interview will help us identify and document locations (i.e., sites) where PFC releases may have occurred. The information collected will be evaluated to determine if the site warrants further investigation, including soil or groundwater sampling.

This form is voluntary and any information you provide will be used strictly to evaluate the need for further site investigation. Please respond to all questions you are able to answer, in part or in whole. Please leave cells blank if an answer cannot be provided.

Your time and expertise are greatly appreciated.

<b>Date/Time of Interview:</b> Select date                      Select time	<b>Work Location (Installation/Building/Area):</b> Webster Field Annex      8076		
<b>Interviewee Name:</b> Mr.    Michael                      Carroll	<b>Position/Job Title:</b> District Fire Chief		
<b>How many years at current position:</b> 2	<b>Phone/Email:</b> 3017574680                      mike.carroll@navy.mil		
1. What types of firefighting foams are currently used at the installation?	3% AFFF Webster Field Annex	6% AFFF Select an installation	High Expansion Foam Select an installation
	Other; please list:		
2. What manufacturer's AFFF products are currently used at the installation?	3M <input checked="" type="checkbox"/>	Ansul <input type="checkbox"/>	Chemguard <input type="checkbox"/>
	Other; please list:		
3. Where are the AFFF solutions currently stored, transferred, or handled at the installation? Please describe.	3M Light Water AFFF 3% Mil Spec F-24385F		
4. Is there a secondary containment in the AFFF storage area(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
	Additional information:		
5. Are your automated fire suppression systems currently fitted for AFFF or have they been retrofitted for use of high expansion foam?	<input type="checkbox"/> Currently fitted for AFFF <input type="checkbox"/> Retrofitted for use of high expansion foam		

(Question 5 continued)	Additional information:	
6. Do you have an inventory of the amount of AFFF currently stored on the installation(s) or present in the automated fire suppression systems?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Additional information:	
7. Can you describe the procedure for how the suppression systems are supplied with AFFF?		
8. Have there been inadvertent releases of AFFF from hangar fire suppression systems within recent years? a) If yes, provide the time frame, and the b) estimated location of the release	Yes <input type="checkbox"/> No <input type="checkbox"/> Year _____ Month _____ Select a month Location of release: Select location Additional information:	
9. How are the discharges handled? (i.e. when the suppression system goes off)? Please describe.		
10. Provide a list of trucks and trailers currently carrying AFFF and where they are parked/stored? Use the "additional information" box to add more numbers or elaborate if needed.	Identify Truck/Trailer: 1. Foam 143 2. Foam 144 3. Engine 141 4.	Location: 1. Fire Station 3 bldg 8076 2. Fire Station 3 bldg 8076 3. Fire Station 3 bldg 8076 4.
Additional information:		

<p>11. Approximately how much AFFF (gallons) is carried/stored in the specified trucks/trailers?</p>	<p>Number of Gallons:</p> <p>1. 50</p> <p>2. 210</p> <p>3. 50</p> <p>4.</p>
<p>12. Are the truck(s) tested for spray patterns to make sure the equipment is working properly?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Additional information: Water Only</p>
<p>13. Is AFFF used during spray pattern testing or are foam distribution test kits used to eliminate AFFF waste stream?</p>	<p><input type="checkbox"/> AFFF is used</p> <p><input type="checkbox"/> Foam distribution test kit is used</p>
<p>14. If AFFF is used during spray pattern testing, please describe the procedures used to contain and/or clean up the AFFF after release.</p>	<p>N/A</p>
<p>15. How often are these spray tests performed?</p>	<p>Spray test frequency: Daily</p> <p>Additional information:</p>
<p>16. Can you provide the locations of these spray tests?</p>	<p>Front of fire station.</p>
<p>17. Can you describe the procedure for how trucks and trailers are supplied with AFFF, and where this resupply occurs?</p>	<p>5 gallon buckets</p>
<p>18. Can you provide the procedures for how these vehicles are currently cleaned/decontaminated?</p>	<p>soap and water</p>



23. For the FTAs identified above, please indicate: a) The years of operation or date range. b) The date when fire training at each FTA was last conducted.	Date Range:	Last Fire Training:
	1. N/A 2. 3. 4.	1. 2. 3. 4.
24. Do you have information on how many gallons of AFFF were released in these FTAs?	Number of Gallons	
	1. N/A 2. 3. 4.	
25. What types of fuels/flammables were used at each FTA?	Fuel Type	
	1. N/A 2. 3. 4.	
26. Was remedial action conducted at these FTAs? a) If "Yes", please describe the remedial action. b) Indicate the year remedial action was conducted, if known. c) Indicate whether or not a new FTA was constructed on top of the original FTA following remediation in the "Additional Information" section.	Yes <input type="checkbox"/> Year	
	No <input type="checkbox"/> Additional Information:	
27. What are the current fire-fighting training practices at this installation? Please describe.	We do not conduct AFFF training.	
28. What are the <b>non-FTA locations</b> where AFFF suppression systems are installed or AFFF/PFCs stored or used or disposed (i.e. hangars, fire stations, maintenance areas, wastewater treatment plants, metal plating facilities, AFFF ponds/lagoons, and/or aerospace, automotive, electronic facilities)	Identify Non-FTA Location (site/building number/description)	
	1. Fire Station 3 Bldg 8076 (245 gallons) 2. 3. 4.	

<p>29. Do these location(s) currently contain or have they historically contained AFFF/PFCs?                  a) If yes, please indicate the years/date range each location contained AFFF/PFCs.</p>	<p>Years or Date Range</p> <p>1. Yes</p> <p>2. Select one</p> <p>3. Select one</p> <p>4. <b>Select one</b></p> <p>Additional information:</p>
<p>30. If applicable, when was the system at this <b>Non-FTA</b> converted from an AFFF to a high expansion foam?                  a) Indicate year of conversion.</p>	<p>Year of Conversion to High Expansion Foam</p> <p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p> <p>Additional information:</p>
<p>31. Is there a metal plating/electroplating shop on base?                  a) If yes, please indicate the years of operation or date range.</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Years of operation and additional information:</p>
<p>32. Is there anyone else or other base organization personnel that you would recommend we interview? If so, please list.</p>	<p>1. First Last</p> <p>2. First Last</p> <p>3. First Last</p> <p>4. First Last</p>
<p><b>Thank you for your participation!</b></p>	



AFF Inventory for Webster Field Annex				
Location/ Bldg	Quantity (gal)	System Ready (SR) vs External Storage (ES)	Product Type	Notes
<b>Webster Field</b>				
8076 Webster Fire Station	310	ES	3M 3%	3 different storage areas
8139 UAV			N/A	
	<b>Web Total</b>	<b>310</b>		

Provided to CH2M September 2016 by District Fire Chief, Michael Carroll

**Subject:** Email correspondence concerning AFFF use at Webster Field Annex: Heidi Morgan (NAVFAC Washington) and Michael Carroll (District Fire Chief): Date September 2018

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River <[heidi.a.morgan@navy.mil](mailto:heidi.a.morgan@navy.mil)>  
Sent: Monday, September 24, 2018 10:18 AM  
To: Ledbetter, John/WDC <[John.Ledbetter1@jacobs.com](mailto:John.Ledbetter1@jacobs.com)>  
Subject: [EXTERNAL] FW: Webster Bldg 8008

John,

See below. I checked the property record for the building and does not include it as well. Between the FD an medical surveillance group (industrial hygienist), I would conclude the building did not have that type of system in it. If you are still unsure then I would come for a building visit and look through old building maps (which are being organized in the vault currently).

Thanks Heidi

-----Original Message-----

From: Carroll, Mike D CIV CNI, N30  
Sent: Monday, September 24, 2018 10:10 AM  
To: Morgan, Heidi A CIV Navfac Wash, PWD Pax River <[heidi.a.morgan@navy.mil](mailto:heidi.a.morgan@navy.mil)>  
Subject: RE: Webster Bldg 8008

Heidi,

I was told there are not any AFFF systems at Webster.

Mike

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
Sent: Monday, September 17, 2018 9:56 AM  
To: Carroll, Mike D CIV CNI, N30 <[mike.carroll@navy.mil](mailto:mike.carroll@navy.mil)>  
Subject: FW: Webster Bldg 8008

Hi Mike,

Who would know the following answers?

Thanks Heidi

-----Original Message-----

From: Ledbetter, John/WDC <[John.Ledbetter1@jacobs.com](mailto:John.Ledbetter1@jacobs.com)>

Sent: Thursday, September 13, 2018 10:18 AM

To: Morgan, Heidi A CIV Navfac Wash, PWD Pax River <[heidi.a.morgan@navy.mil](mailto:heidi.a.morgan@navy.mil)>

Cc: Saunders, Carrie/AUS <[Carrie.Saunders@jacobs.com](mailto:Carrie.Saunders@jacobs.com)>

Subject: [Non-DoD Source] Webster Bldg 8008

Good morning Heidi,

Hey, we are trying to wrap up the draft PA report for PFAS at Webster Field and in the process had to do a "Other Environmental Liabilities or OEL" query in a database we have access to. Seems this is part of the PA process and SOPs we have been told to follow just in the last few months. In the process we found that Building 8008 is listed as a plating shop/machine shop. We also pulled some of the documents related to the building and see it has ventilation hoods/system so doesn't look to use any kind of mist suppressant system that would have PFAS. Just to be sure, we were wondering if you could confirm there was no usage of a mist suppressant system at this building and PFAS has for fire suppressant hasn't been used. May be a quick email or visit to that building tenant would confirm this.

This would help us to show we did look at other things from the query we did and did not find anything. Tanks and paint shops were also in the query but there is no evidence of any PFAS materials or spills.

John Ledbetter, P.G.  
CH2M is now a Jacobs Company

**Subject:** Email correspondence concerning AFFF use and drinking water sampling at Webster Field  
**Annex:** Heidi Morgan (NAVFAC Washington), Justin Barlow (NAVFAC Washington): Date January 2017

-----Original Message-----

**From:** Barlow, Justin CIV NAVFAC Washington  
**Sent:** Wednesday, January 25, 2017 2:07 PM  
**To:** Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
**Cc:** Donmoyer, Larry C. CIV NAVFAC Washington  
**Subject:** RE: New AFFF Information

Heidi,

It was not required by EPA to do the testing at Webster or Solomons. However, the region had the sampling conducted a few months ago, but I have not received the reports yet. I will email to see when I can expect them.

-----Original Message-----

**From:** Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
**Sent:** Wednesday, January 25, 2017 2:04 PM  
**To:** Steckler, David J CIV NAVFAC Washington; [John.Ledbetter@CH2M.com](mailto:John.Ledbetter@CH2M.com);  
[Quinn.Philiposian@ch2m.com](mailto:Quinn.Philiposian@ch2m.com)  
**Cc:** Rambo, Kyle E CIV NAVFAC Washington, Environmental Dept; McDaniel, Lance E CIV NAVFAC Washington, PAXR PWD; Donmoyer, Larry C. CIV NAVFAC Washington; Barlow, Justin CIV NAVFAC Washington  
**Subject:** New AFFF Information

All,

Last week we had a site visit w/ a retired Fire Fighter (Don Ervin) from Pax River. Mr. Ervin showed us where AFFF was used. He showed us where daily checkouts of crash rescue fire truck equipment were conducted (the old wash rack at Taxiway Alpha-Taxiway Bravo). The checkout included spraying AFFF (to ensure it was functioning). Kyle it is where you showed me.

We asked Mr. Ervin if AFFF was used at Webster (because we were told through interviews it was not). He stated he didn't think so, but called me after the site visit and said he spoke to one the retired fire captains (Bobby Johnson) from Webster and he stated they did checkouts as well.

I just spoke to the Mr. Johnson and he said they checked the fire truck AFFF equipment monthly along the runway. He also stated he did not go out for the monthly checks, but he had a call into another retired fire fighter that worked at Webster that knew where it was used. I asked Mr. Johnson if he and the other fire fighter were willing to show me where on Webster and he said yes, and that he would be in touch once he heard back from the other fire fighter.

Justin or Larry was the drinking water well over there included in the UMCR3.

r/

Heidi Morgan  
NAVFAC Pax River Environmental  
Environmental Restoration Program Manager  
301-757-4897

**Subject:** Email correspondence concerning AFFF use at Webster Field Annex: Heidi Morgan (NAVFAC Washington), Quinn Philiposian (CH2M). Date January 2017

*Note: Only Item 2 refers for Webster Field Annex. All other items concern NAS Patuxent River.*

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River [<mailto:heidi.a.morgan@navy.mil>]  
Sent: Tuesday, January 31, 2017 1:48 PM  
To: Philiposian, Quinn/WDC <[Quinn.Philiposian@ch2m.com](mailto:Quinn.Philiposian@ch2m.com)>  
Cc: Ledbetter, John/WDC <[John.Ledbetter@CH2M.com](mailto:John.Ledbetter@CH2M.com)>; Saunders, Carrie/AUS <[Carrie.Saunders@ch2m.com](mailto:Carrie.Saunders@ch2m.com)>; Struve, Susana/WDC <[Susana.Struve@CH2M.com](mailto:Susana.Struve@CH2M.com)>  
Subject: RE: Action items from yesterday 01/19 [EXTERNAL]

All,

Item 2 below - See attached map showing where the AFFF was used on Webster Field. Fire Department personnel stated they would approach the taxiway at the T and either go right or left. Then go about 100'- 150' and spray the AFFF on the runway to ensure the equipment functioned and the foam set up correctly.

In addition, attached is the site table with some recommendations.

Item 3 below - I will check and see if the photo lab POC was able to get us the old photos at the end of the week.

Item 4 - no update.

Heidi

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
Sent: Friday, January 27, 2017 7:20 AM  
To: 'Quinn.Philiposian@ch2m.com'  
Cc: [John.Ledbetter@CH2M.com](mailto:John.Ledbetter@CH2M.com); [Carrie.Saunders@ch2m.com](mailto:Carrie.Saunders@ch2m.com); [Susana.Struve@CH2M.com](mailto:Susana.Struve@CH2M.com); Steckler, David J CIV NAVFAC Washington  
Subject: RE: Action items from yesterday 01/19

All,

See my comments under the actions below.

-----Original Message-----

From: [Quinn.Philiposian@ch2m.com](mailto:Quinn.Philiposian@ch2m.com) [<mailto:Quinn.Philiposian@ch2m.com>]  
Sent: Friday, January 20, 2017 8:35 AM  
To: Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
Cc: [John.Ledbetter@CH2M.com](mailto:John.Ledbetter@CH2M.com); [Carrie.Saunders@ch2m.com](mailto:Carrie.Saunders@ch2m.com); [Susana.Struve@CH2M.com](mailto:Susana.Struve@CH2M.com)  
Subject: [Non-DoD Source] Action items from yesterday 01/19

Good morning Heidi,

Per your request, I've prepared a list of action items for you to follow up on at the base.

1. 2385 HAZMART - ask Gomez about quantity of May 2013 release.

50 gallons on AFFF was released.

2. Webster - Call Bobby Johnson, former (Fire Captain?) at Webster who can show us where they tested truck AFFF spray regularly. Phone number is (301) 481-7022.

Contacted Bobby see email sent 1/25/2017 - waiting to hear back from him to show us where on Webster AFFF was used.

3. Photo Lab - check for old photos of crash incidents. Per Mr. Ervin, a photographer was always present on the scene of crashes. Wish we had heard about this before!

The photo lab does not have any pictures, they were sent to Navy Yard Archives, but I spoke to the former photographer who has some pictures of training exercises with an off base Fire Department at Site 41 (when using AFFF) and he will provided me copies. I will forward when I receive.

4. Air Ops Dept. Supply - Check if they have records of when they first procured AFFF. Mr. Ervin said all their supplies would have been ordered through Air Ops Dept. Supply, and the woman who worked there at the time was Mary (last name unknown).

This action item was to see if possible archival procurement records which could show how much AFFF was ordered.

I spoke to Air Ops the employee who would know has retired. I have another POC that I will speak with, but she is new to the position.

Thanks! Have a great weekend.

- Quinn

Quinn Philiposian

Geologist

D 703.376.5212

C 808.285.0700

CH2M

2411 Dulles Corner Park, Suite 500

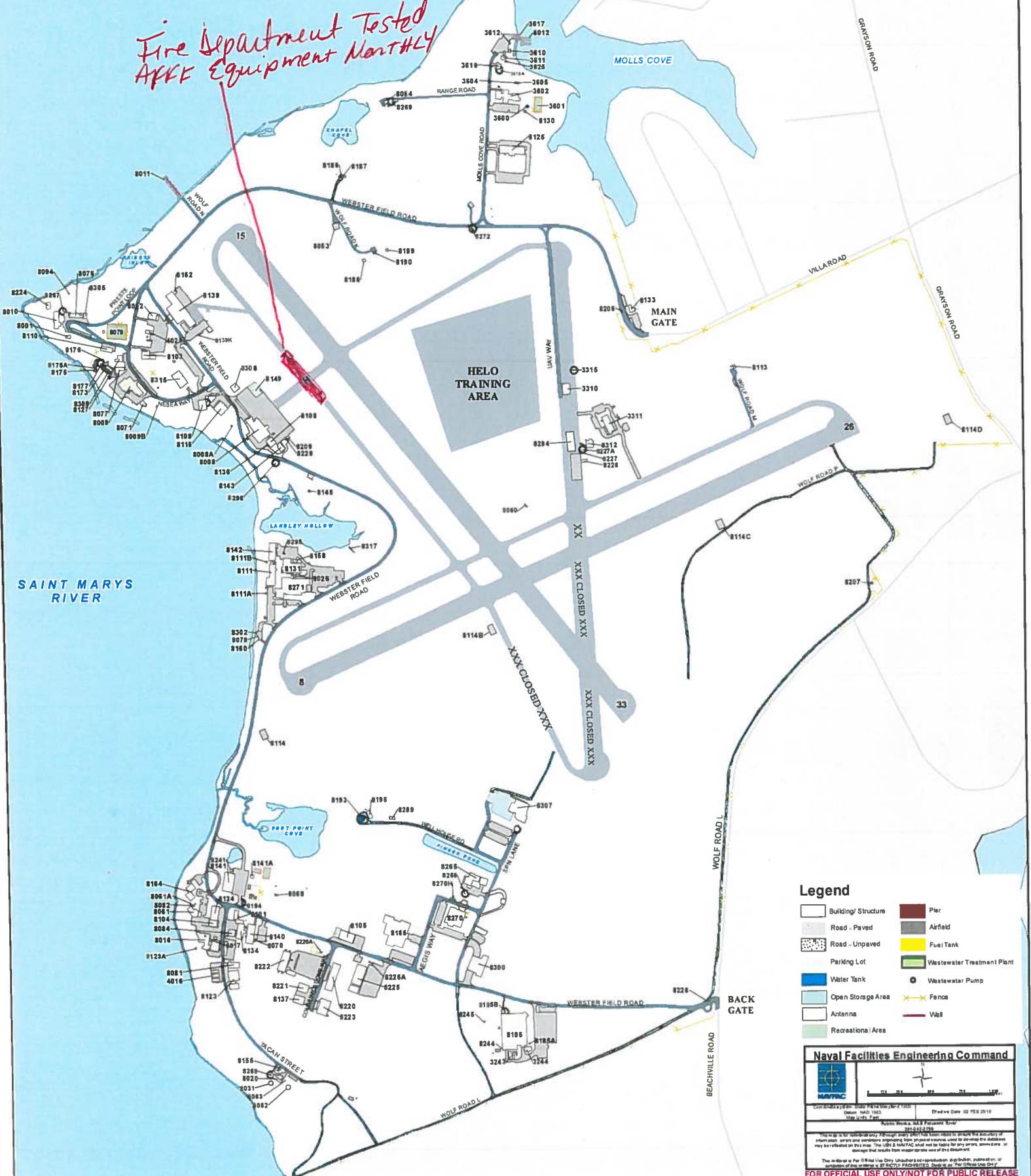
Herndon, VA 20171

2016

# WEBSTER FIELD

## EXISTING CONDITIONS MAP

*Fire Department Tested  
AKKK Equipment Month 4*



**Legend**

	Building/Structure		Pier
	Road - Paved		Airfield
	Road - Unpaved		Fuel Tank
	Parking Lot		Wastewater Treatment Plant
	Water Tank		Wastewater Pump
	Open Storage Area		Fence
	Antenna		Well
	Recreational Area		

**Naval Facilities Engineering Command**

NAVFAC

Scale: 1" = 100'

DATE: 15 FEB 2016

FOR OFFICIAL USE ONLY/NOT FOR PUBLIC RELEASE



**Subject:** Email correspondence concerning AFFF use at Webster Field Annex: Heidi Morgan and David Steckler (NAVFAC Washington), Glen Yannayon and Joseph Spalding and Kevin Wood (PAX/ Webster Field Annex Fire Department)

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River [<mailto:heidi.a.morgan@navy.mil>]  
Sent: Tuesday, February 09, 2016 3:26 PM  
To: Ledbetter, John/WDC <[John.Ledbetter@CH2M.com](mailto:John.Ledbetter@CH2M.com)>  
Subject: FW: Water Supplies at Webster and Solomons

FYI, for future use. In addition, Mr. Spalding provided me with some great information. I told him you all would be interviewing him as well. Mr. Wood is knowledgeable to all the systems now and any releases in the past years.

Heidi

-----Original Message-----

From: Steckler, David J CIV NAVFAC Washington  
Sent: Tuesday, February 09, 2016 3:13 PM  
To: Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
Subject: RE: Water Supplies at Webster and Solomons

That should do it--thanks.

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
Sent: Tuesday, February 09, 2016 2:56 PM  
To: Steckler, David J CIV NAVFAC Washington  
Subject: RE: Water Supplies at Webster and Solomons

David,

I spoke to Joseph Spalding (who starting work here in 1982, he maintained all the suppression systems on base until recently) and Kevin Wood who has maintained the systems for the last 7 years (taking over from Mr. Spalding). Joseph said they started using AFFF 6% in the 1990's and stopped approximately 5 years ago. He stated the only AFFF (at 3%) at Webster is in a fire apparatus in case a aircraft crash. There has never been an aircraft crashes that required a fire to extinguished at Webster. All fire training was conducted at Pax and not Webster.

The Solomons Building 6454 (Hazmat Storage) has fire suppression system containing AFFF at 3%. Bldg. 6454 was built in the late 1990's and did have 6% AFFF in it up until 2 years ago. The system never discharged any AFFF.

Hope this helps and let me know if you need anything else.

Heidi

-----Original Message-----

From: Steckler, David J CIV NAVFAC Washington  
Sent: Tuesday, February 09, 2016 9:52 AM  
To: Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
Subject: RE: Water Supplies at Webster and Solomons

Thanks--that's exactly the kind of information that I was looking for.

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River  
Sent: Tuesday, February 09, 2016 9:38 AM  
To: Steckler, David J CIV NAVFAC Washington  
Subject: RE: Water Supplies at Webster and Solomons

I spoke with the Glen Yannayon with Base Fire Department (FD) and asked about AFFF being stored, used or spilled at Webster and Solomons. There is an aircraft rescue and firefighting response vehicle at Webster to support aircraft crashes with AFFF at 3%. Glen has been with the FD for 20 years and said that AFFF was never used to put out and aircraft fire at Webster. All the crashes at Webster have been what they call hard crash (no fire involved). In addition all crash training was performed at Pax. I spoke to M. Smolek he said that there were no aircraft hangers at Webster, there are now but for UAV's. I will inquire to the type of system it is with IAP (contractor maintains the fire suppression systems on base).

I am going to talk to the IAP contractor. They have one individual that has been around for 40 plus years and hopefully can recall whether Webster used AFFF.

Solomon's never had AFFF stored or used for aircraft fire suppression. They do however have a hazmat building that has 3% AFFF in the buildings fire suppression system. I don't believe this building to be old. I will check the on the age.

**Subject:** Email correspondence concerning AFFF use at Webster Field Annex: Heidi Morgan (NAVFAC Washington) and Michael Smolek (NAVFAC Washington): Date August 2016

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River <[heidi.a.morgan@navy.mil](mailto:heidi.a.morgan@navy.mil)>  
Sent: Tuesday, November 13, 2018 10:36 AM  
To: Ledbetter, John/WDC <[John.Ledbetter1@jacobs.com](mailto:John.Ledbetter1@jacobs.com)>  
Subject: RE: Webster Field AFFF [EXTERNAL]

John

I remember asking this question and was told that AFFF was not used on the helicopter crash. We could not find the crash report, a lot them were disposed of.

Thanks Heidi

-----Original Message-----

From: Ledbetter, John/WDC <[John.Ledbetter1@jacobs.com](mailto:John.Ledbetter1@jacobs.com)>  
Sent: Monday, November 12, 2018 2:26 PM  
To: Morgan, Heidi A CIV Navfac Wash, PWD Pax River <[heidi.a.morgan@navy.mil](mailto:heidi.a.morgan@navy.mil)>  
Cc: Saunders, Carrie/AUS <[Carrie.Saunders@jacobs.com](mailto:Carrie.Saunders@jacobs.com)>  
Subject: [Non-DoD Source] RE: Webster Field AFFF [EXTERNAL]

Hey Heidi,

I hate to bug you again about Webster and previous information we received below from Mike Smolek but one of our PFAS folks was asking if we could get any more information about the CH-53E helicopter crash and if AFFF was used on it. I found on the internet that that crash happened on October 6, 1978 at Webster and 3 crew escaped with minor injuries but we don't know if the crash truck and foam was used. Is there any kind of crash report that can be accessed or if the fire department has any records of this crash? Or better yet, would they have even used foam on a helicopter crash?

If not, we won't worry about it. Thank you.

Thank you.

-----Original Message-----

From: Morgan, Heidi A CIV Navfac Wash, PWD Pax River <[heidi.a.morgan@navy.mil](mailto:heidi.a.morgan@navy.mil)>  
Sent: Monday, August 08, 2016 1:58 PM  
To: Ledbetter, John/WDC <[John.Ledbetter1@jacobs.com](mailto:John.Ledbetter1@jacobs.com)>  
Subject: FW: Webster Field AFFF [EXTERNAL]

See below.

-----Original Message-----

From: Smolek, Michael A Sr. CIV NAVFAC Washington, ENV

Sent: Monday, August 08, 2016 1:24 PM

To: Morgan, Heidi A CIV Navfac Wash, PWD Pax River

Subject: RE: Webster Field AFFF

Heidi-- Solomons- The only aircraft that were ever at Solomons for flight ops purposes were blimps during WWII. There is an helicopter pad there now used only for emergency evacuations. But it is my understanding this is very rarely used and wouldn't have foam capability.

Webster- Until the UAV hangars were built there recently there were never any hangars at Webster. Also the runways are short, built for WWII aircraft. I talked with Pat Woodburn who was the Facilities Manager there from 1974-2015 and he told me that he thought that during some flight operations that a crash truck was sent from the main base on a special basis. He didn't know if they carried foam or not. He remembered only two crashes from his 40 years there. One was a crash in the late 1970s or early 1980's of a CH53(E?) helicopter. He was not on board that day so doesn't know if foam was used or not. It was at the approach end of R/W32 and left a large crater. The other was a glider, so foam would not have been used. He indicated that jets didn't land at Webster because of the short runways.

Mike